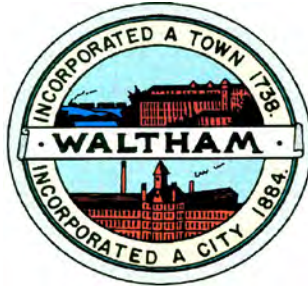


The City of Waltham



**Invites
Interested Parties
To propose the best offer and or bid
For the service or product herewith described:**

ADA Bathroom Adaptation in Three (3) Buildings, 2020

VIRTUAL BID OPENING: 10.00 AM THURSDAY JULY 9, 2020

VIRTUAL PRE-BID Briefing 10.00 AM TUESDAY JULY 2, 2020

A Virtual Zoom Meeting will be held. Coordinates will be announced

LAST DAY FOR WRITTEN QUESTIONS: 12 Noon JULY 6, 2020

(Via e-mail ONLY to Jpedulla@city.waltham.ma.us)

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**SECTION 00 02 00
CITY OF WALTHAM
MASSACHUSETTS**

NOTICE TO BIDDERS

Construction of ADA Bathroom Adaptation Project

The City of Waltham, Massachusetts invites sealed bids from Contractors for the **Construction of ADA Bathroom Adaptation Project**

PLANS, SPECIFICATIONS and other Contract Documents may be obtained by visiting the City's Web Site at www.city.waltham.ma.us/bids

Copies of Addenda will be e- mailed to the registered Bidders without charge. Addenda will also be posted on the web site above

Sealed **BIDS** for this project will be accepted from eligible bidders at the Purchasing Department, Waltham City Hall, 610 Main Street, Waltham, MA 02452 until **10:00 am Thursday July 9, 2020** at which place and time they shall be publicly opened, read aloud and recorded for presentation to the Awarding Authority.

A **VIRTUAL PRE-BID CONFERENCE AND SITE INSPECTION** will be held for all interested parties. Virtual/Zoom Coordinates will be sent to you before the bid opening date of **10:00 Am July 2, 2020**. Attendance at this pre-bid conference is strongly recommended but not mandatory for parties submitting a bid. It will be the only opportunity to visit the site prior to the bid opening.

LAST DAY FOR WRITTEN QUESTIONS is 12 noon July 6, 2020. Questions are to be sent via e-mail only to Jpedulla@city.waltham.ma.us

Each general bid shall be accompanied by a bid deposit in the form of a bid bond, certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the City of Waltham in the amount of five percent (5%) of the value of the bid

Bids shall be made on the basis of the Minimum Wage Rates as determined by the Commissioner of Labor and Industries, Pursuant to the Provisions of Chapter 149 of Massachusetts General Laws, a copy of which is found in the City's Web site at www.city.waltham.ma.us/bids .

Bidders' selection procedures and contract award shall be in conformity with the rules of Commonwealth of Massachusetts statute Chapter 149.

Performance and Labor and Materials payment bonds each in the full amount of the contract price will be required from the successful bidder.

The Awarding Authority reserves the right to reject any or all general bids, if it be in the public interest to do so, and to reject any sub-bid on any sub-trade if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified or that less than three such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

The successful bidder will be required to furnish a Certificate of Insurance, naming the City of Waltham as an Additional Named Insured with a waiver of subrogation, for General Liability and Vehicle Liability in the amount of \$1,000,000 per occurrence and \$1,000,000 in the aggregate and Worker's Compensation Insurance as prescribed by law.

In accordance with the laws of the Commonwealth of Massachusetts the undersigned certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by OSHA that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.

CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

CITY OF WALTHAM

Joseph Pedulla, CPO
Purchasing Department
City Hall, 610 Main Street
Waltham, MA 02452

SECTION 00 10 00 - INSTRUCTION TO BIDDERS**PART 1 - GENERAL****1.01 SCHEDULE OF DATES**

- A. Advertisement appears in Central Register, DOS COMMBUYS, City Web Site and the Bulletin Board at City Hall. Plans and Specifications ready for Bidders can be found at www.city.waltham.ma.us/bids
- B. **A Virtual/Zoom Pre-bid meeting: July 2, 2020 at 10:00 AM.** Zoom coordinates will be sent out well before the meeting
- C. **Questions** and requests for interpretations may be submitted in writing via e-mail ONLY to Jpedulla@city.waltham.ma.us up to **12:00 noon July 6, 2020.**
- D. Addenda will be issued with answers to questions and interpretations as determined by the Purchasing Department only via e-mail and posting on the web site.
- E. **General Bids Deadline:** Submit your bid response no later than **10:00 am. Thursday July 9, 2020** to Joseph Pedulla, CPO, City of Waltham Purchasing Department 610 Main Street Waltham, MA 02452

1.02 BIDDING PROCEDURE

- A. Bids for the work are subject to the provisions of General Laws, Chapter 149 as amended. Regulations governing the bidding procedures as set forth in the above mentioned amended General Laws must be followed.
- B. In the event of any inconsistencies between any of the provisions of these Contract Documents and of the cited statute, anything herein to the contrary notwithstanding, the provisions of the said statute shall control.
- C. No General Bid received by the Awarding Authority after the time respectively established herein for the opening of General Bids will be considered, regardless of the cause for the delay in the receipt of any such bid.
- D. **DELIVERY OF SEALED BIDS (COVID-19)**
While Waltham City Hall is closed due to the COVID-19 Emergency, to ensure that all bids are received on time, the City is asking that you follow the procedure below:
 - 1. IF THE BID IS MAILED:**
The best delivery service is US Postal Service. While UPS, FEDEX and

other carries do not have access to City Hall, the US Postal Service delivers inside City Hall daily. It is best to use the USPS overnight service to deliver your sealed bid.

2. IF THE BID IS DROPPED OFF:

The best way to make sure the bid is received on time and without cutting it too close to the bid deadline, is to have the bid dropped off the weekday before the due date. When dropping off the bid the day before the due date, the City is asking that you call ahead 781-314-3244 or 781-314-3240 so that the Purchasing Department can meet you at the door to accept your bid envelope.

F. VIRTUAL/ZOOM BID OPENINGS and PRE-BID BRIEFINGS (COVID-19)

Although the city no longer holds live bid openings and pre-bid meetings due to the current public health crisis, bid openings and pre-bid meetings will be conducted virtually. You may wish to follow the bid openings and pre-bid meetings by connecting to zoom- www.zoom.us/join - and type in the Meeting Number provided. Click on the bid name to join.

Bid results will be emailed to all vendors of record soon after the bid closes. A copy will be posted in the City web site, under the title of the bid of your interest.

If you wish to inspect any portion of your competitors' responses please email jpedulla@city.waltham.ma.us. The bid document section you requested will be scanned over to your email address.

1.03 WITHDRAWAL OF BIDS

- A. Bids may be withdrawn prior to the time respectively established for the opening of General Bids only on written request to the Awarding Authority.

1.04 INTERPRETATION OF CONTRACT DOCUMENTS

- A. No oral interpretation will be made to any bidder. All questions or requests for interpretations must be made in writing to the Architect.
- B. Every interpretation made to a bidder will be in the form of an Addendum to the drawings and/or specifications, which will be made available to all persons to whom Contract Documents have been issued.
- C. Failure of the Awarding Authority to send, or of any bidder to receive any such Addendum shall not relieve any bidder from obligation under his bid as submitted.
- D. All such Addenda shall become a part of the Contract Documents.

1.05 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Each bidder may visit the site of the proposed work and fully acquaint himself with conditions as they exist, and may also thoroughly examine the Contract Documents. Failure of any bidder to visit the site and acquaint himself with the Contract Documents shall not relieve any bidder from any obligation with respect to his bid.
- B. By submitting a bid, the bidder agrees that the Contract Documents are adequate and that the required result for a full and complete installation can be produced. The successful bidder shall furnish any and all labor, materials, insurance, permits and all other items needed to produce the required result to the satisfaction of the Awarding Authority.

1.06 BID SECURITY

- A. The General Contractor's bid must be accompanied by bid security in the amount of five **percent (5%) of the bid**.
- B. At the option of the bidder, the security may be bid bond, certified, treasurer's or cashier's check issued by a responsible bank or trust company. No other type of bid security is acceptable.

Bid Bonds shall be issued by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts.

- C. Certified, Treasurer's or Cashier's check shall be made payable to the City of Waltham, Massachusetts.
- D. The bid security shall secure the execution of the Contract and the furnishing of a Performance and Payment Bond by the successful General Bidder for 100% of the contract value.
- E. Should any General Bidder to whom an award is made fail to enter into a contract therefore within five (5) days, Saturdays, Sundays and Legal Holidays, excluded, after notice of award has been mailed to him or fail within such time to furnish a Performance Bond and also a Labor and Materials or Payment Bond as required, the amount so received from such General Bidder through his Bid Bond, Certified, Treasurer's or Cashier's check as bid deposit shall become the property of the City of Waltham, Massachusetts as liquidated damages; provided that the amount of the bid deposit, which becomes the property of the City of Waltham, Massachusetts, shall not in any event exceed the difference between his bid price and the bid price of the next lowest responsible and eligible bidder; and provided further that, in case of death, disability, bona fide clerical error or

mechanical error of a substantial nature, or other unforeseen circumstances affecting the General Bidder, his deposit shall be returned to him.

1.07 BID FORM

- A. General Bids shall be submitted on the "FORM FOR GENERAL BID" enclosed. Erasures or other changes must be explained or noted over the signature of the bidder.
- B. Bid forms must be completely filled in. Bids which are incomplete, conditional, or obscure, or which contain additions not called for will be rejected.
- C. General Bidders shall submit one set of executed bid forms to the Awarding Authority.

1.08 SUBMISSION OF BIDS AND BID SECURITIES

- A. Each bid submitted by a General Contractor shall be enclosed in a sealed envelope that shall be placed with the bid security in an outer envelope. The outer envelope shall be sealed and clearly marked as follows:

(Firm Name): _____
Construction of ADA Bathroom Adaptation Project, 3 buildings

1.09 AWARD OF CONTRACT

- A. The Contract shall be awarded to the lowest responsible and eligible General Bidder on the basis of competitive bids in accordance with the procedure set forth in the provision of Chapter 30, §39M of the General Laws of the Commonwealth of Massachusetts.
- B. If the bidder selected as the General Contractor fails to perform his agreement to execute a contract in accordance with the terms of his General Bid, and furnish a Performance Bond and also a Labor and Materials or Payment Bond, as stated in his General Bid an award shall be made to the next lowest responsible and eligible bidder.
- C. The words "lowest responsible and eligible bidder" shall be the bidder whose name is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work and who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, on the work. Essential information in regard to such qualifications shall be submitted in such form as the Awarding Authority may require.

- D. Action on the award will be taken within sixty (60) days, Saturdays, Sundays and Legal Holidays excluded after the opening of the bids.
- E. The contract for this service may be extended, by mutual agreement, for an additional one-year period given that all prices and contract terms remain unchanged from the original contract.
- F. The contractor acknowledges and agrees that the city may add additional resurfacing streets, other than in the original list, for which the contractor will be paid the same rates as in the original contract. See also paragraph 1.18. - ADDITIONAL WORK.

1.10 SECURITY FOR FAITHFUL PERFORMANCE

- A. The successful bidder must deliver to the Awarding Authority simultaneously with his delivery of the executed contract, an executed Performance Bond, and also a Labor and materials or Payment Bond, each issued by a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of One Hundred Percent (100%) of the Contract Price, as surety for the faithful performance of his contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Said bonds shall provide that, if the General Contractor fails or refuses to complete the Contract, the Surety Company will be obligated to do so.
- B. Premiums are to be paid by the General Contractor, and are to be included in the Contract Price.

1.11 EQUAL OPPORTUNITY

- A. The City of Waltham is an Equal Opportunity employer and will require compliance with the minority business enterprise plan (MBE) on file in the Purchasing Department

1.12 VIRTUAL PRE-BID MEETING

- A. See Paragraph 1.02F. A pre-bid conference will be held at the site on **July 2, 2020 at 10:00 AM**. Interested parties are encouraged to attend the VIRTUAL/ZOOM meeting prior to the submission of bids.

1.13 SITE VISITS

- A. Interested parties are encouraged to visit the project site(s) at their own time. Although a site visit is not mandatory, the city encourages interested parties to become familiar with the location and work environment

1.14 CONTRACT DOCUMENTS

- A. The Awarding Authority shall make available the bid documents and addenda in the City Web site at www.city.waltham.ma.us/bids. No plans will be mailed.

1.141 TERMINATION FOR CONVENIENCE

The City of Waltham may, in its sole discretion, terminate all or any portion of this Agreement or the work required hereunder, at any time for its convenience and/or for any reason by giving written notice to the Contractor thirty (30) calendar days prior to the effective date of termination or such other period as is mutually agreed upon in advance by the parties.

If the Contractor is not in default or in breach of any material term or condition of this Agreement, the Contractor shall be paid its reasonable, proper and verifiable costs up to the of termination to the extent previous payments made by the City of Waltham to the Contractor have not already done so. Such payment shall be the Contractor's sole and exclusive remedy for any Termination for Convenience, and upon such payment by the City of Waltham to the Contractor, the City of Waltham shall have no further obligation to the Contractor.

The City of Waltham shall not be responsible for the Contractor's anticipatory profits or overhead costs attributable to unperformed work.

1.15 EQUALITY

- A. Except where otherwise specifically provided to the contrary, the words "or approved equal" are hereby inserted immediately following the name or description of each article, assembly, system, or any component part thereof in the Contract Documents. It is the Contractor's responsibility to provide all the research and documentation that would prove a product or assembly is "equal". Failure to provide research or documentation does not alleviate the Contractor's responsibility to meet the schedule.

1.16 TAX FREE NUMBER

- A. The City of Waltham has a tax-free number.

1.17 SCHEDULE

- A. The work of the Contract shall be Substantially **Completed by no later than 120 days after the Notice-to-Proceed date**

1.18 ADDITIONAL WORK

The Contractor acknowledges and agrees that any additional work assigned by the Public Work Department beyond the initial assignment will be performed for the same unit prices and under the same terms and conditions of the initial work.

1.19 WEEKLY JOB MEETINGS

- A. There will be a weekly job meeting at the site on the same agreed-upon day and time. Time will be provided to discuss and view the progress of the work and to answer questions. The Contractor's job Superintendent and Project Manager shall attend each meeting. The City reserves the right to have job meetings conducted in the location of its choosing.

1.20 PROJECT SUPERINTENDENT

- A. The Contractor shall provide the same person as Superintendent for the entire duration of the project. Failure to maintain the same person in this position shall result in a One Thousand Dollar (\$1,000.00) penalty per incident which shall cover the Architect's time to re-orient new personnel.

1.21 AWARD

- A. The Awarding Authority reserves the right to reject any or all bids if it be in the public interest to do so, and to act upon the bids and make its award in any lawful manner.

1.22 PREVAILING WAGE SCHEDULE

- A. Bids shall be made on the basis of the Prevailing Wage Schedule, as determined by the Commissioner of Labor and Industries, pursuant to the provision of the Massachusetts General Laws. The Prevailing wage Schedule for this project can be found in the City's web Site at www.city.waltham.ma.us/bids

1.23 CONFLICT OF INTEREST

- A. A bidder filing a proposal thereby certifies that the proposal is made in good faith, without fraud, collusion, or connection of any kind with any other bidder

for the same work, and that the bidder is competing solely on its own behalf without connection with, or obligation to, any undisclosed person or firm.

1.24 PROCEED ORDERS

- A. No bidder is to proceed without a proceed order as set out in the contract.

1.25 INTENTIONALLY LEFT BLANK

1.26 COMPLIANCE WITH MASSACHUSETTS GENERAL LAWS

- A. Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A, I certify under the penalty of perjury that I, to the best of my knowledge and belief have filed all state tax returns and paid all the state taxes required under law.

1.27 CONSTRUCTION BARRICADES (if applicable)

- A. The General Contractor shall provide all barricades to enclose the work area to prevent unauthorized access to the site.
1. The barricades shall provide enough room for all construction activities to be performed while separated from pedestrians, students, and staff on site.
 2. Safety is the sole responsibility of the Contractor and any barricades necessary to protect the work and the public shall be provided.
 3. Provide entrance protection.

1.28 INSURANCE

- A. The contractor shall purchase and maintain, at his expense all insurance required by the Contract. Documents and all insurance required by the applicable laws of Massachusetts, including but not limited to, General Laws, Chapter 146, in connection with all hoisting equipment.
- B. The Contractor shall purchase and maintain such insurance as will protect him from claims under workmen's compensation acts and from claims for damages because of bodily injury, including death and all property damage including, without limitation, damage to buildings and adjoining the site of construction which might arise from and during operations under this contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them including:

1. Statutory Worker's Compensation and Employer's Liability

The contractor shall provide insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws (so-called Worker's Compensation Act) to all persons to be employed under this contract and shall continue in force such insurance as aforesaid shall be deemed a material breach of this Contract and shall operate as an immediate termination thereof. The contractor shall, without limiting the generality of the foregoing, conform to the provisions of Chapter 149 of the General Laws, which Section is incorporated herein by reference and made a part of hereof.

2. Comprehensive General Liability Insurance

Minimum bodily injury limits of \$ 1,000,000 per person and \$ 1,000,000 per accident, and property damage limits of \$ 500,000 per accident and \$ 1,000,000 aggregate during any 12-month period, shall include the following:

- a. Public liability (bodily injury and property damage)
- b. Independent contractor's protective liability.
- c. Products and completed operations.
- d. Save harmless agreement for Owner and Architects

3. Comprehensive All Risk Motor Vehicle Liability Insurance

Minimum bodily injury limits of \$ 500,000 per person, \$ 1,000,000 per accident, and property damage limit of \$ 1,000,000 per accident.

4. All Risk Insurance

Covering all Contractors' equipment with a provision for Waiver of Subrogation against the Owner.

5. Excess Liability Insurance in Umbrella Form with combined Bodily Injury and Property Damage Limit of \$ 1,000,000.

6. **City of Waltham shall be a Named Additional Insured with a Waiver of Subrogation on the insurance policy for this project.**

1.29 SITE ACCESS (if required)

- A. The General Contractor may visit the work sites on their own time by first scheduling your visit with the building department- Mr. Bill Forte- 781-314-3276.

1.30 CONSTRUCTION TRAILER (if Required)

- A. The General Contractor shall locate the construction trailer at locations approved by the Owner.
- B. The General Contractor shall locate all on site stored or staged materials within the enclosed area designated by the Owner.

1.31 INTENTIONALLY LEFT BLANK**1.32 COMPLETE BID FORMS**

- A. Please Note: Each bidder must fill in all the blanks on all the bid forms, even if the information is “zero dollars” or “not applicable”. Also, please acknowledge all Addenda issued by the Awarding Authority. Where required Original – “Wet” Signatures must be placed as indicated.

2.00 FUNDS APPROPRIATION and LOAN AUTHORIZATION.

- A THE CONTRACT OBLIGATION ON BEHALF OF THE CITY IS SUBJECT TO PRIOR APPROPRIATION OF MONIES FROM THE GOVERNMENTAL BODY AND AUTHORIZATION BY THE MAYOR.

3.0 CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.

- A All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor

Signature of Individual or Corporate Name by: _____
(Signature of Corporate Officer)

Print Name: _____ Title: _____

Social Security Number or Federal Identification Number: _____

END OF SECTION

SECTION 00310

BID FORM

TO THE PURCHASING AGENT
WALTHAM, MASSACHUSETTS 02453

The undersigned, as bidder, hereby declares that he/she has carefully examined the specifications and provisions attached hereto, and that he/she proposes and agrees, if this bid is accepted, that he/she will contract with the CITY OF WALTHAM in the form prescribed for **ADA Bathroom Construction Adaptation, 3 buildings**, as herein specified and will provide therefore all necessary labor, machinery and equipment, and will perform all work in the manner prescribed and according to the requirements of the Contract Documents.

Accompanying this bid is case, a certified or treasurer’s check payable to the CITY OF WALTHAM, or a bid bond in the amount of FIVE PERCENT (5%) OF THE CONTRACTOR’S BID PRICE.

If this bid shall be accepted and the undersigned shall fail to execute the required contract, in accordance with the terms herein set forth, within five days from the date of mailing a notice to the undersigned at the address given below that the contract is ready for signature, the CITY OF WALTHAM may, at its option, determine that this bid shall be null and void, and the aforesaid cash or checks shall become the property of the CITY OF WALTHAM; otherwise the said cash or checks shall be returned to the undersigned.

Bidder acknowledges receipt of the following addenda(s): _____, _____, _____, _____, _____, _____.

Time for completion of the work is **120 days from the Notice-to-Proceed date,**

BASE BID 1:

The proposed contract price for the Council on Aging Building St. \$ _____
Located at 488 Main Street

BASE BID 2:

The proposed contract price for the Government Center Building \$ _____
Located at 119 School Street

BASE BID 3:

The proposed contract price for the Waltham Public Library \$ _____
Located at 735 Main Street

Grand Total \$ _____

Authorized Signature: _____, Title: _____

Name of Firm: _____

Business Address: _____

Email: _____

_____, _____
Telephone Date

PROOF OF CONTRACTOR’S RESPONSIBILITY

Before a contract will be awarded to any bidder, he/she will be required to furnish evidence satisfactory to the City that he/she has all of the following qualifications:

- A. Ability, equipment, organization, and financial resources sufficient or enable him/her to construct and complete the work successfully within the time required.
- B. Experience during the past three (3) years in the successful completion of similar projects, the magnitude of which shall be not less than one-half (1/2) the work herein specified. In this connection, the attention of the bidder is directed to the “Bidder’s Experience” attached hereto, which shall be used in determining the responsibility of the bidder. The City may require additional information is necessary to determine the responsibility of the bidder.

In the event the bidder fails, refuses, or neglects to submit and require information within the reasonable time stated in any request or fails to qualify as a responsible bidder, his/her bid guaranty shall be forfeited to the use of the owner, not as a penalty, but as liquidated damages.

The determination of whether a bidder is responsible shall rest solely with the City.

BIDDER’S EXPERIENCE

Complete the following Statement of Bidders Qualifications for Sports Field Contractors. List projects of a similar character and scope to the work specified under this contract, which have successfully been completed by during the past three years. Projects must have included the renovation, refurbishment, reconstruction or construction (new) of public, private or institutional sports playing fields and parks/open space facilities.

This information must be furnished by each bidder. A completed project is one that has been accepted and the final payment received from the City or authorized representative.

Statement of Bidders Qualifications
ADA bathroom adaptation

If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

Name of Bidder _____

Permanent Main Office Address _____

When organized _____

How many years have you been engaged in the contracting business under your present firm or trade name? _____

Contracts on hand: (Schedule these showing gross amount of each contract and the appropriate anticipated dates of completion. Include name and address of client and name of person supervising for client.)

General character of work performed by your company

Have you ever failed to complete any work awarded to you? If so, why?

Have you ever defaulted on a contract? If so, where and why?

List the more important contracts awarded to you and contracts for work similar to this project, stating approximate cost for each and the month and year completed. (Give name and address of client and name of person supervising for client.)

List your major equipment available for this contract:

Experience in abatement and demolition work similar to this project

Background and experience of the principal members of your organization including the officers

Projects you have been low bidder on in last 120 days

Credit available: \$ _____

Bank Reference: _____

The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the City of Waltham in verification of the recitals comprising this statement of Bidder's Qualifications.

Dated this _____ day of _____, 2010

Name of Bidder

By _____

Title _____

Authorized Signature

Date

Print Name

--- END OF SECTION ---

Section 00 32 00

Scope of Work

The work involves three (3) city buildings found within the City of Waltham. This work has been divided out accordingly based on the 3 city buildings per work floor; COA Building, Government Center and the Public Library.

The project involves the adaptive correction of all bathrooms as listed in the construction documents. The scope of this work is that of making the current bathrooms in the identified buildings compliant with the National ADA Standards and 521 CMR.

End of Section

00 32 00-1

SECTION 00331

PREVAILING WAGE SCHEDULE

Please visit the City Web Site at www.city.waltham.ma.us/bids for a copy of the schedules

Section 00 50 00

AGREEMENT

CITY OF WALTHAM

ARTICLE 1. This agreement, made this _____ day of _____, 2020 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

CITY OF WALTHAM, MASSACHUSETTS

FOR THE COMPANY

FOR THE CITY

Jeannette A. McCarthy, MAYOR,
City of Waltham
Date: _____

CONTRACTOR (Signature),
Date: _____

Company

Address

John B. Cervone, City Solicitor
Date: _____
APPROVED AS TO FORM ONLY

Michael Chiasson, Director of Public Works
Date: _____

Joseph Pedulla, CPO Purchasing Agent
Date: _____

Paul Centofanti, Auditor
Date: _____

I CERTIFY THAT SUFFICIENT FUNDS
ARE AVAILABLE FOR THIS CONTRACT

SECTION 00501

PERFORMANCE BOND

CITY OF WALTHAM

KNOW ALL MEN BY THESE PRESENT THAT,

_____ as

principal and _____ as surety, are held and firmly bound unto the CITY OF WALTHAM and to such persons, firms, and corporations, who may furnish materials for or perform labor on the work, construction or improvements contemplated in the Contract hereinafter mentioned, or who may have any suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, in the

SUM OF _____ DOLLARS (\$ _____)

(lawful money of the United States of America) for the payment whereof the Contractor and the Surety of Sureties bind themselves and their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT for the above burden (the Contractor) its

_____ heirs, executors, administrators and assigns, shall faithfully perform the Contract, on his part and during the life of any guaranty or warranty, for defective materials and workmanship required under this Contract, and satisfy all claims and demands incurred for the same; and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of failure so to do, and shall fully reimburse and repay the City all outlay and expense which the City may incur in making good any such default, and shall promptly make payment to all persons supplying labor or materials for use in the prosecution of the work provided for in said Contract; and shall indemnify and save harmless the said City, its officers and agents from any and all suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that (except as to the City) no suit, action or proceeding by reason of any default whatever shall be brought on this Bond after two years from the day on which the final payment under the Contract falls due.

AND PROVIDED, that any alterations which may be made in the terms of the Contract or in the work to be done under it, or any assignment, transfer or subletting of any part of the work, or the giving by the City of any extension of time for the performance of the Contract, or any other forbearance on the part of either the City or the Contractor to the other, shall not in any way release the Contractor and the Surety of Sureties, or either or any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety or Sureties of any such alterations, assignment, transfer, subletting extension or forbearance being hereby waived.

This Bond is made for the use and benefit of all persons, firms, and corporations who may furnish materials, or perform any labor for or on account of said work, construction or improvements, or who may have any suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, and they and each of them are hereby made obligees hereunder the same as if their own proper names were written herein as such, and they and each of them may sue hereon in their own names for their own use and benefit.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed hereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such changes, extension of time, alteration or addition to the terms of the Contract or to the work, or to the Specifications.

IN WITNESS WHEREOF, said Contractor and Surety have hereunto set their respective names this _____ day of _____, 20____.

WITNESSES:

(CONTRACTOR)

(SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____
(SURETY) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____ BY _____
(ATTORNEY-IN-FACT)

POWER OF ATTORNEY

Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

SECTION 00 50 20

PAYMENT BOND

CITY OF WALTHAM

KNOW ALL MEN BY THESE PRESENT THAT,

_____ as

principal and _____ as
surety, are held and firmly bound unto the CITY OF WALTHAM and to such persons, firms, and
corporations, who may furnish materials for or perform labor on the work, construction or
improvements contemplated in the Contract hereinafter mentioned, or who may have any suits
or claims for injury or damage to persons or property resulting from or arising out of the work
done under this Contract, in the

SUM OF _____ DOLLARS (\$ _____)
(lawful money of the United States of America) for the payment whereof the Contractor and the
Surety of Sureties bind themselves and their heirs, executors, administrators, successors and
assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT for the above burden (the Contractor) its

heirs, executors, administrators and assigns, shall faithfully perform the Contract, on his part and
during the life of any guaranty or warranty, for defective materials and workmanship required under
this Contract, and satisfy all claims and demands incurred for the same; and shall fully indemnify and
save harmless the City from all cost and damage which it may suffer by reason of failure so to do,
and shall fully reimburse and repay the City all outlay and expense which the City may incur in
making good any such default, and shall promptly make payment to all persons supplying labor or
materials for use in the prosecution of the work provided for in said Contract; and shall indemnify
and save harmless the said City, its officers and agents from any and all suits or claims for injury or
damage to persons or property resulting from or arising out of the work done under this Contract,
then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that (except as to the City) no suit, action or proceeding by reason of any
default whatever shall be brought on this Bond after two years from the day on which the final
payment under the Contract falls due.

AND PROVIDED, that any alterations which may be made in the terms of the Contract or in the work to
be done under it, or any assignment, transfer or subletting of any part of the work, or the giving by the
City of any extension of time for the payment of the Contract, or any other forbearance on the part of
either the City or the Contractor to the other, shall not in any way release the Contractor and the
Surety of Sureties, or either or any of them, their heirs, executors, administrators, successors or
assigns from their liability hereunder, notice to the Surety or Sureties of any such alterations,
assignment, transfer, subletting extension or forbearance being hereby waived.

This Bond is made for the use and benefit of all persons, firms, and corporations who may furnish
materials, or perform any labor for or on account of said work, construction or improvements, or who

may have any suits or claims for injury or damage to persons or property resulting from or arising out of the work done under this Contract, and they and each of them are hereby made obligees hereunder the same as if their own proper names were written herein as such, and they and each of them may sue hereon in their own names for their own use and benefit.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed hereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this Bond, and it does hereby waive notice of any such changes, extension of time, alteration or addition to the terms of the Contract or to the work, or to the Specifications.

IN WITNESS WHEREOF, said Contractor and Surety have hereunto set their respective names this

_____ day of _____, 20____.

WITNESSES:

(CONTRACTOR)

(SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____
(SURETY) (SEAL)

NAME _____ BY _____
(SIGNATURE AND TITLE)

ADDRESS _____ BY _____
(ATTORNEY-IN-FACT)

POWER OF ATTORNEY

Attorneys-in-fact who sign bonds must file with each bond a certified copy of their power of attorney to sign said bonds.

Section 00 50 40

COMPLIANCE FORMS

(PLEASE COMPLETE AND SUBMIT THESE FORMS WITH YOUR RESPONSE)

ORIGINAL "WET" SIGNATURES ARE REQUIRED IN ALL OF THE FOLLOWING DOCUMENTS

NON-COLLUSION FORM AND TAX COMPLIANCE FORM

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

_____, _____
(Signature of person signing bid or proposal) Date

(Name of business)

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____, _____
Signature of person submitting bid or proposal Date

Name of business

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

CERTIFICATE OF VOTE AUTHORIZATION

Date:

I _____, Clerk of _____ hereby certify that at a meeting of the Board of Directors of said Corporation duly held on the _____ day of _____ at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That _____ (name) is hereby, authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seal, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that _____ is duly elected/appointed _____ of said Corporation whose signature appears below as an officer

Signature of Officer

SIGNED:

Clerk of the Corporation: (Corporate Seal)

Print Name: _____

COMMONWEALTH OF MASSACHUSETTS

County of _____

Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be his/her free act and deed before me, and provided to me through satisfactory evidence of identification which were _____ to be the person whose name is signed on the preceding or attached document in my presence.

Notary Public;

My Commission expires: _____

CORPORATION IDENTIFICATION

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state _____
President _____
Treasurer _____
Secretary _____
Federal ID Number _____

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes _____, No _____

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner _____
Residence _____
Name of partner _____
Residence _____

If an Individual:

Name _____
Residence _____

If an Individual doing business under a firm's name:

Name of Firm _____
Name of Individual _____
Business Address _____
Residence _____
Date _____
Name of Bidder _____
By _____

Signature _____

Title _____

Business Address _____ (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

City _____ State _____ Telephone Number _____ Today's Date _____

CERTIFICATE OF AUTHORITY LIMITED LIABILITY COMPANY

The undersigned, being (a/the) duly elected, qualified and active (member / manager) of _____, a Massachusetts limited Liability Company (hereinafter “the Company”)

Does Hereby Certify that

1. The Articles of Organization of the Company were duly filed with the Office of the Secretary of State of the State of Massachusetts on _____, and the Articles of Organization have not been (further) amended.
2. The Company has complied with the publication requirements contained in Section 67 of the Limited Liability Company Law.
3. There exists an Operating Agreement of the Company and that the said Operating Agreement has not been amended or repealed and that the said Operating Agreement remains in full force and effect as of this date.
4. Neither the Articles of Organization nor the Operating Agreement (as amended) require any further act to be taken or a meeting to be held by its members other than as follows:
5. All said requirements, whether as contained in the Articles of Organization or in the Operating Agreement or by operation of law as to the transaction of _____, 20____ have been met.
6. The following person or persons has/have been duly authorized by the Company to execute all documents in connection with said transaction and that the signature appearing to the right of their name(s) is his/her genuine signature.

NAME	OFFICE HELD	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

IN Witness Whereof, the undersigned has executed this Certificate of Authority this _____ day of _____, 20____.

(Signature)

STATE OF MASSACHUSETTS, COUNTY OF _____

On the ____ day of _____, 20____, before me, the undersigned personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/ they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public: _____

My Commission Expires: _____

Notary Stamp:

RIGHT TO KNOW LAW

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. c. 111F, §§8,9 and 10 and the regulations contained in 441 CMR 21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. c. 111F §7 and regulations contained in 441 CMR 21.05. Failure to furnish MSDS and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 111F or M.G.L. are cautioned to obtain and read the laws, rules and regulations referenced above. Copies may be obtained from the State House Bookstore, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834.

Authorized Signature Indicating Compliance with the Right-to-know laws:

Signature

Date

Print Name

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



Company's Name:	Address:	Phone No.:	Payroll No.:
Employer's Signature:	Title:	Contract No:	Tax Payer ID Number
Awarding Authority's Name:	Public Works Project Name:	Public Works Project Location:	Min. Wage Rate Sheet Number

General / Prime Contractor's Name:		Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions																
Employee Name & Complete Address	Work Classification:	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked								Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	(B+C+D+E) (A x F)		Check No. (H)
				Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.	Total Gross Wages							Project Gross Wages		

Are all apprentice employees identified above currently registered with the MA DLS's Division of Apprentice Standards? YES NO

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards. No apprentices are identified above

NOTE: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a **true and accurate** copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date Received by Awarding Authority	38
/ /	

WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

_____, 20_____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____
Title _____

05/14

DEBARMENT CERTIFICATION

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Purchasing Agent of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the City of Waltham, the contract will be cancelled and the award revoked.

Company Name _____

Address _____

City _____, State _____, Zip Code _____

Phone Number (____) _____

E-Mail Address _____

Signed by Authorized Company Representative: _____

_____ Print name. Date _____

10 HOURS OSHA TRAINING CONFIRMATION

Chapter 306 of the Acts of 2004

CONSTRUCTION PROJECTS

AN ACT RELATIVE TO THE HEALTH AND SAFETY ON PUBLIC

The undersigned hereby certifies that all employees to be employed at a worksite for construction, reconstruction, alteration, remodeling, repair, installation, demolition, maintenance or repair of any public work or any public building estimated to cost more than \$10,000.00 have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first payroll report for each employee and will comply with all laws and regulations applicable to awards of subcontracts subject to section 44F.

Company Name: _____

Address: _____

Signature: _____

Title: _____

Print Name _____

Date _____

See following Chapter 306 of the Acts of 2004

NOTE

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

Request for Taxpayer Identification Number and Certification

**Give Form to the
requester. Do not
send to the IRS.**

Fill Out This
Section

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)	
Business name/disregarded entity name, if different from above	
Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see instructions) ▶ _____	
<input type="checkbox"/> Exempt payee	
Address (number, street, and apt. or suite no.)	Requester's name and address (optional) Chief Procurement Officer Purchasing Department, City of Waltham 610 Main Street Waltham, MA 02452
City, state, and ZIP code	
List account number(s) here (optional)	

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number																						
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Fill out this sect. either SS or FID																						
Employer identification number																						
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Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	----------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

“Wet” Original signature required



Massachusetts Office on Disability

One Ashburton Place, Room 1305 Boston, MA 02108

Charles D. Baker, Governor

617-727-7440 TTY

Karyn E. Polito, Lt. Governor

800-322-2020 TTY

Mary M. McCauley, Executive Director

617 727-0965 FAX

We affirm that any work performed using these grant funds will fully comply with either 521 CMR and/or the 2010 ADA Design Standards, whichever is more stringent¹

Signature

Date

¹ MOD is available for assistance related to this. Please contact Karl Bryan at Karl.Bryan@mass.gov if there are any questions

Section 00 54 00
LIQUIDATED DAMAGES

Should a Contractor fail to complete his work on or before the time set forth or as provided in the Contract Documents covering extension of time, the Owner may retain an amount of \$500.00 per calendar day as liquidated damages for each calendar day in accordance with the provisions of that section.

SECTION 00821

PERMITS

PART 1 GENERAL

1.01 CONTRACT DOCUMENTS

- A. The general provisions of the Contract, including General and Supplemental Conditions and General Requirements, apply to the work specified in this section.

1.02 PERMITS

- A. The Contractor shall be responsible for obtaining and complying with all permits required of his equipment, work force, or particular operations (such as blasting and fuel storage permits, etc.) in the performance of the Contract. All costs associated with obtaining permits will be included in the price of the work.
- B. If included as part of this project, The Contractor shall be responsible for complying with requirements of the Local Conservation Commission and the Cambridge Watershed Protection District. All costs associated with complying with the conditions will be included in the price of the work.
- C. The Contractor shall be responsible for obtaining and complying with the requirements of the Street Opening and Trench Permits required by the City Department of Public Works in the performance of the Contract. All costs associated with obtaining permits will be waived by the City.

END OF SECTION

DIVISION 01
Technical Specifications

SPECIFICATIONS GROUP

General Requirements Subgroup

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SECTION 0 001 00 - INVITATION TO BID

The Owner, **City of Waltham, Massachusetts**, will receive sealed proposals for the General Construction and work for Design Renovations of Bathrooms in Various City Buildings for ADA Compliance located at 610 Main Street, Waltham, MA 02452.

Proposals will be received by the Office of RGB; 50 Holden Street, Suite 400, Providence, Rhode Island. Bids are due on **TO BE DETERMINED**, local prevailing time. Proposals received after the stipulated time will not be accepted.

The bids will be opened and reviewed privately by owner, determination of descope and consideration for award will be determined at later date.

Bidding Documents will be placed on **ShareFile** web site as stipulated in invitation to bid.

Bidding documents, in the form of PDF files of Drawings and Project Manual and may be accessed on the <https://rgbarchitects.sharefile.com/d-sc67060399604e4e8> web site.

Bid security, in the amount of 5 percent of the proposal, must accompany each proposal in accordance with the Instructions to Bidders. Bid proposals must also be accompanied by a Letter of Intent.

The successful Bidder will be required to furnish a Performance Bond and a Labor and Materials Payment Bond (AIA Document A312), each in the amount of 100 percent of the contract price.

A Pre-Bid meeting will be held; this is not mandatory, yet highly suggested that contractor's attend. This date and time is **TO BE DETERMINED**.

Refer to the accompanying Bid Specifications for further Information for Bidders.

END OF SECTION 00 01 00

INVITATION TO BID

SECTION 00 02 00 - INSTRUCTION TO BIDDERS

To be considered, proposals or bids must be made in accordance with these Instructions to Bidders.

ARTICLE 1 - DEFINITIONS

Bidding Documents, in the form of Drawings and a Project Manual, include the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, other sample bidding and contract forms and the proposed Contract Documents including any Addenda issued prior to the execution of the Contract.

Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

A Bid is a complete and properly signed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

An Alternate Bid (Alternative or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services or a portion of the Work as described in the Bidding Documents.

A Bidder is a person or entity who submits a Bid.

A Sub-Bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

ARTICLE 2 - BIDDER'S REPRESENTATIONS

The Bidder, by making a Bid represents:

The Bidder has read and understands the Bidding Documents and the Bid is made in accordance therewith.

The Bidder has read and understands the Bidding or Contract Documents, to the extent that such documentation relates to Work for which the Bid is submitted, for other portions of the Project, if any, being bid concurrently or presently under construction.

The Bidder has visited the Site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

The Bid is based upon the materials, systems and equipment required by the Bidding Documents, without exception.

Each Bidder must visit the existing building and examine the existing conditions, systems, materials, equipment, utilities and other related items. Visit may be made at any time during normal working hours of the library.

It will be presumed that each Bidder submitting a proposal will have inspected the site, building or buildings, if any, and their existing conditions. The failure to do so will not relieve the Bidder from any obligation with respect to his proposal.

ARTICLE 3 - BIDDING DOCUMENTS

COPIES

Bidders may obtain from the Architect (unless other issuing office is designated in the Advertisement or Invitation to Bid) complete sets of Bidding Documents in the number and for the deposit sum, if any, indicated therein. The deposit will be refunded to all Bidders who submit a bona-fide Bid and return the Bidding Documents, in good condition, within ten days after receipt of Bids. The cost of replacement of any missing or damaged documents will be deducted from the deposit.

Bidders shall use complete sets of Bidding Documents in preparing bids; neither the Owner nor the Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

In making copies of the Bidding Documents available on the above terms, the Owner or Architect do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant permission for any other use of the Bidding Documents.

INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

The Bidder shall carefully study and compare the Bidding Documents with each other, and with the Work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report, to the Architect, errors, inconsistencies or ambiguities discovered.

Bidders requiring clarification of interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date of receipt of Bids.

Make all written requests on the form provided hereinafter these Instructions.

No telephonic clarification or interpretation will be made by the Architect.

Interpretations, corrections or changes of the Bidding Documents will be made by Addendum. Interpretations, corrections or changes of the Bidding Documents by any other manner will not be binding, and Bidders shall not rely upon them.

SUBSTITUTIONS

The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

No substitution will be considered unless (1) an "equal", "or equal", or "approved equal" phrase is so specified; and (2) a written request for approval has been received by the Architect at least ten (10) days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, performance and test data and other information necessary for an evaluation. A statement setting forth changes in the material, equipment or other portions of the Work including changes in the Work of other Contracts that incorporation of the proposed substitution would require shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

If the Architect approves any proposed substitution prior to the receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely on approvals in any other manner.

No substitutions will be considered after Contract award unless specifically provided in the Contract Documents.

ADDENDA

Addenda will be mailed to all known, by the issuing office, to have received a complete set of Bidding Documents.

Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

No Addenda will be issued later than four days prior to the date for receipt of Bids except an Addendum withdrawing the requests for Bids or one which includes a postponement of the date for receipt of Bids.

Each Bidder shall ascertain, prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 - BIDDING PROCEDURES

FORM AND STYLE OF BIDS

Bids shall be submitted, in duplicate, on the forms identical to the form included in the Bidding Documents.

Do not remove the forms from the Bidding Documents.

All blanks on the bid form shall be filled in by typewriter or manually in ink.

Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and in case of discrepancy between the two, the written amount shall govern.

Interlineations, alterations and erasures must be initialed by the signer of the Bid.

All requested Alternates (Alternatives) shall be bid.

Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder.

The Bidder shall make no additional stipulations on the bid form nor qualify his Bid in any other manner.

Each copy of the Bid shall include the legal name of the Bidder and a statement that the Bidder is a sole proprietor, partnership, corporation, or other legal entity. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the State of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying agent's authority to bind the Bidder.

BID SECURITY

Each Bid shall be accompanied by a bid security in the form and amount required, pledging that the Bidder will enter into a Contract with the Owner on the terms stated in the Bid and will, if

required, furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

If a surety bond is required it shall be written on AIA A310, Bid Bond, unless otherwise provided in the in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

The Owner will have the right to retain the bid security of Bidders until either (a) the Contract has been executed and binds, if required, have been furnished; or (b) the specified time has elapsed so that bids may be withdrawn; or (c) all Bids have been rejected.

SUBMISSION OF BIDS

All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project Name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof.

Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

Oral, telephonic or telegraphic Bids are invalid and will not receive consideration.

MODIFICATION OR WITHDRAWAL OF BID

A Bid may be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

Prior to the time and date designated for receipt of Bids, a Bid may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or by telegram; if by telegram, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the date and time set for the receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

Bid Security, if required, shall be in an amount sufficient for the Bid as modified or resubmitted.

ARTICLE 5 - CONSIDERATION OF BIDS

OPENING OF BIDS

Unless stated otherwise in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be opened publicly and read aloud. An abstract of the amounts of the Base Bid and major Alternates, if any, will be made available to Bidders. When it has been stated that the Bids will be opened privately, an abstract of the same information may, at the discretion of the Owner, be made available to Bidders within a reasonable time.

REJECTION OF BIDS

The Owner shall have the right to reject any or all Bids, reject a Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or reject a Bid which is in any way incomplete or irregular.

ACCEPTANCE OF BID (AWARD)

It is the intent of the Owner to award a contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities or irregularities in a Bid received and to accept the Bid which, in the Owner's judgement, is in the Owner's own best interest.

It is the intent of the Owner, if he accepts any Alternates (Alternatives), to accept them in the order in which they are listed in the Bid Form, but the Owner shall have the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates accepted.

ARTICLE 6 - POST-BID INFORMATION

CONTRACTOR'S QUALIFICATION STATEMENT

Bidders to whom award of Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement, unless the statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

SUBMITTALS

Unless waived by the Architect, the Bidder as soon as practicable after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

A designation of the Work to be performed with the Bidder's own forces;

Names of the manufacturers, products and the suppliers of principal items or systems of materials and equipment proposed for the Work; and,

Names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

Prior to the award of Contract, the Architect will notify the Bidder in writing if either the Owner or the Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner, or the Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid, or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event either withdrawal or disqualification, bid security will not be forfeited.

Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 - PERFORMANCE AND PAYMENT BOND

BOND REQUIREMENTS

The Bidder shall furnish a Performance Bond and Payment Bond covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder's usual sources. Include cost and the premiums for same in the Bid.

TIME OF DELIVERY AND FORM OF BONDS

The Bidder shall deliver the required bonds to the Owner not later than three (3) days following the date of execution of the Contract. If the Work is commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of Work, submit evidence of satisfactory to the Owner that such Bonds will be furnished and delivered in accordance with this paragraph.

Unless otherwise provided, the bonds shall be written on form of AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

The bonds shall be dated on or after the date of the Contract.

The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

FORM TO BE USED

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, The Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

END OF SECTION 00 02 00

SECTION 00 04 30 - BID BOND FORM

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned ** _____

as Principal, and *** _____ as Surety, are hereby held and firmly bound unto the Owner hereinafter referred to as the Owner, in the penal sum of

_____ (\$ _____).

for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators and successors and assigns.

Signed this _____ day of _____, 2020.

The Condition of the above obligation is such that whereas the Principal has submitted to the Owner a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing for the

_____.

NOW, THEREFORE,

1. If said Bid shall be rejected, or in the alternate
2. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in other respects perform the agreement created by the acceptance of said Bid,

then his obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of the obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations for said Surety and its Bond shall be in no way impaired or affected by the extension of the time within which the Principal may accept such Bid and said Surety does hereby waive notice of any such extension.

** Insert Bidder's Name.

*** Insert Name of Surety.

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

S E A L _____ (L.S.)

BY _____

ACKNOWLEDGEMENT OF PRINCIPAL (IF CORPORATION)

State of _____)

) ss:

County of _____)

On this _____ day of _____, 2020

before me personally came and appeared _____, to me known, who,

being by me duly sworn, did depose and say that he resides at _____:

that he is the _____ of

_____, the Corporation described in and which executed the foregoing instrument; that he knows that seal of said corporation; that one of the impressions affixed to said instrument is an impression of said seal; that it was so affixed by order of the directors of said Corporation, and that he signed his name thereto by like order.

S E A L

ACKNOWLEDGEMENT OF PRINCIPAL (IF PARTNERSHIP)

State of _____)

) ss:

County of _____)

On this _____ day of _____, 2020

before me personally came and appeared _____, to me known and known by me to be one of the members of the firm of _____, described in and who executed the foregoing instrument; and he acknowledged to me that he executed the same as and for the act and deed of said Firm.

S E A L

ACKNOWLEDGEMENT OF PRINCIPAL (IF AN INDIVIDUAL)

State of _____)

) ss:

County of _____)

On this _____ day of _____, 2020

before me personally came and appeared _____, to me known and known by me to be the person described in and who executed the foregoing instrument; and he acknowledged that he executed same.

S E A L

ACKNOWLEDGEMENT OF SURETY

State of _____)

) ss:

County of _____)

On this _____ day of _____, 2020

before me personally came and appeared _____, to me known, who, being by me duly sworn, did depose and say that he resides at _____: that he is the _____ of _____, the Corporation described in and which executed the foregoing instrument; that he knows that seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said Corporation, and that he signed his name thereto by like order.

S E A L

END OF SECTION 00 04 30

SECTION 00 04 50 - LETTER OF INTENT

TO: City of Waltham Massachusetts
c/o The Robinson Green Beretta Corporation
50 Holden Street
Providence, Rhode Island 02908

FOR: _____

Gentlemen:

This is to advise you that the _____
(Legal Name of Surety)

who is authorized to do business in the State of Massachusetts, is prepared to execute a Performance Bond and Labor and Material Payment Bond, AIA Document A312, each in the amount of 100 percent of the Contract, for the:

(Legal Name of General Bidder)

should they be awarded a contract for the construction of the _____

_____.

(Name of Surety)

By: _____
(Authorized Representative)

Title: _____

Print or Type name: _____

Date: _____

END OF SECTION 000450

SECTION 000500 – CONTRACT AGREEMENT

AIA Document A101 Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, 2017 Edition, and as amended, forms the basis of Contract between the Owner and the Contractor, and is included, following this page, as an integral part of the Bid Documents. Provisions which are not so amended or supplemented remain in full force and effect.

END OF SECTION 000520

SECTION 00 06 10 - PERFORMANCE BOND; PAYMENT BOND

PERFORMANCE BOND

AIA Document A312 - Performance Bond - 2010 Edition is included, following this page, as an integral part of the Bid documents, and issues of this form signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual.

PAYMENT BOND

AIA Document A312 - Payment Bond - 2010 Edition is included, following this page, as an integral part of the Bid Documents, and issues of this form, signed and executed by the successful Bidder and Surety, will be bound into the executed Contract copies of the Project Manual

END OF SECTION 00 06 10

SECTION 000700 - GENERAL CONDITIONS

AIA Document A201 - General Conditions of the Contract for Construction - 2007 Edition, as amended and included here, forms the basis of Contract between the Owner and Contractor, and is included, following this page, as an integral part of the Bid Documents. Provisions which are not so amended or supplemented remain in full force and effect. The Bidder hereby acknowledges that it has reviewed AIA Document A201-2007 as amended, and hereby accepts that form except as to the items noted therein to be completed upon Award.

The Contractor shall note that Section 008000 entitled "Supplementary Conditions" has additionally modified AIA A201 - General Conditions of the Contract for Construction and therefore accepts those modifications.

END OF SECTION 000700

SECTION 00 80 00 - SUPPLEMENTARY CONDITIONS

A. INTRODUCTION

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201-2007. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions shall remain in effect.

B. OTHER CONDITIONS

Should additional conditions be required for the work of this Project, they shall be included in that portion of this Project Manual directly following these Supplementary Conditions; and with their inclusion become a part of the Contract for this work.

C. REFERENCE TO DIVISION 1

Where provisions of the General Conditions relate to project administrative or work-related requirements of the Contract, those paragraphs are may have additional Requirements or Conditions, specified in Division 1, "General Requirements" of the Specifications.

ARTICLE 1 - GENERAL PROVISIONS

Add the following sub-paragraphs to 1.1:

1.1.9 Miscellaneous Definitions.

1.1.9.1 The term "product" includes materials, systems and equipment.

1.1.9.2 Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that references to the drawings accompanying this specification is made, unless otherwise stated. Where "as directed", "as required", "as permitted", "approved", "acceptance", or words of similar import are used, it shall be understood that the direction, requirement, permission, approval or acceptance of the Architect is intended, unless stated otherwise. As used herein, "provide" shall be understood to mean "provide complete in place" that is, "furnish and install".

Add the following Paragraph 1.7:

1.7 AVAILABILITY OF CADD DRAWING FILES

1.7.1 After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will be made available to the Contractor for his/her/their use in preparation of his/her/their construction coordination and shop drawings related to the referenced contract, and subject to the following terms and conditions. Coordinate with Section 013000 - SUBMITTALS of the Project Manual.

1.7.1.1 The files and/or disk(s) may contain information submitted, in part, by others. While this information is believed to be reliable, there may be occasional inconsistencies due to the transfer of electronic data from our master file to the disk(s), as well as in the transfer of disk data to your system. Thus, RGB is not responsible for its accuracy, or for errors or omissions, which may have been incorporated into the resultant documents, nor does it make any warranties, expressed or implied, of merchantability or for fitness for a particular purpose.

- 1.7.1.2 Data contained on these electronic files shall not be used for any purpose other than as a convenience in coordination of the work and the preparation of the shop drawings for the referenced project.
- 1.7.1.3 Any other use, without the express written permission of the Architect, shall be at the sole risk of the Contractor and without liability or legal exposure to the Architect.
- 1.7.1.4 The Contractor shall make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Architect, its agents or sub consultants that may arise out of, or in connection with, the Contractor's or his agent's use of these electronic files. By opening the files, the Contractor shall, to the fullest extent permitted by law, agrees to fully indemnify and hold the Architect and his consultants harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.
- 1.7.1.5 These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Architect makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software.
- 1.7.1.6 In the event that a conflict arises between the signed and sealed construction documents prepared by the Architect and the furnished CADD files, the signed and sealed construction documents shall govern.
- 1.7.1.7 The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of his contractual obligations and requirement to fully comply with all the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors, suppliers, and agents for the project.
- 1.7.1.8 If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing shop drawings, coordination drawings, and data related to this contract, all previous indication of ownership (seals, logos, signatures, initials, and dates) shall be removed.
- 1.7.1.9 These files shall be made available at the cost of \$ \$500.00 per CD or website transfer. Make Checks payable to the Architect. Payment is due at the time of delivery of files.
- 1.7.1.9.1 Files will be made available on CD-ROM or ftp website only. No documents will be e-mailed.

ARTICLE 2 - OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.5 Change to read:

"Prior to the start of construction, the Contractor will be furnished, free of charge, 1 set of PDF files of the Drawings and Project Manual, complete with Addendum, for his use in the execution of the Contract. Additional sets as may be required, by the Contractor, shall be procured by the Contractor at his costs. The Contractor shall print and utilize one of these sets of documents for the sole purpose of maintaining "record documents".

ARTICLE 3 - CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Add the following sub-paragraphs to 3.2:

3.2.5 In case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, provide the better quality or greater quantity of Work in accordance with the Architect's interpretation.

3.2.6 Omissions from the drawings and specifications of items obviously needed to perform the work, such as attachments, bolts, hangers, and other fastening devices shall not relieve the Contractor from furnishing and installing same. It shall be the duty of the Contractor to procure from the Architect all necessary interpretations of the designs, drawings and specifications.

3.4 LABOR AND MATERIALS

Add the following sub-paragraph 3.4.0:

3.4.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.4 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.6 TAXES

Add the following sub-paragraph 3.6.0:

3.6.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.6 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

Add the following sub-paragraph 3.7.0:

3.7.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.7 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.8 ALLOWANCES

Add the following sub-paragraph 3.8.0:

3.8.0 Refer to Specification Section entitled, ALLOWANCES, for additional provisions on the subject. References to Section 3.8 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.9 SUPERINTENDENT

Add the following sub-paragraph to 3.9.2

3.9.2.1 Employ a project superintendent acceptable to the Owner and Architect. Prior to the assignment or replacement of a superintendent, submit a resume to the Architect for acceptance review.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

Refer to Specification Section entitled, CONSTRUCTION PROGRESS DOCUMENTATION, for additional provisions on the subject. References to Section 3.10 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following sub-paragraph 3.11.0

3.11.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.11 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Add the following sub-paragraph 3.12.0

3.12.0 Refer to Specification Section entitled, SUBMITTALS, for additional provisions on the subject. References to Section 3.12 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.13 USE OF SITE

Add the following sub-paragraph 3.13.0

3.13.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.13 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.14 CUTTING AND PATCHING

Add the following sub-paragraph 3.14.0

3.14.0 Refer to Specification Section entitled, SUMMARY OF THE WORK, for additional provisions on the subject. References to Section 3.14 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

3.15 CLEANING UP

Add the following sub-paragraph 3.15.0

3.15.0 Refer to Specification Section entitled, CLEANING and Specification Section entitled CLOSEOUT PROCEDUES for additional provisions on the subject. References to Section 3.15 elsewhere in the Contract Documents shall also read as referring to those Sections of the Specifications.

ARTICLE 7 - CHANGES IN THE WORK

7.1 GENERAL

Add new sub-paragraphs:

- 7.1.4 The amount of credit to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in the Contract Sum will be the amount of the actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.
- 7.1.5 The reasonable (as stated herein) allowance for overhead and profit combined, included in the total cost to the Owner, shall be based upon the following schedule:
- 7.1.5.1 For the Contractor, for any work performed by his own forces, 12% of the cost;
- 7.1.5.2 For each Sub-Contractor involved, work performed by his own forces, 12% of the cost;
- 7.1.5.3 For the Contractor, for work performed by his sub-contractor, 8% of the amount due the sub-contractor.
- 7.1.6 Subsequent to the approval of a Change Order, whether involving a change in Contract Sum, contract time or both, no additional claim related to that matter will be considered by the Owner. A change incorporated into a Change Order is therefore, all inclusive, and includes such factors as project impact, schedule "ripple" effect or other items which may pertain to such change.

ARTICLE 8 - TIME

8.3 DELAYS AND EXTENSIONS OF TIME

Add new sub-paragraphs:

- 8.3.4 Landscape work and corresponding seasonally limited work may be scheduled for later completion, as mutually agreed upon, and completed under approved working conditions.
- 8.3.5 When designated by the Architect, additional time of one month will be allowed for the principal purpose of removing materials and equipment from the site and for the final cleaning up operations of the site work.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES.

Add the following sub-paragraph 9.2.1:

- 9.2.1 Refer to Specification Section entitled, PAYMENT PROCEDURES, for additional provisions on the subject. References to Section 9.2 elsewhere in the Contract Documents shall also read as referring to that Section of the Specifications.

9.3 APPLICATIONS FOR PAYMENT

- 9.3.1 Add the following sentence:

"The form of Application for Payment shall be AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, supported by AIA Document G702A, Continuation Sheet. Prior to the submission of the completed (typed) application, submit a draft copy for review by the Architect."

9.4 CERTIFICATES FOR PAYMENT

Add new sub-paragraphs:

9.4.3 First Certificate for Payment - The Architect will process this Certificate, only after he has received (1) the information required of Article 7 of the Instructions to Bidders, (2) Certification that the Contractor is currently maintaining Record Drawings, (3) decisions on options indicated in Section 010100 (if any), (4) submissions required in Section 013000, and (5) is adhering to the requirements of Article 3 of the General Conditions and Supplementary Conditions.

9.4.4 Second and Subsequent Certificates for Payment - The Architect will process the second certificate only after receipt of (1) Certificates that contractor is currently maintaining record drawings, (2) Release of Liens, (3) Certification of foundation and building layout survey data if specified in Section 010100, and (4) all proposed materials and color samples have been submitted for Architect's approval and color selections. Certification as to maintenance of Record Drawings and Releases of Lien will accompany subsequent applications, otherwise the Architect will not process the respective Certificate for Payment.

9.6 PROGRESS PAYMENTS

Add the following to sub-paragraph to 9.6.1:

9.6.1.1 The Owner shall make payments on account of this Contract as provided herein as follows: On or about the 15th day of each month, 90 percent of the value, based on the Contract prices for labor and materials incorporated in the work and of materials suitably stored at the site thereof or at some other location agreed upon, in writing, by the parties up to the first day of that month, as estimated by the Architect, less the aggregate of previous payments; and upon substantial completion of the entire work, a sum sufficient to increase the total payments to 95% of the Contract Price.

9.6.1.2 Such reduction shall occur upon the Owner's approval and after receipt of AIA Document G707A (Consent of Surety to Reduction).

9.8 SUBSTANTIAL COMPLETION

Add the following to sub paragraph 9.8.1:

9.8.1.1 "Prior to issuance of a Certificate of Substantial Completion, and in addition to the requirements herein, the Contractor and his sub-contractors shall submit: (1) their respective certificates of contract document compliance; (2) warranties and guarantees; (3) bonds; (4) certificates and affidavits; (5) operating manuals, report of Owner instructions and test results; (6) project record documents, including record drawings; (7) extra materials and samples (as specified) required for Owner; and (8) Occupancy Permit, if required."

9.10 FINAL COMPLETION AND FINAL PAYMENT

Add the following to sub paragraph 9.10.1:

"Prior to final inspection, and in addition to the requirements herein, submit: (1) Contractor's Affidavits (AIA Document G706 and G706A); and Consent of Surety (AIA Document G707)."

Add new Paragraphs:

9.11 RELEASES OF LIEN

- 9.11.1 The Contractor shall submit Releases of Lien from all sub-contractors and material suppliers indicating payment(s) received from the previous applications. Certificates for Payment will not be processed unless these releases are included therewith.
- 9.11.2 Immediately satisfy any lien or encumbrance which, because of any act or default of the Contractor is filed against the premises, and indemnify and save the Owner harmless against all resulting loss and expenses, including attorney's fees. In addition, moneys due under this Contract, as may be considered necessary by the Owner, may be retained by the Owner until all such suits, claims for damages or expenses as aforesaid shall be settled and paid.
- 9.11.3 The statement on the Standard AIA Form G702, Certificate for Payment, which certifies that "all bills are paid for which previous certificates for payment were issued" shall be notarized by a Notary Public currently licensed to practice in the State in which the Project is located.

9.12 LIQUIDATED DAMAGES.

- 9.12.1 The Owner will suffer financial loss if the Project is not completed (Substantial and Final) on the dates set forth in the Contract Documents. The Contractor (and his Surety) shall be liable for and shall pay to the Owner the sums stipulated in the Bid Form as fixed, agreed, and liquidated damages for each calendar day of delay until the Work is Completed.

ARTICLE 11 - INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

Add new sub-paragraph under 11.1.1:

- 11.1.1.9 Liability insurance shall include all major divisions of coverage and be on a comprehensive general liability basis including:

Premises-Operations (including (X-C-U)
 Independent contractor's protective
 Blanket contractual
 Owned, non-owned and hired motor vehicles
 Broad form property coverage (including explosion, collapse and underground)

Add the following sub-paragraph to 11.1.2:

- 11.1.2.1 The insurance required by sub-paragraph 11.1.1 shall be written for not less than the following, or greater if required by law:

Worker's Compensation:

State and Federal (where applicable) - Statutory
 Employer's Liability - \$500,000.

Comprehensive General Liability (including Premises-Operation; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damages; Contractual and Personal Injury)

Bodily Injury/Property Damage:

\$1,000,000. - Each Occurrence

\$2,000,000. - Annual Aggregate

Products and Completed Operations to be maintained for two (2) years after final payment.

Property Damage Liability Insurance will provide X, C or U coverage as applicable.

Comprehensive Automobile Liability:

Bodily Injury/Property Damage:

\$1,000,000. - Each Occurrence

Add the following sub-paragraph to 11.1.3:

11.1.3.1 The Contractor shall furnish one copy each of Certificates of Insurance, acceptable to the Owner, herein required for each copy of the Agreement which shall be specifically set forth evidence of all coverage required by sub-paragraphs 11.1.1, 11.1.2 and 11.1.3. The form of the Certificate shall be acceptable to the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.

11.2 OWNER'S LIABILITY INSURANCE

Change paragraph 11.2. to read:

11.2. The Contractor shall furnish the Owner, through the Architect, an insurance certificate providing Owner's Protective Liability extended to include the interests of the Architect, and to protect the Owner and the Architect, The Robinson Green Beretta Corporation, from any liability which might be incurred against them as result of any operation of the Contractor or his sub-contractors or their employees. Such insurance shall be written for the same limits as the Contractor's Liability Insurance, and shall include the same coverage.

11.3 PROPERTY INSURANCE.

Change sub-paragraph 11.3.1 to read:

11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. Such insurance shall be in a company or companies against which the Owner has no reasonable objection. This insurance company shall include the interests of the Owner, the Contractor, Sub-contractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism, and malicious mischief. If not covered under all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an application for Payment under Sub-paragraph 9.3.2.

11.3.1.1 The form of policy for this coverage shall be completed value.

11.3.1.2 If by the terms of this insurance any mandatory deductibles are required, or if the Contractor should elect, with concurrence of the Owner, to increase the mandatory deductible amounts, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

11.3.4 Delete this sub-paragraph in its entirety.

Change sub-paragraph 11.3.6 to read:

11.3.6 Before an exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Contractor.

ARTICLE 12 – UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.2. AFTER SUBSTANTIAL COMPLETION

Change sub-paragraphs under 12.2.2 to read:

12.2.2.1 Change all references of 'one year' to read 'two years' and 'one-year' to read 'two-years'

12.2.2.2 Change all references of 'one-year' to read 'two-years'

12.2.2.3 Change all references of 'one-year' to read 'two-years'

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.5 TESTS AND INSPECTIONS

Add the following sub-paragraph to 13.5.1

13.5.1.1 Refer to Specification Section 01 40 00 for the extent of other inspection and testing services to be included as part of this Contract.

Add the new paragraph 13.8:

13.8 SPECIAL WARRANTIES

13.8.1 The Contractor shall provide and pay for all the requirements outlined in this section (13.8) as part of the Project Base Bid.

13.8.2 Service Contracts will be captured in the Project Schedule of Values. The costs associated with the Service Contract Work will not be subject to Retainage and will be billed quarterly for the duration of the Service Contract period, unless otherwise approved in writing by the Owner.

13.8.3 Warranty Provisions:

13.8.3.1 As prescribed in Paragraph 12.2.2.1 of AIA Document A201- 2007 as amended by the Contract Agreement the Contractor shall provide a minimum of a two (2) year warranty period on all systems, repairs, materials and workmanship incorporated in the project. Systems, repairs, materials and workmanship that has been prescribed as having warranties for periods greater than two (2) years by the individual specification sections shall be carried at the warranty period prescribed by that individual reference provided a minimum of two (2) years are provided in all aspects of the warranty/guarantee provisions.

13.8.3.2 Additionally, as prescribed in 12.2.2.2 of AIA Document A201-2007 as amended by the Contract Agreement, the two (2) year period for correction of work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of Work.

13.8.3.3 Additionally as provided in 12.2.2.3 of AIA Document A201-2007 as amended by the Contract Agreement states upon completion of any Work under or pursuant to Paragraph 12.2 that the two (2) year correction period in connection with the Work requiring correction shall be renewed and recommence. The obligations under Paragraph 12.2 shall cover any repairs and replacement to any part of the Work or other property that is damaged by the defective Work and Work impacted by such corrective action.

Add the following ARTICLE 16:

ARTICLE 16 - EQUAL OPPORTUNITY

16.1 THE CONTRACTOR POLICIES OF EMPLOYMENT

16.1.1 The Contractor shall maintain policies of employment as follows:

16.1.1.1 The Contractor and all Sub-contractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin or age. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, national origin or age. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

16.1.1.2 The Contractor and all Sub-contractors shall, in all solicitations or advertisements for employees placed by them on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age.

END OF SECTION 00 80 00

SECTION 01 02 00 - CONTRACT – LIST OF DRAWINGS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. See Modified AIA Document A201.

1.2 SPECIFICATIONS

- A. Titles to Divisions and paragraphs in these specifications and in the notes on the drawings are introduced for convenience, and shall not be taken as an exact, correct or complete segregation of materials and labor.
- B. No responsibility is assumed by the Architect and Owner for omissions or duplications by the Contractor or his subcontractors due to real or alleged error in arrangement of matter in this specification or in notes on the drawings.
- C. Latest revisions of Federal, State and ASTM Specifications shall be used where only the specification number without date or revision number is given in specifications.
- D. The omissions from the plans and/or specification of express reference to any labor, equipment, system, assembly to make such system/assembly operational or materials reasonably to be inferred therefrom and necessary for the proper execution of the work shall not relieve the Contractor or Subcontractor from furnishing them of a kind in keeping with the general character of the work.

1.3 DRAWINGS

- A. List of Drawings:

ARCHITECTURAL

CONSTRUCTION DOCUMENTS:

0000	COVER
G001	GENERAL NOTES, ABBREVIATIONS & SYMBOLS
A101	DEMOLITION & PROPOSED FLOOR PLANS-COA BUILDING
A102	DEMOLITION & PROPOSED FLOOR PLANS-GOVERNMENT CENTER
A103	DEMOLITION & PROPOSED FLOOR PLANS-PUBLIC LIBRARY
A104	TYPICAL MOUNTING HEIGHTS AND DETAILS

END OF SECTION 01 02 00

SECTION 01 10 00 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the Specification are a part of this Section, which shall consist of all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the work, whether temporary or permanent and whether or not incorporated or to be incorporated in the work; and as related to the project or projects defined in the Bidding Requirements.
- B. The specification format used herein is in accordance with MASTERFORMAT, CSI (2004 Format) and in no way intends to restrict this Contractor from expediting his work as he sees fit, nor is there any intention of segregating the units of work as related to specific trades involving jurisdictional problems.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification:
 - 1. Waltham Massachusetts
 - B. Owner: City of Waltham
 - C. Architect: The Robinson Green Beretta Corporation
50 Holden Street, 4th Floor
Providence, RI 02908
- Contractor: To be Determined

1.3 SUMMARY OF THE WORK

- A. The scope of the work on this project includes but is not limited to:
 - 1. The scope of work contained in this set of drawings and specifications is comprised of a number of city buildings found within Waltham, MA This work has been divided out accordingly based on city buildings and location of work per floor; COA Building, Government Center and the Public Library.

Scope: The project involves the adaptive correction of all bathrooms as listed in the construction documents. The scope of this work is that of making the current bathrooms in the identified buildings compliant with the National ADA Standards and 521 CMR.

B. CONTRACTOR'S DUTIES

1. The Contractor is responsible for all personnel involved in the work, including those of his direct employ, his sub-contractors and suppliers of materials and equipment and/or labor. The Technical Specifications have been divided for convenience only to cover the scope of work, and where reference to a particular contractor is noted, it is for convenience only. The Owner and Architect only recognize one Contractor as party to this Contract.
 2. As it is impractical to enumerate every piece of equipment, device and/or accessory required for proper operation of the indicated systems specified within their respective Sections or Divisions of the Project Manual; it is intended that all materials, systems, and/or equipment, required to insure proper operation of the equipment, device, and/or accessory, be provided as a part of the Work of this Project so the specified work or system functions, and/or performs as required by the specification. To infer the intent is otherwise, is to render the specified work or system less than required.
 3. Except as specifically noted, provide and pay for:
 - a) Labor, materials and equipment.
 - b) Tools, construction equipment and machinery.
 - c) Water, heat and utilities required for construction.
 - d) Other facilities and services necessary for proper execution and completion of the Work.
- C. Owner is NOT exempt from sales tax on products permanently incorporated in the Work.
- D. Pay ALL sales, consumer, use and similar taxes for the Work or portions thereof.
- E. Secure and pay for, as necessary for proper execution and completion of the Work, and as applicable at time of receipt of Bids:
1. Permits.
 - a. Pay all permit fees charged by the Authorities having Jurisdiction, including all other permit fee, use fees, application fees.
 - b. The obtaining of the construction permits are the responsibility of the Contractor, unless noted otherwise.
 2. Government fees.
 3. Licenses.
- F. Give required notices for operations which may disturb the functions of adjacent facilities.
- G. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on the performance of the Work.
- H. Promptly submit written notice, within five business days of discovery, to the Architect of observed variance of Contract Documents from legal requirements.
- I. Lay out all work and be responsible for all lines, elevations, measurements of the building, utilities and site work executed under the Contract. Verify the figures shown before laying out the Work and be responsible for any error resulting from failure to do so. Employ a competent registered engineer or registered land surveyor, approved by the Architect and Owner, for establishing all lines, levels and dimensions, and place at the disposal of the Architect, as required for checking purposes.
1. Upon completion of the foundation work, submit certified survey data which indicates and corroborates indicated building layout and foundation elevations.

2. Provide certified survey at the completion of the Project, indicating building location, heights, grades, utility line inverts, and prominent site improvements.
- J. Enforce strict discipline and good order among employees. Do not employ persons not skilled in assigned task.
- K. Notify all trades, sub-contractors and suppliers of all designated alternatives and be responsible for their coordination.
- L. At your option, certain indicated materials and/or procedures are specified herein to be used in lieu of other indicated materials and/or procedures, at no change in Contract Price. Such options should be analyzed and coordinated during the bidding period, so that the selection of any may immediately be brought to the Architect's attention, once the Contract is awarded (within thirty days thereafter).

1.4 HEALTH AND SAFETY PRECAUTIONS

A. OSHA:

1. These construction documents, and the joint and several phases of construction hereby contemplated, are to be governed, at all times, by the applicable portions of the Federal Laws, including but not limited to, the latest amendments of the following:
 - a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-956;
 - b. Part 1910 - Occupational Safety and Health Standards, Title 29, Code of Federal Regulations, as amended to date;
 - c. Part 1926 - Safety and Health Regulations for Construction, Title 29, Code of Federal Regulations, as amended to date.
2. This Project, the Contractor and his sub-contractors shall, at all times, be governed by applicable Chapters of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction, as amended to date.
 - a. Note: Furnish the Owner and Architect copies of all accident reports.

B. Dig Safe:

1. All excavations near underground public utility facilities shall be performed in accordance with Massachusetts State Law, G.L. C.82 § 40A to 40E.

C. Emergencies:

1. Should tornado, hurricane, gale or heavy wind warnings be issued, take precautions to minimize the danger to persons, to the work, and to the adjacent property. Damage caused to any part of the work shall be rectified or replaced to the complete satisfaction of the Architect and Owner and at no expense to the Owner. Injury to personnel or damage to adjacent property because of the work shall be the complete responsibility of the Contractor, and he accepts exclusive responsibility for same.

D. Loading:

1. Do not load any part of the existing work involved in this Contract, during construction, with a load greater than it is calculated to carry with safety. Should any accidents or

damage occur through any violation of this requirement, the Contractor shall be held responsible under his Contract and Bond. When, in the opinion of the Architect, portions of the existing areas appear to be overloaded, it shall be the Contractor's responsibility to prove otherwise, or the Contractor shall follow the instructions of the Architect in connection with reduction of the loads.

2. Contractor to review existing site conditions and survey to determine location of underground utility systems and structures. Protect systems from damage. Repair, replace any existing to remain systems, unless noted otherwise.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain at job site, one copy of:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Reviewed Shop Drawings.
5. Record Drawings.
6. Change Orders.
7. Other modifications to Contract.
8. Field Test Reports.
9. Approved materials, samples and colors.

B. Store documents in approved field construction office, apart from documents used for construction.

C. Provide files and racks for storage of documents.

1. Provide red pen or pencil for all marking.

D. File documents in accordance with Project Filing Format of MASTERFORMAT.

E. Maintain documents in clean, dry, legible condition.

F. Do not use record documents for construction purposes.

G. Make documents available at all times for inspection by Architect and Owner.

H. Recording changes:

1. Keep record documents current.
2. Do not permanently conceal any work until required information has been recorded.
3. Contract Drawings: Legibly mark to record actual construction and the following:
 - a. Record various elements of foundations in relation to lowest floor elevation.
 - b. Reference horizontal and vertical location of underground utilities and appurtenances to permanent surface improvements.
 - c. Reference location of internal utilities and appurtenances concealed in construction to visible and accessible features of structure.
 - d. Record field changes of dimensions and details.
 - e. Record changes made by Change Order or Field Order.
 - f. Record details not on original Contract Drawings.
4. Specifications and Addenda: Legibly mark up each Section to record the following:

- a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - b. Changes made by Change Order and Field Order.
 - c. Other matters and materials not previously specified.
5. Shop Drawings: Maintain as record documents; legibly annotate drawings to record changes after review.

1.6 TRANSPORTATION AND HANDLING

- A. Transport all materials and equipment on legally approved conveyances as required or recommended by the respective manufacturer or supplier.
 1. Obtain permits, as required.
- B. Receive and handle all materials and equipment, at the project site, by conveyances or methods as recommended by the respective manufacturer or supplier.
- C. Coordinate delivery of equipment and materials when two or more trades, contractors or suppliers are involved.
- D. Remove from the site any material or item of equipment damaged during the transportation or handling process, and immediately replace at no additional cost to the Owner.

1.7 STORAGE AND PROTECTION

- A. Store all materials and equipment as recommended by the respective manufacturer or supplier, including the following minimum requirements.
- B. Upon receipt of such materials and equipment, check, distribute, store and safeguard in a clean, dry, ventilated location.
- C. Elevate off the ground, items which can be stored in exterior locations, and completely cover with approved tarpaulins. Protect against the elements at all times.
- D. Maintain all storage areas in a clean and orderly condition at all times.
- E. Immediately replace any material or item of equipment damaged, due to inadequate storage protection, at no additional cost to the Owner.

1.8 CUTTING AND PATCHING

- A. Execute cutting, including excavating, fitting or patching work required to:
 1. Make several parts fit properly.
 2. Uncover work to provide for installation of ill-timed work.
 3. Remove and replace defective work.
 4. Remove and replace work not conforming to the Contract Documents.
 5. Remove samples of installed work, as specified, for testing.
 6. Install specified work in existing construction.

- B. In addition to the Contract requirements, upon written instructions from Architect:
 - 1. Uncover work to provide for Architect's observation of covered work, as required by General Conditions.
 - 2. Remove samples of installed materials for testing; as required by the General Conditions.
- C. Do not endanger any work by cutting or altering work, or any part of it.
- D. Do not cut or alter work of another Contractor without written permission of the Architect.
- E. Prior to cutting which affects structural safety of Project, or work of another Contractor, submit written notice to Architect requesting consent to proceed with cutting.
- F. Prior to cutting and patching, done on instruction of the Architect, submit written cost estimate.
- G. Should conditions of work, or schedule, indicate change of materials or methods, submit written recommendations to the Architect and Owner including:
 - 1. Conditions indicating change.
 - 2. Recommendations for alternative materials or methods.
 - 3. Submittals required for Substitutions.
 - 4. Impact on operations and maintenance, both long and short term.
- H. Submit written notice, to the Architect and Owner, designating time work will be uncovered, to provide for observation.
- I. Payment for costs caused by ill-timed or defective work, or work not conforming to the Contract Documents, including costs for additional services of Architect or other costs to the Owner will be borne by the Contractor.
- J. Contractor Inspection:
 - 1. Inspect existing conditions of work, including existing underground structures and elements subject to movement or damage during:
 - a. Cutting and patching.
 - b. Excavating and backfilling.
 - 2. After uncovering work, inspect conditions affecting installation of new products.
- K. Preparation: (prior to cutting)
 - 1. Provide shoring, bracing and support as required to maintain structural integrity of the Project.
 - 2. Provide appropriate protection to fully protect other portions of the Project from dust, fumes, humidity, etc.
 - 3. Provide protection from the elements.
- L. Performance: Perform all work of fitting, adjustment, cutting, patching, finishing, and restoration to perfectly match the quality as specified throughout these specifications by trade persons skilled in the work being performed.

1.9 OWNER-FURNISHED PRODUCTS

- A. Where Owner furnished and/or Owner furnished and installed products or equipment is specified, the Contractor is responsible to verify and coordinate, with the Owner, the extent of the Work under this Contract, associated with such product or equipment.
- B. Owner's duties:
 - 1. Schedule delivery date, with supplier, in accordance with the Construction Schedule, as developed with both the Architect and Owner in regards to furnished products.
 - 2. Obtain installation drawings and instructions.
- C. Contractor's duties:
 - 1. Designate required delivery date for each product in accordance with the Construction Schedule, as developed with both the Architect and Owner in regards to furnished products.
 - 2. Promptly inspect delivered products, report damaged or defective products.
 - 3. Handle at site, including uncrating and storage.
 - 4. Protect from exposure to elements and from damage.
 - 5. The Contractor shall endeavor to work with the Owner in their schedule to accommodate the work. It is expected that work will include, but not be limited to: Furnishings, Communications, Security, Audio-Visual and Technology.
 - 6. Repair or replace items damaged as a result of Contractor's operations.

1.10 CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by:
 - 1. Law.
 - 2. Ordinances.
 - 3. Permits.
 - 4. Contract Documents.
- B. Do not unreasonably encumber the site with materials and equipment.
- C. Do not load structure with weight that will endanger structure.
- D. Assume full responsibility for protection and safekeeping of products stored on the premises.
- E. Move any stored products which interfere with operations of Owner or other Contractor.
- F. Obtain and pay for use of additional storage or work areas needed for operations.
- G. Limit use of site for work and storage within confines of the Project Limit Line.
- H. Use of Site: Limit use of Project site to work in areas or areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the work is indicated.
 - 1. Limits: Confine construction operations to construction areas indicated on drawings and allowed by the Owner.
 - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

- a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

1.11 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. Controlled Substances: Use of tobacco products and other controlled substances within the existing building and/or on Project site is not permitted.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Division 01 Section "Alternates" for products selected under an alternate.
 - 2. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 3. Divisions 02 through 23 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

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

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use CSI Form 13.1A and/or facsimile of form provided in Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

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

1.5 QUALITY ASSURANCE

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

1.6 PROCEDURES

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Generally not allowed unless otherwise indicated.
- C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed and/or the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.

- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 MINOR CHANGES IN THE WORK

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

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within 15 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total sum of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.

- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Provide an updated Contractor's construction schedule that indicates the effect of the change, including changes in activity duration, start and finish times, and activity relationship. Use total float before requesting an extension of the Contract Time.
 - 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

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

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

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

1.4 SCHEDULE OF VALUES

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

5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract as described in Division 01 Section "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. Include separate line items under Contractor and principal subcontracts for LEED documentation and other Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by

- measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
 10. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
 11. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.

2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
 5. Products list (preliminary if not final).
 6. Schedule of unit prices.
 7. Submittal schedule (preliminary if not final).

8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits.
 11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 12. Initial progress report.
 13. Report of preconstruction conference.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds.
 16. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final liquidated damages settlement statement.
 10. Build code required contractor certification.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

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

- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Special Reports: Submit at time of unusual event.
- K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

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

1.6 COORDINATION

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

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 6. Punch List and Final Completion: Include not more than 45 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.

- h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
9. Other Constraints:
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- 1. See Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- 1. Type of system - TBD
- 2.2 STARTUP CONSTRUCTION SCHEDULE
- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within seven days of date established for commencement of the Work.

- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice of Award. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's construction schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
 - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
 - 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 - 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 - 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.

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

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts 2 days before each regularly scheduled progress meeting.

2.5 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

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

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

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

2.6 SPECIAL REPORTS

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

2.7 RECORD DOCUMENTS

- A. Prior to the start of construction, the Architect shall deliver to the Contractor, a complete set of "Issued for Construction" drawings, and a complete project manual, including addenda, for the purpose of maintaining record documents.
- B. Also, maintain a copy of all modifications and change orders.
- C. Maintain the documents in a safe, dry location during the entire construction process. The Contractor, together with his sub-contractors, shall indicate clearly and accurately, any and all changes necessitated by field conditions. In addition, accurately maintain dimensions locating all pipes, ducts, etc. built into or under concrete slabs or masonry walls, including elevations, inverts, etc.
- D. With each monthly requisition, send certification, signed by the Contractor's Superintendent and Owner's Field Representative, that the documents are being maintained accurately and currently. At the completion of the Project, return the documents to the Architect, along with certification that the documents are complete in that they represent the true constructed conditions.
- E. Electronic Submission of Record Drawings in AutoCAD is mandatory in addition to hard copies.

2.8 ELECTRONIC FILES

- A. The Robinson Green Beretta Corporation shall make electronic drawing files available to the successful Contractor, at a charge of \$250.00 for the purpose of preparing submittals, record drawings, etc in accordance with the following policy:
1. Drawings shall not be e-mailed, but burned to a CD/DVD.
 2. Requester must sign an Electronic File Transmittal Form.
 3. Copies of documents that may be relied upon by the Contractor are limited to the printed copies (also known as hard copies) that are signed or sealed by the Architect. Files in

electronic media format or test, data, graphic or other types that are furnished by the Architect to the Contractor are only for the convenience of the Contractor. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. When transferring documents in electronic media format, the Architect make no representations as to long-term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems or computer hardware differing from those in use by the Architect at the beginning of this project.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
 - 1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate final completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
 - 4. Preconstruction video recordings.
 - 5. Periodic construction video recordings.
 - 6. Web-based construction photographic documentation.
- B. Related Requirements:
 - 1. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
 - 2. Division 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
 - 3. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
 - 4. Division 02 Section "Structure Demolition" for photographic documentation before building demolition operations commence.

1.3 UNIT PRICES

- A. Basis for Bids: Base number of construction photographs on average of 20 photographs per week over the duration of Project.

1.4 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Digital Camera
 - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:

- a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- C. Construction Photographs: Submit electronic prints of each photographic view within seven days of taking photographs.
1. Format: Electronic Format, in printable format.
 2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- D. Video Recordings: Submit video recordings within seven days of recording.
1. Submit video recordings by posting to Project Web site.
 2. Identification: With each submittal, provide the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Weather conditions at time of recording.
 3. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, three-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding video recording. Include name of Project and date of video recording on each page.
- E. Web-Based Photographic Documentation: Submit time-lapse sequence video recordings within 7 days of recording.
1. Submit time-lapse sequence video recordings by posting to Web-based photographic documentation service provider's Web site.
 2. Identification: For each recording, provide the following information:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect
 - d. Name of Contractor.

- e. Date(s) and time(s) video recording was recorded.
- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- g. Weather conditions at time of recording.

1.5 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.
- B. Web-Based Photographic Documentation Service Provider: A firm specializing in providing photographic equipment, Web-based software, and related services for construction projects, with record of providing satisfactory services similar to those required for Project.

1.6 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Digital Video Recordings: Provide high-resolution, digital video disc in format acceptable to Architect.

2.2 WEB-BASED PHOTOGRAPHIC DOCUMENTATION

- A. Project Camera: Provide fixed exterior camera installation, mounted to provide unobstructed view of construction site from location approved by Architect.
 - 1. Provide one fixed-location camera(s), with the following characteristics:
 - a. Static view.
 - b. Capable of producing minimum **3.0** megapixel pictures.
 - c. Provide power supply, active high-speed data connection to service provider's network, and static public IP address for each camera.
- B. Wireless Hand-Held Camera: Provide portable camera system capable of producing images complying with requirements in this Section, with wireless transmission to service provider's network enabling a live image stream viewable by multiple parties.
 - 1. Provide battery charger, spare battery pack, base station hub, and base station connections in a number and distribution adequate to enable wireless camera operation throughout Project site.

2. Provide power supply, active high-speed data connection to service provider's network, and static public IP address at base station hub. Provide power supply, conduit, and data wiring between base station hub and base station connections.
- C. Web-Based Image Access: Password-protected access for Project team administered by Contractor, providing current image access and archival image access by date and time, with images downloadable to viewer's device.
1. Provide public viewer open access to most recent project camera image.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. Date and Time: Include date and time in file name for each image.
 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- D. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
1. Flag construction limits before taking construction photographs.
 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- E. Periodic Construction Photographs: Take 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Architect [Directed Construction Photographs: From time to time, Architect will instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- G. Time-Lapse Sequence Construction Photographs: Take 20 photographs as indicated, to show status of construction and progress since last photographs were taken.

1. Frequency: Take photographs weekly, with timing each month adjusted to coincide <Insert time interval> with the cutoff date associated with each Application for Payment.
 2. Vantage Points: Following suggestions by Architect and Contractor, photographer to select vantage points. During each of the following construction phases, take not less than two of the required shots from same vantage point each time to create a time-lapse sequence as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above-grade structural framing.
 - c. Exterior building enclosure.
 - d. Interior Work, through date of Substantial Completion.
- H. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.
1. Do not include date stamp.
- I. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

3.2 CONSTRUCTION VIDEO RECORDINGS

- A. Video Recording Photographer: Engage a qualified videographer to record construction video recordings.
- B. Recording: Mount camera on tripod before starting recording unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.
- C. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.
- D. Preconstruction Video Recording: Before starting excavation, record video recording of Project site and surrounding properties from different vantage points, as directed by Architect.
 1. Flag construction limits before recording construction video recordings.
 2. Show existing conditions adjacent to Project site before starting the Work.

3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of excavation.
 4. Show protection efforts by Contractor.
- E. Periodic Construction Video Recordings: Record video recording weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes.
- F. Time-Lapse Sequence Construction Video Recordings: Record video recording to show status of construction and progress.
1. Frequency: During each of the following construction phases, set up video recorder to automatically record one frame of video recording every five minutes, from same vantage point each time, to create a time-lapse sequence of 30 minutes in length as follows:
 - a. Commencement of the Work, through completion of subgrade construction.
 - b. Above-grade structural framing.
 - c. Exterior building enclosure.
 2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
 3. Vantage Points: Following suggestions by Architect and Contractor, photographer shall select vantage points.

3.3 WEB-BASED CONSTRUCTION PHOTOGRAPHIC DOCUMENTATION

- A. Live Streaming Construction Site Images: Provide Web-accessible image of current site image from fixed location camera(s), updated at 15 minute intervals during daytime operation.
- B. Time-Lapse Sequence Construction Site Recordings: Provide video recording from a fixed-location camera to show status of construction and progress.
1. Frequency: Record one frame of video recording every 15 minutes, from same vantage point each time, to create a time-lapse sequence of construction activities.
 2. Timer: Provide timer to automatically start and stop video recorder so recording occurs only during daylight construction work hours.
- C. Maintain cameras and Web-based access in good working order according to Web-based construction photographic documentation service provider's written instructions until final completion. Provide for service of cameras and related networking devices and software.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

- B. Related Requirements:

1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Division 01 Section "Photographic Documentation" for submitting construction photographs.
5. Division 01 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
6. Division 01 Section "Closeout Procedures" for submitting warranties.
7. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
9. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
10. Division 02 through 33 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols.

An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

- a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

- a. Scheduled date for first submittal.
- b. Specification Section number and title.
- c. Submittal category: Action; informational.
- d. Name of subcontractor.
- e. Description of the Work covered.
- f. Scheduled date for Architect's final release or approval.
- g. Scheduled date of fabrication.
- h. Scheduled dates for purchasing.
- i. Scheduled dates for installation.
- j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement
 - c. The following digital data files will be furnished for each appropriate discipline:

- 1) Floor plans.
 - 2) Reflected ceiling plans.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- D. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Name of subcontractor.
 - f. Name of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.

- 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.
4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
 - a. Transmittal Form for Paper Submittals: Use AIA Document G810.
 - b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
 - 1) Project name.
 - 2) Date.
 - 3) Destination (To:).
 - 4) Source (From:).
 - 5) Name and address of Architect.
 - 6) Name of Contractor.
 - 7) Name of firm or entity that prepared submittal.
 - 8) Names of subcontractor, manufacturer, and supplier.
 - 9) Category and type of submittal.
 - 10) Submittal purpose and description.
 - 11) Specification Section number and title.
 - 12) Specification paragraph number or drawing designation and generic name for each of multiple items.
 - 13) Drawing number and detail references, as appropriate.
 - 14) Indication of full or partial submittal.
 - 15) Transmittal number, numbered consecutively.
 - 16) Submittal and transmittal distribution record.
 - 17) Remarks.
 - 18) Signature of transmitter.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01).

Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Names of subcontractor, manufacturer, and supplier.
 - g. Category and type of submittal.
 - h. Submittal purpose and description.
 - i. Specification Section number and title.
 - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - k. Drawing number and detail references, as appropriate.
 - l. Location(s) where product is to be installed, as appropriate.
 - m. Related physical samples submitted directly.
 - n. Indication of full or partial submittal.
 - o. Transmittal number, numbered consecutively.
 - p. Submittal and transmittal distribution record.
 - q. Other necessary identification.
 - r. Remarks.
- F. Options: Identify options requiring selection by Architect.
- G. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Submit electronic submittals via email as PDF electronic files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 3. Action Submittals: Submit electronic copies of each submittal unless otherwise indicated. Architect will return electronic copies via email and/or project FTP site.
 4. Informational Submittals: Submit electronic copies of each submittal unless otherwise indicated. Architect will not return copies.
 5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.

- c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before or concurrent with Samples.
 - 6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Architect will retain electronic copies in project file; remainder will be returned electronically via email or project FTP site.
 - 4. BIM File Incorporation: Develop and incorporate Shop Drawing files into Building Information Model established for Project.
 - a. Prepare Shop Drawings in the following format: PDF
 - b. Refer to Division 01 Section "Project Management and Coordination" for requirements for coordination drawings.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will mark up and retain one returned Sample set as a project record sample.]
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

- G. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- L. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- M. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- N. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- O. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- P. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- Q. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- R. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- S. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- T. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.

5. Description of product.
 6. Test procedures and results.
 7. Limitations of use.
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- X. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

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

3.2 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

SECTION 01 33 00 – SUBMITTAL PROCEDURES Design Renovations for ADA Compliance-Waltham, MA

- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 01 33 00

SECTION 01 35 46 - INDOOR AIR QUALITY MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Product requirements for indoor construction and finishing materials.
 - 2. Final Construction Products List.
 - 3. Construction site management.
 - 4. Indoor Environmental Consultant qualifications.
 - 5. Scheduling and product installation sequencing.
 - 6. Operation of HVAC systems during construction.
 - 7. Product installation.
 - 8. Building flush out.
 - 9. Indoor air quality testing.
 - 10. Documentation and reporting.

1.2 REFERENCES

- A. American Conference of Government Industrial Hygienists (ACGIH).
- B. American National Standards Institute/American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ANSI/ASHRAE):
 - 1. 52.2 – Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
 - 2. 55 – Thermal Environmental Conditions for Human Occupancy.
 - 3. 62.1 – Ventilation for Acceptable Indoor Air Quality.
 - 4. 62.2 – Ventilation and Acceptable Indoor Air Quality for Low-Rise Residential Buildings.
- C. GREENGUARD Environmental Institute (GREENGUARD) - Indoor Air Quality Certification Program.
- D. U.S. Green Building Council (USGBC) - Leadership in Energy and Environmental Design (LEED) 2009 for New Construction and Major Renovations.
- E. Sheet Metal and Air Conditioning Manufacturer’s Association International (SMACNA)
- F. United States Environmental Protection Agency (EPA):
 - Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
 - National Ambient Air Quality Standard, Code of Federal Regulations, Title 40, Part 50.

a. DEFINITIONS

- i. Dry Products: Products used in a solid state, including gypsum board, carpet, acoustical panels and tiles, and textiles.
- ii. MERV: Minimum Efficiency Reporting Value.
- iii. Priority Products: Products known to be high chemical emitters, long term emitters, and those expected to present emissions in high amounts (high surface area).
- iv. Threshold Limit Value (TLV): Industrial Work Place Standard as defined by ACGIH.
- v. Wet Products: Products used in a liquid or semi-liquid state, including adhesives, joint sealers, paints, and coatings.

b. SUBMITTALS

- i. Final Construction Products List:
 - 1. Submit list of proposed indoor construction and finishing products.
 - 2. Include strategies for minimizing use of wet products.
 - 3. Obtain approval by Commissioning Agent prior to installation of products.
- ii. Indoor Air Quality Test Report:
 - 1. Provide copies of Indoor Air Quality Test Report from Indoor Environmental Consultant.
 - 2. Include in report:
 - a. Study design including methodology for determination of air sampling locations and duration of sampling.
 - b. Summary of sampling and analytical methods employed.
 - c. Copy of field sampling logs.
 - d. Summary of methods and results used to determine that ventilation system was started at normal daily start time and operated at minimum outside airflow rates for occupied mode for duration of air testing.
 - e. Laboratory analytical data for each contaminant and summary table showing compliance with specified criteria.

c. QUALITY ASSURANCE

- i. Provide written notification of product requirements to subcontractors and suppliers of interior construction and finishing products.
- ii. Indoor Environmental Consultant Qualifications:
 - 1. Contractor shall employ and pay for an Indoor Environmental Consultant to perform specified indoor air quality testing.
 - 2. Minimum 5 years experience in conducting indoor environmental quality evaluations of non-industrial buildings.
 - 3. Retain Certified Industrial Hygienist (CIH) on staff to review and sign test reports.

d. DELIVERY, STORAGE AND HANDLING

i. Storage Area:

1. Designate secure storage area to facilitate protection of stored absorptive products.
2. Clearly identify storage area. Keep dry, clean, and orderly; prevent contamination of products.
3. Monitor storage areas for contamination; correct problems and implement preventative measures.

ii. Products:

1. Protect absorptive products from moisture damage before, during, and after installation.
2. Immediately remove products exhibiting stains, mold, mildew, or other evidence of water or moisture damage from site.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Interior Construction and Finishing Products; in purchasing products, give preference to:
1. Products designed and manufactured in manner to produce least harmful and irritating effects.
 2. Products certified by GREENGUARD Environmental Institute as Low Emitting. For products that are not GREENGUARD Certified, provide a test, which at maximum is performed one year prior to installation, to ensure conformance to GREENGUARD standard emission values.
 3. Products providing lowest practical yet technologically achievable emissions of particulates and chemical vapors, as defined in following paragraphs.
- B. Maximum Chemical emission Values for Products In Commercial or Retail Buildings:
1. Emission rate calculations: Assume 32 cubic meters as volume for determination of product loading.
 2. Product emission rates and modeling for predicted exposure concentrations: As measured in milligrams/square meter per hour ($\text{mg}/\text{m}^2 \square \text{hr}$) at anticipated loading (square meter/cubic meter [m^2/m^3] within building. Predicted indoor concentrations shall be based on building modeling parameters of 0.72 air changes per hour (ACH). The product shall produce indoor air concentration levels less than the amounts specified for each substance within seven (7) days of installation.
 3. Total VOC emission rate: Maximum total volatile organic compounds (VOC) of 0.05 milligrams/cubic meter (mg/m^3).
 4. Total aldehydes: Maximum 0.1 parts per million (ppm).
 5. Formaldehyde: Maximum 0.05 parts per million (ppm).
 6. 4-Phenylcyclohexene (4-PC): Maximum 0.0065 milligrams/cubic meter (mg/m^3) or 0.1 parts per billion (ppb).
 7. Styrene: Maximum 0.07 milligrams/cubic meter (mg/m^3).
 8. For individual Volatile Organic Compounds (VOCs) not listed above: Shall produce an air concentration level less than 1/10th of the Threshold Limit Value (TLV) at the anticipated product loading in the building within seven (7) days of installation.
 9. Regulated pollutants: Maximum air concentration as promulgated by National Ambient Air Quality Standard for primary and secondary outdoor air pollutants.
 10. Identified carcinogens and reproductive toxins: Below levels of no significant risk according to evaluation protocols established by EPA or approved State and public health organizations.

IAQ MANAGEMENT

- B. Maximum Chemical and Particle emission Values for Products In Educational, Daycare, Healthcare, or Otherwise Sensitive Environments:
11. Emission rate calculations: Assume 231 cubic meters as volume for determination of product loading.
 12. Product emission rates and modeling for predicted exposure concentrations: As measured in milligrams/square meter per hour ($\text{mg}/\text{m}^2 \square \text{hr}$) at anticipated loading (square meter/cubic meter [m^2/m^3] within building. Predicted indoor concentrations shall be based on building modeling parameters of 0.9 air changes per hour (ACH) and a 0.9 ventilated volume fraction. The product shall produce indoor air concentration levels less than the amounts specified for each substance within seven (7) days of installation except for formaldehyde. Formaldehyde criteria are established so that emission levels reach 0.014 ppm (13.5 ppb) within 14 days of installation (meeting CA 1350 requirements).
 13. Total VOC emission rate: Maximum total volatile organic compounds (VOC) of 0.022 milligrams/cubic meter (mg/m^3).
 14. Total aldehydes: Maximum 0.043 parts per million (ppm).
 15. Formaldehyde: Maximum 0.0135 parts per million (ppm) within 14 days of installation.
 16. Total Phthalates: Maximum 0.01 milligrams/cubic meter (mg/m^3). Total phthalates are defined as the total response of a specific target list of phthalates including dibutyl (DBP), diethylhexyl (DEHD), diethyl (DEP), butylbenzyl(BBP), di-octyl (DOP), and dimethyl (DMP) phthalates (conducted using a modified phthalate specific analytical method, OSHA 104).
 17. Total Particles: Maximum 0.02 milligrams/cubic meter (mg/m^3). This is applicable only to fibrous, particle-releasing products with exposed surface area in air streams (determined using a "forced air" test with specific test method).
 18. For individual Volatile Organic Compounds (VOCs) not listed above: Shall produce an air concentration level less than 1/100 of the Threshold Limit Value (TLV) and less than 1/2 of the California Chronic REL at the anticipated product loading in the building within seven (7) days of installation.

PART 3 - EXECUTION

3.1 CONSTRUCTION SITE MANAGEMENT

- A. If weather or plumbing leaks result in interior of building becoming wet:
1. Ensure that building is properly dried out prior to installation of any additional materials into the space.
 2. Inspect installed materials for mold and mildew.
 3. Affected materials less than 10 square feet in area: Remediate materials according to accepted industry practices.
 4. Affected materials 10 square feet or more in area: Employ certified remediation firm to remove materials from site.
- B. For projects incorporating new construction in an existing space, follow the procedures outlined in the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) *IAQ Guidelines for Occupied Buildings Under Construction*, Chapter 3, also see section 3.3 below.

3.2 SCHEDULING AND PRODUCT INSTALLATION SEQUENCING

- A. Schedule shipment and delivery of products based on actual construction progress to minimize time products are stored on site.
- B. Prepare and staff building site for delivery of products.

- C. Inspect products upon delivery for conformance to Final Construction Materials List and to ensure that they are free from water and moisture damage and properly stored.
- D. Use the least practical amount of wet materials.
- E. Do not install dry materials until wet materials have been installed and allowed to dry to greatest extent practical.
- F. Choose drying times so that specified pollutant emission rates are achieved prior to installation of dry materials.
- G. Install solvent containing materials during periods during which building is unoccupied. Schedule installation as early as possible during construction to allow for maximum off-gassing prior to building occupancy or re-occupancy.
- H. Install high-VOC emitting products prior to installation of porous and fibrous products, or protect with polyethylene sheeting, properly sealed.
- I. Complete installation of interior finishing materials two to four weeks prior to building occupancy. Continuously flush out building with fresh air for two to four weeks.
- J. Provide temporary ventilation during touch-up operations; extend building flush-out for minimum of four days after touch-up is complete.

3.3 OPERATION OF HVAC SYSTEMS DURING CONSTRUCTION IN OCCUPIED BUILDINGS

- A. Depressurize construction area at rate at least 10 percent greater than rate of supply or pressurize existing spaces, whichever is more feasible.
- B. Erect supplemental containment barriers if pressurization is not adequate to control construction dust and odors in occupied areas.
- C. Ensure that construction equipment and staging areas are away from air intakes for existing construction.
- D. Temporarily seal intake dampers for existing space when high-emitting construction activities are performed near outdoor air intakes for existing construction.
- E. During demolition or construction in existing spaces:
 - 1. Do not operate building HVAC systems in affected areas.
 - 2. Temporarily seal supply and return openings with plastic sheeting.
 - 3. If system must be operational during demolition or construction, install temporary MERV 8 filters in return openings in accordance with LEED Guidelines; maintain in clean condition.

3.4 BUILDING FLUSH-OUT

- A. If building meets Clearance Criteria immediately following construction, building flush-out is not required.
- B. Following completion of interior finishes and installation of new furnishings, flush building with 100 percent clean outdoor air for two to four weeks prior to occupancy. If time does not permit a two to four week flush-out period, the design and construction team shall designate whatever time is available for building flush (even if it is as minimal as 24 hours).
- C. Install new MERV 13 filtration media prior to beginning the flush-out procedure.
- D. After flush-out, install new MERV 13 filtration media, except for those filters processing only outdoor air.

3.5 INDOOR AIR QUALITY TESTING

- A. Perform testing after completion of construction and installation of new furnishings, but before Owner occupancy, using protocols established by reputable standard setting or method development organizations such as state and federal agencies and reputable non- governmental organizations such as the GREENGUARD Environmental Institute or ASTM.
- B. Conduct testing prior to Owner occupancy but during normally occupied hours.
- C. Operate building HVAC system at normal daily start and stop times at minimum outside airflow for occupied mode for duration of testing.
- D. Number of Air Sampling Locations: Minimum of one per 25,000 square feet or for each contiguous floor area, whichever is greater. Include areas with least ventilation and greatest presumed source strength.
- E. At each location, collect samples at to 6 feet above floor over minimum 4 hour period.
- F. Demonstrate that contaminant concentrations do not exceed following maximum concentration limits:

Contaminant	Maximum Concentration Limit
Carbon Dioxide *	10,300/ventilation rate

Contaminant	Maximum Concentration Limit
Carbon Monoxide	9 ppm and maximum 2 ppm above outdoor levels
Total Volatile Organic Compounds (TVOC)	Maximum 500 micrograms/cubic meter
Formaldehyde	Maximum 27 parts per billion
4-Phenylcyclohexene (4-PCH)	Maximum 6.5 micrograms/cubic meter
Other Individual VOC's	Below odor and/or sensory irritation threshold and maximum 1/10 TLV
Total Aldehydes	Maximum 100 parts per billion
Total Particles (PM 10)	Maximum 50 micrograms/cubic meter

* Carbon dioxide monitoring is required only if building is occupied during testing. Ventilation rate is outdoor air requirement per person. Carbon dioxide measurement is differential between indoor and outdoor conditions, based on occupancy type as defined by ANSI/ASHRAE 62.1 and 62.2.

- G. For each sampling location where, maximum concentration limit is exceeded, conduct additional flush-out with outside air and retest specific contaminant until maximum concentration limit is achieved. Collect samples for retesting from original sampling location.

END OF SECTION

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority and/or Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

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

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

1.4 CONFLICTING REQUIREMENTS

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

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.

1. Indicate manufacturer and model number of individual components.
2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 1. Specification Section number and title.
 2. Entity responsible for performing tests and inspections.
 3. Description of test and inspection.
 4. Identification of applicable standards.
 5. Identification of test and inspection methods.
 6. Number of tests and inspections required.
 7. Time schedule or time span for tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 1. Project quality-control manager may also serve as Project superintendent for small or limited projects.
 2. Project quality control manager shall not have other project responsibilities for large and/or complex projects.

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

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, and telephone number of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.

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

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, and mockups, and laboratory mockups; do not reuse products on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

- a. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.
- L. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings and/or as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.
1. Exterior wall assembly complete with water mitigation management components; air and vapor barrier assembly; opening returns, etc. Minimum size of 8'x6', unless noted otherwise.
- M. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections in Divisions 02 through 33.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **Testing Agency Responsibilities:** Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform any duties of Contractor.
- G. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. **Schedule of Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's

quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

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

1.11 SPECIAL INSPECTIONS

- A. Special Inspections: Owner will engage a qualified Coordinator of Special Inspection to conduct State Building Code special inspections and/testing program required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections.
- B. Special Inspections and/or Testing: Conducted by a qualified testing agency and/or special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections and in Statement of Special Inspections attached to this Section, and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect, Commissioning Authority, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority, and Construction Manager, with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion; this includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

- A. Firms acceptable to perform designated tests and inspections are:
 1. Geisser Engineering Corporation, 227 Wampanoag Trail, Riverside, RI 02915
 2. Briggs Engineering & Testing, 100 Weymouth Street, Rockland, MA 02370
 3. Theilisch Engineering, 195 Frances Ave, Cranston, RI 02910
 4. Other firms as approved by architect

3.2 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.

4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and Construction Manager's reference during normal working hours.

3.3 REPAIR AND PROTECTION

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

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

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

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

REFERENCES

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

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association (The) www.aluminum.org	(703) 358-2960
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	www.aamanet.org	
AASHTO	American Association of State Highway and Transportation Officials	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ABAA	Air Barrier Association of America www.airbarrier.org	(866) 956-5888
ABMA	www.abma-dc.org	
ACI	American Concrete Institute	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AF&PA	www.afandpa.org	(202) 463-2700

REFERENCES

AGA	American Gas Association	(202) 824-7000
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AHRI	Air-Conditioning, Heating, and Refrigeration Institute, The www.ahrinet.org	(703) 524-8800
AI	www.asphaltinstitute.org	
AIA	American Institute of Architects (The)	(800) 242-3837
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	www.aitc-glulam.org	
ALSC	American Lumber Standard Committee, Incorporated	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	www.aosaseed.com	
APA	APA - The Engineered Wood Association	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	www.ari.org	
ARMA	Asphalt Roofing Manufacturers Association	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute	

REFERENCES

	(See ASCE)	
ASHRAE	www.ashrae.org	(404) 636-8400
ASME	ASME International www.asme.org	(800) 843-2763
ASSE	American Society of Sanitary Engineering	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International)	(610) 832-9500
ATIS	Alliance for Telecommunications Industry Solutions www.atis.org	(202) 628-6380
AWCMA	American Window Covering Manufacturers Association (Now WCMA)	
AWCI	www.awci.org	
AWI	Architectural Woodwork Institute	(571) 323-3636
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association)	(205) 733-4077
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	www.buildershardware.com	
BIA	Brick Industry Association (The)	(703) 620-0010
BICSI	BICSI, Inc. www.bicsi.org	(800) 242-7405 (813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(866) 342-4772
CCC		

REFERENCES

	www.carpetcushion.org	
CDA	Copper Development Association	(800) 232-3282
CEA	Canadian Electricity Association www.canelect.ca	(613) 230-9263
CEA	Consumer Electronics Association www.ce.org	(866) 858-1555 (703) 907-7600
CFFA	www.chemicalfabricsandfilm.com	
CGA	Compressed Gas Association	(703) 788-2700
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	www.cispi.org	
CLFMI	Chain Link Fence Manufacturers Institute	(301) 596-2583
CPA	Composite Panel Association www.pbmdf.com	(703) 724-1128
CRI	Carpet and Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRRC	www.coolroofs.org	(510) 485-7175
CRSI	Concrete Reinforcing Steel Institute	(847) 517-1200
CRRC	Cool Roof Rating Council www.coolroofs.org	(866) 465-2523 (510) 485-7175
CSA	Canadian Standards Association www.csa.ca	(800) 463-6727 (416) 747-4000
CSA	(Formerly: IAS - International Approval Services) www.csa-international.org	(416) 747-4000
CSI	www.csinet.org	(703) 684-0300
CSSB	Cedar Shake & Shingle Bureau	(604) 820-7700

REFERENCES

CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
ECA	Electrical Components Association www.ec-central.org	(703)907-8024
EIA	www.eia.org	
EIMA	EIFS Industry Members Association	(800) 294-3462
EJCDC	Engineers Joint Contract Documents Committee http://content.asce.org/ejcdc/	(703) 295-6000
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
ESD	(Electrostatic Discharge Association) www.esda.org	
ETL SEMCO	(Formerly: ITS - Intertek Testing Service NA) www.intertek-etlsemko.com	
FIBA	(The International Basketball Federation) www.fiba.com	
FIVB	(The International Volleyball Federation) www.fivb.ch	
FM Approvals	www.fmglobal.com	
FM Global	FM Global www.fmglobal.com	(401) 275-3000
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	49 228 367 66 0

REFERENCES

GA	www.gypsum.org	(301) 277-8686
GANA	Glass Association of North America	(785) 271-0208
GRI	(Part of GSI)	
GS	www.greenseal.org	
GSI	Geosynthetic Institute	(610) 522-8440
HI	Hydronics Institute www.gamanet.org	(908) 464-8200
HI/GAMA	Hydronics Institute/Gas Appliance Manufacturers Association Division of Air-Conditioning, Heating, and Refrigeration Institute (AHRI) www.ahrinet.org	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	www.hpva.org	
HPW	H. P. White Laboratory, Inc.	(410) 838-6550
IAPSC	International Association of Professional Security Consultants www.iapsc.org	(515) 282-8192
ICBO	International Conference of Building Officials www.iccsafe.org	(888) 422-7233
ICEA	www.icea.net	
ICRI	International Concrete Repair Institute, Inc.	(847) 827-0830
ICPA	International Cast Polymer Association www.icpa-hq.org	(703) 525-0320
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	www.ieee.org	
IES	Illuminating Engineering Society of North America	(703) 525-0320
IEST	Institute of Environmental Sciences and Technology	(847) 255-1561

REFERENCES

	www.iest.org	
IGMA	Insulating Glass Manufacturers Alliance www.igmaonline.org	(613) 233-1510
ILI	www.iliai.com	
ISA	Instrumentation, Systems, and Automation Society, The	(919) 549-8411
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(877) 464-7732 (801) 341-7360
ITS	(Now ETL SEMCO)	
ITU	International Telecommunication Union	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LGSEA	Light Gauge Steel Engineers Association www.arcat.com	(202) 263-4488
LMA	(Now part of CPA)	
LPI	Lightning Protection Institute	(800) 488-6864
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MCA	Metal Construction Association www.metalconstruction.org	(847) 375-4718
MFMA	www.maplefloor.org	
MFMA	Metal Framing Manufacturers Association, Inc.	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	www.marble-institute.com	

REFERENCES

MPI	Master Painters Institute	(888) 674-8937
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(630) 942-6591
NACE	(National Association of Corrosion Engineers International) www.nace.org	(281) 228-6200
NADCA	www.nadca.com	
NAGWS	National Association for Girls and Women in Sport	(800) 213-7193, ext. 453
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	www.ncaa.org	
NCMA	National Concrete Masonry Association	(703) 713-1900
NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 222-2300
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	www.necanet.org	
NeLMA	Northeastern Lumber Manufacturers' Association	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(888) 300-6382 (269) 488-6382
NFHS	www.nfhs.org	
NFPA	NFPA	(800) 344-3555

REFERENCES

	www.nfpa.org	
NFRC	National Fenestration Rating Council	(301) 589-1776
NGA	National Glass Association www.glass.org	(866) 342-5642 (703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	www.nlga.org	
NOFMA	NOFMA: The Wood Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NOMMA	National Ornamental & Miscellaneous Metals Association	(888) 516-8585
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	(National Sanitation Foundation International) www.nsf.org	(734) 769-8010
NSSGA	www.nssga.org	(703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. (The)	(800) 323-9736
NWFA	National Wood Flooring Association www.nwfa.org	(800) 422-4556 (636) 519-9663
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDI	www.pdionline.org	(978) 557-0720
PGI	PVC Geomembrane Institute	(217) 333-3929
PTI	Post-Tensioning Institute www.post-tensioning.org	(248) 848-3180
RCSC	Research Council on Structural Connections www.boltcouncil.org	
RFCI		

REFERENCES

	www.rfci.com	(706) 882-3833
RIS	Redwood Inspection Service	
SAE	SAE International www.sae.org	(877) 606-7323 (724) 776-4841
SCAQMD	South Coast Air Quality Management District www.aqmd.com	(909) 396-2000
SCTE	www.scte.org	(610) 363-6888
SDI	Steel Deck Institute	(847) 458-4647
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	(877) 294-5424 (516) 294-5424
SEI/ASCE	(See ASCE)	
SIA	Security Industry Association	(866) 817-8888
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association www.smacentral.org	(561) 533-0991
SMACNA	National Association www.smacna.org	
SMPTE	www.smpte.org	
SPFA	Spray Polyurethane Foam Alliance www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The)	(850) 434-2611
SPRI	Single Ply Roofing Industry www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC		

REFERENCES

	www.sspc.org	(412) 281-2331
STI	Steel Tank Institute	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWPA	Submersible Wastewater Pump Association www.swpa.org	(847) 681-1868
TCA	www.tilt-up.org	
TCNA	Tile Council of North America, Inc.	(864) 646-8453
TEMA	Tubular Exchanger Manufacturers Association www.tema.org	(914) 332-0040
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	www.masonrysociety.org	
TPI	Truss Plate Institute, Inc.	(703) 683-1010
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 649-5555
TRI	Tile Roofing Institute www.tilerroofing.org	(312) 670-4177
UL	www.ul.com	(847) 272-8800
UNI	Uni-Bell PVC Pipe Association	(972) 243-3902
USAV	USA Volleyball www.usavolleyball.org	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council www.usgbc.org	(800) 795-1747
USITT	www.usitt.org	(315) 463-6463
WASTEC	Waste Equipment Technology Association	(800) 424-2869
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651

REFERENCES

WCMA	Window Covering Manufacturers Association www.wcmanet.org	(212) 297-2122
WDMA	(Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(312) 321-6802
WI	www.wicnet.org	
WMMPA	Wood Moulding & Millwork Producers Association	(800) 550-7889
WSRCA	Western States Roofing Contractors Association www.wsrca.com	(800) 725-0333 (650) 570-5441
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

DIN	www.din.de	
IAPMO	International Association of Plumbing and Mechanical Officials	(909) 472-4100
ICC	International Code Council www.iccsafe.org	(888) 422-7233
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543

- D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

COE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOD	Department of Defense http://dodssp.daps.dla.mil	(215) 697-6257

REFERENCES

DOE	Department of Energy www.energy.gov	(202) 586-9220
EPA	Environmental Protection Agency	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	www.fda.gov	
GSA	General Services Administration	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	(See TRB)	
NIST	National Institute of Standards and Technology	(301) 975-6478
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Buildings Service (See GSA)	
PHS	http://www.hhs.gov/ophs/	
RUS	Rural Utilities Service	(202) 720-9540
SD	State Department www.state.gov	(202) 647-4000
TRB	Transportation Research Board http://gulliver.trb.org	(202) 334-2934
USDA	www.usda.gov	
USP	U.S. Pharmacopeia	(800) 227-8772
USPS	Postal Service www.usps.com	(202) 268-2000

REFERENCES

- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA)	(202) 272-0080
	Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	
CFR	Code of Federal Regulations	(866) 512-1800
	Available from Government Printing Office	(202) 512-1800
	www.gpoaccess.gov/cfr/index.html	
DOD	Department of Defense Military Specifications and Standards	(215) 697-2664
	Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	
DSCC	Defense Supply Center Columbus (See FS)	
FED-STD	Federal Standard (See FS)	
FS	Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil/	
	www.dsp.dla.mil	
	Available from General Services Administration	(202) 619-8925
	Available from National Institute of Building Sciences	(202) 289-7800
	www.wbdg.org/ccb	
FTMS	Federal Test Method Standard (See FS)	
MIL		
MIL-STD	(See MILSPEC)	
MILSPEC	Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	

UFAS

Available from Access Board

(202) 272-0080

www.access-board.gov

- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBHF

www.dca.ca.gov/bhfti

(916) 574-2041

CCR California Code of Regulations

(916) 323-6815

CDHS California Department of Health Services

www.dhcs.ca.gov

(916) 445-4171

CDPH California Department of Public Health, Indoor Air Quality Section
www.cal-iaq.org

CPUC

www.cpuc.ca.gov

TFS Texas Forest Service

<http://txforests-service.tamu.edu>

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.
 - 2. Division 31 Section "Dewatering" for disposal of ground water at Project site.
 - 3. Division 32 Section "Asphalt Paving" for construction and maintenance of asphalt pavement for temporary roads and paved areas.
 - 4. Division 32 Section "Concrete Paving" for construction and maintenance of cement concrete pavement for temporary roads and paved areas.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's agent/representative, Architect, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- G. Sewer, Water, and Electric Power Service: Use charges are specified in Division 01 Section "Multiple Contract Summary."

1.4 INFORMATIONAL SUBMITTALS

- A. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- B. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- C. Dust and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.

1.5 QUALITY ASSURANCE

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

1.6 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m-) square tack and marker boards.
 - 3. Potable drinking water and private toilet.
 - 4. Coffee machine and beverage supplies.
 - 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
 - 6. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from office building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction and marked for intended location and application.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille

in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures."

- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

- G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- H. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- I. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- J. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
1. Install electric power service overhead or underground unless otherwise indicated.
 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- K. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 2. Install lighting for Project identification sign.
- L. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine in each field office.
 - b. Provide one telephone line(s) for Owner's use.
 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.

- c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Provide temporary parking areas for construction personnel.

C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touchup signs so they are legible at all times.

D. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Division 01 Section "Execution."

F. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

G. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become

damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

- H. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- I. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- D. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- F. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- H. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and/or tenants from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.

2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
 3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 4. Insulate partitions to control noise transmission to occupied areas.
 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.
- I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking in construction areas.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
1. Protect porous materials from water damage.
 2. Protect stored and installed material from flowing or standing water.
 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 4. Remove standing water from decks.
 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 2. Keep interior spaces reasonably clean and protected from water damage.
 3. Periodically collect and remove waste containing cellulose or other organic matter.
 4. Discard or replace water-damaged material.

5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove materials that can not be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

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

1.4 ACTION SUBMITTALS

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

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

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

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.
 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
 4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience may be considered unless otherwise indicated.
 - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 71 00 – CLEANING REQUIREMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Execute cleaning, during progress of the work, and at completion of the work, as required by General Conditions.

1.2 RELATED REQUIREMENTS

- A. Conditions of the contract.
- B. Each Specification Section: Cleaning for specific products or work.

1.3 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with all local codes, ordinances, regulations and anti-pollution laws.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

- A. Execute periodic cleaning, not less than weekly, to keep the work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish per Section 01 50 00 TEMPORARY FACILITIES AND CONTROLS.
- C. Remove waste materials, debris and rubbish from the site periodically, and dispose of at legal disposal areas away from the site.

3.2 DUST CONTROL

- A. Clean interior spaces prior to the start of finish painting, and continue cleaning on an as-needed basis until painting is finished.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.3 PROGRESSIVE CLEANING

- A. Cleaning during construction is the responsibility of the Contractor. All areas shall be cleaned in a manner acceptable to Owner's Representative. Minimum one (1) full-time cleaning personnel with tools shall be provided from completion of the flooring, until occupation by Owner's operations, whose primary function shall be cleaning the Facility in a manner acceptable to Owner's representative.

3.4 FINAL CLEANING

- A. Final cleaning before final inspection. Interior and exterior areas of the building shall be cleared of all rubbish and thoroughly cleaned by the Contractor, including the following:
 1. All construction facilities, debris, and rubbish shall be removed from the Owner's property and legally disposed of.
 2. All finished surfaces including floors, walls and ceilings shall be swept, dusted, washed, waxed and polished. This includes cleaning of the work of all finished trades where needed, whether or not cleaning for such trades is included in their respective SECTIONS.
 3. Pipe and duct spaces, chases, and furred spaces shall be left thoroughly cleaned.
 4. All glass and mirrors shall be washed and polished, both sides, by a Window Cleaning Contractor specializing in such work.
 5. All ceilings, wall surfaces, floors, door frames, hardware, metal work, glass, enameled metals, and the like, shall be cleaned.

3.5 VENTILATING SYSTEMS:

- A. Replace temporary filters with permanent filters. See Division 23 for requirements regarding disposable filters. Do not operate the fan system unless temporary filters conforming to the requirements of Division 23 are in place.
- B. Clean ducts, blowers and coils if units were operated without filters during construction.
- C. Replace all HVAC filtration media with new filtration media as indicated above and conduct a flushing out the building at 100% outside air for two weeks after construction ends, and prior to occupancy of the building.

3.6 OTHER CLEANING

- A. Broom clean exterior paved surfaces, rake clean other surfaces of the grounds disturbed by construction.
- B. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION 01 71 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

- B. Related Requirements:

1. Division 01 Section "Summary" for limits on use of Project site.
2. Division 01 Section "Submittal Procedures" for submitting surveys.
3. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
4. Division 02 Section "Structure Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

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

- C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.5 QUALITY ASSURANCE

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

reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

- a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in Division 01 sustainable design requirements Section.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate

and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

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

3.6 STARTING AND ADJUSTING

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

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 01 74 20 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
 - 1. Division 02 Section "Structure Demolition" for disposition of waste resulting from demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.
 - 2. Division 04 Section "Unit Masonry" for disposal requirements for masonry waste.
 - 3. Division 04 Section "Stone Masonry" for disposal requirements for excess stone and stone waste.
 - 4. Division 31 Section "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials[, including the following:

1. Demolition Waste (which may include the following when within the project scope):

- a. Asphalt paving.
- b. Concrete.
- c. Concrete reinforcing steel.
- d. Brick.
- e. Concrete masonry units.
- f. Wood studs.
- g. Wood joists.
- h. Plywood and oriented strand board.
- i. Wood paneling.
- j. Wood trim.
- k. Structural and miscellaneous steel.
- l. Rough hardware.
- m. Roofing.
- n. Insulation.
- o. Doors and frames.
- p. Door hardware.
- q. Windows.
- r. Glazing.
- s. Metal studs.
- t. Gypsum board.
- u. Acoustical tile and panels.
- v. Carpet.
- w. Carpet pad.
- x. Demountable partitions.
- y. Equipment.
- z. Cabinets.
- aa. Plumbing fixtures.
- bb. Piping.
- cc. Supports and hangers.
- dd. Valves.
- ee. Sprinklers.
- ff. Mechanical equipment.
- gg. Refrigerants.
- hh. Electrical conduit.
- ii. Copper wiring.
- jj. Lighting fixtures.
- kk. Lamps.
- ll. Ballasts.
- mm. Electrical devices.
- nn. Switchgear and panelboards.
- oo. Transformers.

2. Construction Waste (which may include the following when within the project scope):

- a. Masonry and CMU.
- b. Lumber.

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

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, both estimated and actual in tons.
 - 5. Quantity of waste recycled, both estimated and actual in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

- E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Qualification Data: For waste management coordinator and refrigerant recovery technician.
- H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each

type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for demolition waste. Include the following:
1. Total quantity of waste.
 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 3. Total cost of disposal (with no waste management).
 4. Revenue from salvaged materials.
 5. Revenue from recycled materials.
 6. Savings in hauling and tipping fees by donating materials.
 7. Savings in hauling and tipping fees that are avoided.
 8. Handling and transportation costs. Include cost of collection containers for each type of waste.
 9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 1. Comply with operation, termination, and removal requirements in Division 01 Section "Temporary Facilities and Controls."
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - 2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
- E. Waste Management in Historic Zones or Areas: Hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches (300 mm) or more.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site designated by Owner.
 - 5. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.

- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: Use only available recycling receivers and processors licensed to do business in the local area.
- C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- D. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- E. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch (38-mm) or 4-inch (100-mm) size.
 - 1. Crush asphaltic concrete paving and screen to comply with requirements in Division 31 Section "Earth Moving" for use as general fill.
- B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
- C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - 1. Pulverize concrete to maximum 1-1/2-inch (38-mm) size.
 - 2. Crush concrete and screen to comply with requirements in Division 31 Section "Earth Moving" for use as satisfactory soil for fill or subbase.
- D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 1-inch (25-mm) size.
 - a. Crush masonry and screen to comply with requirements in Division 31 Section "Earth Moving" for use as general fill or satisfactory soil for fill or subbase.
 - b. Crush masonry and screen to comply with requirements in Division 32 Section "Plants" for use as mineral mulch.
 2. Clean and stack undamaged, whole masonry units on wood pallets.
- E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- F. Metals: Separate metals by type.
1. Structural Steel: Stack members according to size, type of member, and length.
 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- J. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- L. Carpet Tile: Remove debris, trash, and adhesive.
1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- N. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.
 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.

4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
 - a. Comply with requirements in Division 32 Section "Plants." for use of clean sawdust as organic mulch.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 - a. Comply with requirements in Division 32 Section "Plants." for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.

D. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.

E. Disposal: Remove waste materials from Owner's property and legally dispose of them.

3.7 CWM FORMS TO BE USED:

- A. Form CWM-1 for construction waste identification.
- B. Form CWM-2 for demolition waste identification.
- C. Form CWM-3 for construction waste reduction work plan.
- D. Form CWM-4 for demolition waste reduction work plan.
- E. Form CWM-5 cost/revenue analysis of construction waste reduction work plan.

- F. Form CWM-6 cost/revenue analysis of demolition waste reduction work plan.
- G. Form CWM-7 for construction waste
- H. Form CWM-8 for demolition waste.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Division 01 Section "Photographic Documentation" for submitting final completion construction photographic documentation.
 - 2. Division 01 Section "Execution" for progress cleaning of Project site.
 - 3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 5. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
 - 6. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect and/or Construction Manager. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Predictive and Preventative Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
5. Submit test/adjust/balance records.
6. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.

7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and/or Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect and/or Construction Manager.
 - d. Name of Contractor.
 - e. Page number.
4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect will return annotated file.
 - b. PDF electronic file. Architect will return annotated file.
 - c. Three paper copies. Architect will return two copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

- 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls." Division 01 Section "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
 3. Retain "Initial Manual Submittal" Paragraph below, which facilitates completion of manuals prior to their use in demonstration and training applications specified in Division 01 Section "Demonstration and Training."
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority (if applicable) will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority (if applicable) will return copy with comments.
1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's (if applicable) comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to

ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, [loose-leaf] [post-type] binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

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

2.5 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- C. **Manufacturers' Maintenance Documentation:** Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.

- D. **Maintenance Procedures:** Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.

- E. **Maintenance and Service Schedules:** Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. **Scheduled Maintenance and Service:** Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. **Maintenance and Service Record:** Include manufacturers' forms for recording maintenance.

- F. **Spare Parts List and Source Information:** Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

- G. **Maintenance Service Contracts:** Include copies of maintenance agreements with name and telephone number of service agent.

- H. **Warranties and Bonds:** Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. **Operation and Maintenance Documentation Directory:** Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

- B. **Emergency Manual:** Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

- C. **Product Maintenance Manual:** Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
- G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 20

SECTION 01 78 30 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Division 01 Section "Execution" for final property survey.
 - 2. Division 01 Section "Closeout Procedures" for general closeout procedures.
 - 3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned record prints and one set(s) of prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

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

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
 1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Format: Annotated PDF electronic file.
 3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 4. Refer instances of uncertainty to Architect for resolution.
 5. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Division 01 Section "Submittal Procedures" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.

- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
 1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

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

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean,

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dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 01 78 30

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.
- B. Related Requirements:
 - 1. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.
- C. Allowances: Furnish demonstration and training instruction time under the Demonstration and Training Allowance as specified in Division 01 Section "Allowances."
- D. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up. See requirements in Division 01 Section "Unit Prices."

1.3 INFORMATIONAL SUBMITTALS

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

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.
 2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
 3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
 4. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

1.5 QUALITY ASSURANCE

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

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

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

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

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 3. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner, through General Contractor, with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

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

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

END OF SECTION 01 79 00

SECTION 02 41 20 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

B. Related Requirements:

1. Division 01 Section "Summary" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Division 01 Section "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner and/or ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
 1. Inspect and discuss condition of construction to be selectively demolished.

2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's and other tenants' on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of elevator and stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Pre-demolition Photographs or Video: Submit before Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Perform and/or engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
 - 2. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- F. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes and/or templates as indicated. If not indicated, provide preconstruction photographs for record.
 - 1. Comply with requirements specified in Division 01 Section "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
 - 3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.
 - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

- b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
- C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal" when provided.
- B. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
1. Building Structure and Shell: Maintain existing walls, floors, and roof. Maintain existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and nonstructural roofing material) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area as indicated on Drawings as designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable,

protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw; and then remove masonry between saw cuts.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.
- D. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.
- B. END OF SECTION 02 41 20

SECTION 03 30 50 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 ACTION SUBMITTALS

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

1.4 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Comply with the following sections of ACI 301 (ACI 301M), unless modified by requirements in the Contract Documents:
 - 1. "General Requirements."
 - 2. "Formwork and Formwork Accessories."
 - 3. "Reinforcement and Reinforcement Supports."
 - 4. "Concrete Mixtures."
 - 5. "Handling, Placing, and Constructing."
 - 6. "Lightweight Concrete."
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

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

2.2 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I/II.
 - a. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregate: ASTM C 33, graded, 3/4-inch (38-mm) nominal maximum aggregate size.
- C. Water: ASTM C 94/C 94M.

2.4 ADMIXTURES

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

2.5 RELATED MATERIALS

- A. Vapor Retarder: Plastic sheet, ASTM E 1745, Class A or B.
- B. Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick; or plastic sheet, ASTM E 1745, Class C.
- C. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- F. Clear, **[Waterborne]** **[Solvent-Borne]**, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.7 CONCRETE MIXTURES

- A. Comply with ACI 301 (ACI 301M) requirements for concrete mixtures.
- B. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301 (ACI 301M), as follows:
 - 1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
 - 3. Cementitious Materials: Use pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
 - 4. Slump Limit: 5 inches (125 mm) or 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
 - 5. Air Content: Maintain within range permitted by ACI 301 (ACI 301M). Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116, and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - 1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - 2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
 - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301 (ACI 301M).

3.2 EMBEDDED ITEMS

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

3.3 VAPOR RETARDERS

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

3.4 STEEL REINFORCEMENT

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

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Locate and install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least **[one-fourth]** of concrete thickness, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3.6 CONCRETE PLACEMENT

- A. Comply with ACI 301 (ACI 301M) for placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.
- E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.7 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301 (ACI 301M).
 1. Testing Frequency: One composite sample shall be obtained for each day's pour of each concrete mix exceeding 5 cu. yd. (4 cu. m) but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
 2. Testing Frequency: One composite sample shall be obtained for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mix placed each day.

3.10 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 03 30 50

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Materials and installation requirements for other work, commonly assigned to carpentry trade, are specified in other sections of these specifications.
- B. The types of carpentry work specified in this section include (but are not necessarily limited to) the following:
 - 1. Wood furring.
 - 2. Wood grounds, nailers, blocking.
 - 3. Miscellaneous wood framing.
- C. Fire-retardant treated plywood and lumber.

1.3 SUBMITTALS

- A. Wood Treatment Data: For information only, submit chemical treatment manufacturer's instructions for proper use of each type of treated material.
 - 1. Certificate: Pressure Treatment, for each type specified, include certification by treating plant stating chemicals and process used, net amount of salts retained and conformance with applicable standards.
 - 2. For water-borne preservatives, include statement that moisture content of treated materials was reduced to a maximum of 15% prior to shipment to project site.
- B. Certificates: Fire-Retardant Treatment, certification by testing plant that treatment material complies with this specification and with all governing regulations, and treatment will not bleed through finished surfaces.

1.4 QUALITY ASSURANCE

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

1.5 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 4. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent unless otherwise indicated.

2.2 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Provide wood for support or attachment of other work such as cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes shown or specified, worked to shapes shown, and as follows:
 - a. Moisture Content: 15% maximum for lumber items not specified to receive wood preservative treatment.
 - 2. Grade: Construction Grade light framing size lumber of any species, or board size lumber, as required. Provide Construction Grade boards (RIS or WCLIB) or No. 2 boards (SPIB or WWPA).
- B. For items of dimension lumber size, provide Construction, stud, or No. 2 grade lumber and any of the following species with moisture content not exceeding 15%:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB or WWPA.
 - 5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

6. Western woods; WCLIB or WWPA.
 7. Northern species; NLGA.
 8. Eastern softwoods; NeLMA.
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
1. Mixed southern pine; No. 2 grade; SPIB.
 2. Hem-fir or hem-fir (north); Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
 3. Spruce-pine-fir (south) or spruce-pine-fir; Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
 4. Eastern softwoods; No. 2 Common grade; NeLMA.
 5. Northern species; No. 2 Common grade; NLGA.
 6. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- D. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- D. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- F. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
 - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
 - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
- G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

- I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- J. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 1. Comply with approved and/or indicated fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
 2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
 3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD GROUND, SLEEPER, BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preserved-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required.
 1. Firestop furred spaces on walls at each floor level, with wood blocking or incombustible materials, accurately fitted to close furred spaces. Comply with governing regulations.
- B. Furring to Receive Gypsum Drywall: Unless otherwise shown, provide 1" x 3" furring at 24" o/c. spacing, in the direction required for support of drywall; refer to Division 9.
- C. Suspended Furring: Provide size and spacing shown, including hangers and attachment devices.

- D. Tolerance: Shim and level wood furring to a tolerance of 1/8" in 10'-0", except 1/4" in 10'-0" at thick coat plaster work.

3.4 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet or sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 07 21 50 - SOUND ATTENUATION BATTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Glass fiber acoustical insulation for interior wall partitions as indicated.

1.3 MATERIALS PROVIDED IN OTHER SECTIONS

- A. Division 07 Section "Thermal Insulation".
- B. Division 09 Section "Gypsum Drywall".
- C. Division 09 Section "Gypsum Board Shaft Wall System".
- D. Division 09 Section "Non-Structural Metal Framing".

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM).
 - 1. C 665 Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E 84 Test Method for Surface Burning Characteristics of Building Materials.
 - 3. E 119 Test Method for Fire Tests of Building Construction Materials.
 - 4. E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

1.5 SUBMITTALS

- A. Product Data: Submit product literature, samples, and installation instructions for approved insulation.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.
- B. Label insulation packages to include material name, production date and/or product code.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Owens Corning, as specified; equivalent products by Certainteed or Johns Manville may be submitted for approval.

2.2 MATERIAL

- A. Type: OC "Sound Attenuation Batts", unfaced glass fiber acoustical insulation complying with ASTM C 665, Type I.

- 1. Size:
 - a. Thickness: as detailed, to provide indicated STC
 - b. Width: To suit stud spacing
- 2. Surface Burning Characteristics: When tested in accordance with ASTM E 84.
 - a. Maximum flame spread: 10
 - b. Maximum smoke developed: 10
- 3. Combustion Characteristics: Noncombustible, tested in accordance with ASTM E 136.
- 4. Fire Resistance Ratings: Wall assemblies containing Owens Corning SAB have achieved fire resistance ratings when tested in accordance with ASTM E119. See listing documents for full assembly construction details.
- 5. Sound Transmission Class: STC required, as indicated in details.
- 6. Dimensional Stability: Linear shrinkage less than 0.1 %

- B. Concealed Blanket Type Insulation:

- 1. Poly-encapsulated, formaldehyde-free fiberglass insulation above indicated ceilings.

2.3 BLANKET INSULATION:

- A. Provide above ceiling insulation, as shown, equal to "Johns Manville ComfortTherm Formaldehyde-free Thermal and Acoustical Fiber Glass Insulation." Thermal resistance "R" (RSI) values of the insulation shall be R (RSI) 19 in ceilings.

- B. Criteria:

- 1. ASTM C 665, Type II, Class A, Category 1
- 2. ASTM E 96 Permeability; vapor retarder facer films on standard product: 0.5 Perms.
- 3. UL File R3711
- 4. ASTM E 84 Flame Spread 25 or less, Smoke Developed 50 or less

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

- A. Examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified.
- B. Obtain installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.
- C. Clean substrates of substances harmful to insulation.

3.2 INSTALLATION-GENERAL

- A. Comply with manufacturer's instructions for particular conditions of installation in each case.
- B. Sound Attenuation Batts may be friction-fit in place until the interior finish is applied. Install batts to fill entire stud cavity. If stud cavity is less than 96" in height, cut lengths to friction fit against floor and ceiling tracks. Walls with penetrations require that insulation be carefully cut to fit around outlets, junction boxes and other irregularities.
- C. Where walls are not finished on both sides or insulation does not fill the cavity depth, provide manufacturer approved supplementary support to hold insulation in place.
- D. Where insulation must extend higher than 8 feet, temporary support can be provided to hold product in place until the finish material is applied.
- E. Extend fiberglass insulation full thickness as shown over entire surface. Cut and fit tightly around obstructions, and fill voids with insulation. Install a single layer, unless otherwise shown, with joints staggered in one direction.
 - 1. Provide two layers for applications in excess of 6".

3.3 PROTECTION

- A. Protect installed insulation as recommended by approved manufacturer.

END OF SECTION 07 21 50

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: The extent of each type of joint sealer is indicated. Provide "sealant" for all exterior joints, certain indicated interior joints, and where "mastic" is indicated. Provide "calking" at all remaining interior joints.
- B. The required applications include, but are not limited to the following:
 - 1. Exterior building wall joints.
 - 2. Flashing and coping joints.
 - 3. Joints at openings and indicated frames or subframes.

1.3 PRE-INSTALLATION MEETING:

- A. Pre-Installation Meeting: Meet at the project well in advance of the time scheduled for work, (a minimum of one week), and review requirements for the work and conditions which could possibly interfere with successful performance of the work. Require all parties concerned with the work, or required to coordinate with it, or to protect it thereafter, to attend the meeting, including:
 - 1. Owner or Representative
 - 2. General Contractor
 - 3. Installer
 - 4. Manufacturer(s) Representatives
 - 5. Architect

1.4 QUALITY ASSURANCE:

- A. At the Owner's option, testing of depth of joint material may be undertaken to insure compliance with the specification and conformance to manufacturer's specifications and recommendations for joint design. If the joint fails to comply with design requirements, the Contractor shall pay for the cost of testing and replacement of all affected joints.

1.5 SUBMITTALS:

- A. Product Data:
 - 1. For information only, submit copies of manufacturer's specifications, recommendations and installation instructions for each type of material required. Include manufacturer's published

data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.

B. Samples:

1. Submit samples of each color required (except black) for each type of joint sealer exposed to view. Install sample between two strips of material similar to or representative of typical surfaces where sealer will be used, held apart to represent typical joint widths. Samples will be reviewed for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

C. Guarantee:

1. Submit copies of written two-year guarantee agreeing to repair or replace joint sealers which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.
 - a. Provide guarantee signed by the Installer and Contractor.

1.6 JOB CONDITIONS:

- A. Examine the joint surfaces and backing, and their anchorage to the structure, and the conditions under which the joint sealer work is to be performed. Do not proceed with the joint sealer work until unsatisfactory conditions have been corrected.
- B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when weather conditions are favorable for proper cure and development of high early bond strength. Where joint width is affected by ambient temperature variations, install elastomeric sealants when temperatures are in the lower third of manufacturer's recommended installation temperature range.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL:

- A. Colors: For exposed materials provide color as indicated or, if not indicated, as selected from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.
- B. Hardness: As recommended by manufacturer for application shown.
- C. Modulus of Elasticity: Provide the lowest available modulus of elasticity which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.
- D. Compatibility: Before purchase of each required material, confirm its compatibility with each material it will be exposed to in the joint system.

- E. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.
- F. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc.) recommended by the manufacturer for the particular condition of installation (location, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal condition of installation.

2.2 SEALANTS (See Sealant Schedule at end of Section for specific use of sealants.)

A. Urethanes:

1. Type "A1": Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25. (Fed. Spec. TT-S-00227E Type I, Class A.)
 - a. Chem-Calk CC-550, by Bostik.
 - b. Vulkem 245, by Tremco.
 - c. Vulkem 255, Wide-Joint, by Tremco.
 - d. NR-200 Urexpan, by Pecora Corporation.
 - e. Sikaflex-2c NS/SL, by Sika Corporation.
 - f. SL-2, by Sonneborn
2. Type "A2": Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25. (Fed. Spec. TT-S-00227E Type II, Class A.)
 - a. Chem-Calk 500, by Bostik.
 - b. Vulkem 227, by Tremco.
 - c. Dynatrol II, by Pecora Corporation.
 - d. Sikaflex-2c NS/SL, by Sika Corporation.
 - e. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
 - f. Dymeric, by Tremco
3. Type "A3": One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25. (Fed. Spec. TT-S-00230C Type I, Class A.)
 - a. Vulkem 45, by Tremco.
 - b. Urexpan NR-201, by Pecora Corporation.
 - c. Sonolastic SL1, by Sonneborn Building Products, ChemRex Inc.
4. Type "A4": One-Part Urethane: Non-Sag, ASTM C920, Type S, Grade NS, Class 25. (Fed. Spec. TT-S-00230C Type II, Class A.)
 - a. Chem-Calk 900, by Bostik.
 - b. Vulkem 116, by Tremco.
 - c. Sonolastic NP I, by Sonneborn Building Products, ChemRex Inc.
 - d. Dymonic, by Tremco.

B. Silicones:

1. Type "B1": One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.

- a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning.
 - b. 864 Architectural Silicone, by Pecora Corporation.
 - c. Sonolastic 150 Silyl Terminated polyether, by Sonneborn
 - d. Spectrem 3, by Tremco.
2. Type "B2": One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning. (colors only)
 - b. 999-A, Dow Corning.
 - c. Construction 1200 Sealant, General Electric Company.
 - d. Sonolastic 150 Silyl Terminated polyether, by Sonneborn (Not for wet glazing)
 - e. Spectrem 2, by Tremco.
 3. Type "B3": One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
 - a. 795 Silicone Structural Glazing, Glazing, and Weatherproofing Sealant, by Dow Corning. (colors only)
 - b. Construction 1200 Sealant, General Electric Company.
 - c. 999-A, Dow Corning.
 - d. 864 Architectural Silicone, by Pecora Corporation. (colors only)
 - e. Sonolastic 150 Silyl Terminated polyether, by Sonneborn
 - f. Spectrem 1, by Tremco.
- C. Acrylics, Latex: (For interior use only.)
1. Type "C1": One-Part Acrylic Latex, Non-Sag, ASTM-C-834-76.
 - a. Chem-Calk 600, by Bostik.
 - b. LC-130, by MACCO Adhesives, The Glidden Company.
 - c. Easa-ply ALS, by W. R. Meadows, Inc.
 - d. AC-20+Silicone Acrylic Latex, by Pecora Corporation.
 - e. Sonolac, Sonneborn Building Products, ChemRex Inc.
- D. Acoustical Sealants:
1. Type "D1":
 - a. AC-20 FTR Acoustical and Insulation Sealant, by Pecora Corporation.
 - b. 60+ Unicrylic, by Pecora Corporation.
 - c. Sheetrock Acoustical Sealant, by United States Gypsum.
- E. Butyls:
1. Type "E1": One-Part Butyl, Non-Sag, FS TT-S-1657.
 - a. Chem-Calk 300, by Bostik.
 - b. BC-158 Butyl Rubber, by Pecora Corporation. (ASTM C1085)
- F. Preformed Compressible & Non-Compressible Fillers:

1. Type "F1": Backer Rod - Closed cell polyethylene foam:
 - a. HBR Backer Rod, by Nomaco.
 - b. #92 Greenrod, by Nomaco.
 - c. Sonolastic Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
 - d. Soft Cell Backer Rod (Non-gassing), by Sonneborn.

2.3 MISCELLANEOUS ACCESSORIES:

- A. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.
- B. Bond Breaker Tape: Polyethylene tape or other plastic tape recommended by the sealant manufacturer to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
- C. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam; or other flexible, permanent, durable non-absorptive material as recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.1 Manufacturer's Instructions:

1. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.
- B. Joint Preparation:
 1. Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or caulking compound. Etch concrete and masonry joint surfaces and roughen vitreous or glazed joint surfaces as recommended by sealant manufacturer.
 2. Prime or seal the joint surfaces where recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.

3.2 INSTALLATION:

- A. Set joint filler units at proper depth or position in the joint to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.
- B. Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- C. Install bond breaker tape where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

- D. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Fill sealant rabbet to a slightly concave surface, between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
- E. Install sealants to depths recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:
 - 1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.
 - 2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
 - 3. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75% to 125% of joint width.
 - 4. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
 - 5. Do not overheat hot-applied sealants.
 - 6. Recess exposed edges of joint fillers slightly behind adjoining surfaces, so compressed units will not protrude from the joint.

3.3 CURE AND PROTECTION:

- A. Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Advise the Contractor of procedures required for the cure and protection of joint sealers during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of acceptance.

3.4 SEALANT SCHEDULE

- A. Interior Joints:
 - 1. Seal interior perimeters of exterior openings.
 - a. For all of the above interior joints:
 - 1) Sealant Type - A2
 - 2) Sealant Type - A4
 - 3) Sealant Type - B1 (for prefinished materials only)
 - 2. Exposed interior control joints in drywall and concealed joints.
 - a. Sealant Type - C1
 - b. Sealant Type - D1
 - 3. Painted metal lap joints.
 - a. Sealant Type - B1

END OF SECTION 07 90 00

SECTION 08 11 10 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

- 1. Standard and custom hollow metal doors and frames.

B. Related Sections:

- 1. Division 08 Section "Door Hardware".
- 2. Division 09 Sections "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

- 1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
- 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
- 3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
- 4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- 5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
- 6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- 7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- 9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
- 10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
- 11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
- 12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
- 13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
- 14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
- 15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
- 16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
 - 1. Elevations of each door design.
 - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of anchorages, joints, field splices, and connections.
 - 6. Details of accessories.
 - 7. Details of moldings, removable stops, and glazing.
 - 8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
 - 1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. CECO Door Products.
 2. Curries Company.
 3. Steelcraft.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 STANDARD HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.

- B. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
 4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
 5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Manufacturers Basis of Design:
1. CECO Door Products Legion Series.
 2. Curries Company 707 Series.

2.4 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
1. Fabricate frames with mitered or coped corners.
 2. Fabricate frames, with the exception of slip-on drywall types, with "closed and tight" miter seams continuously welded on face, finished smooth with no visible seam unless otherwise indicated.
 3. Frames for Steel Doors: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
 4. Frames for openings up to 48 inches in width: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.]
 5. Frames for openings 48 inches and wider in width: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.]
 6. Frames for Wood Doors: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
 7. Frames for Borrowed Lights: Minimum 16 gauge (0.053-inch-1.3-mm-) thick steel sheet.
 8. Manufacturers Basis of Design:
 - a. CECO Door Products BQ/BU/DQ/DU/BR/DR Series (Drywall Profile).
 - b. CECO Door Products SQ/SU/SR Series (Masonry Profile).
 - c. Curries Company C/CM/CG Series (Drywall Profile).
 - d. Curries Company M/G Series (Masonry Profile).
- C. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

- D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

2.6 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.
- C. Hollow Metal Frames:
 - 1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
 - 3. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
 - 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
 - 5. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
 - 6. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 - 7. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.

- 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
8. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
- D. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.
- 2.7 STEEL FINISHES
- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness.

- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Standard Steel Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 08 11 10

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
1. Swinging doors.
 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
1. Mechanical door hardware.
 2. Cylinders specified for doors in other sections.
- C. Related Sections:
1. Division 08 Section "Hollow Metal Doors and Frames".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 2. ICC/IBC - International Building Code.
 3. NFPA 80 - Fire Doors and Windows.
 4. NFPA 101 - Life Safety Code.
 5. NFPA 105 - Installation of Smoke Door Assemblies.
 6. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
1. ANSI/BHMA Certified Product Standards - A156 Series
 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- D. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified builders hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor in good standing by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- D. Source Limitations: Obtain each type and variety of Door Hardware specified in this Section from a single source, qualified supplier unless otherwise indicated.
- E. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:
1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 2. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Thresholds: Not more than 1/2 inch high.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware

- (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Review and finalize construction schedule and verify availability of materials.
 3. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 1. Structural failures including excessive deflection, cracking, or breakage.
 2. Faulty operation of the hardware.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
 - B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.

- d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" heavy weight.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following
 - a. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. McKinney Products (MK).
 - c. Stanley Hardware (ST).

2.3 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANS/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 - a. Acceptable Manufacturers:
 - 1) Burns Manufacturing (BU).
 - 2) Rockwood Manufacturing (RO).
 - 3) Trimco (TC).

2.4 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
 - b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
 - c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
 - d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper mounting.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC8000 Series.
 - b. LCN Closers (LC) - 4040XP Series.
 - c. Sargent Manufacturing (SA) - 351 Series.
 - d. Norton Door Controls (NO) - 7500 Series.

2.5 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following:
 - a. Stainless Steel: 300 series, .050-inch thick, with countersunk screw holes (CSK).
4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
5. Metal Door Edging: Door protection edging fabricated from a minimum .050-inch thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
6. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.6 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Rockwood Manufacturing (RO).
 - c. Trimco (TC).

2.7 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.

- C. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- D. Acceptable Manufacturers:
 - 1. Pemko Manufacturing (PE).
 - 2. Reese Enterprises, Inc. (RS).
 - 3. Zero International (ZE).

2.8 CYLINDRICAL LOCKSETS – HEAVY DUTY

All locksets shall be ANSI 156.2 Series 4000, Grade 1 Certified. Furnish with standard 2 3/4” backset. Lock housing shall be fabricated of steel zinc dichromate and stainless steel. Latchbolt shall be brass or stainless steel with a minimum 1/2” throw. Locks shall be non-handed and fully field reversible.

2.9 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.10 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- C. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 3. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.3 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.5 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

END OF SECTION 08 71 00

SECTION 09 22 ~~20~~-20 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK:

- A. The types of metal stud systems required include:
 1. Screw-type steel studs for drywall work.
 2. Suspension system for interior gypsum board ceilings, soffits and grid systems.

1.3 RELATED WORK UNDER OTHER SECTIONS:

- A. Division 07 Section "Sound Attenuation Batts"
- B. Division 07 Section "Thermal Insulation"
- C. Division 09 Section "Gypsum Board."
- D. Division 26 Section - Metal or plastic grommets to protect electric cable and wire.

1.4 SUBMITTALS:

- A. Product Data: For information only, submit copies of manufacturer's specifications and installation instructions for each type of metal stud and accessories including other data as may be required to show compliance with these specifications.
- A.B. Evaluation Reports: Submit evaluation reports certified under an independent third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98 accreditation criteria for inspection agencies.

1.5 QUALITY ASSURANCE:

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified in accordance with the product-certification program of the Steel Framing Industry Association (SFIA) or a similar organization that provides a verifiable code-compliance program.
- A.B. U.L. Rated Assemblies: Where metal studs are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide studs identical with units, tested and shown in the applicable UL design of the "Fire Resistance Index" and Gypsum Association "GA-600" latest edition..
- B.C. Manufacturer: Provide steel studs, of the type(s) indicated, produced by one of the following:

1. Punched-type non-load-bearing ~~curtain~~ wall studs:

- a. Marino Corporation
- b. ~~Dietrich Industries~~ClarkDietrich

2. Screw-type lightgauge drywall studs:

- a. Marino Corporation
- b. ~~Dietrich Industries~~ClarkDietrich

1.6 PRODUCT DELIVERY AND STORAGE:

- A. Protect metal studs from rusting and damage. Deliver to the project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off the ground in a dry ventilated space, as required by AISI S202, "Code of Standard Practice for Cold-Formed Steel Framing."

PART 2 - PRODUCTS

2.1 GENERAL:

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Installation standard ASTM C 754.
- C. System Components: Comply with AISI S220 and ASTM C645, Section 10. With each type of metal stud required, provide manufacturer's standard runners (tracks), shoes, clips, ties, stiffeners, fasteners, door jamb reinforcers and accessories as recommended by the manufacturer for the applications indicated, to provide a complete metal stud system.
- D. Punched Steel Non-Load-Bearing Studs: Manufacturer's standard formed steel studs of the height, depth, shape and gage indicated; and with the section modulus indicated, if any; with punched webs to facilitate erection of system and passage of mechanical/electrical service lines.
 1. Gage: As scheduled.
 2. Depth of Section: As shown.
 3. Steel: ~~ASTM A 570, Grade D (40,000 psi yield strength)~~AISI S220 and ASTM C645, Section 10.
 4. Finish: Hot-dip zinc coating complying with AISI S220; ASTM A 525653, G40 (Z120); or coating with equivalent corrosion resistanceG90. Galvannealed products are unacceptable.
 - a. Coating shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to authorities having jurisdiction.
 - a.b. Product: ClarkDietrich; DiamondPlus® Coating on ProSTUD and ProTRAK [25] [20].
 - 4-5. Face of Flanges: Screw type (knurled to facilitate use of self-drilling tapping fasteners).
- E. Drywall Screw-Type Steel Studs: Manufacturer's standard formed lightgauge steel studs complying with AISI S220 and ASTM C 645, Section 10, of the height, size, and gage indicated; with punched webs to facilitate erection of system and passage of

mechanical/electrical service lines.

1. ~~Product: ClarkDietrich; ProSTUD and ProTRAK [25 (25 EQ) 50 ksi (345 MPa)] [20 (20 EQ) 70 ksi (483 MPa)] [30 mil (20 DW) 33 ksi (227 MPa)] [33 mil (20 STR) 33 ksi (227 MPa)] product with Smart Edge technology or comparable product.~~
- 1-2. Gage: 25 gage minimum ~~[0.0150 inch] [0.0179 inch]~~, however, provide 20 gage ~~[0.0181 inch] [0.0296 inch]~~ studs in unbraced partitions over 10 feet in height, and at certain door jambs hereinafter specified.
- 2-3. Provide 20 gage ~~(0.0329 inch)~~ or heavier studs at partitions indicated to receive fiberglass reinforced cementitious board, and at gypsum drywall partitions indicated to be finished with ceramic tile.
- 3-4. Provide ~~18-gage~~20 gage ~~(0.0296 inch)~~ or heavier studs at walls indicated to receive Security Mesh.
- 4-5. Depth of Section: As indicated.
- 5-6. Flange Width: Not less than 1.25".
- 6-7. Shape: "Cee" shape (returned flanges).
7. ~~Steel and Finish: ASTM A 591 Commercial Quality electrolytic zinc coated steel, Class B.~~
8. ~~Humid Exposures: Where studs are located in exterior walls, provide hot-dip zinc coating complying with ASTM A 525, G90.~~
- 9-8. Face of Flanges: Screw-type (knurled to facilitate use of self-drilling tapping fasteners).

F. Suspension Systems:

1. Tie-wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch (1.59 mm) diameter wire, or double strand of 0.048-inch (1.21 mm) diameter wire.
2. Hanger Attachments to Concrete:
 - a. Anchors: Capable of sustaining a load equal to 5 times that imposed as determined by ASTM E 488.
 - b. Powder-Actuated Fasteners: Capable of sustaining, a load equal to 10 times that imposed as determined by ASTM E 1190.
3. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16-inch (4.12 mm) in diameter.
4. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-~~metal-steel~~ thickness of 0.053-inch (1.34 mm) and minimum 1/2 inch wide flanges.
 - a. Depth: As indicated on drawings, if not indicated provide 2 inches (51 mm).
5. Furring Channels (Furring Members):
 - a. Cold-Rolled Channels: 0.053-inch (1.34 mm) ~~uncoated~~base-steel thickness, with minimum 1/2 inch (13 mm) wide flanges, 3/4 inch (19 mm) deep.
 - b. Steel Studs and Runners: ~~AISI S220 and~~ ASTM C 645, Section 10. Use either steel studs and runners or ~~dimpled~~ steel studs and runners of equivalent minimum base-~~metal-steel~~ thickness.
 - 1) ~~Product: ClarkDietrich; ProSTUD and ProTRAK [20 (20 EQ) 70 ksi (483 MPa)] [30 mil (20 DW) 33 ksi (227 MPa)] product with Smart Edge technology or comparable product.~~
 - 1)2) Minimum Base-~~Metal-Steel~~ Thickness: As indicated on drawings. If not indicated, not less than ~~22-20~~ gauge ~~[0.0181 inch] [0.0296 inch]~~.
 - 2)3) Depth: As indicated on drawings. If not indicated depth should be not less than 2-1/2 inches (64 mm).

6. Hat-Shaped, Rigid Furring Channels: ASTM C 645/AISI S220, 7/8-inch (22 mm) deep.

a. Product: ClarkDietrich; Hat-Shaped, Rigid Furring Channels, or comparable product.

a.b. Minimum Base-Metal/Steel Thickness: As indicated on drawings. If not indicated, thickness should be not less than 25 gauge (0.0179 inch).

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General:

1. Manufacturer's Instructions: Install metal stud systems in accordance with manufacturer's printed or written instructions and recommendations.

~~a. ANSI Standards: Comply with applicable requirements of ANSI A 42.3 and A 42.4, except where more detailed or more stringent requirements are indicated.~~

~~b. Gypsum Association Specifications: Comply with the requirements and recommendations of GA-203 latest edition "Installation of Screw-Type Steel Framing Members to Receive Gypsum board", where metal studs are indicated to receive gypsum board.~~

e.a. Coordinate requirements and recommendations with GA-600 latest edition for wall construction type and/or sound ratings.

~~2. ML/SFA Specifications: Comply with the requirements and recommendations of "Specifications for Metal Lathing and Furring" by the Metal Lath/Steel Framing Association, where metal studs are indicated to receive metal lath and plaster.~~

3.2. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to the layout at base and tops of studs. Secure tracks for the type of construction involved, except do not exceed 24" o.c. spacing for nail or power-driven fasteners, nor 16" o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.

a. Isolation of Stud Systems from Structures: Where stud systems abut ceiling or deck construction or vertical structural elements, provide slip or cushion-type joint between stud system and structure to prevent the transfer of structural loads or movements to stud systems, unless otherwise shown.

4.3. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

5.4. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.

6.5. Where wire-tying is indicated for assembly of stud system components, tie with either single 16 gage or double 18 gage wire except as otherwise indicated. Wrap to form either saddle-tie or figure-eight, depending upon type of member intersection.

7.6. Install supplementary framing, blocking and bracing in the metal stud system where walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings and similar work requiring attachment to the wall or partition. Where type of supplementary support is not indicated, comply with the stud manufacturer's recommendations and industry standards in each case, considering the weight or loading resulting from the item supported. In addition, provide horizontal bracing in all partitions 8'-0" high or greater, whether or not required by the stud manufacturer.

8.7. Height of Partition Stud Systems: Terminate top of all partitions at underside of

construction above, unless shown otherwise.

- 9-8. Stud Spacing: Space studs at 16" o.c., maximum, install studs so flanges within framing system, point in same direction.

B. Installation of Stud System to Receive Gypsum Board:

1. Runner Tracks: At partition corners and intersections, butt runner tracks, except leave clearance where base course of gypsum board is to run through.
2. Friction fit studs to runner tracks by positioning and rotating into place. Provide positive attachment to tracks for studs located at partition corners and intersections, and adjacent to openings, and for jack studs located above and below openings. Attach with either self-tapping screws or by use of clinching tool, at both flanges of stud.
3. At partition corners and intersections, provide a minimum of 3 studs, positioned to support each surface of partition; or provide 2 studs with the second stud installed after the base course of gypsum board has been run through, and screw anchor the second stud through the gypsum board to the first stud at 2' o.c. spacing.
4. Install full length studs between runner tracks wherever possible. If necessary, splice studs by nesting with a minimum lap of 8" and fasten laps with 2 screws through each flange.
5. Frame door openings with vertical studs securely attached to each jamb of door frame. On head of door frame install runner track; cut flanges at ends, bend web 90 degrees and screw attach to jamb studs. Install jack studs over door opening, spaced same as full-height studs. Where control joints are shown to extend upward from door jambs, install an unattached cripple stud spaced 1/2" from jamb or strut stud(s). Space next full-height stud not more than 6" from jamb or strut stud(s).
 - a. Provide jamb stud(s) at swing/hinged-door openings as follows:
 - 1) Door widths up to 4'-0" - 2-25 gage or 1-20 gage
 - 2) Door opening in excess of 4' - 2-20 gage
 - b. Attach jamb studs to metal door frames with metal clips, each with two screws into jamb stud.
6. Frame openings other than door openings in the same manner as required for door openings and install framing below sills of openings to match framing required above door heads.
7. Frame both sides of expansion and control joints as shown for the partition system, with a separate stud and do not bridge the joint with components of the stud system.

END OF SECTION 09 22 2016

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 840 Standard Specification for Application and Finishing of Gypsum Board
- C. Gypsum Association (GA)
 - 1. GA-216 Application and Finishing of Gypsum Board

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Tile backing panels.
 - 3. Hi-Abuse Gypsum drywall applied to screw type metal support systems.
 - 4. Gypsum drywall for ceiling applications.
- B. Related Requirements:
 - 1. Division 07 Section "Sound Attenuation Batts"
 - 2. Division 09 Section "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For information only, submit copies of manufacturer's product specifications and installation instructions for each gypsum drywall components, including other data as may be required to show compliance with these specifications.
- B. Certification: Submit certification that proposed materials conform to the Fire Test Data of ASTM E 84.
- C. Samples: For the following products:
 - 1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

- A. Fire-Resistance Rating: Where work is indicated for fire-resistance ratings, including those required to comply with governing regulations, provide materials and installations identical with applicable assemblies tested and listed by recognized authorities, including U.L. and A.I.A.
- B. Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.
- C. Allowable Tolerances: 1/8" offsets between planes of board faces, and 1/4" in 8'-0" for plumb, level, warp and bow.
- D. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 - 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
 - 3. Simulate finished lighting conditions for review of mockups.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver gypsum drywall materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers off the ground on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 and GA-216 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Examine the substrates and the spaces to receive gypsum drywall, and the conditions under which gypsum drywall is to be installed; and do not proceed with the installation until unsatisfactory conditions have been corrected.
- C. Maintain ambient temperatures at not less than 55 degrees F., for the period of 24 hours before drywall finishing, during installation and until compounds are dry.
- D. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- E. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
- C. Low-Emitting Materials: For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 GYPSUM BOARD, GENERAL

- A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. American Gypsum.
 2. CertainTeed Corp.
 3. Georgia-Pacific Gypsum LLC.
 4. Lafarge North America Inc.
 5. National Gypsum Company.
 6. USG Corporation.
- B. General: Comply with GA-216 ASTM C 1396/C 1396M.
- C. Gypsum Wallboard:
 1. Thickness: 5/8 inch (12.7 mm).

2. Long Edges: Tapered.

D. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

E. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: As indicated, 5/8 inch (15.9 mm), Type X, unless otherwise noted.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10.

2.4 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. CertainTeed Corp.; GlasRoc Tile Backer.
- b. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.

2. Core: As indicated on Drawings, 5/8 inch (15.9 mm), Type X, unless otherwise noted.
3. Mold Resistance: ASTM D 3273, score of 10.

B. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. American Gypsum.
- b. CertainTeed Corp.
- c. Georgia-Pacific Gypsum LLC.
- d. Lafarge North America Inc.
- e. PABCO Gypsum.
- f. Temple-Inland.
- g. USG Corporation.

2. Core: As indicated on Drawings 5/8 inch (15.9 mm), Type X, unless otherwise noted.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

2. Shapes:
 - a. Corner bead.
 - b. Bullnose bead.
 - c. Casing bead / LC-Bead: J-shaped; exposed long flange receives joint compound.
 - d. L-Bead: L-shaped; exposed long flange receives joint compound.
 - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - f. Expansion (control) joint.
 - g. Curved-Edge corner bead: With notched or flexible flanges.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Exterior Gypsum Soffit Board: Paper.
 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, rounded edges, and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
 5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.
- D. Joint Compound for Exterior Applications:
 1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
 2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.
- E. Joint Compound for Tile Backing Panels:
 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
 2. Cementitious Backer Units: As recommended by backer unit manufacturer.
 3. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Expansion Joints: Rigid vinyl, 1-1/2" wide, 10' lengths, with removable flexible vinyl strip.
- C. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 - 1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- E. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 - 2. Provide Insul-Hold fasteners to secure insulation in place. Install in accordance with manufacturers specifications. Install 6" below top of insulation and at 4'-0" above floor. Option: Use strip or individual units.
 - 3. Recycled Content of Blankets: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- F. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
 - b. Grabber Construction Products; Acoustical Sealant GSC.
 - c. Pecora Corporation; AC-20 FTR.
 - d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
 - e. USG Corporation; SHEETROCK Acoustical Sealant.
 - 2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- G. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panel's not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels. Control joints to be installed minimum 24'-0" o.c. until noted otherwise.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8- inches- (6.4- to 9.5-mm-) wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2- inches- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Wallboard Type: As indicated on Drawings.
 - 2. Type X: As indicated on Drawings.
 - 3. Flexible Type: Apply in double layer at curved assemblies.
 - 4. Ceiling Type: As indicated on Drawings.
 - 5. Foil-Backed Type: As indicated on Drawings.
 - 6. Abuse-Resistant Type: As indicated on Drawings.
 - 7. Moisture- and Mold-Resistant Type: As indicated on Drawings.
 - 8. Type X: Where required for specific fire-resistance-rated assembly indicated.
 - 9. Glass-Mat Interior Type: As indicated on Drawings.
 - 10. Skim-Coated Type: As indicated on Drawings.
- B. Single-Layer Application:
 - 1. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 - 2. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 APPLYING TILE BACKING PANELS

- A. Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
- B. Cementitious Backer Units: ANSI A108.11, at wet areas, and where indicated.
- C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Corner bead: Use at outside corners.
 - 2. Bullnose Bead: Use where indicated.
 - 3. LC-Bead: Use at exposed panel edges.
 - 4. L-Bead: Use where indicated.
 - 5. U-Bead: Use at exposed panel edges.
 - 6. Curved-Edge corner bead: Use at curved openings.
- D. Exterior Trim: Install in the following locations:
 - 1. Corner bead: Use at outside corners.
 - 2. LC-Bead: Use at exposed panel edges.
- E. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Drywall finishing to be installed in accordance with Gypsum Association "Recommended Levels of Gypsum Board Finish, #GA-214-M-97" and ASTM C 840.
 - 1. Level #0
 - a. For use in areas of temporary construction
 - b. No taping, finishing or accessories.
 - 2. Level #1
 - a. In areas above ceilings and areas not exposed to public view. Tape and fastener heads need not be covered with joint compound.
 - b. Tape, set in joint compound at joints and interior angles.
 - c. Finish surface to be free of excess compound. Some tool marks and ridges are acceptable.
 - 3. Level #2
 - a. Use at water-resistant backing board used as base for ceramic tile.
 - b. At joints and interior angles: Embed tape in compound and wiped with joint knife leaving thin coat of compound over tape.

- c. At accessories and fasteners: Cover with one separate coat of joint compound.
 - d. Finish surface to be free of excess compound. Tool marks and ridges are acceptable. Compound applied over tape at time of embedment is considered separate coat and satisfies the conditions of this level.
4. Level #3
- a. Use in areas to receive medium or heavy-duty textured coatings; or where heavy-duty wall coverings are to be applied.
 - b. At joints and interior angles: Taped as "Level #2" then covered with one separate coat of joint compound.
 - c. At accessories and fasteners: Cover with two separate coats of joint compound.
 - d. Surface to be smooth and free of all ridges and tool marks.
5. Level #4
- a. Use in areas to receive flat paint, light texture finish, or light-duty wall covering.
 - b. At joints: Taped as "Level #2" then covered with two separate coats of joint compound.
 - c. At interior angles: Taped as "Level #2" then covered with one separate coat of joint compound.
 - d. At accessories and fasteners: Cover with three separate coats of joint compound.
 - e. Surface to be smooth and free of all ridges and tool marks.
6. Level #5: Where indicated on Drawings.
- a. Primer and its application to surfaces are specified in other Division 09 Sections.
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Ceramic tile.
2. Stone thresholds.
3. Tile backing panels.
4. Metal edge strips.

- B. Related Sections:

1. Division 07 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
 1. Level Surfaces: meet or exceed Code requirement.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- D. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Full-size units of each type of trim and accessory.
 - 3. Stone thresholds in 6-inch (150-mm) lengths.
 - 4. Metal edge strips in 6-inch (150-mm) lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product, signed by product manufacturer.
- D. Material Test Reports: For each tile-setting and -grouting product.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:

1. Stone thresholds.
2. Joint sealants.
3. Cementitious backer units.
4. Metal edge strips.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.
- D. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

- F. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation [in swimming pools] [on exteriors] [or] [in wet areas], do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- G. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Factory-mounted glazed ceramic tile.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Olean; Division of Dal-Tile International Inc.
 - b. Daltile; Division of Dal-Tile International Inc.
 - c. Or others if approved by the Architect.
 - 3. Composition: Match existing.
 - 4. Module Size: Match Existing.
 - 5. Thickness: Match Existing.
 - 6. Surface: Match Existing.
 - 7. Finish: Match Existing.
 - 8. Tile Color and Pattern: Match Existing.
 - 9. Grout Color: Match Existing.

2.3 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 - 1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, in maximum lengths available to minimize end-to-end butt joints.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. C-Cure; C-Cure Board 990.
 - b. Custom Building Products; Wonderboard.
 - c. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
 - d. USG Corporation; DUROCK Cement Board.
 2. Thickness: Match Existing.
- B. Fiber-Cement Underlayment: ASTM C 1288, in maximum lengths available to minimize end-to-end butt joints.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corp.; FiberCement [Underlayment] [BackerBoard].
 - b. James Hardie; [Hardiebacker] [Hardiebacker 500].
 2. Thickness: Match Existing.

2.5 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
1. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
 2. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
 - a. Boiardi Products; a QEP company.
 - b. Bonsal American; an Oldcastle company.
 - c. Bostik, Inc.
 - d. C-Cure.
 - e. Custom Building Products.
 - f. Jamo Inc.
 - g. Laticrete International, Inc.
 - h. MAPEI Corporation.
 - i. Mer-Kote Products, Inc.
 - j. Southern Grouts & Mortars, Inc.
 - k. Summitville Tiles, Inc.
 - l. TEC; a subsidiary of H. B. Fuller Company.
 3. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 4. Provide prepackaged, dry-mortar mix combined with [acrylic resin] [or] [styrene-butadiene-rubber] liquid-latex additive at Project site.
 5. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Water-Cleanable Epoxy Grout: ANSI A118.3[, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D].
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Atlas Minerals & Chemicals, Inc.
 - b. Bonsal American; an Oldcastle company.
 - c. Laticrete International, Inc.
 - d. MAPEI Corporation.
 - e. TEC; a subsidiary of H. B. Fuller Company.
 - 3. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, and certified by manufacturer for intended use.

2.7 ELASTOMERIC SEALANTS

- A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."
 - 1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 - 3. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.
- B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.
- C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; Dow Corning 786.
 - b. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
 - c. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
 - d. Tremco Incorporated; Tremsil 600 White.

2.8 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; match existing exposed-edge material.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bonsal American; an Oldcastle company; Grout Sealer.
 - b. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout
 - c. TEC; a subsidiary of H. B. Fuller Compan Grout Sealer.

2.9 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.

- b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
 - B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Exterior tile floors.
 - b. Tile floors in wet areas.
 - c. Tile swimming pool decks.
 - d. Tile floors in laundries.
 - e. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.
 - f. Tile floors composed of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- F. Joint Widths: Match Existing
- G. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- H. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
 - 1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in latex-portland cement mortar (thin set).
- I. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- J. Grout Sealer: Apply grout sealer to grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

- A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.5 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect

- metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
 - C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
 - D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 09 30 00

SECTION 09 51 10 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Acoustical tiles for ceilings.
2. Concealed suspension systems.

B. Related Requirements:

1. Division 09 Section "Gypsum Board".
2. Division 21-28 for light fixtures, sprinklers and air distribution components.

- C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 PREINSTALLATION MEETINGS

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

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.
2. Product Data for Credit EQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content.
3. Laboratory Test Reports for Credit EQ 4: For ceiling systems, adhesives and sealants, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

- C. Samples: For each exposed product and for each color and texture specified, 6-inches- (150-mm-) in size.

- D. Samples for Initial Selection: For components with factory-applied color finishes.
- E. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Tile: Set of full-size Samples of each type, color, pattern, and texture.
 - 2. Concealed Suspension-System Members: 6-inch- (150-mm-) long Sample of each type.
 - 3. Exposed Moldings and Trim: Set of 6-inch- (150-mm-) long Samples of each type and color.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Method of attaching hangers to building structure.
 - a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
 - 3. Size and location of initial access modules for acoustical tile.
 - 4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
 - 5. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).
- B. Qualification Data: For testing agency.
- C. Product Test Reports: For each acoustical tile ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- D. Evaluation Reports: For each acoustical tile ceiling suspension system and anchor and fastener type, from ICC-ES.
- E. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full-size tiles equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each concealed grid and exposed component equal to 2 percent of quantity installed.

1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to the National Voluntary Laboratory Accreditation Program (NVLAP) for testing indicated.
- B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of typical ceiling area as shown on Drawings.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical tiles, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical tiles, permit them to reach room temperature and stabilized moisture content.
- C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for the Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical tile ceiling installation.

PART 2 - PRODUCTS

2.1 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical tiles, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical tiles, permit them to reach room temperature and stabilized moisture content.
- C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

2.2 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical tile ceiling installation.
 - 2. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.3 ACOUSTICAL TILES, GENERAL

- A. Low-Emitting Materials: Acoustical tile ceilings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Source Limitations:
 - 1. Acoustical Ceiling Tile: Obtain each type from single source from single manufacturer.
 - 2. Suspension System: Obtain each type from single source from single manufacturer.
- C. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system from single source from single manufacturer.
- D. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface according to ASTM E 795.
- E. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical tiles are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.4 ACOUSTICAL TILES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following. If not indicated, provide Tundra #303 tegular 24" x 24" x 5/8" thick at 1.1 lbs/sf, as manufactured by Armstrong World Industries:
 - 1. BPB Celotex.

2. CertainTeed Corp.
3. USG Interiors, Inc.; Subsidiary of USG Corporation.

B. Color: White.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.5 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M as applicable to the type of suspension system required for the type of ceiling units indicated. Coordinate with other work supported by or penetrating through the ceilings, including light fixtures, HVAC equipment, and partition system (if any).

B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gauge diameter wire.

D. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

2.6 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Subject to compliance with requirements, provide same as acoustical ceiling manufacturer or comparable product by one of the following:

1. Chicago Metallic Corporation.
2. Donn Products.
3. National Rolling Mills Company.
4. USG Interiors, Inc.; Subsidiary of USG Corporation.

- B. Type of System: Either Direct-Hung, Double-Web Suspension System or Indirect Hung Suspension System (as Contractor's option): Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 (Z90) coating designation.
 - 1. Structural Classification: Intermediate-duty system.
 - 2. Indirect-Hung Suspension System, conform to the following:
 - a. Carrying Channels: 1-1/2" steel channels, hot-rolled or cold-rolled, not less than 0.475 lbs. per lin. Ft.
- C. Concealed Suspension System: Manufacturer's standard galvanized steel system of runners, cross runners, splines and accessories.
 - 1. Access: Manufacturer's standard total access system, either up-acting or down-acting (each 12 x 24 unit independently removable.)
 - 2. Provide access units for up to a maximum of 25% of the total ceiling area.
- D. Exposed Suspension System: Manufacturer's standard exposed runners, cross-runners and accessories, of the types and profiles indicated, with exposed cross-runners coped to lay flush with main runners.
 - 1. Finish of Exposed Members: Provide uniform factory-applied finish on exposed surfaces of ceiling suspension system including moldings, trim and accessories.
 - 2. Finish: Manufacturer's standard baked enamel finish, white unless otherwise selected by Architect.

2.7 METAL EDGE MOLDINGS AND TRIM

- A. Edge Moldings: Provide manufacturer standard angle moldings; in finish to match exposed system. Provide manufacturer's standard angle moldings in finish to match exposed system.

2.8 ACOUSTICAL SEALANT

- A. Acoustical Sealant: A heavy-bodied, non-shrinking, non-drying, non-sag, grade mastic compound intended for interior sealing of concealed construction joints.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION WORK

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Verify that layout of hangers will not interfere with other work; make adjustments in layout as necessary.
- E. Do not begin ceiling installation until services above ceiling are complete except for final trim.
- F. Notify Architect of unsatisfactory conditions before proceeding.
- G. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.
- H. Locate system on room axis according to reflected ceiling plan.

3.2 INSTALLATION OF CEILING TILES

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Install acoustical panels in accordance with manufacturer's written instructions.
- C. Lay panels flat into the tee grid. Scribe and cut panels for accurate fit at perimeter and around penetrations.
- D. Hold tile field in compression when performing cuts.
- E. Install acoustical panels after above-ceiling work is complete. Install panels level, in uniform plane, and free from warp, twists, and dents.
- F. Installation Tolerance: Maximum variation from flat and level surface is 1:360.

3.3 INSTALLATION OF SUSPENSION SYSTEM

- A. General:
 - 1. Conform to the requirements of CISCA (AC) – Acoustical Ceilings: Use and Practice.
 - 2. Install in accordance with manufacturer's instructions and ASTM C 636 and ASTM E 580.
 - 3. Attach hangers to structural members. Do not support ceilings directly from permanent metal forms or steel floor or roof deck.
 - 4. Space hangers not more than 48 inches o.c. in both directions.
 - 5. 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.
 - 6. 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.
 - 7. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently. Do not eccentrically load system or induce rotation of runners.
 - 8. Perimeter Trim: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.

- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 2. Splay hangers only where required[**and, if permitted with fire-resistance-rated ceilings,**] to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical tiles.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Arrange directionally patterned acoustical tiles as follows:
1. As indicated on reflected ceiling plans.

2. Install tiles with pattern running in one direction parallel to long or short axis of space.
 3. Install tiles in a basket-weave pattern.
- G. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension-system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.
1. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile.
 2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches (305 mm) o.c.
 3. Protect lighting fixtures and air ducts to comply with requirements indicated for the indicated fire-resistance-rated assembly design.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- B. Protect installed acoustical panel ceilings until completion of project.

END OF SECTION 09 51 10

SECTION 09 91 00 – PAINTING Interior

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Painting and finishing of interior and exterior exposed items and surfaces throughout the project, except as otherwise indicated.
2. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work.
3. Field painting of exposed bare and covered pipes and ducts, and hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under the mechanical and electrical work, except as otherwise noted.

- B. "Paint", as used herein, is defined as all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

- C. Paint all exposed surfaces except where the natural finish of the material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint these the same as adjacent similar materials or areas.

D. Paint prefinished metal items such as:

1. Door light stops and moldings.
2. Prefinished door frames.
3. Radiation covers, cabinet unit heater covers and other "primed" mechanical equipment, electro-statically.

- E. Color Coding and Identification: Is specified in respective sections of Divisions 21, through Division 28.

- F. Colors: As selected.

1.3 PAINTING NOT INCLUDED:

- A. The following categories of work are not included as part of the field-applied finish work, or are included in other sections of these specifications.

1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for fabricated components such as architectural woodwork, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.

2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefinished partition systems, acoustic materials, architectural woodwork and casework, light fixtures, switchgear and distribution cabinets. Prefinished items to be painted are hereinbefore indicated.
3. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting. (Note: Copper tubing and piping is not a finished metal.)
5. Operating Parts and Labels:
 - a. Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting.
 - b. Do not paint over code-required labels, such as Underwriters' Laboratories and Factory Mutual, or equipment identification, performance rating, name, or nomenclature plates. Permanently remove all other labels, prior to painting.

1.4 QUALITY ASSURANCE:

- A. Product Data: For information only, submit copies of manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. For each type of product indicated.
 1. Submit a list of manufacturer's products proposed for use.
 2. Upon approval of the list, submit a detailed schedule of each surface to be painted, and include the specific sealer, primer, underbody and finish coats proposed for each such surface.
 3. After approval is granted, submit complete color catalog(s) for color selections.
- B. Samples: Submit samples for review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Trade Contractor. Provide a listing of the material and application for each coat of each finish sample.
- C. Maintenance Sample Stock: Provide the Owner with one (1) gallon, air-tight covered, of each applied paint color for future use. Identify each container with manufacturer's name, number and color designation.
- D. Submit certification that materials proposed herein conform to the above requirements and to the fire test requirements of ASTM E84, Class "A" - 0-25 Flame Spread.
 1. Flame Spread Rating: Provide materials with ratings in accordance with NFPA #101, "Life Safety Code", 25 or less in exit ways, corridors, stairways, storage rooms or other areas of high hazard; 75 or less elsewhere.
- E. VOC Compliance: Provide LOW VOC materials conforming to the State and local regulations as relating to VOC/VOS requirements at the time of application, and as follows:
 1. VOC Compliance: All paints and coatings must comply with Green Seal Testing Program Limits as follows:
 - a. Non-Flat Primer / Paint: 150g/L. VOC Limit

- b. Flat Primer / Paint: 50g/L. VOC Limit

1.5 DELIVERY AND STORAGE:

A. Delivery:

1. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and application instructions thereon.
2. Provide labels on each container with the following information:
 - a. Name of title of material.
 - b. Fed. Spec. number, if applicable.
 - c. Manufacturer's stock number.
 - d. Manufacturer's name.
 - e. Contents by volume, for major pigment and vehicle constituents.
 - f. Thinning instructions.
 - g. Application instructions.

B. Storage:

1. Provide a secure space for the storage of all paint materials and equipment for the exclusive use of this work, and maintain and leave it free from fire hazards due to improperly stored rags or thinners.

1.6 JOB CONDITIONS:

- A. Apply water-base paints when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F. and 90 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- B. Apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F. and 95 degrees F., unless otherwise permitted by the paint manufacturer's printed instructions.
- C. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 85% or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions.
 1. Continue painting during inclement weather, if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 COLORS AND FINISHES:

- A. Painting, surface treatments and finishes, are indicated in the contract documents to match existing.

1. Provide the necessary compatible base color for the selected finish colors. Should color coverage appear to be a problem, notify the Architect prior to base coat application. Sample areas may be required (approximately four areas of four square feet each).
 2. Use representative colors when preparing samples for review.
- B. Upon completion of the first coat, notify the Architect for his review and approval. This review and approval procedure may be done on a room by room basis so as not to impede the progress of the work.
- C. Color Pigments: Pure, non-fading, applicable types to suit the substrates and service indicated.
1. Lead content in the pigment, if any, is limited to contain not more than 0.06% lead, as lead metal based on the total non-volatile (dry-film) of the paint by weight.
- D. Paint Coordination: Provide finish coats, compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime, as required. Notify the Architect, in writing, of any anticipated problems using specified coating systems with substrates primed by others.

2.2 MATERIAL QUALITY:

- A. Provide the best quality grade of the various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
- B. Interior Paint Manufacturers:
1. Sherwin-Williams Co. "Harmony" Coating System as specified.
 2. Benjamin Moore Company "Eco-Spec", as specified.
 3. Or equivalent products by the following:
 - a. PPG Industries "Pure Performance" Low VOC line
 - b. Devoe "Wonder-Pure" Low VOC line
- C. Proprietary names, used to designate colors or materials, are not intended to imply that products of the named manufacturers are required to the exclusion of equivalent products of other manufacturers.
- D. Provide undercoat paint produced by the same manufacturer as the finish coats. Use only thinners approved by the paint manufacturer, and use only within recommended limits.

2.3 LOW ODOR - LOW VOC COMPLIANT INTERIOR PAINTS

- A. Coordinate with Finish Schedule for material and colors required.
- B. Gypsum Drywall System (except ceilings):

1st coat - Sherwin-Williams Harmony Interior Latex Primer B11W900
2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series
3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat- Benjamin Moore Eco Spec Interior Latex Primer Sealer-231
2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223
3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223

- C. Ferrous Metals: (for all exposed to view metal, in finished rooms, including grilles, diffusers, piping, ducts, conduit, metal doors and frames and miscellaneous metals. When concealed from view and in mechanical equipment rooms, spot prime, only):

1st coat - Sherwin-Williams DTM Acrylic Primer/Finish
2nd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series
3rd coat - Sherwin-Williams Harmony Interior Latex Eg-Shel B9 Series

or;

1st coat - Benjamin Moore M04 Acrylic Metal Primer-M04
2nd coat - Benjamin Moore Eco Spec Interior Latex Eggshell 223
3rd coat- Benjamin Moore Eco Spec Interior Latex Eggshell 223

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine the areas and conditions under which painting work is to be applied and do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Starting of painting work will be construed as acceptance of the surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

3.2 PREPARATION:

A. New Substrates:

1. General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as specified, for each particular substrate condition.
 - a. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.
 - b. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

- c. Equipment, factory primed, including but not limited to fire extinguisher cabinets; electric panels, in finished areas; grilles; diffusers; and similar equipment not indicated to be painted "electro-statically" shall be dulled by sanding with #00 sandpaper or other approved material prior to receiving finish coats. Remove all sanding residue with water-moistened rags or other approved method.
2. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
 - a. Wire brush or mechanically sand rust spots to bright metal and spot prime.
 - b. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with the same type shop primer.
 3. Galvanized Surfaces: Clean free of oil and surface contaminate with an acceptable non-petroleum based solvent.

3.3 MATERIALS PREPARATION:

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

3.4 APPLICATION:

- A. General:
 1. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.
- B. Apply primer, intermediate and finish coats to not less than the manufacturer's recommended wet film and dry film thicknesses and spreading rates for each of the various types of materials specified.
 1. Verify mil thickness, wet or dry, by use of recommended gauges.
- C. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- D. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

- E. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
- F. Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.
- G. Finish doors on tops, bottoms and side edges the same as the faces, unless otherwise indicated.
- H. Sand lightly between each succeeding enamel or varnish coat.
- I. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.
- J. Scheduling Painting:
 - 1. Apply the first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 - 2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- K. Minimum Coating Thickness: Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
 - 1. Electrical items to be painted include, but are not limited to, the following:
 - a. Conduit and fittings.
 - b. Panels.
 - c. Panel backboards.
- L. Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
 - 1. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
 - 2. Apply prime coat to all surfaces including surfaces indicated to receive other finishes.
- M. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.
- N. Transparent (Clear) Finishes: Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes or other surface imperfections.
 - 1. Provide satin finish for final coats, unless otherwise indicated.
- O. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION:

- A. Clean-up: During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.
 - 1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.
 - 1. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
 - 2. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 09 91 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. As indicated in previous Sections of the Project Manual, this project is pursuing NE-CHPS prerequisites and point. Refer to section 01 81 13.13 CHPS DESIGN REQUIREMENTS for additional information and NE-CHPS scorecard.

1.2 SUMMARY

- A. Section Includes:
 - 1. All primary and secondary directories, directionals, room identification, workstation ID's and signage for ADA and life safety code compliance.
- B. Related Sections:
 - 1. Division 1: Administrative, procedural and temporary work requirements.

1.3 REFERENCES

- A. Signs and their installation shall comply with applicable provisions of the latest edition of the following standards and with requirements of authorities having jurisdiction:
 - 1. ADAAG – Americans with Disabilities Act Accessibility Guidelines; US Architectural and Transportation Barriers Compliance Board.
 - 2. International Code Council/American National Standards Institute A117.1- Standard on Accessible and Usable Buildings Facilities.
 - 3. National Fire Protection Association 101 Life Safety Code.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Signage schedule in manufacturer's format for verification of text/copy.
 - 2. Approval drawings showing materials, construction detail, lay-out, copy, size and mounting methods.
 - 3. Engineering drawings for each sign type.
 - 4. Sample of two sign types for verification of materials, color, pattern, overall quality, and for adherence to drawings and requirements indicated.

1.5 QUALIFICATIONS

- A. Manufacturer specializing in manufacturing the products specified in this section with minimum five years experience. Obtain signs from one source and a single manufacturer.

1.6 WARRANTY

- A. Provide manufacturer's warranty against defects in materials and workmanship for minimum 5 years.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Signage shall be Fusion as manufactured by Takeform, 1.800.528.1398, www.takeform.net or Architect approved equal.
- B. Substitutions: Bidder must obtain prior written approval from the Architect and/or Owner to bid alternates or substitutions to the specification.

2.2 SIGN STANDARDS

- A. It is the intent of these specifications to establish a sign standard for the Owner including but not limited to primary and secondary directories, wall mounted and overhead directionals, flag mounted directionals, primary room identification, restrooms, conference room, work station ID's and all code compliant signage. While the Owner may not obtain all signs and sign types, the signage contractor shall design and submit approval drawings for all.
- B. Engineered and Tested:
 - 1. The signage system shall have undergone rigorous testing to ensure longevity and optimal performance. Testing shall include environmental testing to ensure that materials can withstand changes in temperature and humidity without distortion as well as testing to ensure resistance to chemicals and UV effects. Further, mechanical testing shall ensure that the tensile and pull-out strength of mounting hardware is adequate to ensure a safe installation. Test data shall be included with submittals.
- C. Typography:
 - 1. Type style: see drawings. Copy shall be a true, clean, accurate reproduction of typeface(s) specified. Upper and lower case or all caps shall be as indicated in Sign Type drawings and Signage Schedule. Letter spacing to be normal and interline spacing shall be set by manufacturer.
 - 2. Arrows, symbols and logo art: To be provided in style, sizes, colors and spacing as shown in drawings.
 - 3. Grade II Braille utilizing perfectly round, clear insertion beads.
- D. Evacuation Maps:
 - 1. Evacuation maps shall have a unique "you-are-here" orientation as well as two emergency egress paths. The maps shall show location of fire extinguishers, fire pulls, stairwells, elevators and restrooms.
- E. Color and Finishes:
 - 1. Colors, patterns and artwork: see drawings.
 - 2. Message Background: see drawings.
 - 3. Finishes are to meet current federal ADA and all state and local requirements.

2.3 SIGNS

- A. Signage System:
 - 1. The signage shall incorporate a decorative laminate face with applied graphics including all tactile requirements in adherence to ADA specifications.
 - 2. All signs, including work station and room ID's, overheads and flag mounts, directionals and directories shall have a matching appearance and constructed utilizing the same manufacturing process to ensure a consistent look throughout.
- B. Materials:

1. Sign face shall be 0.035" (nominal) standard grade, high pressure surface laminate. A painted sign face shall not be acceptable.
 2. The sign shall incorporate balanced construction with the core sandwiched between laminates to prevent warping. Laminate on the sign face only shall not be acceptable.
 3. Tactile lettering shall be precision machined, raised 1/32", matte PETG and subsurface colored for scratch resistance.
 4. Signs shall incorporate a metal accent bar. Bars shall be anodized with a brushed satin finish. Painted bars shall not be acceptable. Refer to drawings.
- C. Standard Colors:
1. Face/background color shall be standard grade, high pressure laminate, all colors and finishes. Refer to drawings.
 2. Standard tactile colors shall match manufacturer's ADA standard color selection. Refer to drawings.
- D. Construction:
1. The signage shall, with the exception of directories and directionals, be a uniform 8 1/2" width to facilitate inserts printed on standard width paper.
 2. Insert components shall have a .080 thickness non-glare acrylic window and shall be inlaid flush to sign face for a smooth, seamless appearance.
 3. The signage shall include modules allowing for inserts, notice holders, occupancy sliders, marker, magnetic, and cork boards. All modules shall be flush to sign face for a smooth, seamless appearance.
 4. The laminates (front and back) shall be pressure laminated and precision machined together to a 90-degree angle. Edges shall be smooth, void of chips, burrs, sharp edges and marks.
 5. The signage shall utilize an acrylic sphere for Grade II Braille inserted directly into a scratch resistant, high pressure laminate sign face. Braille dots are to be pressure fit in high tolerance drilled holes.
 6. Braille dots shall be half hemispherical domed and protruding a minimum 0.025".
 7. The signage shall utilize a pressure activated adhesive. The adhesive shall be nonhazardous and shall allow for flexing and deflection of the adhered components due to changes in temperature and moisture without bond failure.
 8. All signs shall be provided with appropriate mounting hardware. Hardware shall be finished and architectural in appearance and suitable for the mounting surface.
 9. Some signs may be installed on glass. A blank backer is required to be placed on the opposite side of the glass to cover tape and adhesive. The backer shall match the sign in size and shape.
- E. Printed Inserts:
1. The signage shall be capable of accepting paper or acetate inserts to allow changing and updating as required. Insert components shall have a 0.080" thickness non-glare acrylic window and shall be inlaid flush to sign face for a smooth, seamless appearance.
 2. The signage contractor shall provide and install all signage inserts.
 3. Manufacturer shall provide a template containing layout, font, color, artwork and trim lines to allow Owner to produce inserts on laser or ink jet printer. The template shall be in an Acrobat or Word format (.pdf).
- F. Quantities:
Code and Facility Signage:

Sign Type A or B Restroom For each Toilet Room

*Coordinate type and locations with owner prior to ordering.

PART 3 - EXECUTION

3.1 SITE VISITS

- A. Site visits – 3 site visits shall be required by the sign contractor:
 - 1. Prior to submission of bid for site assessment and evaluation.
 - 2. Post award for the purposes of meeting with Owners and project manager.
 - 3. Final walk-through and punchlist.
- B. Programming – sign contractor shall perform all wayfinding & programming. Programming shall include location plan, message schedule, and/or plots, fire/evacuation maps and insert graphics. All programming materials shall be submitted for approval.

3.2 CODE COMPLIANCE

- A. It shall be the responsibility of the successful bidder to meet any and all local, state, and federal code requirements in fabricating and installing signs.

3.3 DELIVERY, STORAGE, PROTECTION

- A. Package to prevent damage or deterioration during shipment, handling, storage and installation. Products should remain in original packaging until removal is necessary. Store products in a dry, indoor location.

3.4 EXAMINATION

- A. Installer shall examine signs for defects, damage and compliance with specifications. Installation shall not proceed until unsatisfactory conditions are corrected.

3.5 INSTALLATION

- A. General: Installation locations shall be in accordance with ADA specifications. Locate signs where indicated using mounting methods in compliance with manufacturer's written instructions:
 - 1. The signage contractor shall coordinate installation schedules with the Owner and/or Construction Manager.
 - 2. Installation shall be performed by manufacturer's personnel trained and certified in manufacturer's methods and procedures.
 - 3. The signage contractor shall submit a CAD generated location plan noting the location of all signage and cross referenced to message schedule or plots for architect's approval.
 - 4. Installer to conduct a pre-installation survey prior to manufacturing to verify copy and sign location. Each location shall be noted using a low tack vinyl reproduction of actual sign. Full scale renderings of directories and directionals shall also be provided. Any location discrepancy or message issues shall be submitted to architect for review.
 - 5. Signs shall be level, plumb, and at heights indicated with sign surfaces free from defects.
 - 6. Upon completion of the work, signage contractor shall remove unused or discarded materials, containers and debris from site.

3.6 WEB PORTAL AND STANDARDS MANUAL

- A. Web Portal: Manufacturer shall provide a password protected web portal enabling Owner to view and access all sign types comprising the sign system. The sign types shall be priced and shall be capable of purchase directly from the portal.

- B. Manufacturer shall provide a comprehensive Standards Manual in both a paper and PDF format. The manual shall include all graphic standards, sign type descriptions, renderings showing color, pattern and finish, engineering drawings, location plans, plots, artwork, insert templates, mounting detail, and reorder information.

END OF SECTION 10 14 00

SECTION 102113 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Steel toilet compartments configured as toilet enclosures and urinal screens.

- B. Related Sections:

- 1. Division 06 Section Rough Carpentry for blocking.
 - 2. Division 10 Section "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Shop Drawings: For toilet compartments. Include plans, elevations, sections, details, and attachments to other work.

- 1. Show locations of cutouts for compartment-mounted toilet accessories.
 - 2. Show locations of reinforcements for compartment-mounted grab bars.
 - 3. Show locations of centerlines of toilet fixtures.

- C. Samples for Initial Selection: For each type of unit indicated. Include Samples of hardware and accessories involving material and color selection.

- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

- 1. Each type of material, color, and finish required for units, prepared on 6-inch- (152-mm-) square Samples of same thickness and material indicated for Work.
 - 2. Each type of hardware and accessory.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of toilet compartment, from manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Comply with requirements in GSA's CID-A-A-60003, "Partitions, Toilets, Complete."
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- C. Regulatory Requirements: Comply with applicable provisions in Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities and ICC/ANSI A117.1 for toilet compartments designated as accessible.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M).
- C. Brass Castings: ASTM B 584.
- D. Brass Extrusions: ASTM B 455.
- E. Steel Sheet: Commercial steel sheet for exposed applications; mill phosphatized and selected for smoothness.
 - 1. Electrolytically Zinc Coated: ASTM A 879/A 879M, 01Z (03G).
 - 2. Hot-Dip Galvanized: ASTM A 653/A 653M, either hot-dip galvanized or galvanized.
- F. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- G. Stainless-Steel Castings: ASTM A 743/A 743M.
- H. Zamac: ASTM B 86, commercial zinc-alloy die castings.
- I. Particleboard: ANSI A208.1, Grade M-2 with 45-lb (20.4-kg) density

- J. Plastic Laminate: NEMA LD 3, general-purpose HGS grade, 0.048-inch (1.2-mm) nominal thickness.
- K. Adhesives: Manufacturer's standard product that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 STEEL UNITS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. All American Metal Corp.
 - 2. American Sanitary Partition Corporation.
 - 3. Ampco, Inc.
 - 4. Bradley Corporation; Mills Partitions.
 - 5. Global Steel Products Corp.
- C. Toilet-Enclosure Style: Floor anchored.
- D. Urinal-Screen Style: Wall hung, flat panel.
- E. Door, Panel, and Pilaster Construction: Seamless, metal facing sheets pressure laminated to core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces shall be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.
 - 1. Core Material: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch (25 mm) for doors and panels and 1-1/4 inches (32 mm) for pilasters.
 - 2. Grab-Bar Reinforcement: Provide concealed internal reinforcement for grab bars mounted on units.
 - 3. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.
- F. Urinal-Screen Construction:
 - 1. Flat-Panel Urinal Screen: Matching panel construction.
 - 2. Integral-Flange, Wall-Hung Urinal Screen: Similar to panel construction, with integral full-height flanges for wall attachment, and maximum 1-1/4 inches (32 mm) thick.
 - 3. Wedge-Shaped, Wall-Hung Urinal Screen: Similar to panels, V-shaped, fabricated for concealed wall attachment, and maximum 6 inches (152 mm) wide at wall and minimum 1 inch (25 mm) wide at protruding end.
- G. Facing Sheets and Closures: Electrolytically coated or hot-dip galvanized-steel sheet with nominal base-metal (uncoated) thicknesses as follows:
 - 1. Pilasters, Braced at Both Ends: Manufacturer's standard thickness, but not less than 0.036 inch (0.91 mm).

2. Pilasters, Unbraced at One End: Manufacturer's standard thickness, but not less than 0.048 inch (1.21 mm).
 3. Panels: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
 4. Doors: Manufacturer's standard thickness, but not less than 0.030 inch (0.76 mm).
 5. Flat-Panel Urinal Screens: Thickness matching the panels.
- H. Pilaster Shoes and Sleeves (Caps): Stainless-steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.
- I. Brackets (Fittings):
1. Stirrup Type: Ear or U-brackets; stainless steel.
 2. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.3 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
1. Material: Stainless steel.
 2. Hinges: Manufacturer's standard continuous, cam type that swings to a closed or partially open position
 3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
 4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
 5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
 6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

2.4 FABRICATION

- A. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.
- B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch (13 mm).
 - b. Panels and Walls: 1 inch (25 mm).
 2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel.
 - a. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches (51 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust so tops of doors are level with tops of pilasters when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113

SECTION 10 28 00 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Each type of toilet accessory is shown on the drawings and/ or in the specification.

1.3 QUALITY ASSURANCE:

- A. Products:
 - 1. The Basis of Design is Bobrick Washroom Equipment, Inc.
 - 2. Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same areas.
 - 3. Stamped names or labels on exposed faces of units will not be permitted.
 - 4. Provide locks for all dispensing units, with the same keying for each type of accessory units in the project wherever possible. Furnish two keys for each lock.

1.4 SUBMITTALS:

- A. Manufacturer's Data: For information only, submit copies of manufacturer's technical data and installation instructions for each toilet accessory.
- B. Samples: When requested, submit full-size samples of units for review of design and operation. Acceptable samples will be returned and may be used in the work. Compliance with all other requirements is the exclusive responsibility of the Contractor.
- C. Setting Drawings: Provide setting drawings, templates, instructions and directions for installation of anchorage devices in other work.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Stainless Steel: AISI, Type 302/304, with polished No. 4 finish, unless otherwise indicated.
- B. Brass: Cast or forged quality alloy, FS WW-P-541.
- C. Sheet Steel: Cold rolled, commercial quality, ASTM A 366. Surface preparation and metal pretreatment as required for applied finish.

- D. Galvanized Steel Sheet: ASTM A 527, G60.
- E. Chromium Plating: Nickel and chromium electro-deposited on metal, ASTM B 456, Type SC 2.
- F. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.
- G. Mirror Glass: ASTM C1036, Class 1, Quality q1, 1/4" thick, with silver coating, copper protective coating, and non-metallic paint coating.
- H. Galvanized Steel Mounting Devices: ASTM A 386, hot-dip galvanized after fabrication.

2.2 ACCESSORY SCHEDULE:

- A. Include the accessories indicated on the plans.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine the areas and conditions under which toilet accessories are to be installed and do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

- A. Furnish and install fire retardant blocking as required for installation.
- B. Use concealed fastenings.
- C. Provide anchors, bolts and other necessary anchorages, and attach accessories securely to walls and partitions in locations as shown.
 - 1. Install grab bars so as to sustain a dead weight of 250 pounds for five minutes.
- D. Install concealed mounting devices and fasteners fabricated of the same material as the accessories, or of galvanized steel, as recommended by manufacturer.
- E. Install exposed mounting devices and fasteners finished to match the accessories.
- F. In public spaces, provide theft-resistant fasteners for all accessory mountings.
- G. Secure toilet room accessories in accordance with the manufacturer's instructions for each item and each type of substrate construction.

END OF SECTION 10 28 00

SECTION 12 36 40 - STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Quartz countertops.
 - 2. Setting materials and accessories.

1.3 RELATED SECTIONS:

- A. Division 01: Administrative, procedural, and temporary work requirements.
- B. Division 6 - Base cabinets.
- C. Division 7 - Joint sealers.

1.4 REFERENCES

- A. ASTM International (ASTM):
 - 1. C97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
 - 2. C99 - Standard Test Method for Modulus of Rupture of Dimension Stone.
 - 3. C170 - Standard Test Method for Compressive Strength of Dimension Stone.
 - 4. C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
 - 5. C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 6. C880 - Standard Test Method for Flexural Strength of Dimension Stone.
 - 7. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.5 SUBMITTALS

- A. Shop Drawings: Include layout, dimensions, materials, finishes, cutouts, and attachments.
- B. Samples:
 - 1. 3 x 3 inch quartz samples showing available colors.
 - 2. 3 inch long joint sealer samples showing available colors.

1.6 QUALITY ASSURANCE

- A. Fabricator must be an approved, stocking fabricator of Cambria Natural Quartz Surfacing.
- B. Fabricator and Installer Qualifications: Minimum 2 years documented experience in work of this Section.
- C. Mockup:
 - 1. Construct countertop mockup, 2 feet wide, full depth
 - 2. Approved mockup may remain as part of the Work.

1.7 WARRANTY

- A. Provide manufacturer's 10 year warranty against defects in materials

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturers: Spectrum Quartz, Cambria USA, Inc, Corian Quartz, or as specified and detailed.
- B. Substitutions: in accordance with Division 01.

2.2 MATERIALS

- A. Quartz Sheet:
 - 1. Product: Cambria Natural Quartz Surfacing
 - 2. Composition: Quartz aggregate, resin, and color pigments formed into flat slabs.
 - 5. Color: To be selected from manufacturer's full color range.
 - 6. Thickness: 3cm.
 - 7. Physical characteristics:
 - a. Water absorption: Maximum 0.02 percent, tested to ASTM C-97.
 - b. Moisture Expansion: Maximum .10% tested to ASTM C-370
 - c. Modulus of rupture: Minimum 6800 psi, tested to ASTM C- 674
 - d. Abrasion Resistance: Minimum 164.0 Tabor Abrasion test (ASTM) C501-92.
 - e. Abrasion Resistance: Minimum 125mm UNI 10532
 - f. Gloss rating of not less than: 47 using glossmeter.
 - g. Flame spread rating: Class 1, tested to ASTM E-84.
 - 8. Locations:
 - a. As noted on drawings. Refer to Room Finish Schedule.

2.3 ACCESSORIES

- A. Adhesive: Type recommended by quartz manufacturer.

2.4 FABRICATION

- A. Cut quartz panels accurately to required shapes and dimensions.
- B. Radius exposed edges.
- C. Fabricate with hairline joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean surfaces to receive fabrications; remove loose and foreign matter than could interfere with adhesion.

3.2 INSTALLATION

- A. Install fabrications in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Adhere fabrications with continuous beads of adhesive.
- C. Set plumb and level. Align adjacent pieces in same plane.
- D. Install with hairline joints.
- E. Fill joints between fabrications and adjacent construction with approved joint sealer; finish smooth and flush.

3.3 INSTALLATION TOLERANCES

- A. Maximum variation from level and plumb: 1/8 inch in 10 feet, noncumulative.
- B. Maximum variation in plane between adjacent pieces at joint: Plus or minus 1/16 inch.

3.4 CLEANING

- A. Clean fabrications in accordance with manufacturer's instructions.

3.5 PROTECTION

- A. Protect installed fabrications with non-staining sheet coverings.

END OF SECTION 12 36 40

SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Equipment labels.
 - 2. Warning signs and labels.
 - 3. Pipe labels.
 - 4. Stencils.
 - 5. Valve tags.
 - 6. Warning tags.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- D. Valve numbering scheme.
- E. Valve Schedules: For each piping system to include in maintenance manuals.

1.4 COORDINATION

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Material and Thickness: Aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
3. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
4. Fasteners: Stainless-steel rivets or self-tapping screws.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: White
3. Background Color: Black or Blue.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: White.

C. Background Color: Black or Blue.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C).

- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel rivets or self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
 - 1. Tag Material: Aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
 - 2. Fasteners: Brass wire-link or beaded chain; or S-hook.
- B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
 - 1. Valve-tag schedule shall be included in operation and maintenance data.

2.4 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
 - 1. Size: 3 by 5-1/4 inches minimum.
 - 2. Fasteners: Brass grommet and wire.
 - 3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
 - 4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.3 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:
 - 1. Valve-Tag Size and Shape:
 - a. Cold Water: 1-1/2 inches round.
 - b. Hot Water: 1-1/2 inches round.

3.4 WARNING-TAG INSTALLATION

- A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 220553

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe, tube, and fittings.
 - 2. Specialty pipe fittings.
 - 3. Encasement for underground metal piping.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water.
- B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 INFORMATIONAL SUBMITTALS

- A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.

1.6 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.7 PROJECT CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of sanitary waste service.
 - 2. Do not proceed with interruption of sanitary waste service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service class(es).
- B. Gaskets: ASTM C 564, rubber.
- C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.
- C. CISPI, Hubless-Piping Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ANACO-Husky.
 - b. Dallas Specialty & Mfg. Co.
 - c. Fernco Inc.
 - 2. Standards: ASTM C 1277 and CISPI 310.
 - 3. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Cast-Iron, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. MG Piping Products Company.
2. Standard: ASTM C 1277.
3. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 GALVANIZED-STEEL PIPE AND FITTINGS

- A. Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Standard Weight class. Include square-cut-grooved or threaded ends matching joining method.
- B. Cast-Iron Drainage Fittings: ASME B16.12, threaded.
- C. Steel Pipe Pressure Fittings:
 1. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Schedule 40, seamless steel pipe. Include ends matching joining method.
 2. Malleable-Iron Unions: ASME B16.39; Class 150; hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface; and female threaded ends.
 3. Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- D. Cast-Iron Flanges: ASME B16.1, Class 125.
 1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
 2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- E. Grooved-Joint, Galvanized-Steel-Pipe Appurtenances:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Anvil International; a subsidiary of Mueller Water Products, Inc.
 - b. Grinnell Mechanical Products.
 - c. Shurjoint Piping Products.
 2. Galvanized, Grooved-End Fittings for Galvanized-Steel Piping: ASTM A 536 ductile-iron castings, ASTM A 47/A 47M malleable-iron castings, ASTM A 234/A 234M forged steel fittings, or ASTM A 106/A 106M steel pipes with dimensions matching ASTM A 53/A 53M steel pipe, and complying with AWWA C606 for grooved ends.
 3. Grooved Mechanical Couplings for Galvanized-Steel Piping: ASTM F 1476, Type I. Include ferrous housing sections with continuous curved keys; EPDM-rubber gasket suitable for hot and cold water; and bolts and nuts.

2.5 DUCTILE-IRON PIPE AND FITTINGS

A. Ductile-Iron, Mechanical-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, mechanical-joint, ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Ductile-Iron, Push-on-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, push-on-joint ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Gaskets: AWWA C111/A21.11, rubber.

2.6 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Hard Copper Tube: ASTM B 88, Type L and Type M water tube, drawn temper.

D. Soft Copper Tube: ASTM B 88, Type L, water tube, annealed temper.

E. Copper Pressure Fittings:

1. Copper Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

F. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

G. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

2.7 ENCASUREMENT FOR UNDERGROUND METAL PIPING

A. Standard: ASTM A 674 or AWWA C105/A 21.5.

B. Material: Linear low-density polyethylene film of 0.008-inch (0.20-mm) minimum thickness.

C. Form: Sheet or tube.

- D. Color: Black or natural.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.
- M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 2 percent downward in direction of flow for piping NPS 4 (DN 100) and larger.
 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.
- O. Install steel piping according to applicable plumbing code.
- P. Install stainless-steel piping according to ASME A112.3.1 and applicable plumbing code.
- Q. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."
- R. Install engineered soil and waste drainage and vent piping systems as follows:
1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
 2. Solvent Drainage System: Comply with ASSE 1043 and solvent fitting manufacturer's written installation instructions.
 3. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
- S. Install underground, ductile-iron, force-main piping according to AWWA C600. Install buried piping inside building between wall and floor penetrations and connection to sanitary sewer piping outside building with restrained joints. Anchor pipe to wall or floor. Install thrust-block supports at vertical and horizontal offsets.
1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- T. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."
1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- U. Plumbing Specialties:
1. Install backwater valves in sanitary waster gravity-flow piping. Comply with requirements for backwater valves specified in Division 22 Section "Sanitary Waste Piping Specialties."
 2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Division 22 Section "Sanitary Waste Piping Specialties."
 3. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Division 22 Section "Sanitary Waste Piping Specialties."
- V. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- W. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

- X. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."
- Y. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 22 Section "Escutcheons for Plumbing Piping."

3.2 JOINT CONSTRUCTION

- A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
- B. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead-and-oakum calked joints.
- C. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.
- D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- E. Join stainless-steel pipe and fittings with gaskets according to ASME A112.3.1.
- F. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.
- G. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.
- H. Flanged Joints: Align bolt holes. Select appropriate gasket material, size, type, and thickness. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Torque bolts in cross pattern.

3.3 VALVE INSTALLATION

- A. General valve installation requirements are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."
- B. Shutoff Valves:
 - 1. Install gate or full-port ball valve for piping NPS 2 (DN 50) and smaller.
 - 2. Install gate valve for piping NPS 2-1/2 (DN 65) and larger.
- C. Check Valves: Install swing check valve, between pump and shutoff valve, on each sewage pump discharge.

- D. Backwater Valves: Install backwater valves in piping subject to backflow.
 - 1. Horizontal Piping: Horizontal backwater valves
 - 2. Floor Drains: Drain outlet backwater valves unless drain has integral backwater valve.
 - 3. Install backwater valves in accessible locations.
 - 4. Comply with requirements for backwater valve specified in Division 22 Section "Sanitary Waste Piping Specialties."

3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for pipe hanger and support devices and installation specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
 - 2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
 - 3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
 - 4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
 - 5. Vertical Piping: MSS Type 8 or Type 42, clamps.
 - 6. Install individual, straight, horizontal piping runs: 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - 7. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 - 8. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.
- D. Support vertical piping and tubing at base and at each floor.
- E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- F. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
 - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections according to the following unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.6 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.7 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction.

3.8 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.9 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping shall be any of the following:
 - 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 - 2. Hubless, cast-iron soil pipe and fittings[**and solvent stack fittings**]; **[CISPI] [heavy-duty]** hubless-piping couplings; and coupled joints.
 - 3. Galvanized-steel pipe, drainage fittings, and threaded joints.

4. Stainless-steel pipe and fittings, sealing rings, and gasketed joints.
 5. Copper DWV tube, copper drainage fittings, and soldered joints.
- C. Aboveground, vent piping shall be any of the following:
1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 2. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.
 3. Galvanized-steel pipe, drainage fittings, and threaded joints.

END OF SECTION 221316

SECTION 224713 - DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes drinking fountains and related components.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of drinking fountain.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include operating characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For drinking fountains to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

- A. Drinking Fountains.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product:
 - 2. Standards: Comply with ICC A117.1 and NSF 61.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.
- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- B. Set pedestal drinking fountains on floor.
- C. Install recessed drinking fountains secured to wood blocking in wall construction.
- D. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
- E. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball, gate, or globe valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."
- F. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- G. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Division 22 Section "Escutcheons for Plumbing Piping."
- H. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Division 07 Section "Joint Sealants."

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Install ball, gate, or globe shutoff valve on water supply to each fixture. Comply with valve requirements specified in Division 22 Section "General-Duty Valves for Plumbing Piping."
- C. Comply with soil and waste piping requirements specified in Division 22 Section "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

- A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

- A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
- C. Provide protective covering for installed fixtures.
- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224713

SECTION 224213.13 - COMMERCIAL WATER CLOSETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Water closets.
 - 2. Flushometer valves.
 - 3. Toilet seats.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for water closets.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For flushometer valves and electronic sensors to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than four of each type.

PART 2 - PRODUCTS

2.1 WATER CLOSETS

- A. Water Closets.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

- a. American Standard America.
 - b. Crane Plumbing, L.L.C.
 - c. Kohler Co.
 - d. TOTO USA, INC.
2. Bowl:
- a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: Vitreous china.
 - c. Type: Siphon jet.
 - d. Style: as indicated on the drawings.
 - e. Height: Handicapped/elderly, complying with ICC/ANSI A117.1.
 - f. Rim Contour: Elongated.
 - g. Water Consumption: 1.6 gal. per flush.
 - h. Spud Size and Location: match existing.
 - i. Color: White.
3. Bowl-to-Drain Connecting Fitting: ASME A112.4.3.
4. Toilet Seat: compatible with water closet
5. Support of wall mounted water closets:
- a. Standard: ASME A112.6.1M.
 - b. Description: Waste-fitting assembly, as required to match drainage piping material and arrangement with faceplates, couplings gaskets, and feet; bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.
 - c. Water-Closet Mounting Height: handicapped/elderly height according to ICC/ANSI A117.1.

2.2 FLUSHOMETER VALVES

A. Flushometer Valves :

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Sloan Valve Company.
 - b. Zurn Industries, LLC; Commercial Brass and Fixtures.
- 2. Standard: ASSE 1037.
- 3. Minimum Pressure Rating: 125 psig (860 kPa).
- 4. Features: Include integral check stop and backflow-prevention device.
- 5. Material: Brass body with corrosion-resistant components.
- 6. Exposed Flushometer-Valve Finish: Chrome plated.
- 7. Panel Finish: Chrome plated or stainless steel.
- 8. Style: as indicated on the drawings.
- 9. Consumption: 1.6 gal. per flush.

2.3 TOILET SEATS

A. Toilet Seats:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Standard America.
 - b. Church Seats.
 - c. Olsonite Seat Co.
 - d. TOTO USA, INC.
3. Standard: IAPMO/ANSI Z124.5.
4. Material: Plastic.
5. Type: Commercial (Heavy duty).
6. Shape: Elongated rim, open front.
7. Hinge: Self-sustaining.
8. Hinge Material: Noncorroding metal.
9. Color: White.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before water-closet installation.
- B. Examine walls and floors for suitable conditions where water closets will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
3. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.

B. Support Installation:

1. Install supports, affixed to building substrate, for floor-mounted, back-outlet water closets.
2. Use carrier supports with waste-fitting assembly and seal.
3. Install floor-mounted, back-outlet water closets attached to building floor substrate, onto waste-fitting seals; and attach to support.
4. Install wall-mounted, back-outlet water-closet supports with waste-fitting assembly and waste-fitting seals; and affix to building substrate.

C. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.

4. Install actuators in locations that are easy for people with disabilities to reach.
5. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

D. Install toilet seats on water closets.

E. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Division 22 Section "Escutcheons for Plumbing Piping."

F. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Division 07 Section "Joint Sealants."

3.3 CONNECTIONS

- A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.
- B. Comply with soil and waste piping requirements specified in Division 22 Section "Sanitary Waste and Vent Piping."
- C. Where installing piping adjacent to water closets, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.
- B. Adjust water pressure at flushometer valves to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

- A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed water closets and fittings.
- C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

END OF SECTION 224213.13

SECTION 224213.16 - COMMERCIAL URINALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Urinals.
 - 2. Flushometer valves.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for urinals.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For flushometer valves to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than four of each type.

PART 2 - PRODUCTS

2.1 WALL-HUNG URINALS

A. Urinals

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Standard America.
 - b. Kohler Co.
 - c. Crane Plumbing, L.L.C.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC; Commercial Brass and Fixtures.
3. Fixture:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: Vitreous china.
 - c. Strainer or Trapway: Open trapway with integral trap.
 - d. Water Consumption: Water saving.
 - e. Color: White.
4. Flushometer Valve: TBD
5. Waste Fitting:
 - a. Standard: ASME A112.18.2/CSA B125.2 for coupling.
6. Support: ASME A112.6.1M, Type I, urinal carrier with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture.

2.2 URINAL FLUSHOMETER VALVES

A. Battery-Powered, Solenoid-Actuator, Piston Flushometer Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Kohler Co.
 - b. Moen Incorporated.
 - c. Sloan Valve Company.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC; Commercial Brass and Fixtures.
3. Standard: ASSE 1037.
4. Minimum Pressure Rating: 125 psig (860 kPa).
5. Features: Include integral check stop and backflow-prevention device.
6. Material: Brass body with corrosion-resistant components.

7. Exposed Flushometer-Valve Finish: Chrome plated.
8. Panel Finish: Chrome plated or stainless steel.
9. Style: Exposed] [Concealed].
10. Actuator: Solenoid complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
11. Trip Mechanism: Battery-powered electronic sensor complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
12. Consumption: 1.0 gal. (3.8 L) per flush.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before urinal installation.
- B. Examine walls and floors for suitable conditions where urinals will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Urinal Installation:

1. Install urinals level and plumb according to roughing-in drawings.
2. Install wall-hung, back-outlet urinals onto waste fitting seals and attached to supports.
3. Install wall-hung, bottom-outlet urinals with tubular waste piping attached to supports.
4. Install accessible, wall-mounted urinals at mounting height for the handicapped/elderly, according to ICC/ANSI A117.1.
5. Install trap-seal liquid in waterless urinals.

B. Support Installation:

1. Install supports, affixed to building substrate, for wall-hung urinals.
2. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
3. Use carriers without waste fitting for urinals with tubular waste piping.
4. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.

C. Flushometer-Valve Installation:

1. Install flushometer-valve water-supply fitting on each supply to each urinal.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible urinals with handle mounted on open side of compartment.
4. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.

3. Comply with escutcheon requirements specified in Division 22 Section "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between urinals and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to urinal color.
3. Comply with sealant requirements specified in Division 07 Section "Joint Sealants."

3.3 CONNECTIONS

- A. Connect urinals with water supplies and soil, waste, and vent piping. Use size fittings required to match urinals.
- B. Where installing piping adjacent to urinals, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust urinals and controls. Replace damaged and malfunctioning urinals, fittings, and controls.
- B. Adjust water pressure at flushometer valves to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

- A. Clean urinals and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed urinals and fittings.
- C. Do not allow use of urinals for temporary facilities unless approved in writing by Owner.

END OF SECTION 224213.16

SECTION 224216.13 - COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for lavatories.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For lavatories and faucets to include in operation and maintenance manuals.

1. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - a. Servicing and adjustments of automatic faucets.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, COUNTER-MOUNTED LAVATORIES

- A. Lavatory: Oval, vitreous china, undercounter mounted.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Standard America.
 - b. Crane Plumbing, L.L.C.
 - c. Kohler Co.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC; Commercial Brass and Fixtures.
 3. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1.
 - b. Type: For undercounter mounting.
 - c. Nominal Size: Oval, 19 by 16 inches.
 - d. Faucet-Hole Punching: No holes.
 - e. Faucet-Hole Location: On countertop.
 - f. Color: White.
 - g. Mounting Material: Sealant and undercounter mounting kit.
 4. Faucet: Solid-Brass, Automatically Operated Lavatory Faucets.

2.2 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES

- A. Lavatory: Vitreous china, wall mounted, with back.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Standard America.
 - b. Crane Plumbing, L.L.C.
 - c. Kohler Co.
 - d. Zurn Industries, LLC; Commercial Brass and Fixtures.
 3. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1.
 - b. Type: For wall hanging.
 - c. Faucet-Hole Punching: Three holes, 2-inch (51-mm) centers.
 - d. Faucet-Hole Location: Top.
 - e. Color: White.
 - f. Mounting Material: Chair carrier.

g. ADA compatible

4. Faucet: Solid-Brass, Automatically Operated Lavatory Faucets.
5. Support: ASME A112.6.1M, Type II, concealed-arm lavatory carrier

2.3 SOLID-BRASS, MANUALLY OPERATED FAUCETS

- A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

2.4 SOLID-BRASS, AUTOMATICALLY OPERATED LAVATORY FAUCETS

- A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

- B. Lavatory Faucets: Automatic-type, battery-powered, electronic-sensor-operated, mixing, solid-brass valve.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

- a. American Standard America.
- b. Grohe America, Inc.
- c. Kohler Co.
- d. Moen Incorporated.
- e. Sloan Valve Company.
- f. TOTO USA, INC.
- g. Zurn Industries, LLC; Commercial Brass and Fixtures.

3. Standards: ASME A112.18.1/CSA B125.1 and UL 1951.
4. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
5. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
6. Body Type: Coordinate with sink to be installed on.
7. Body Material: Commercial, solid brass.
8. Finish: Polished chrome plate.
9. Maximum Flow Rate: 0.5 gpm (1.5 L/min.).
10. Mounting Type: Coordinate with sink to be installed on.
11. Spout: Rigid type.
12. Spout Outlet: Aerator.

2.5 SUPPLY FITTINGS

- A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

- B. Standard: ASME A112.18.1/CSA B125.1.

- C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.
- D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.
- E. Operation: Loose key.
- F. Insulation: as required by Code.

2.6 WASTE FITTINGS

- A. Standard: ASME A112.18.2/CSA B125.2.
- B. Drain: Grid type with NPS 1-1/4 (DN 32) offset and straight tailpiece.
- C. Trap:
 - 1. Size: NPS 1-1/2 by NPS 1-1/4 (DN 40 by DN 32).
 - 2. Material: Chrome-plated, two-piece, cast-brass trap and swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall; and chrome-plated, brass or steel wall flange.
 - 3. Material: Stainless-steel, two-piece trap and swivel elbow with 0.012-inch- (0.30-mm-) thick stainless-steel tube to wall; and stainless-steel wall flange.
- D. Insulation: as required by Code.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before lavatory installation.
- B. Examine counters and walls for suitable conditions where lavatories will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install lavatories level and plumb according to roughing-in drawings.
- B. Install supports, affixed to building substrate, for wall-mounted lavatories.
- C. Install accessible wall-mounted lavatories at handicapped/elderly mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.
- D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Division 22 Section "Escutcheons for Plumbing Piping."

- E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Division 07 Section "Joint Sealants."
- F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories.

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Division 22 Section "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Division 22 Section "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

- A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.
- B. Adjust water pressure at faucets to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

- A. After completing installation of lavatories, inspect and repair damaged finishes.
- B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed lavatories and fittings.
- D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

END OF SECTION 224216.13

SECTION 238233 - CONVECTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hydronic baseboard radiators.
 - 2. Hydronic finned-tube radiators.
 - 3. Hydronic convectors.

1.3 ACTION SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each type of product indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Color Samples for Initial Selection: For units with factory-applied color finishes.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For convection heating units to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 HOT-WATER OR STEAM BASEBOARD RADIATORS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - 1. Embassy Industries, Inc.
 - 2. Haydon Corporation, Inc.
 - 3. Rittling, a div. of Hydro-Air Components.
- D. Performance Ratings: Rate baseboard radiators according to Hydronics Institute's "I=B=R Testing and Rating Standard for Baseboard Radiation."
- E. Heating Elements: Copper tubing mechanically expanded into flanged collars of evenly spaced aluminum fins resting on polypropylene element glides. One end of tube shall be belled.
 - 1. Tube Diameter: Match existing.
 - 2. Fin Size: Match Existing.
 - 3. Fin Spacing: 50 per foot.
- F. Heating Elements: Steel tubing mechanically expanded into flanged collars of evenly spaced steel fins resting on polypropylene element glides. Tube ends shall be threaded.
 - 1. Tube Diameter: Match Existing.
 - 2. Fin Size: 3 by 3 inches.
 - 3. Fin Spacing: 52 per foot.
- G. Enclosures: Minimum 0.0428-inch thick steel, removable front cover.
- H. Rust-Resistant Enclosures: Minimum 0.052-inch- (1.3-mm-) thick ASTM A 653/A 653M, G60 galvanized-steel, removable front cover.
 - 1. Full-height back.
 - 2. Full-length damper.
 - 3. End panel.
 - 4. End caps.
 - 5. Inside and outside corners.
 - 6. Valve access door.
 - 7. Joiner pieces to snap together.
 - 8. Enclosure Height: Match existing.
 - 9. Enclosure Depth: Match Existing
 - 10. Finish: Baked-enamel finish in manufacturer's standard color as selected by Architect.
 - 11. Element Brackets: Primed and painted steel to support front panel and element.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive convection heating units for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for hydronic-piping connections to verify actual locations before convection heating unit installation.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 BASEBOARD RADIATOR INSTALLATION

- A. Install units level and plumb.
- B. Install baseboard radiators according to Guide 2000 - Residential Hydronic Heating.
- C. Install enclosure continuously around corners, using outside and inside corner fittings.
- D. Join sections with splice plates and filler pieces to provide continuous enclosure.
- E. Install access doors for access to valves.
- F. Install enclosure continuously from wall to wall.
- G. Terminate enclosures with manufacturer's end caps except where enclosures are indicated to extend to adjoining walls.
- H. Install valves within reach of access door provided in enclosure.
- I. Install air-seal gasket between wall and recessing flanges or front cover of fully recessed unit.
- J. Install piping within pedestals for freestanding units.

3.3 CONNECTIONS

- A. Connect hot-water units and components to existing piping.
 - 1. Install shutoff valves on inlet and outlet, and balancing valve on outlet.
- B. Install piping adjacent to convection heating units to allow service and maintenance.
- C. Ground electric convection heating units according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper convection heating unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Remove and replace convection heating units that do not pass tests and inspections and retest as specified above.

END OF SECTION 238233

DRAWINGS

CITY OF WALTHAM ADA UPGRADES



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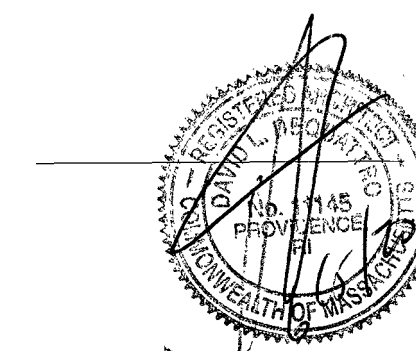
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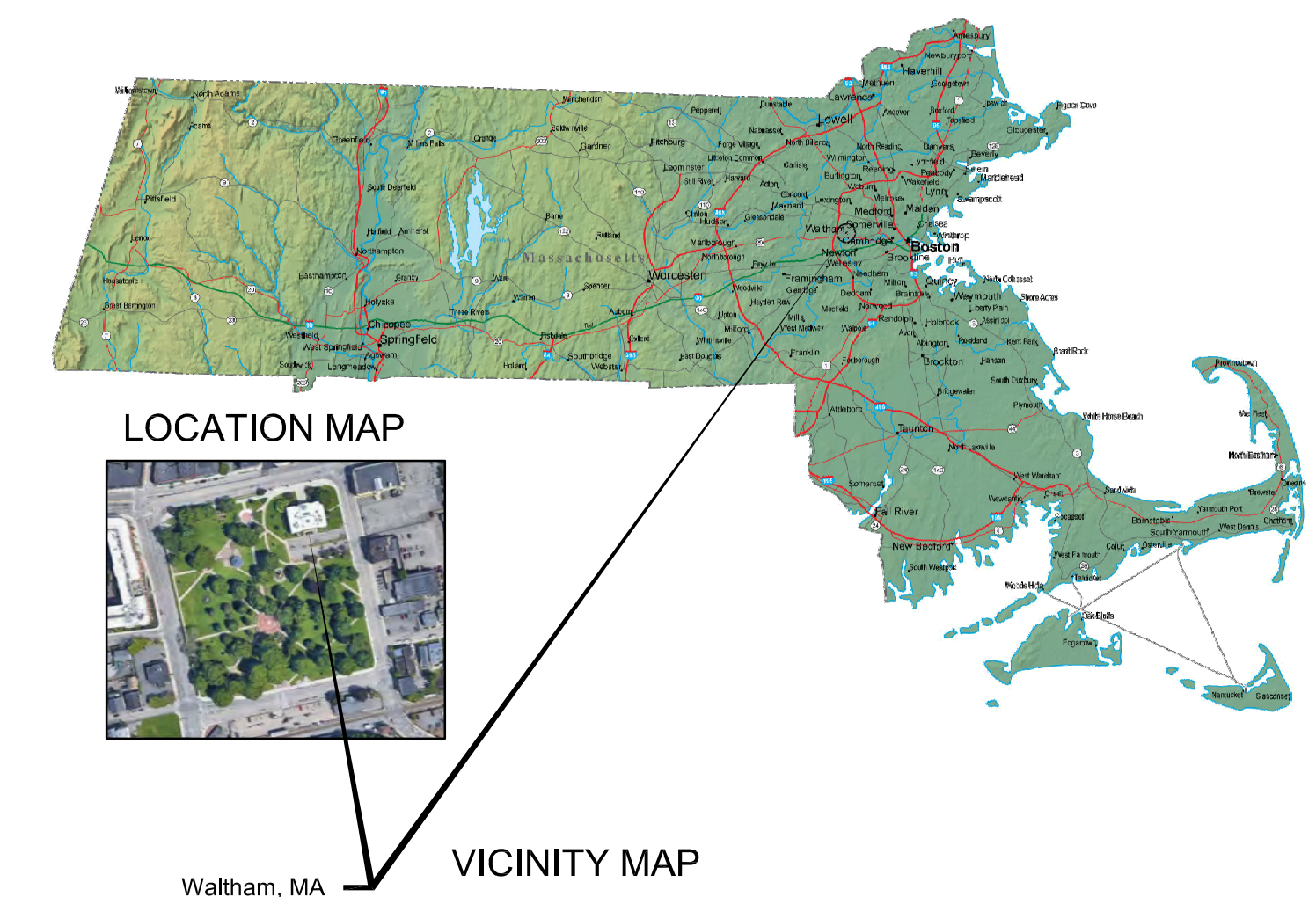
LIST OF DRAWINGS

COVER SHEET

ARCHITECTURAL

Sheet Number	Sheet Title
G001	GENERAL NOTES, ABBREVIATIONS & SYMBOLS
A101	DEMOLITION & PROPOSED FLOOR PLANS-COA BUILDING
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A104	TYPICAL MOUNTING HEIGHTS AND DETAILS

CITY OF WALTHAM ADA UPGRADES - 6525



STATUS: ISSUED FOR CONSTRUCTION

DATE: JUNE 5, 2020

SCOPE OF WORK

THIS PROJECT INVOLVES THE ADAPTIVE CORRECTION OF ALL BATHROOMS IN THE IDENTIFIED BUILDINGS IN THE CITY OF WALTHAM, MA. THE CORRECTION MUST FOLLOW ADA STANDARDS AND MUST ADDRESS ALL IDENTIFIED PROBLEMS IN THE CONSTRUCTION DOCUMENTS. THE SCOPE OF THIS WORK IS THAT OF MAKING CURRENT BATHROOMS IDENTIFIED IN THE COA BUILDING, GOVERNMENT CENTER AND PUBLIC LIBRARY COMPLIANT WITH THE NATIONAL ADA STANDARDS.

GENERAL NOTES

- GENERAL CONDITIONS: THE GENERAL CONDITIONS FOR THIS CONTRACT SHALL BE DOCUMENT A201 (1997 EDITION) EXCEPT AS HEREIN AMENDED.
- SCOPE: WORK TO INCLUDE DEMOLITION & CONSTRUCTION AS INDICATED ON THE DRAWINGS & SPECIFIED HEREIN. EACH CONTRACTOR TO FURNISH ALL LABOR & MATERIALS NECESSARY FOR A COMPLETE INSTALLATION. EACH CONTRACTOR SHALL RESPECT THE WORK OF OTHER CONTRACTORS & ARE RESPONSIBLE FOR & LIABLE TO REPAIR OR REPLACE ANY DAMAGE CAUSED BY THEIR WORK.
- CODES: ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH LOCAL & STATE CODES & REGULATIONS HAVING JURISDICTION. THE CONTRACTOR SHALL PROTECT & INDEMNIFY THE OWNER & ARCHITECT AGAINST ANY CLAIM OR LIABILITY ARISING FROM ANY SUCH CODE OR REGULATION.
- THE CONTRACTOR SHALL OBTAIN & PAY FOR ALL REQUIRED PERMITS, INSPECTIONS & APPROVALS.
- QUALITY: WORKMANSHIP SHALL BE OF THE HIGHEST TYPE, & MATERIALS USED OR SPECIFIED OF THE BEST QUALITY THAT THE MARKET OFFERS. THE CONTRACTOR SHALL PROTECT APPLICATIONS SHALL CONFORM TO THE MANUFACTURER'S SPECIFICATIONS.
- COORDINATION OF THE WORK: THE GENERAL CONTRACTOR SHALL COORDINATE THE WORK OF ALL THE SUBCONTRACTORS & MECHANICAL TRADES WHETHER THEY RECEIVE THEIR CONTRACT FROM THE CONTRACTOR OR THE OWNER. THE CONTRACTOR'S INSTRUCTIONS SHALL BE FOLLOWED BY ALL TRADES.
- MECHANICAL TRADES: THE MECHANICAL & ELECTRICAL TRADES SHALL INSTALL THEIR WORK AS RAPIDLY AS THE OTHER WORK PERMITS & SHALL COMPLETE THIS WORK BY THE TIME THE OTHER TRADES HAVE FINISHED.
- EXAMINATION OF THE SITE & DOCUMENTS: THE CONTRACTOR BEFORE SUBMITTING ANY PROPOSAL SHALL VISIT THE SITE & EXAMINE FOR HIMSELF ALL CONDITIONS & LIMITATIONS WHICH EFFECT THE CONTRACT. THE CONTRACTOR SHALL CAREFULLY EXAMINE ALL CONTRACT DOCUMENTS & SUBDIVISIONS IN THESE DOCUMENTS ARE FOR CONVENIENCE. NO REAL OR ALLEGED ERRORS IN ARRANGEMENT OF MATTER SHALL BE REASON FOR OMISSION OR DUPLICATION BY ANY CONTRACTOR.
- SEPARATE CONTRACTS: THE OWNER RESERVES THE RIGHT TO LET OTHER CONTRACTS IN CONNECTION WITH THE WORK. THE GENERAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS REASONABLE OPPORTUNITY FOR THE EXECUTION OF THEIR WORK & SHALL PROPERLY CONNECT & COORDINATE HIS WORK WITH THEIRS.
- GUARANTEE: ALL MATERIALS & WORKMANSHIP SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE UNLESS SPECIFIED OTHERWISE FOR A LONGER PERIOD OF TIME ON CERTAIN ITEMS. ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
- TRASH REMOVAL: PRIOR TO STARTING WORK, THE GENERAL CONTRACTOR SHALL PROVIDE A CONSTRUCTION DUMPSTER & PICKUP SERVICE FOR ALL CONSTRUCTION DEBRIS (DUMPSTER LOCATION TO BE COORDINATED WITH THE OWNER). AT THE END OF EACH DAY, THE GENERAL CONTRACTOR SHALL REMOVE ALL TRASH & DEBRIS FROM THE SITE & OR WITHIN THE BUILDING. IF TRASH & DEBRIS ARE NOT REMOVED, THE OWNER MAY (AT HIS OPTION) PAY FOR ITS REMOVAL & BACK CHARGE THE CONTRACTOR.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS & CONDITIONS AT THE SITE & REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO EXECUTING ANY WORK.
- HEATING, VENTILATION, PLUMBING, AIR CONDITIONING & ELECTRICAL: THIS PART OF THE WORK SHALL BE COORDINATED WITH THE OTHER TRADES. THE CONTRACTOR SHALL COORDINATE THE LOCATION & SIZE OF OPENINGS FOR VENTS, PIPES, DUCTS, INSERTS, BOXES, HANGERS ETC.. H.V.A.C. IS BY THE OWNER. COORDINATE THIS WORK WITH OWNERS REPRESENTATIVE.
- ALL SECTIONS, DETAILS, MATERIALS, METHODS, ETC. SHOWN &/OR NOTED ON ANY PLAN OR SECTION SHALL APPLY TO ALL OTHER SIMILAR LOCATIONS UNLESS OTHERWISE NOTED.
- THE GENERAL CONTRACTOR SHALL SAFELY SHORE, BRACE, OR SUPPORT ALL WORK AS REQUIRED. THIS WORK SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR & NO ACT, DIRECTION, OR REVIEW OF ANY SYSTEM OR METHOD BY THE ARCHITECT SHALL RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY.
- IT IS NOT THE INTENT OF THESE DRAWINGS TO SHOW NOR INDICATE ANY OR ALL FASTENING OR FRAMING TECHNIQUES/DEVICES, NOR BE ABLE TO SHOW ALL CONDITIONS PRESENT.
- IT IS THE OWNERS RESPONSIBILITY TO SELECT ALL FINISHES, IE: PAINT, WALL COVERING, FLOOR MATERIAL, CEILING MATERIAL, MOLDINGS & ELECTRICAL RECEPTACLES, ETC.. IT IS THE CONTRACTORS RESPONSIBILITY TO PURCHASE & INSTALL ALL ITEMS AS THE OWNER SELECTS THEM.
- ALL WALLS & CEILINGS TO BE 5/8" OR 1/2" GYPSUM BOARD, TYPE "X" FINISH/ TEXTURE TO BE SELECTED BY OWNER. 5/8" MOISTURE RESISTANT TYPE X OR 5/8" CEMENT BOARD.
- CONTINUANCE OF BUSINESS: THE GENERAL CONTRACTOR SHALL MAKE PROVISIONS FOR CLOSING OFF CONSTRUCTION AREAS FROM BUSINESS AREAS, KEEPING ALL UTILITIES IN OPERATION.
- STORAGE: THE CONTRACTOR SHALL PROVIDE ON SITE WEATHER PROTECTED STORAGE SPACE, IE: TRAILER. STORAGE OF CONSTRUCTION MATERIALS IN THE EXISTING BUILDING SHALL NOT BE PERMITTED.
- PROTECTION: THE CONTRACTOR SHALL CLOSE UP & SEAL OFF (DUST FREE) ALL AREAS NOT INVOLVED IN CONSTRUCTION, & SHALL PROTECT ALL PUBLIC & ADJACENT AREAS FROM DAMAGE. THE CONTRACTOR WILL PAY FOR EXISTING SERVICES (WATER, TELEPHONE & ELECTRICITY) & WILL TURN OVER THESE SERVICES TO THE OWNER UPON FINAL ACCEPTANCE OF THIS PROJECT (COORDINATE WITH OWNERS REPRESENTATIVE).
- THE CONTRACTOR SHALL VERIFY LOCATION & ACTUAL DEPTH OF ALL EXISTING SANITARY PIPING, STORM DRAINS, GAS & WATER MAINS, ELECTRIC LINES & PIPES. HE IS ALSO ADVISED TO VERIFY ACTUAL INVERTS OF SANITARY & STORM LINES BY HAVING DUG TEST PITS WELL IN ADVANCE OF TRENCHING & CONSTRUCTION. ANY DISCREPANCY IN THIS PLAN & ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE ARCHITECT. ALL NECESSARY PERMITS & APPROVALS MUST BE OBTAINED FROM PROPER AUTHORITIES.
- ARCHITECTURAL, MECHANICAL, ELECTRICAL & SPRINKLER: EACH CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT FOR APPROVAL PRIOR TO FABRICATION.
- ALL WORK IS NEW UNLESS OTHERWISE NOTED.
- DAMAGE: THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING BUILDING, WALLS, CEILINGS, FLOORS, FURNITURE & FURNISHINGS. DAMAGED SURFACES DUE TO CONSTRUCTION TO BE PATCHED, REPAIRED &/OR REPLACED AS REQUIRED & BLEND TO MATCH EXISTING ADJACENT SURFACES AT NO ADDITIONAL COST TO OWNER.

27. DEMOLITION:

- WORK SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO THE FOLLOWING: REMOVAL AND/OR SALVAGING OF PLUMBING FIXTURES, CORING AND/OR TRENCHING FOR NEW PLUMBING LINES, REMOVAL OF WALL AND FLOOR TILE, REMOVAL AND RELOCATION OF TOILET ACCESSORIES, REMOVAL OF MILLWORK, REMOVAL OF BASEBOARD HEAT, REMOVAL OF WALL ASSEMBLIES ETC.
 - THE GENERAL CONTRACTOR SHALL OBTAIN ALL DEMOLITION PERMITS & PAY ALL FEES AS REQUIRED BY LOCAL REGULATIONS.
- EXISTING UTILITIES: WATER LINES, EXISTING & NEW MUST BE DISINFECTED IN CONFORMANCE WITH ARMY SPECS. #4-1. EXISTING SEWER LINES TO BE CLEANED AFTER CONSTRUCTION IS COMPLETED.
 - GYPSUM BOARD: GYPSUM BOARD SHALL BE 5/8" OR 5/8" F.C.W.R. GYPSUM BOARD TO BE USED IN ALL WET AREAS SUCH AS TOILET ROOMS, MATERIAL AS MANUFACTURED BY U.S. GYPSUM OR EQUAL. FINISH (CEMENT ACCESSORIES & TAPE OR SKIM COAT) ALL JOINTS & NAIL HEADS READY FOR PAINT, VMC OR PANELING.
 - HANDICAPPED REQUIREMENTS: THE GENERAL CONTRACTOR WILL ACQUAINT HIMSELF WITH THE (ADA CODE-521 CMR 30 AND 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN) TO INSURE THAT THIS FACILITY WILL BE ACCESSIBLE. THE FOLLOWING IS A PARTIAL LIST OF REQUIREMENTS:
 - ALL DOORS WILL HAVE A MINIMUM OF 1'-6" CLEAR ON THE LATCH (PULL) SIDE OF THE DOOR.
 - DOOR MATS & THRESHOLDS TO BE A MAXIMUM OF 1/2" HIGH.
 - DOOR HARDWARE SHALL BE MOUNTED BETWEEN 36" & 42" ABOVE FLOOR.
 - DOORS TO HAZARDOUS AREAS TO HAVE KNURLED HANDLES.
 - TOILETS:
 - LAVATORY TO HAVE LEVER HANDLES OR SPRING FAUCETS.
 - A COAT HOOK 54" ABOVE THE FLOOR WILL BE MOUNTED ON THE BACK SIDE OF THE HANDICAPPED STALL DOOR.
 - LOCATE THE WATER CLOSET 18" FROM THE CENTER LINE OF THE FIXTURE TO THE WALL. THE SEAT WILL BE 17" TO 19" ABOVE THE FLOOR TO THE TOP OF THE SEAT.
 - PROVIDE TWO 42" LONG X 1 1/2" OUTSIDE DIAMETER PEENED GRAB BARS 1/2" FROM THE WALL WITH ONE BEHIND AT 6" FROM THE WALL & ONE ADJACENT TO AT 12" FROM THE WALL, 33"-36" PARALLEL TO & ABOVE THE FLOOR.
 - LAVATORY TO BE MOUNTED 32" ABOVE THE FINISHED FLOOR TO RIM WITH KNEE SPACE OF 30" IN WIDTH & 27" IN HEIGHT.
 - INSTALL MIRROR 36" ABOVE THE FINISHED FLOOR (TO BOTTOM) & 72" TO TOP.
 - DISPENSERS TO BE MOUNTED A MAXIMUM OF 42" ABOVE THE FLOOR TO ALL OPERATING OR DISPENSING SLOTS.
 - TOILET PAPER DISPENSERS MOUNTED 19" TO CENTER LINE ABOVE THE FLOOR.

- THE GENERAL CONTRACTOR SHALL COORDINATE THE LOCATION & SIZE OF OPENINGS FOR VENTS, PIPES, INSERTS, BOXES, HANGERS, ETC.
- ALL INTERIOR FINISHES & FURNISHINGS FOR CEILINGS, WALLS & FLOORS SHALL BE CLASS A WITH A FLAME SPREAD RATING OF 0 TO 2.
- SUBMIT SAMPLES OF ALL PAINTS & STAINS FOR APPROVAL OF THE OWNER PRIOR TO APPLICATION.
- BEFORE COMMENCING WORK, THE GENERAL CONTRACTOR WILL MEET WITH THE APPOINTED OWNERS REPRESENTATIVE TO OUTLINE PHASING OF CONSTRUCTION & DISPOSITION OF EXISTING CONSTRUCTION MATERIALS & OR EQUIPMENT. ALL WOOD BLOCKING TO BE PRESSURE TREATED, FIRE RETARDANT.
- ALL PIPING, CONDUIT, BX CABLE & SIMILAR CONSTRUCTION WILL BE EITHER LOCATED INSIDE A WALL OR INSULATED WITH A MIN. 3/4" SPACE FROM THE WALL OR SEALED TO THE WALL.
- ALL ANGULAR OPENINGS IN CONSTRUCTION WILL BE SEALED TO WITHIN 1/32"
- ALL PLYWOOD TO BE FR5 (FIRE RETARDANT TREATED) PLYWOOD ON EXTERIOR FACES TO BE EXTERIOR GRADE FR5.
- PROVIDE FR5 PLYWOOD & PRESSURE TREATED BLOCKING IN WALLS FOR ALL GRAB BARS, TOILET ROOM FIXTURES & MISC. SEE PLANS

ELECTRICAL NOTES:

- ALL WORK SHALL BE PERFORMED BY LICENSED ELECTRICIANS & SHALL COMPLY WITH THE RHODE ISLAND ELECTRICAL CODE (SBC-5), N.I.P.A. & ALL APPLICABLE LOCAL CODES & ORDINANCES.
- THIS CONTRACTOR SHALL VISIT THE SITE TO VERIFY ALL EXISTING ELECTRICAL CONDITIONS, CONFIRM EXISTING WIRING METHODS, QUALITY & TYPE OF DEVICES, COVER PLATES, FIXTURES, ETC. CONFIRM LOCATIONS OF NEAREST BRANCH CONDUIT PANEL.
- PROVIDE EMERGENCY LIGHTING & EXIT SIGNS COMPLYING WITH LIFE SAFETY CODE.
- PROVIDE BRANCH WIRING TO ALL NEW DEVICES & LIGHT FIXTURES INDICATED ON PLANS. DO NOT CONNECT RECEPTACLES & LIGHT FIXTURES ON COMMON CIRCUITS. PROVIDE HOMERUNS TO NEAREST PANEL BOARDS SIZED TO SUPPORT ALL NEW LOAD REQUIREMENTS.
- ALL NEW WIRING SHALL MATCH EXISTING BRANCH WIRING CONDITIONS, IE: CONDUIT & WIRE, "MC" CABLE, OTHER PROVIDE GROUND WIRE WITH ALL BRANCH CIRCUITS MINIMUM.
- ALL DEVICES SHALL BE PROVIDED WITH BACKBOXES, COVER PLATES & BRANCH WIRING FOR A COMPLETE SYSTEM.

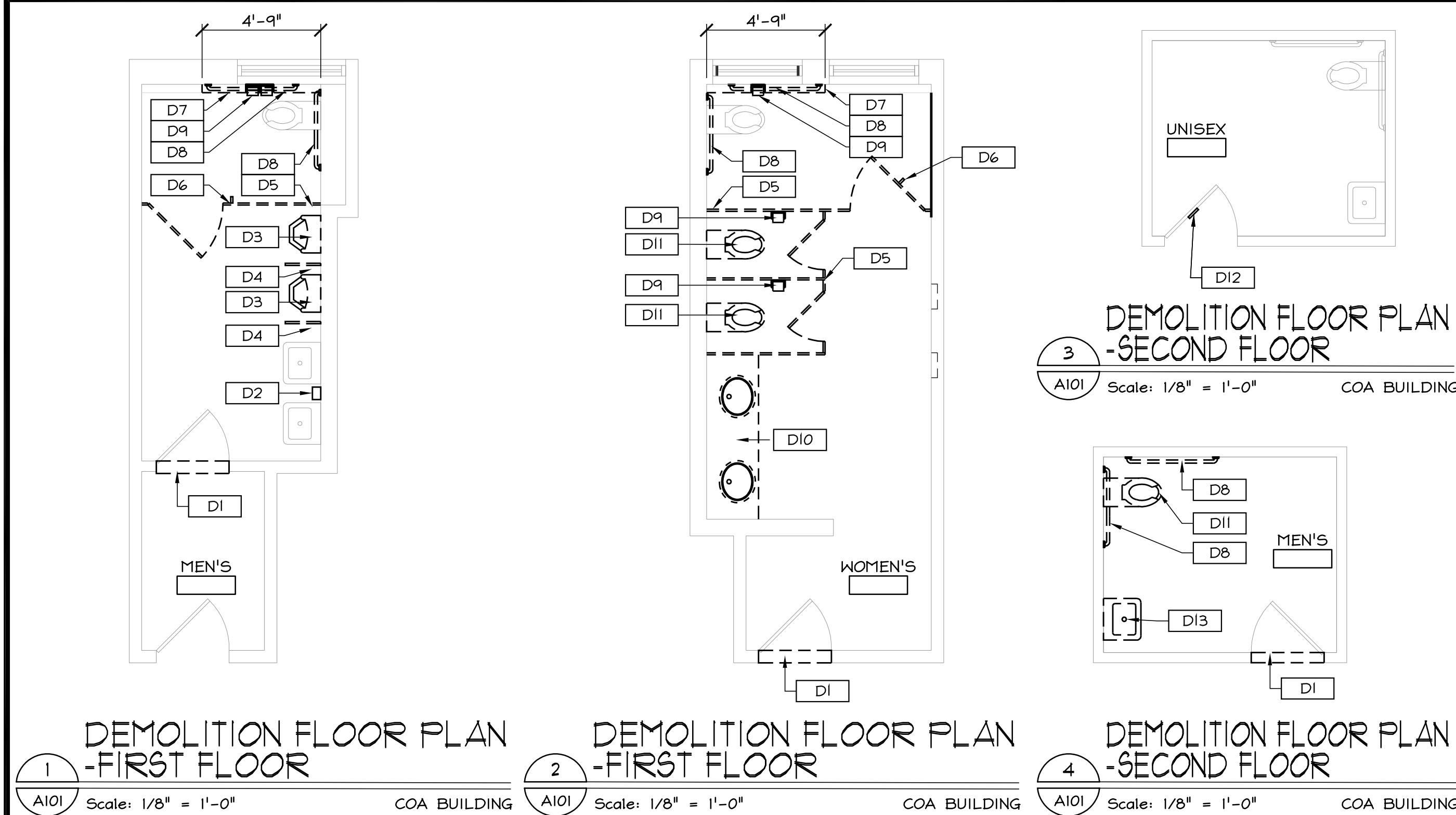
PLUMBING NOTES:

- PLUMBING CONTRACTOR SHALL RECONFIGURE EXISTING &/OR PROVIDE NEW FIXTURES, PIPING, ETC., AS REQUIRED TO PROPERLY SUPPLY RENOVATED SPACES. EXACT LOCATIONS OF THESE ITEMS IS TO BE COORDINATED WITH THE OWNER.

ABBREVIATIONS

AFB	ABOVE FINISHED FLOOR	FBD	FIBERBOARD	MB	MACHINE BOLT	SDL	SADDLE
AFP	ACCESS PANEL	FGL	FLOOR GLASS	MAH	MANUFACTURED	SEAN	SEAM
ACP	ACCESS PANEL	FIL	FILLER (S)	MFD, MFR'D	MANUFACTURED	SCRN	SCREEN
ACC	ACCESSORY, ACCESSORIES	FIN	FINISH	MFR	MANUFACTURER	SEALNT	SEALANT
ACOUS	ACOUSTICAL	FNF	FINISH FLOOR ELEVATION	MFG	MANUFACTURING	SEALER	SEALER
ACT	ACTIVATING	MBL	MASONRY BLOCK	MGL	MASONRY	STG	STAIR
ADH	ADHESIVE	FTR	FINNED TUBE RADIATION	MK	MARK	SEC	SECTION
ADJ	ADJUSTABLE	FA	FIRE ALARM SYSTEM	MAS	MASONRY	SEL	SELECT (OR)
AGG	AGGREGATE (S)	FDC	FIRE DEPARTMENT CONN.	MCJ	MASONRY CONTROL JOINT	SPT	SEPTIC TANK
AGV	AIR CONDITIONING	FE	FIRE EXTINGUISHER	MIS	MASONRY	SVJ	SERVICE SINK
AVB	AIR/VAPOR BARRIER	FEC, FXC	FIRE EXTINGUISHER CABINET	MRE	MASONRY OPENING	SH	SHEATHING
ALC	ALTERNATING CURRENT	FHC	FIRE HOSE CABINET	MTL	MATERIAL (S)	SHT	SHEET
ALT	ALTERNATE	FHR	FIRE HOSE RACK	MAX	MAXIMUM	SHS	SHOVEL
ALUM	ALUMINUM	FH	FIRE HYDRANT	MCC	MEDIUM CABINETS	S & R	SHELF & ROD
AT	ALUMINUM THRESHOLD	FMN	FIRE MAIN	MED	MEDIUM	SHR	SHOWER RECEPTOR
ANC	ANCHOR (S) ANCHORAGE (S)	FMR	FIRE MANSION	MDF	MEDIUM DENSITY FIBERBOARD	SHR	SINK
AB	ANCHOR BOLTS	FRT	FIRE RESISTANT	MFB	METAL	SHM	SIMILAR (HUNG)
AN	ANGLE	FRS	FIRE RESISTANT FINISH	MIB, MEMB	MASONRY BRICK	SH	SINGLE
AND	ANDIZED	FRC	FIRE-RETARDANT TREATMENT	MTL	METAL	SKL	SKYLIGHT
ANT	ANTENNA (E)	FSD	FIRE STANDPIPE	METC	METAL CLAD	SL	SLEEVE
APP	APPROVED, APPROVAL	FXD	FIXED	MRE	METAL EDGE	SDE, SD	SHOCK DETECTOR
APPROX	APPROXIMATE	FXT	FIXTURE	MTR	METAL ROOF DECK(ING)	SMV	SMOKE-VENTING HATCH
AD	AREA DRAIN	FLG	FLASHING	M	METER (S)	SCWD	SOLID CORE WOOD
@	AT	FHCS	FLAT HEAD COUNTERSUNK SCREW	MEZZ	MEZZANINE	SS1	SOLID SURFACE MATERIAL
ATT	ATTACH, ATTACHMENT	FHWS	FLAT HEAD WOOD SCREW	MIC	MICROPHONE	SPK	SPEAKER
AV	AUTOMATIC	FLM	FLOOR	MIM	MILLWORK	SPC	SPECIFICATIONS
AVE	AVENUE	FLR	FLOOR, FLOORING	MIR	MIRROR	SPF	SPECIFIED
AVG	AVERAGE	FD	FLOOR DRAIN	MIR	MIRROR	SQR	SQUARE
		FLU	FLOOR GRILLE (REGISTER)	MIS	MISCELLANEOUS	SQ	SQUARE FOOT (FEET)
		FL	FLOOR LINE	MIX	MIXING VALVE	ST	SQUARE YARD
		BM	BENCH MARK	MOD	MODULAR	STAG	STAGGER
		BG	BEARING	MLD	MEDIUM DENSITY OVERLAY	SS	STAINLESS STEEL
		BL	BEARING PLATE	MND	MOUNT (ED), (ING)	STD	STEEL
		BIT	BITUMINOUS	MNT	MOUNTING HEIGHT	STF	STIFFENER
		BLK	BOTTOM OF CURB	MUL	MULLION	STN	STONE
		BLOCK	BLOCKING			STO	STANDARD
		BLDG	BUILDING			SD	STORM DRAIN
		BD	BOARD			S	SUPPORT
		BF	BOTTOM OF FOOTING			SIP	SUSPENDED
		BO	BOTTOM OF CURB			SUP	SUSPENDED ACOUSTIC TILE
		BOX	BOTH SIDES			SUSP CEIL	SUSPENDED CEILING
		BS	BOTH WAYS			SYM	SYMMETRY (ICAL)
		BOT	BOTTOM			SYS	SYSTEM
		BKT	BRACKET				
		BK	BRICK			TB	TACKBOARD
		BRG	BRIDGING, BRIDGE (D)			TEL	TELEPHONE
		BTU	BRITISH THERMAL UNIT			TV	TEMPERATURE CONTROL VALVE
		BLDG	BUILT-UP ROOFING			TMF, TCMF	TEMPERATURE CONTROL VALVE
		BUR	CHALK			TP	TEST PIT
		CK				TZ	THERMOMETER
						TH	THERMOSTAT
						THS	THICK, THICKNESS
						TR	TOLERANCE
						TCL	TONGUE AND GROOVE
						TG, T & G	TOP OF CONCRETE / CURB
						TOC	TOP OF STEEL
						TS	TOP OF WALL
						TRNS	TRANSOM
						TR	TRANSOM
						TJ	TRUSS JOIST "I" SECTION
						TR	TURNING POINT
						TR	TYPICAL
						TO1	TOP OF MASONRY
						UHF	ULTRAHIGH FREQUENCY
						UG	UNDERGROUND
						UL	UNDERWRITERS LABORATORY
						UNF	UNFINISHED
						UNP	UNPAINTED OTHERWISE
						UH	UNIT HEATER
						UK	UNIT KITCHEN
						UV	UNIT VENTILATOR
						UAS	UPWARD ACTING SECTIONAL
						V-J	V-JOINTED
						VAC	VACUUM
						VAB	VAPOR BREAKER
						VAB	VAPOR BARRIER
						VAPORPROOF	VAPORPROOF
						VNR	VENEER
						VN	VENT THROUGH ROOF
						VTR	VENTILATOR
						VFR, VERT	VERTICAL
						VHFL	VERY HIGH FREQUENCY
						VLF	VERY LOW FREQUENCY
						VIB	VIBRATION ISOLATOR
						V1	VINTL
						VN	VINYL COMPOSITION TILE
						VB	VINYL BASE
						VF	VINYL FABRIC
						VOT	VINYL QUARTZ TILE
						VS	VINYL SHEET
						VN	VINYL TILE
						VIT	VITREOUS
						VIC	VITRIFIED CLAY
						VV	VOLY (AGE)
						VWC	VINYL WALLCOVERING
						WN	WAINSCOT
						WH	WALL-HUNG
						WHY	WALL HYDRANT
						WTN	WALL TO WALL
						W	WASTE
						W	WASTE RECEPTACLES
						WC	WATER CLOSET
						WHA	WATER HAMMER ARRESTOR
						WP	WATERPROOF (ED), (ING)
						WPT (WP)	WEATHERSTRIPPING
						WE	WEEP HOLE
						WVF	WELDED WIRE FABRIC
						WID	WIDE WIDTH
						WFLF	WIDE-FLANGE BEAM
						WGL	WIRE GLASS
						WIF	WIRE FISH
						W, W/	WITHIN
						WO, W/O	WITHOUT
						WB	WOOD BASE
						WB1	WOOD BEAM
						WBO	WORK BY OTHERS
						WBOR	WORK BY OWNER
						WB	WORK BY TENANT
						WK	WORK
						WKR1	WORKROOM
						W	WROUGHT IRON
						XR	X-RAY
						Y	WYE FITTING
						Z	ZONE
						ZC	ZINC COATED
						ZS	ZEE STUD

MB	MACHINE BOLT	SDL	SADDLE
MAH	MANUFACTURED	SEAN	SEAM
MFD, MFR'D	MANUFACTURED	SCRN	SCREEN
MFR	MANUFACTURER	SEALNT	SEALANT
MFG	MANUFACTURING	SEALER	SEALER
MGL	MASONRY	STG	STAIR
MK	MARK	SEC	SECTION
MAS	MASONRY	SEL	SELECT (OR)
MCJ	MASONRY CONTROL JOINT	SPT	SEPTIC TANK
MIS	MASONRY	SVJ	SERVICE SINK
MRE	MASONRY OPENING	SH	SHEATHING
MTL	MATERIAL (S)	SHT	SHEET
MAX	MAXIMUM	SHS	SHOVEL
MCC	MEDIUM CABINETS	S & R	SHELF & ROD
MED	MEDIUM	SHR	SHOWER RECEPTOR
MDF	MEDIUM DENSITY FIBERBOARD	SHR	SINK
MFB	METAL	SHM	SIMILAR (HUNG)
MIB, MEMB	MASONRY BRICK	SH	SINGLE
MTL	METAL	SKL	SKYLIGHT
METC	METAL CLAD	SL	SLEEVE
MRE	METAL EDGE	SDE, SD	SHOCK DETECTOR
MTR	METAL ROOF DECK(ING)	SMV	SMOKE-VENTING HATCH
M	METER (S)	SCWD	SOLID CORE WOOD
MEZZ	MEZZANINE	SS1	SOLID SURFACE MATERIAL
MIC	MICROPHONE	SPK	SPEAKER
MIM	MILLWORK	SPC	SPECIFICATIONS
MIR	MIRROR	SPF	SPECIFIED
MIS	MISCELLANEOUS	SQR	SQUARE
MIX	MIXING VALVE	SQ	SQUARE FOOT (FEET)
MOD	MODULAR	ST	SQUARE YARD
MND	MEDIUM DENSITY OVERLAY	STAG	STAGGER
MNT	MOUNT (ED), (ING)	SS	STAINLESS STEEL
MHT	MOUNTING HEIGHT	STD	STEEL
MUL	MULLION	STF	STIFFENER
		STN	STONE
NL	NON-LABELED (FINISH)	STO	STANDARD
NAT	NOISE-REDUCTION	SD	STORM DRAIN
NRC	CO-EFFICIENT	S	SUPPORT
NOM	NOMINAL	SIP	SUSPENDED
NC	NON-CORROSIVE	SUP	SUSPENDED ACOUSTIC TILE
NTS	NOT IN THIS CONTRACT	SUSP CEIL	SUSPENDED CEILING
NOT	NOT TO SCALE	SYM	SYMMETRY (ICAL)
NO#	NUMBER	SYS	SYSTEM
OC	ON-CENTER		
K,L,H	OPEN-ROOF STEEL JOIST	TB	TACKBOARD
OPNG	OPERATOR	TEL	TELEPHONE



DEMOLITION NOTES:

- THE SCOPE OF THIS DEMOLITION PACKAGE IS TO PROVIDE A SHELL BUILDING INCLUSIVE OF EXISTING ROOF, EXTERIOR WALLS, FLOOR SLAB, & STRUCTURAL FRAMING.
- THE EXISTING CONDITIONS INFORMATION SHOWN &/OR INDICATED ON THE DRAWINGS WAS OBTAINED FROM LIMITED EXISTING DRAWINGS PREPARED BY OTHERS, (WHEN AVAILABLE); FIELD REVIEW; FIELD MEASUREMENT; &/OR OTHER AVAILABLE DOCUMENTATION &/OR OBSERVATION BY OTHERS. NOT ALL EXISTING CONDITIONS &/OR ACTUAL CONSTRUCTION MAY BE INDICATED &/OR KNOWN.
- CONTRACTOR TO VERIFY ALL EXISTING, CONDITIONS, CONNECTIONS, LOCATIONS, SIZES, ETC. IN THE FIELD AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
- CONTRACTOR TO COORDINATE EXTENTS OF ALL DEMOLITION WORK WITH ALL NEW WORK AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
- CONTRACTOR TO PROPERLY DE-ENERGIZE, SHUT OFF & CAP ALL UTILITIES (ELECTRICAL, GAS, WATER, SEWER, TELEPHONE, ETC.) BACK TO THE EXISTING EXTERIOR WALLS, ROOF DECK, AND/OR TO SLAB OR GRADE. U.N.O. COORDINATE W/ MEP DEMOLITION DWGS & LOCAL UTILITY COMPANIES.
- FULL EXTENT OF BUILDING MATERIALS IS UNKNOWN. EXISTING BUILDING CONSTRUCTION MAY CONTAIN MATERIALS THAT REQUIRE ABATEMENT. IF POTENTIAL MATERIALS ARE DISCOVERED, CONTRACTOR TO NOTIFY OWNER & ARCHITECT BEFORE PROCEEDING WITH WORK.
- CONTRACTOR TO PROVIDE ALL OSHA and/or BUILDING CODE REQUIRED SAFETY PROTECTION TO PROTECT WORKERS FROM FALLS, CRUSHING, ELECTROCUTION, IMPACT FROM ABOVE, ETC.
- CONTRACTOR TO MAINTAIN BUILDING IN A SAFE AND SECURE MANNER AND TO ELIMINATE THE APPEARANCE OF AN ATTRACTIVE NUISANCE. MAINTAIN PHYSICAL BARRIER TO PREVENT BUILDING/ SITE ACCESS BY CHILDREN AT A MINIMUM.
- CONTRACTOR TO PROTECT ALL EXISTING WORK TO REMAIN DURING DEMOLITION.
- CONTRACTOR TO FURNISH AND INSTALL ALL SHORING AND/OR BRACING TO SUPPORT ALL EXISTING WALLS, FLOORS/ROOFS, ETC. PRIOR TO REMOVALS OF EXISTING CONSTRUCTION.
- EXISTING BUILDING CONSTRUCTION DEFICIENCIES NOT INDICATED ON THE DRAWINGS, BUT UNCOVERED &/OR DISCOVERED BY CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPORTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION OF NEW WORK. ADDITIONAL DETAILS WILL BE FURNISHED AS NECESSARY. TYPICAL.
- PROTECT THROUGH PENETRATIONS OF HORIZONTAL ASSEMBLIES AND FIRE-RESISTANCE-RATED WALL ASSEMBLIES WITH AN APPROVED FIRESTOP SYSTEM EQUIVALENT TO THE FIRE-RESISTANCE RATING OF THE CONSTRUCTION PENETRATED.

DEMOLITION LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- EXISTING WALL/ITEM TO BE REMOVED
- EXISTING FLOOR TO BE TRENCHED
- R4D = REMOVE & DISPOSE OF
- R4S = REMOVE & SALVAGE

DEMOLITION WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- D1 R4D DOOR THRESHOLD IN IT'S ENTIRETY. PREP FLOOR FOR NEW ADA COMPLIANT THRESHOLD
- D2 R4S SOAP DISPENSER FOR REINSTALLATION
- D3 R4S URINAL FOR RELOCATION. OPEN WALL AS NECESSARY TO MOVE URINAL. CAP PIPES AS NECESSARY
- D4 R4S PRIVACY PARTITIONS FOR REINSTALLATION
- D5 R4S ACCESSIBLE TOILET COMPARTMENT AND/OR STALL DOOR FOR RECONFIGURATION OF DOOR SWING AND RELOCATION OF TOILET COMPARTMENT
- D6 R4S COAT HOOK FOR REINSTALLATION
- D7 R4D PORTION OF BASE BOARD HEAT TO ACCOMMODATE WATER CLOSET CLEARANCE. REWORK HOT WATER LINE DOWN THROUGH BASEMENT AND STUB BACK UP TO RECONNECT HOT WATER LINE BACK TO NEAREST BASEBOARD. PATCH AND SEAL AS REQUIRED
- D8 R4D REAR AND SIDE MOUNTED GRAB BAR
- D9 R4S TOILET PAPER DISPENSER FOR REINSTALLATION
- D10 R4D LAVATORY COUNTERTOP AND/OR SINKS IN IT'S ENTIRETY. CAP PIPES AS NECESSARY
- D11 R4S WALL AND/OR FLOOR MOUNTED TOILET. OPEN WALL AS NECESSARY TO MOVE TOILET. CAP PIPES AS NECESSARY
- D12 R4S ROOM SIGNAGE FOR REINSTALLATION
- D13 R4S SINK IN IT'S ENTIRETY. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK

GENERAL PLAN NOTES:

- COORDINATE ALL NEW WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
- ALL DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH U.N.O.
- ALL WALL PENETRATIONS AND/OR DAMAGE CAUSED BY DEMOLITION AND/OR NEW WORK TO HAVE AREAS PATCHED & REPLACED IN-KIND. IF EXISTING MATERIALS CANNOT BE MATCHED, CONTRACTOR TO COVER IN THEIR BID NEW SIMILAR MATERIALS TO COVER ENTIRE WALL, NOT THE PATCHED AREA

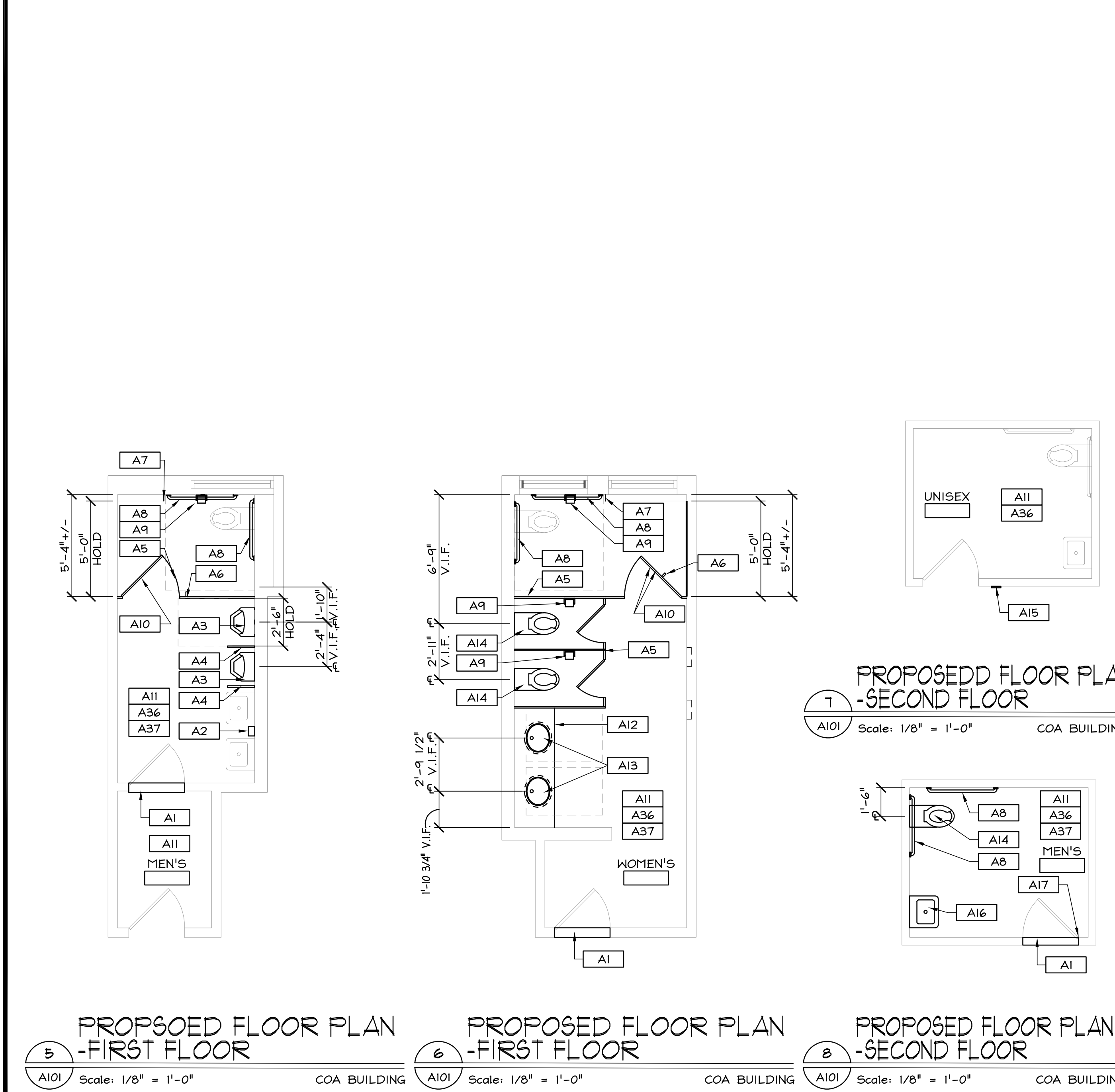
PROPOSED LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- NEW WALL/PARTITION

F#1 = FURNISH AND INSTALL

PLAN WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- A1 F#1 ADA DOOR THRESHOLD TO MATCH EXISTING FINISH AND DOOR OPENING. THRESHOLD NOT TO EXCEED MAX HEIGHT OF 1/2". 1/4" VERTICAL W/ 1/4" BEVELED
- A2 REINSTALL SOAP DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A3 REINSTALL URINAL. RE-PIPE AS NECESSARY TO ACCOMMODATE NEW LOCATION. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH & PAINT WALL OR MATCH TILE TO MATCH EXISTING FINISH(S). IF FINISHES CANNOT BE MATCHED THEN PROVIDE NEW FINISHES ON ENTIRE WALL.
- A4 REINSTALL PRIVACY PARTITIONS
- A5 REINSTALL ACCESSIBLE TOILET COMPARTMENT AND STALL DOOR
- A6 REINSTALL COAT HOOK. REFER TO TYPICAL MOUNTING HEIGHTS
- A7 RECONFIGURE BASE BOARD SHEET METAL AS NECESSARY TO CLOSE OFF END. PATCH WALL AND FLOOR AS NECESSARY TO MATCH EXISTING
- A8 F#1 REAR AND SIDE MOUNTED GRAB BARS. REFER TO TYPICAL MOUNTING HEIGHTS
- A9 REINSTALL TOILET PAPER DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A10 F#1 PULL HANDLES ON BOTH SIDES OF ACCESSIBLE STALL DOOR NEAR THE LATCH, AND CENTER DOOR OPENING HARDWARE 34"-48" ABOVE FINISH FLOOR
- A11 PATCH TO MATCH ENTIRE ROOM AS NECESSARY TO ACCOMMODATE NEW WORK. MATCH FLOOR, WALL TILE AND PAINT COLORS
- A12 F#1 SOLID SURFACE COUNTERTOP. RE: 4/A104 FOR ADDITIONAL INFORMATION
- A13 F#1 NEW ADA DROP IN SINKS. CONNECT PLUMBING TO EXISTING LOCATIONS IN THE WALL OR PROVIDE FLOOR OFFSET FLANGE TO ACCOMMODATE NEW LOCATION
- A14 REINSTALL WALL AND/OR FLOOR MOUNTED TOILET. RELOCATE CARRIER AS NECESSARY OR PROVIDE FLOOR OFFSET FLANGE TO ACCOMMODATE NEW LOCATION
- A15 REINSTALL ROOM SIGNAGE. REFER TO TYPICAL MOUNTING HEIGHTS
- A16 REINSTALL WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS
- A17 ADJUST OR REPLACE DOOR CLOSER. MAINTAIN DOOR HINGES TO PROVIDE AN OPENING FORCE NOT TO EXCEED 5LBF
- A18 F#1 ADA FLOOR MOUNTED TOILET. REFER TO TYPICAL MOUNTING HEIGHTS
- A19 F#1 NEW WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS

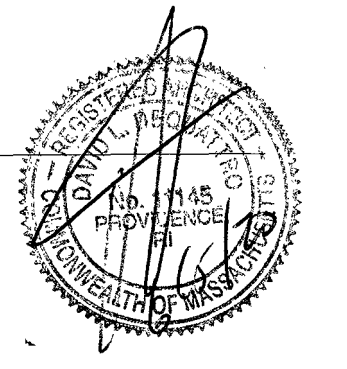


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Checked by DLD

Revised on

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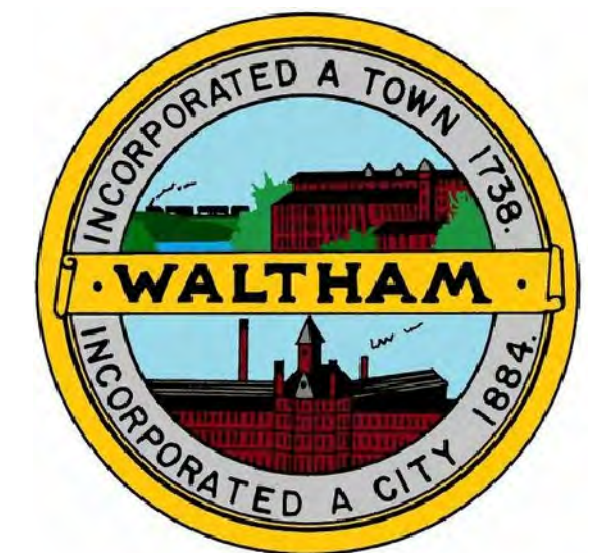
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Architecture - Project Management - Interior Design

Project

**CITY OF WALTHAM
ADA UPGRADES**



610 Main Street
Waltham, MA 02452

Drawing Status

**ISSUED FOR
CONSTRUCTION**

Issued On JUNE 5, 2020

Sheet Contents

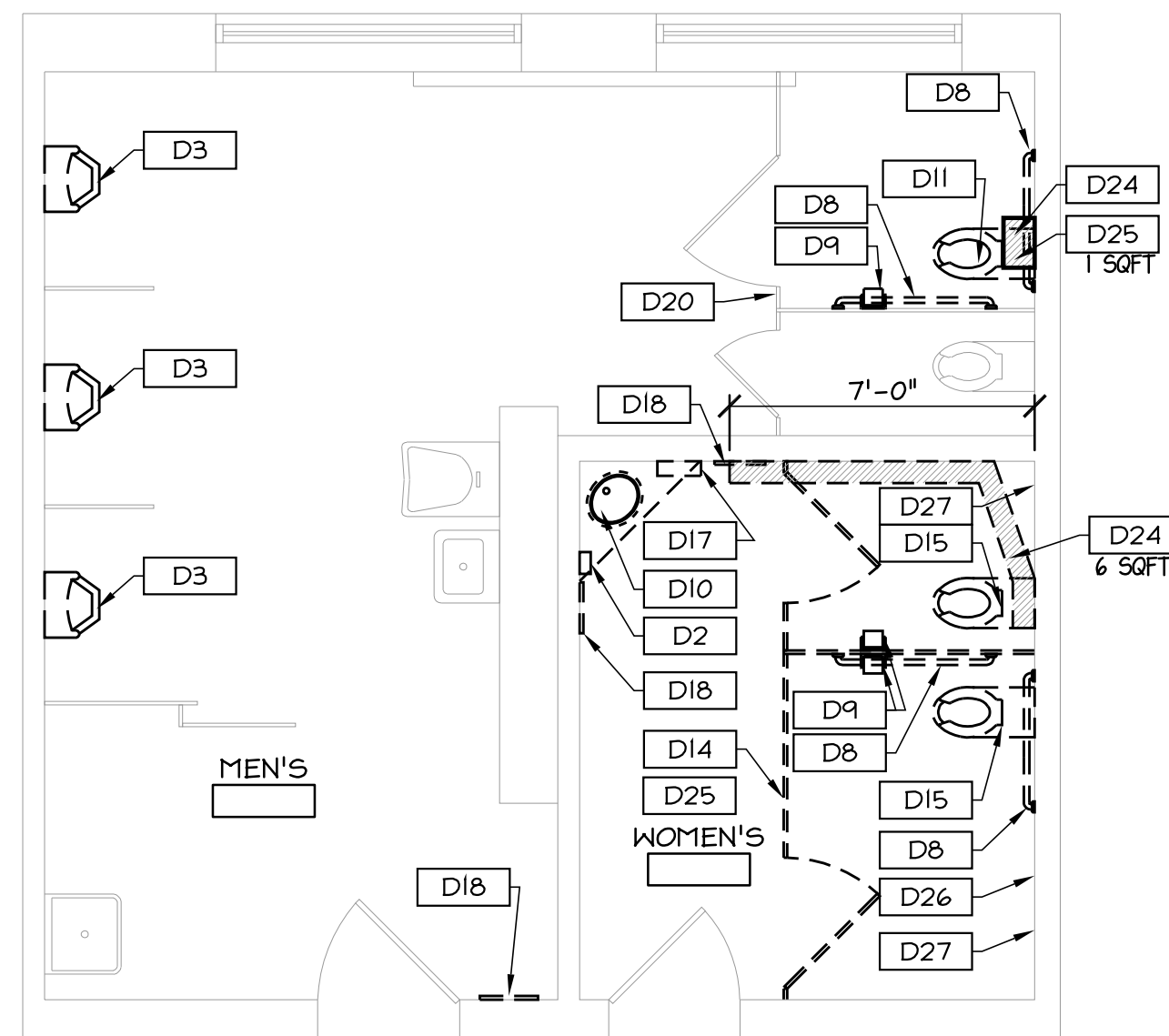
**DEMOLITION &
PROPOSED FLOOR
PLANS-COA BUILDING**

Project Number. 6525

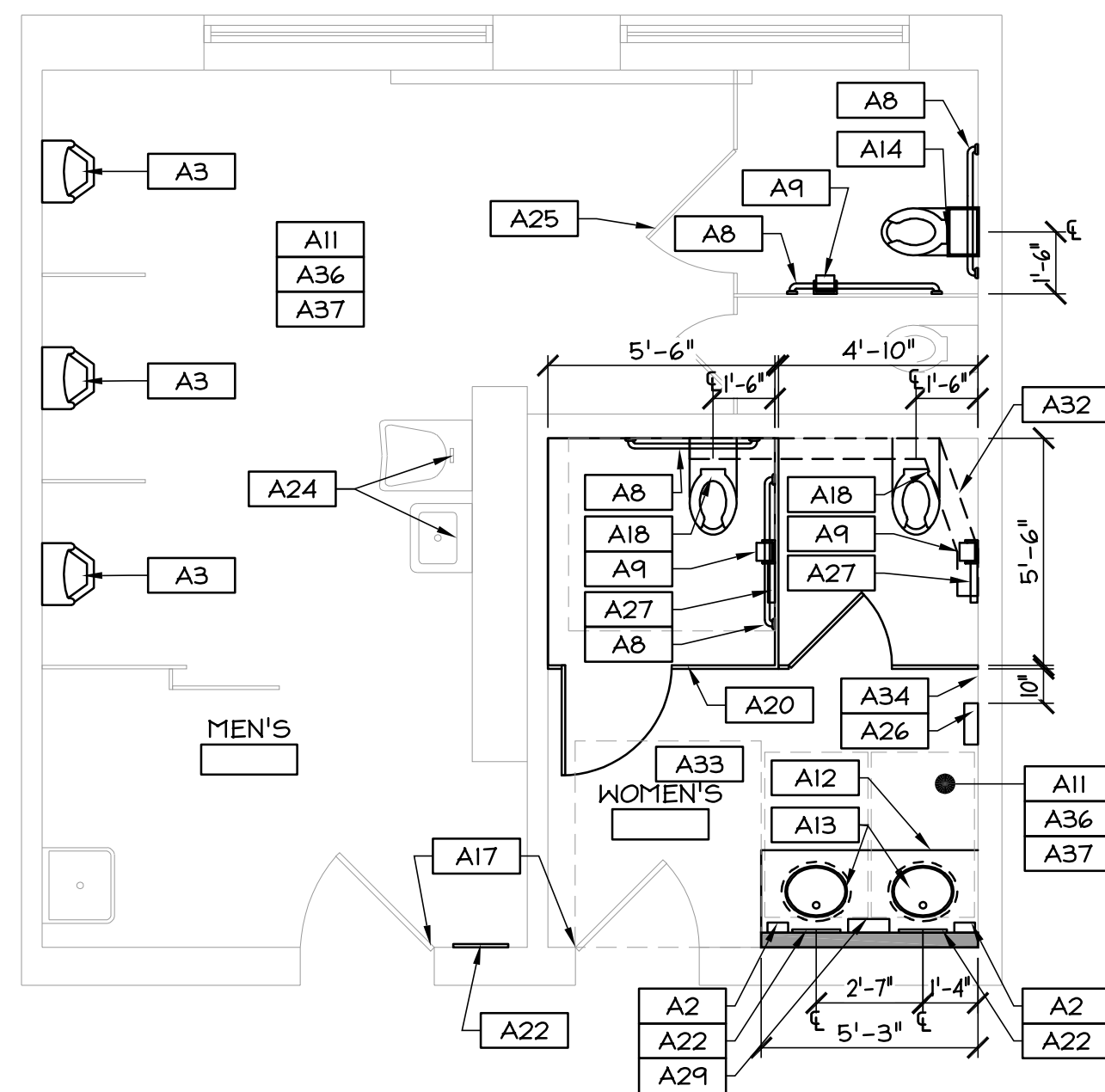
Drawing No.

A101

Sheet of



1
DEMOLITION FLOOR PLAN
-GROUND FLOOR
 A102 Scale: 1/4" = 1'-0" GOVERNMENT CENTER



2
PROPOSED FLOOR PLAN
-GROUND FLOOR
 A102 Scale: 1/4" = 1'-0" GOVERNMENT CENTER

ADDITIONAL SCOPE NOT SHOWN: GOVERNMENT CENTER

GROUND FLOOR:
 REMOVE AND DISPOSE EXISTING DRINKING FOUNTAIN. FURNISH AND INSTALL NEW DRINKING FOUNTAIN. BASIS OF DESIGN: ELKAY LZSTL&WSSP. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

FIRST FLOOR:
 REMOVE AND DISPOSE EXISTING DRINKING FOUNTAIN. FURNISH AND INSTALL NEW DRINKING FOUNTAIN. BASIS OF DESIGN: ELKAY EZSTL&LCL. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

REMOVE AND SALVAGE DRINKING FOUNTAIN. RELOCATE/REWORK FOUNTAIN TO PROVIDE A 27" KNEE CLEARANCE ABOVE THE FINISH FLOOR. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

SECOND FLOOR:
 PAMPHLETS MOUNTED IN THE HALLWAY BY THE RESTROOMS ARE MOUNTED TO HIGH. REMOVE AND SALVAGE PAMPHLET HOLDER AND REINSTALL AT 48" MAX ABOVE FINISH FLOOR. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

DEMOLITION NOTES:

1. THE SCOPE OF THIS DEMOLITION PACKAGE IS TO PROVIDE A SHELL BUILDING INCLUSIVE OF EXISTING ROOF, EXTERIOR WALLS, FLOOR SLAB, & STRUCTURAL FRAMING.
2. THE EXISTING CONDITIONS INFORMATION SHOWN &/OR INDICATED ON THE DRAWINGS WAS OBTAINED FROM LIMITED EXISTING DRAWINGS PREPARED BY OTHERS, (WHEN AVAILABLE); FIELD MEASUREMENT; &/OR OTHER AVAILABLE DOCUMENTATION &/OR OBSERVATION BY OTHERS. NOT ALL EXISTING CONDITIONS &/OR ACTUAL CONSTRUCTION MAY BE INDICATED &/OR KNOWN.
3. CONTRACTOR TO VERIFY ALL EXISTING, CONDITIONS, CONNECTIONS, LOCATIONS, SIZES, ETC. IN THE FIELD AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
4. CONTRACTOR TO COORDINATE EXTENTS OF ALL DEMOLITION WORK WITH ALL NEW WORK AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
5. CONTRACTOR TO PROPERLY DE-ENERGIZE, SHUT OFF & CAP ALL UTILITIES (ELECTRICAL, GAS, WATER, SEWER, TELEPHONE, ETC.) BACK TO THE EXISTING EXTERIOR WALLS, ROOF DECK, AND/OR TO SLAB OR GRADE. U.N.O. COORDINATE W/ MEP DEMOLITION DWGS & LOCAL UTILITY COMPANIES.
6. FULL EXTENT OF BUILDING MATERIALS IS UNKNOWN. EXISTING BUILDING CONSTRUCTION MAY CONTAIN MATERIALS THAT REQUIRE ABATEMENT. IF POTENTIAL MATERIALS ARE DISCOVERED, CONTRACTOR TO NOTIFY OWNER & ARCHITECT BEFORE PROCEEDING WITH WORK.
7. CONTRACTOR TO PROVIDE ALL OSHA and/or BUILDING CODE REQUIRED SAFETY PROTECTION TO PROTECT WORKERS FROM FALLS, CRUSHING, ELECTROCUTION, IMPACT FROM ABOVE, ETC.
8. CONTRACTOR TO MAINTAIN BUILDING IN A SAFE AND SECURE MANNER AND TO ELIMINATE THE APPEARANCE OF AN ATTRACTIVE NUISANCE. MAINTAIN PHYSICAL BARRIER TO PREVENT BUILDING/ SITE ACCESS BY CHILDREN AT A MINIMUM.
9. CONTRACTOR TO PROTECT ALL EXISTING WORK TO REMAIN DURING DEMOLITION.
10. CONTRACTOR TO FURNISH AND INSTALL ALL SHORING AND/OR BRACING TO SUPPORT ALL EXISTING WALLS, FLOORS/ROOFS, ETC. PRIOR TO REMOVALS OF EXISTING CONSTRUCTION.
11. EXISTING BUILDING CONSTRUCTION DEFICIENCIES NOT INDICATED ON THE DRAWINGS, BUT UNCOVERED &/OR DISCOVERED BY CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPORTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION OF NEW WORK. ADDITIONAL DETAILS WILL BE FURNISHED AS NECESSARY. TYPICAL.
12. PROTECT THROUGH PENETRATIONS OF HORIZONTAL ASSEMBLIES AND FIRE-RESISTANCE-RATED WALL ASSEMBLIES WITH AN APPROVED FIRESTOP SYSTEM EQUIVALENT TO THE FIRE-RESISTANCE RATING OF THE CONSTRUCTION PENETRATED.

DEMOLITION LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- EXISTING WALL/ITEM TO BE REMOVED
- /// EXISTING FLOOR TO BE TRENCHED
- R#D = REMOVE & DISPOSE OF
- R#S = REMOVE & SALVAGE

DEMOLITION WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- D1 R#D DOOR THRESHOLD IN IT'S ENTIRETY. PREP FLOOR FOR NEW ADA COMPLIANT THRESHOLD
- D2 R#S SOAP DISPENSER FOR REINSTALLATION
- D3 R#S URINAL FOR RELOCATION. OPEN WALL AS NECESSARY TO MOVE URINAL. CAP PIPES AS NECESSARY
- D4 R#S PRIVACY PARTITIONS FOR REINSTALLATION
- D5 R#S ACCESSIBLE TOILET COMPARTMENT AND/OR STALL DOOR FOR RECONFIGURATION OF DOOR SWING AND RELOCATION OF TOILET COMPARTMENT
- D6 R#S COAT HOOK FOR REINSTALLATION
- D7 R#D PORTION OF BASE BOARD HEAT TO ACCOMMODATE WATER CLOSET CLEARANCE. REWORK HOT WATER LINE DOWN THROUGH BASEMENT AND STUB BACK UP TO RECONNECT HOT WATER LINE BACK TO NEAREST BASEBOARD. PATCH AND SEAL AS REQUIRED
- D8 R#D REAR AND SIDE MOUNTED GRAB BAR
- D9 R#S TOILET PAPER DISPENSER FOR REINSTALLATION
- D10 R#D LAVATORY COUNTERTOP AND/OR SINKS IN IT'S ENTIRETY. CAP PIPES AS NECESSARY
- D11 R#S WALL AND/OR FLOOR MOUNTED TOILET. OPEN WALL AS NECESSARY TO MOVE TOILET. CAP PIPES AS NECESSARY
- D12 R#S ROOM SIGNAGE FOR REINSTALLATION
- D13 R#S SINK IN IT'S ENTIRETY. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK

GENERAL PLAN NOTES:

1. COORDINATE ALL NEW WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
2. ALL DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH U.N.O.
3. ALL WALL PENETRATIONS AND/OR DAMAGE CAUSED BY DEMOLITION AND/OR NEW WORK TO HAVE AREAS PATCHED & REPLACED IN-KIND. IF EXISTING MATERIALS CANNOT BE MATCHED, CONTRACTOR TO COVER IN THEIR BID NEW SIMILAR MATERIALS TO COVER ENTIRE WALL, NOT THE PATCHED AREA

PROPOSED LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- NEW WALL/PARTITION
- F#I = FURNISH AND INSTALL

PLAN WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- A1 F#I ADA DOOR THRESHOLD TO MATCH EXISTING FINISH AND DOOR OPENING. THRESHOLD NOT TO EXCEED MAX HEIGHT OF 1/2". 1/4" VERTICAL W/ 1/4" BEVELED
- A2 REINSTALL SOAP DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A3 REINSTALL URINAL. RE-PIPE AS NECESSARY TO ACCOMMODATE NEW LOCATION. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH & PAINT WALL OR MATCH TILE TO MATCH EXISTING FINISH(S). IF FINISHES CANNOT BE MATCHED THEN PROVIDE NEW FINISHES ON ENTIRE WALL
- A4 REINSTALL PRIVACY PARTITIONS
- A5 REINSTALL ACCESSIBLE TOILET COMPARTMENT AND STALL DOOR
- A6 REINSTALL COAT HOOK. REFER TO TYPICAL MOUNTING HEIGHTS
- A7 RECONFIGURE BASE BOARD SHEET METAL AS NECESSARY TO CLOSE OFF END. PATCH WALL AND FLOOR AS NECESSARY TO MATCH EXISTING
- A8 F#I REAR AND SIDE MOUNTED GRAB BARS. REFER TO TYPICAL MOUNTING HEIGHTS
- A9 REINSTALL TOILET PAPER DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A10 F#I PULL HANDLES ON BOTH SIDES OF ACCESSIBLE STALL DOOR NEAR THE LATCH, AND CENTER DOOR OPENING HARDWARE 34"-48" ABOVE FINISH FLOOR
- A11 PATCH TO MATCH ENTIRE ROOM AS NECESSARY TO ACCOMMODATE NEW WORK. MATCH FLOOR, WALL TILE AND PAINT COLORS
- A12 F#I SOLID SURFACE COUNTERTOP. RE: 4/A104 FOR ADDITIONAL INFORMATION
- A13 F#I NEW ADA DROP IN SINKS. CONNECT PLUMBING TO EXISTING LOCATIONS IN THE WALL OR PROVIDE FLOOR OFFSET FLANGE TO ACCOMMODATE NEW LOCATION
- A14 REINSTALL WALL AND/OR FLOOR MOUNTED TOILET. RELOCATE CARRIER AS NECESSARY OR PROVIDE FLOOR OFFSET FLANGE TO ACCOMMODATE NEW LOCATION
- A15 REINSTALL ROOM SIGNAGE. REFER TO TYPICAL MOUNTING HEIGHTS
- A16 REINSTALL WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS
- A17 ADJUST OR REPLACE DOOR CLOSER. MAINTAIN DOOR HINGES TO PROVIDE AN OPENING FORCE NOT TO EXCEED 5LBF
- A18 F#I ADA FLOOR MOUNTED TOILET. REFER TO TYPICAL MOUNTING HEIGHTS
- A19 F#I NEW WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS

- D14 R#D ACCESSIBLE TOILET COMPARTMENT AND DOOR IN IT'S ENTIRETY
- D15 R#D FLOOR AND/OR WALL MOUNTED TOILET. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK IF APPLICABLE.
- D16 R#D DOOR, FRAME AND HARDWARE IN IT'S ENTIRETY
- D17 R#S PAPER TOWEL DISPENSER FOR REINSTALLATION
- D18 R#S MIRROR FOR REINSTALLATION
- D19 R#S FEMALE NAPKIN DISPENSER FOR REINSTALLATION
- D20 R#D ACCESSIBLE STALL'S LOCKING MECHANISM. PREP FOR NEW LOCK SET.
- D21 R#S RECESSED TOWEL DISPENSER & TRASH RECEPTACLE. RETURN BACK TO LIBRARY THE LOCATION OF PROPOSED WORK
- D22 R#D SINK. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK
- D23 R#S EXISTING DOOR FUNCTION HARDWARE. DEAD BOLT TO REMAIN
- D24 TRENCH FLOOR TO TIE INTO EXISTING SANITARY LINE AS NECESSARY TO ACCOMMODATE NEW FLOOR MOUNTED TOILET LOCATION
- D25 R#D TILE FLOOR AS NECESSARY TO ACCOMMODATE NEW WORK. PREP FOR NEW FINISH
- D26 R#D WALL TILE. PREP WALL FOR NEW FINISH
- D27 R#D ALL PLUMBING PENETRATIONS COMING THROUGH WALL. CAP PIPES BACK INTO WALL AS NECESSARY TO ACCOMMODATE NEW WORK
- D28 R#D BABY CHANGING TABLE IN IT'S ENTIRETY. PATCH WALL AS NECESSARY
- D29 R#D WALL ASSEMBLY IN IT'S ENTIRETY. PROVIDE TEMPORARY FIRE RATED PLASTIC CONSTRUCTION BARRIERS SECURED TIGHTLY TO ALL SURFACES. PLASTIC BARRIER SHALL HAVE A DOUBLE ZIPPER ENTRANCE. CONTRACTOR PROVIDE TEMPORARY EXIT SIGNAGE DIRECTED TO THE NEAREST EGRESS DOOR. REMOVE ALL RECEPTACLES AND/OR TELE DATA. TAKE BACK ALL POWER AND DATA WIRING BACK TO NEAREST JUNCTION BOX AND/OR BATCH POINT. ANY UNFORESEEN PLUMBING OR MECHANICAL DISCREPANCIES ARE THE G.C.'S RESPONSIBILITY TO MAKE SAFE AND FOLLOW THE INTERNATIONAL BUILDING CODE, PLUMBING, MECHANICAL AND ELECTRICAL CODE. REWORK ACOUSTICAL CEILING TILE & GRID SYSTEM, AND WINDOW SYSTEM AS NECESSARY TO ACCOMMODATE NEW WORK. CONTRACTOR TO VERIFY IF WALLS ARE NON-BEARING IN NATURE. IF IN DOUBT, CONTRACTOR TO HAVE A REGISTERED ENGINEER IN THE STATE OF MASSACHUSETTS REVIEW AND ISSUE A SKETCH TO COINCIDE WITH THE WORK INTENDED, AND AS DOCUMENTED ON THE FLOOR PLANS/ 9/A103

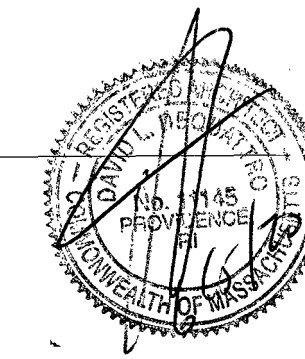
- A20 F#I NEW TOILET COMPARTMENT PARTITIONS AND DOORS.
- A21 F#I ADA WALL MOUNTED TOILET. REFER TO TYPICAL MOUNTING HEIGHTS
- A22 REINSTALL MIRROR. REFER TO TYPICAL MOUNTING HEIGHTS
- A23 REINSTALL FEMALE NAPKIN DISPOSAL. REFER TO TYPICAL MOUNTING HEIGHTS
- A24 F#I ADA COMPLIANT UNDER SINK PIPE PROTECTION
- A25 F#I NEW LOCKING MECHANISM FOR TOILET COMPARTMENT STALL DOOR
- A26 F#I NEW SURFACE MOUNTED SANITARY NAPKIN DISPENSER. (BOBRICK B-2706) REFER TO TYPICAL MOUNTING HEIGHTS
- A27 F#I NEW SANITARY NAPKIN DISPOSAL. (BOBRICK B-254). REFER TO TYPICAL MOUNTING HEIGHTS
- A28 F#I NEW PLUMBING WALL. 3-5/8" METAL STUD W/ TYPE X 5/8" GYP. BOARD TO UNDERSIDE OF DECK.
- A29 REINSTALL PAPER TOWEL DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A30 F#I NEW PRIVACY LOCKSET FUNCTION FOR EXISTING DOOR. MATCH MANUFACTURER AND FINISH TO EXISTING HARDWARE SETS
- A31 F#I HORIZONTAL WALL-MOUNTED BABY CHANGING STATION (BOBRICK KB200-01)
- A32 INFILL TRENCH WITH CONCRETE ONCE NEW SANITARY CONNECTION IS IN-PLACE
- A33 F#I NEW CERAMIC FLOOR TILE. FLOOR TILE TO MATCH EXISTING COLOR AND SIZE
- A34 F#I NEW CERAMIC WALL TILE. WALL TILE TO MATCH EXISTING COLOR AND SIZE
- A35 F#I NEW WALL ASSEMBLY AND UL LISTING IF APPLICABLE TO MATCH EXISTING. NEW WALL TO EXTEND TO UNDERSIDE OF DECK. F#I NEW CEILING TILES AS NECESSARY TO MATCH EXISTING. MATCH WINDOW SYSTEM AS NECESSARY TO ACCOMMODATE NEW WALL LOCATION
- A36 F#I NEW HORN AND STROBE SYSTEM CONNECTED TO FIRE ALARM AND CIRCUITED TO THE NEAREST PANEL W/ SPACE TO ADD APPROPRIATE CIRCUITRY IF BATHROOM IS NOT EQUIPPED WITH HORN AND STROBE. CONTRACTOR TO INCLUDE ALL LABOR AND MATERIALS NECESSARY TO MAKE THE HORN AND STROBE SYSTEM MEET CODE AND BE OPERABLE AND IN TANDEM W/ EXISTING FIRE ALARM SYSTEM
- A37 PATCH HOLE FROM REMOVAL OF FLOOR TOILET AND/OR PATCH WALL FROM REMOVAL OF WALL MOUNTED FIXTURES. CONTRACTOR TO PREP FLOOR AND/OR WALL FOR NEW FINISH MATERIAL TO MATCH EXISTING. IF NEW MATERIAL CANNOT BE MATCHED, CONTRACTOR TO REPLACE ENTIRE FLOOR, WALL AND/OR CEILING SURFACE TO MATCH AND/OR BE SIMILAR IN MATERIAL AS THE EXISTING

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Certification



Drawn by AJG

Checked by DLD

Revised on

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 Providence, Rhode Island 02908

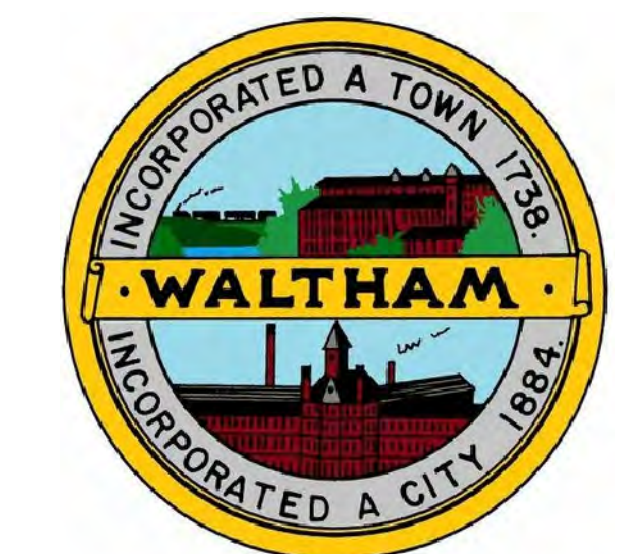
Phone: (401) 272-1730
 Fax: (401) 273-7156

E-mail: rgbinfo@rgb.net
 www.rgb.net

Architecture - Project Management - Interior Design

Project

CITY OF WALTHAM
ADA UPGRADES



610 Main Street
 Waltham, MA 02452

Drawing Status

ISSUED FOR CONSTRUCTION

Issued On JUNE 5, 2020

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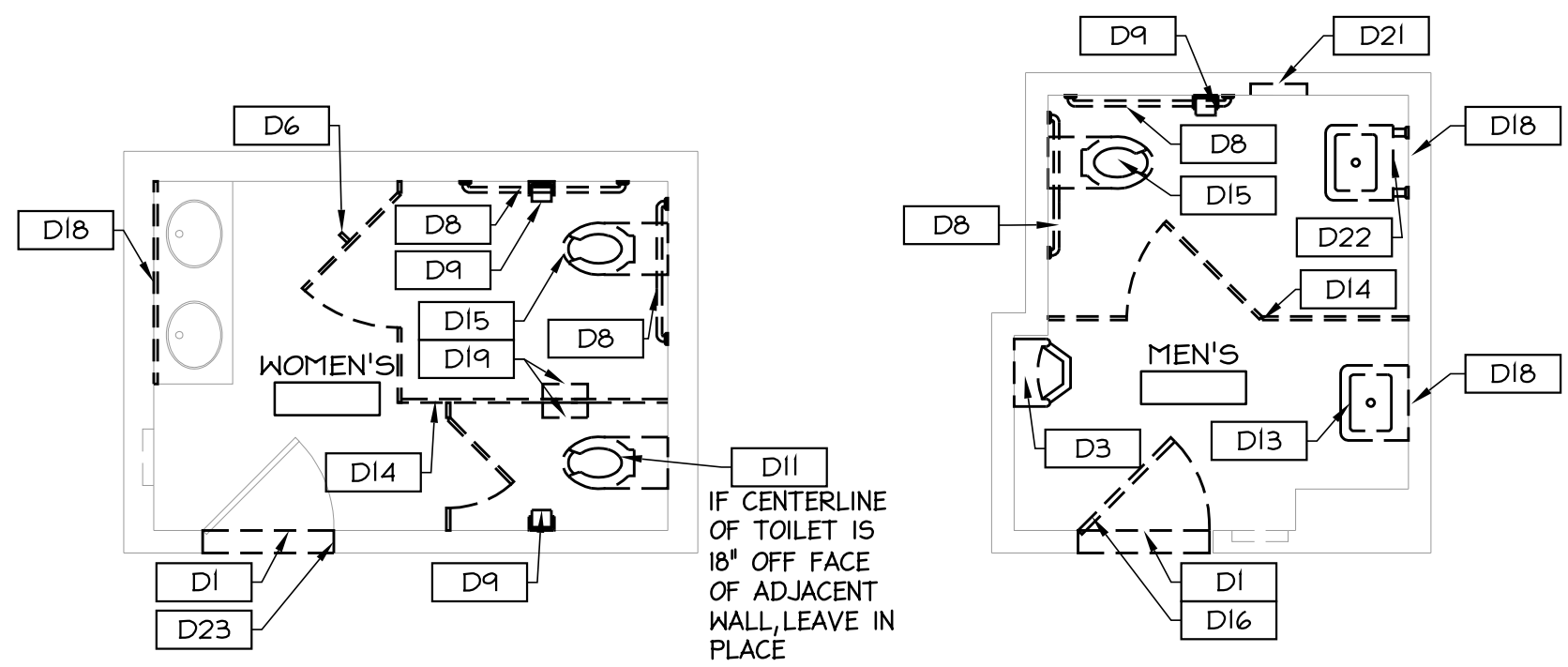
DEMOLITION & PROPOSED FLOOR PLANS- GOVERNMENT CENTER

Project Number. 6525

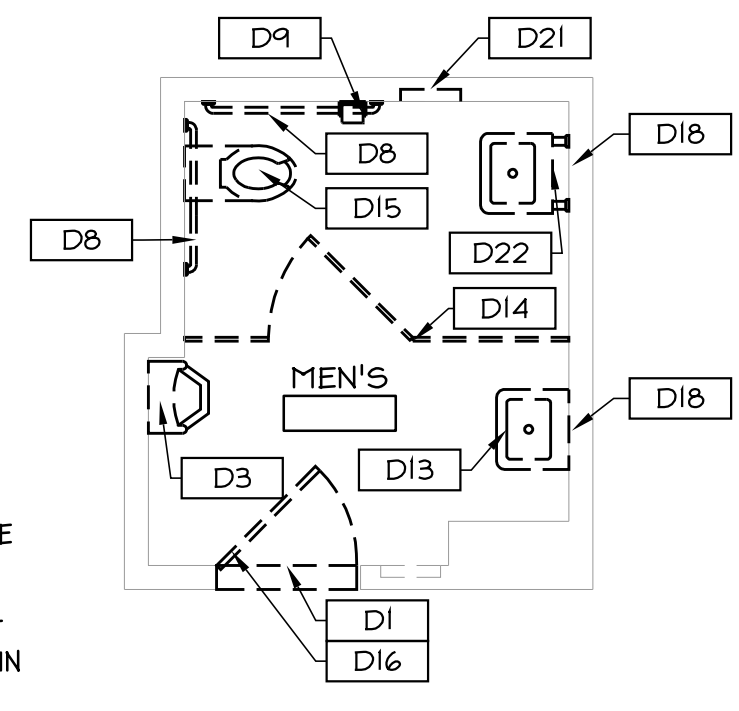
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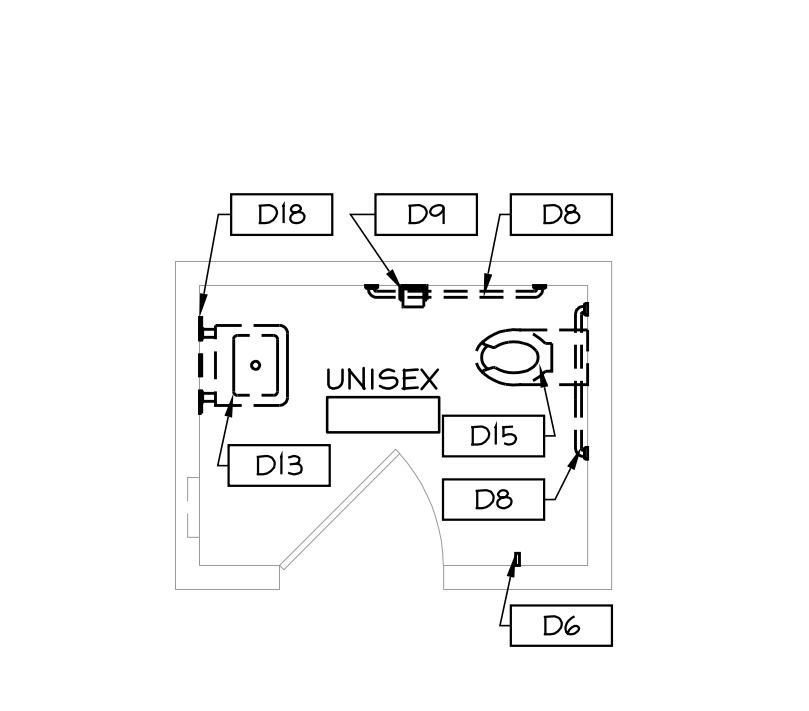
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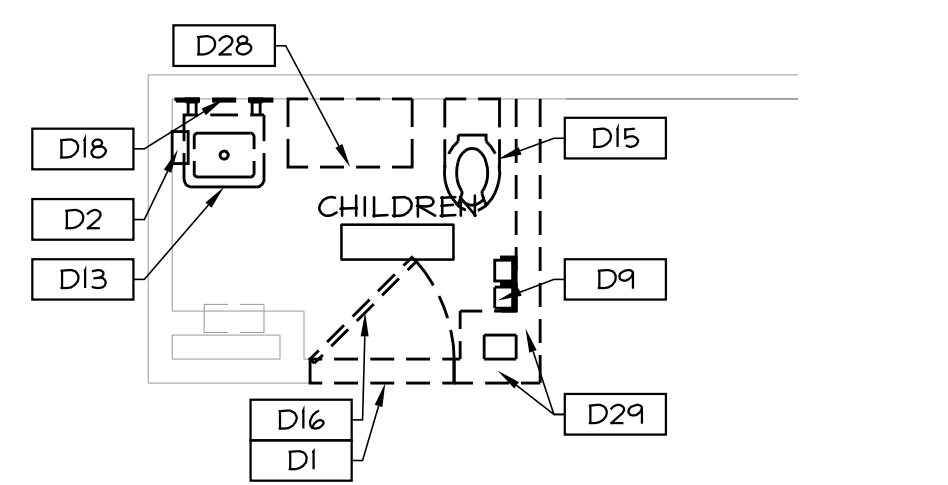
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DEMOLITION FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



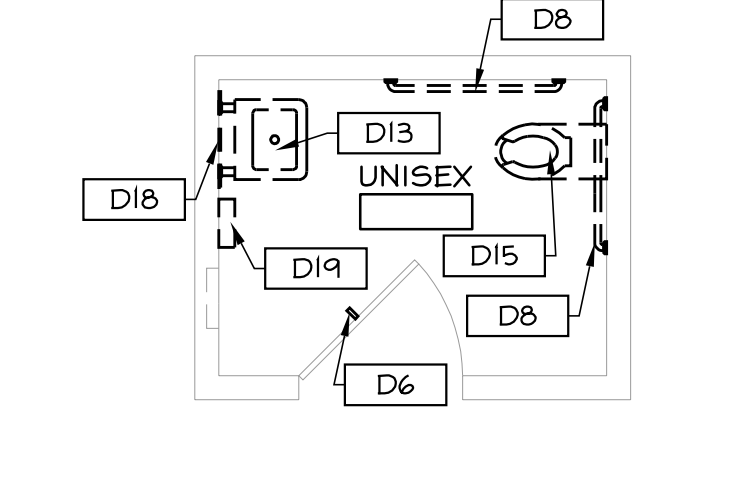
2
DEMOLITION FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



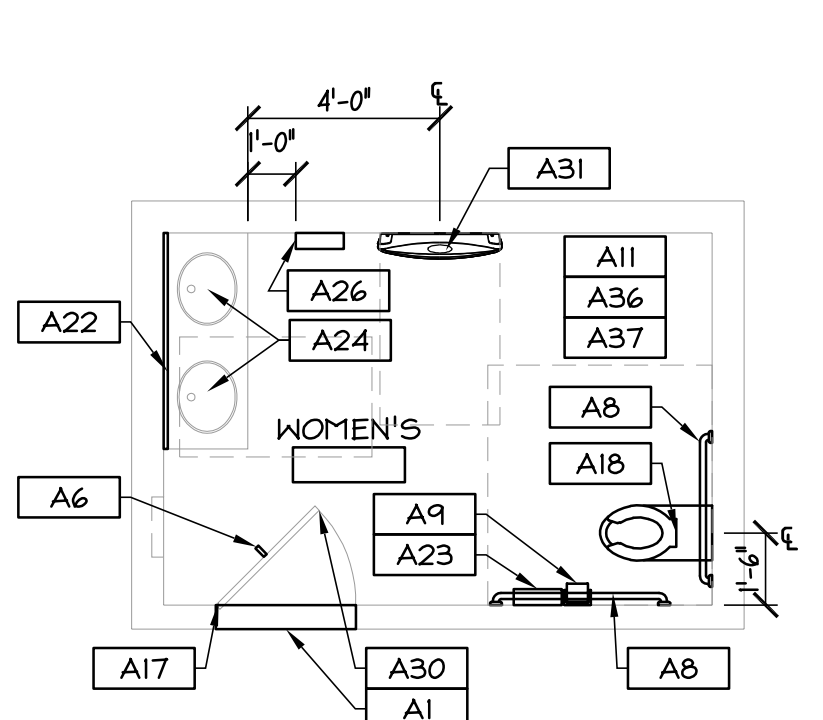
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DEMOLITION FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



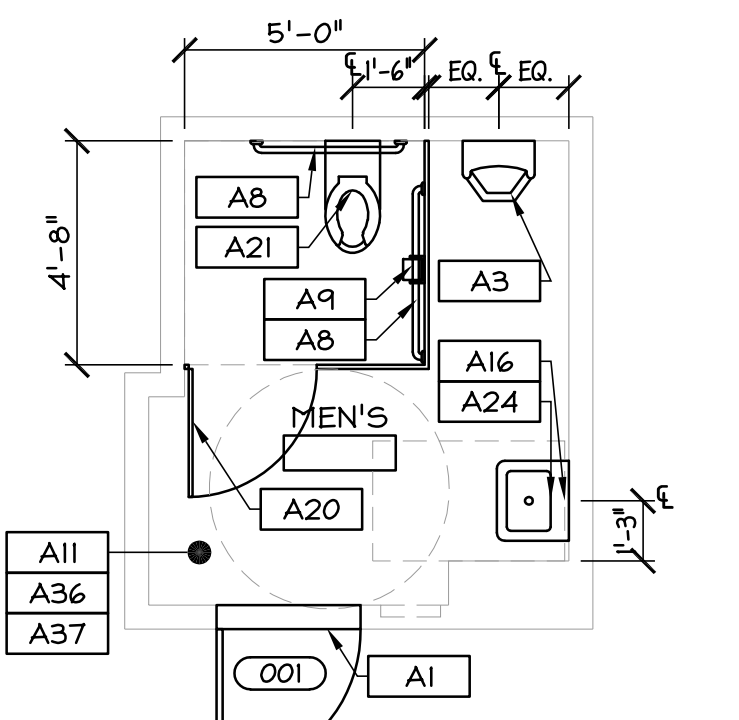
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DEMOLITION FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



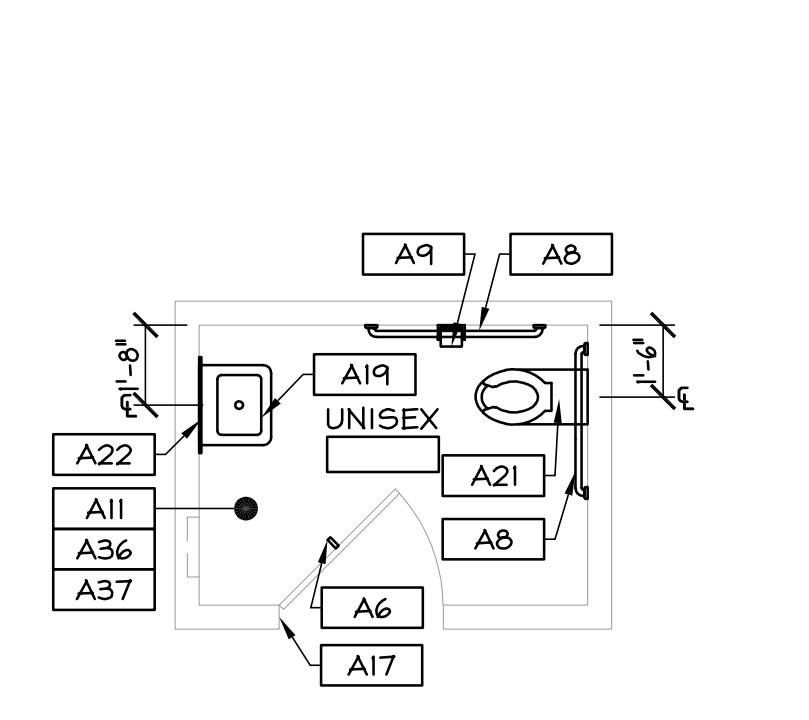
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DEMOLITION FLOOR PLAN
-SECOND FLOOR
A103 Scale: 1/4" = 1'-0" LIBRARY



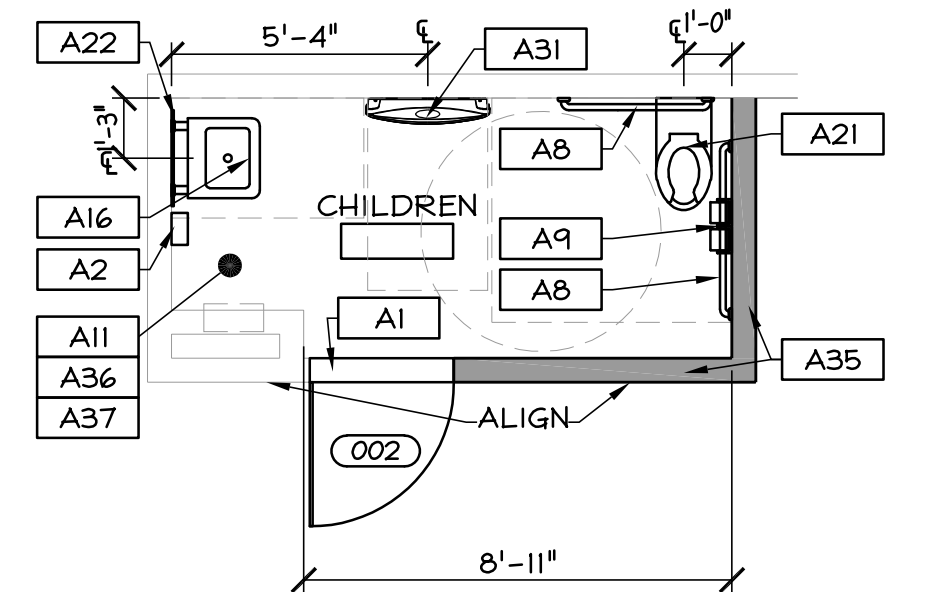
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PROPOSED FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



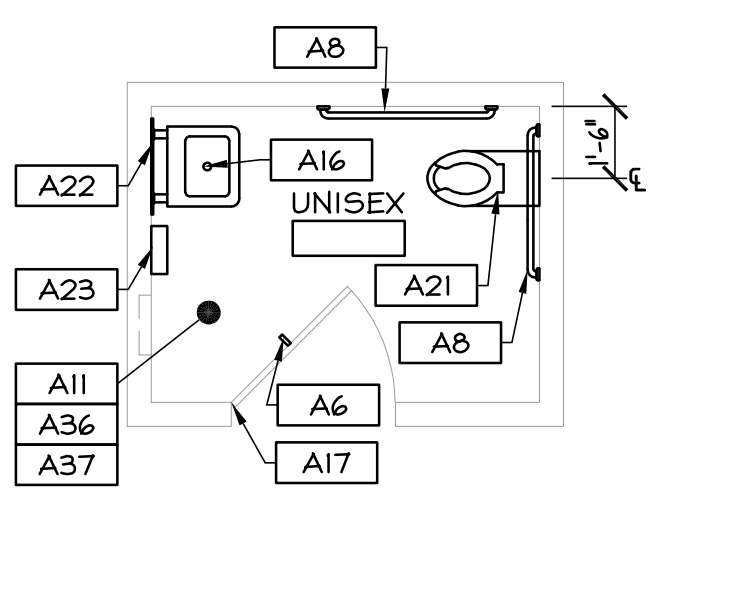
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PROPOSED FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



8
PROPOSED FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



9
PROPOSED FLOOR PLAN
-LOWER LEVEL
A103 Scale: 1/4" = 1'-0" LIBRARY



10
PROPOSED FLOOR PLAN
-SECOND FLOOR
A103 Scale: 1/4" = 1'-0" LIBRARY

ADDITIONAL SCOPE NOT SHOWN: LIBRARY

GROUND FLOOR:
REMOVE AND DISPOSE EXISTING CHILDREN'S DRINKING FOUNTAIN. FURNISH AND INSTALL NEW DRINKING FOUNTAIN. BASIS OF DESIGN: ELKAY LZ5TLBW5SP. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

REMOVE AND DISPOSE EXISTING DRINKING FOUNTAIN. FURNISH AND INSTALL NEW DRINKING FOUNTAIN. BASIS OF DESIGN: ELKAY LZ5TLBW5SP. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH TO MATCH EXISTING WALL AND PAINT TO MATCH EXISTING COLOR.

DEMOLITION NOTES:

1. THE SCOPE OF THIS DEMOLITION PACKAGE IS TO PROVIDE A SHELL BUILDING INCLUSIVE OF EXISTING ROOF, EXTERIOR WALLS, FLOOR SLAB, & STRUCTURAL FRAMING.
2. THE EXISTING CONDITIONS INFORMATION SHOWN &/OR INDICATED ON THE DRAWINGS WAS OBTAINED FROM LIMITED EXISTING DRAWINGS PREPARED BY OTHERS, (WHEN AVAILABLE); FIELD MEASUREMENT; &/OR OTHER AVAILABLE DOCUMENTATION &/OR OBSERVATION BY OTHERS. NOT ALL EXISTING CONDITIONS &/OR ACTUAL CONSTRUCTION MAY BE INDICATED &/OR KNOWN.
3. CONTRACTOR TO VERIFY ALL EXISTING, CONDITIONS, CONNECTIONS, LOCATIONS, SIZES, ETC. IN THE FIELD AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
4. CONTRACTOR TO COORDINATE EXTENTS OF ALL DEMOLITION WORK WITH ALL NEW WORK AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING DEMOLITION WORK.
5. CONTRACTOR TO PROPERLY DE-ENERGIZE, SHUT OFF & CAP ALL UTILITIES (ELECTRICAL, GAS, WATER, SEWER, TELEPHONE, ETC.) BACK TO THE EXISTING EXTERIOR WALLS, ROOF DECK, AND/OR TO SLAB OR GRADE. U.N.O. COORDINATE W/ MEP DEMOLITION DWGS & LOCAL UTILITY COMPANIES.
6. FULL EXTENT OF BUILDING MATERIALS IS UNKNOWN. EXISTING BUILDING CONSTRUCTION MAY CONTAIN MATERIALS THAT REQUIRE ABATEMENT. IF POTENTIAL MATERIALS ARE DISCOVERED, CONTRACTOR TO NOTIFY OWNER & ARCHITECT BEFORE PROCEEDING WITH WORK.
7. CONTRACTOR TO PROVIDE ALL OSHA and/or BUILDING CODE REQUIRED SAFETY PROTECTION TO PROTECT WORKERS FROM FALLS, CRUSHING, ELECTROCUTION, IMPACT FROM ABOVE, ETC.
8. CONTRACTOR TO MAINTAIN BUILDING IN A SAFE AND SECURE MANNER AND TO ELIMINATE THE APPEARANCE OF AN ATTRACTIVE NUISANCE. MAINTAIN PHYSICAL BARRIER TO PREVENT BUILDING/ SITE ACCESS BY CHILDREN AT A MINIMUM.
9. CONTRACTOR TO PROTECT ALL EXISTING WORK TO REMAIN DURING DEMOLITION.
10. CONTRACTOR TO FURNISH AND INSTALL ALL SHORING AND/OR BRACING TO SUPPORT ALL EXISTING WALLS, FLOORS/ROOFS, ETC. PRIOR TO REMOVALS OF EXISTING CONSTRUCTION.
11. EXISTING BUILDING CONSTRUCTION DEFICIENCIES NOT INDICATED ON THE DRAWINGS, BUT UNCOVERED &/OR DISCOVERED BY CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPORTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION OF NEW WORK. ADDITIONAL DETAILS WILL BE FURNISHED AS NECESSARY. TYPICAL.
12. PROTECT THROUGH PENETRATIONS OF HORIZONTAL ASSEMBLIES AND FIRE-RESISTANCE-RATED WALL ASSEMBLIES WITH AN APPROVED FIRESTOP SYSTEM EQUIVALENT TO THE FIRE-RESISTANCE RATING OF THE CONSTRUCTION PENETRATED.

DEMOLITION LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- - - EXISTING WALL/ITEM TO BE REMOVED
- /// EXISTING FLOOR TO BE TRENCHED
- R#D = REMOVE & DISPOSE OF
- R#S = REMOVE & SALVAGE

DEMOLITION WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- D1 R#D DOOR THRESHOLD IN IT'S ENTIRETY. PREP FLOOR FOR NEW ADA COMPLIANT THRESHOLD
- D2 R#S SOAP DISPENSER FOR REINSTALLATION
- D3 R#S URINAL FOR RELOCATION. OPEN WALL AS NECESSARY TO MOVE URINAL. CAP PIPES AS NECESSARY
- D4 R#S PRIVACY PARTITIONS FOR REINSTALLATION
- D5 R#S ACCESSIBLE TOILET COMPARTMENT AND/OR STALL DOOR FOR RECONFIGURATION OF DOOR SWING AND RELOCATION OF TOILET COMPARTMENT
- D6 R#S COAT HOOK FOR REINSTALLATION
- D7 R#D PORTION OF BASE BOARD HEAT TO ACCOMMODATE WATER CLOSET CLEARANCE. REMARK HOT WATER LINE DOWN THROUGH BASEMENT AND STUB BACK UP TO RECONNECT HOT WATER LINE BACK TO NEAREST BASEBOARD. PATCH AND SEAL AS REQUIRED
- D8 R#D REAR AND SIDE MOUNTED GRAB BAR
- D9 R#S TOILET PAPER DISPENSER FOR REINSTALLATION
- D10 R#D LAVATORY COUNTERTOP AND/OR SINKS IN IT'S ENTIRETY. CAP PIPES AS NECESSARY
- D11 R#S WALL AND/OR FLOOR MOUNTED TOILET. OPEN WALL AS NECESSARY TO MOVE TOILET. CAP PIPES AS NECESSARY
- D12 R#S ROOM SIGNAGE FOR REINSTALLATION
- D13 R#S SINK IN IT'S ENTIRETY. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK

GENERAL PLAN NOTES:

1. COORDINATE ALL NEW WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.
2. ALL DIMENSIONS TO EXISTING CONSTRUCTION ARE TO FACE OF FINISH U.N.O.
3. ALL WALL PENETRATIONS AND/OR DAMAGE CAUSED BY DEMOLITION AND/OR NEW WORK TO HAVE AREAS PATCHED & REFINISHED IN-KIND. IF EXISTING MATERIALS CANNOT BE MATCHED, CONTRACTOR TO COVER IN THEIR BID NEW SIMILAR MATERIALS TO COVER ENTIRE WALL, NOT THE PATCHED AREA

PROPOSED LEGEND:

- EXISTING WALL/ITEM TO REMAIN
- NEW WALL/PARTITION

F#I = FURNISH AND INSTALL

PLAN WORK NOTES:

- xxx NOTES WITHOUT AN ARROW INDICATE AN ENTIRE SPACE/AREA.
- xxx NOTES WITH AN ARROW(S) INDICATE SPECIFIC AREAS &/OR ITEMS.
- A1 F#I ADA DOOR THRESHOLD TO MATCH EXISTING FINISH AND DOOR OPENING. THRESHOLD NOT TO EXCEED MAX HEIGHT OF 1/2". 1/4" VERTICAL W/ 1/4" BEVELED
- A2 REINSTALL SOAP DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A3 REINSTALL URINAL. RE-PIPE AS NECESSARY TO ACCOMMODATE NEW LOCATION. REFER TO TYPICAL MOUNTING HEIGHTS. PATCH & PAINT WALL OR MATCH TILE TO MATCH EXISTING FINISH(S). IF FINISHES CANNOT BE MATCHED THEN PROVIDE NEW FINISHES ON ENTIRE WALL
- A4 REINSTALL PRIVACY PARTITIONS
- A5 REINSTALL ACCESSIBLE TOILET COMPARTMENT AND STALL DOOR
- A6 REINSTALL COAT HOOK. REFER TO TYPICAL MOUNTING HEIGHTS
- A7 RECONFIGURE BASE BOARD SHEET METAL AS NECESSARY TO CLOSE OFF END. PATCH WALL AND FLOOR AS NECESSARY TO MATCH EXISTING
- A8 F#I REAR AND SIDE MOUNTED GRAB BARS. REFER TO TYPICAL MOUNTING HEIGHTS
- A9 REINSTALL TOILET PAPER DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A10 F#I PULL HANDLES ON BOTH SIDES OF ACCESSIBLE STALL DOOR NEAR THE LATCH, AND CENTER DOOR OPENING HARDWARE 34"-48" ABOVE FINISH FLOOR
- A11 PATCH TO MATCH ENTIRE ROOM AS NECESSARY TO ACCOMMODATE NEW WORK. MATCH FLOOR, WALL TILE AND PAINT COLORS
- A12 F#I SOLID SURFACE COUNTERTOP. RE: 4/A104 FOR ADDITIONAL INFORMATION
- A13 F#I NEW ADA DROP IN SINKS. CONNECT PLUMBING TO EXISTING LOCATIONS IN THE WALL
- A14 REINSTALL WALL AND/OR FLOOR MOUNTED TOILET. RELOCATE CARRIER AS NECESSARY OR PROVIDE FLOOR OFFSET FLANGE TO ACCOMMODATE NEW LOCATION
- A15 REINSTALL ROOM SIGNAGE. REFER TO TYPICAL MOUNTING HEIGHTS
- A16 REINSTALL WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS
- A17 ADJUST OR REPLACE DOOR CLOSER. MAINTAIN DOOR HINGES TO PROVIDE AN OPENING FORCE NOT TO EXCEED 5LBF
- A18 F#I ADA FLOOR MOUNTED TOILET. REFER TO TYPICAL MOUNTING HEIGHTS
- A19 F#I NEW WALL MOUNTED SINK. REFER TO TYPICAL MOUNTING HEIGHTS

- D14 R#D ACCESSIBLE TOILET COMPARTMENT AND DOOR IN IT'S ENTIRETY
- D15 R#D FLOOR AND/OR WALL MOUNTED TOILET. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK IF APPLICABLE.
- D16 R#D DOOR, FRAME AND HARDWARE IN IT'S ENTIRETY
- D17 R#S PAPER TOWEL DISPENSER FOR REINSTALLATION
- D18 R#S MIRROR FOR REINSTALLATION
- D19 R#S FEMALE NAPKIN DISPENSER FOR REINSTALLATION
- D20 R#D ACCESSIBLE STALL'S LOCKING MECHANISM. PREP FOR NEW LOCK SET.
- D21 R#S RECESSED TOWEL DISPENSER & TRASH RECEPTACLE. RETURN BACK TO LIBRARY
- D22 R#D SINK. CAP PIPES AS NECESSARY. OPEN WALL AS NECESSARY TO ACCOMMODATE THE LOCATION OF PROPOSED WORK
- D23 R#S EXISTING DOOR FUNCTION HARDWARE. DEAD BOLT TO REMAIN
- D24 TRENCH FLOOR TO TIE INTO EXISTING SANITARY LINE AS NECESSARY TO ACCOMMODATE NEW FLOOR MOUNTED TOILET LOCATION
- D25 R#D TILE FLOOR AS NECESSARY TO ACCOMMODATE NEW WORK. PREP FOR NEW FINISH
- D26 R#D WALL TILE. PREP WALL FOR NEW FINISH
- D27 R#D ALL PLUMBING PENETRATIONS COMING THROUGH WALL. CAP PIPES BACK INTO WALL AS NECESSARY TO ACCOMMODATE NEW WORK
- D28 R#D BABY CHANGING TABLE IN IT'S ENTIRETY. PATCH WALL AS NECESSARY
- D29 R#D WALL ASSEMBLY IN IT'S ENTIRETY. PROVIDE TEMPORARY FIRE RATED PLASTIC CONSTRUCTION BARRIERS SECURED TIGHTLY TO ALL SURFACES, PLASTIC BARRIER SHALL HAVE A DOUBLE ZIPPER ENTRANCE. CONTRACTOR PROVIDE TEMPORARY EXIT SIGNAGE DIRECTED TO THE NEAREST EGRESS DOOR. REMOVE ALL RECEPTACLES AND/OR TELE DATA. TAKE BACK ALL POWER AND DATA WIRING BACK TO NEAREST JUNCTION BOX AND/OR BATCH POINT. ANY UNFORESEEN PLUMBING OR MECHANICAL DISCREPANCIES ARE THE G.C.'S RESPONSIBILITY TO MAKE SAFE AND FOLLOW THE INTERNATIONAL BUILDING CODE, PLUMBING, MECHANICAL AND ELECTRICAL CODE. REMARK ACUSTICAL CEILING TILE & GRID SYSTEM, AND WINDOW SYSTEM AS NECESSARY TO ACCOMMODATE NEW WORK. CONTRACTOR TO VERIFY IF WALLS ARE NON-BEARING IN NATURE. IF IN DOUBT, CONTRACTOR TO HAVE A REGISTERED ENGINEER IN THE STATE OF MASSACHUSETTS REVIEW AND ISSUE A SKETCH TO COINCIDE WITH THE WORK INTENDED, AND AS DOCUMENTED ON THE FLOOR PLANS/ 9/A103

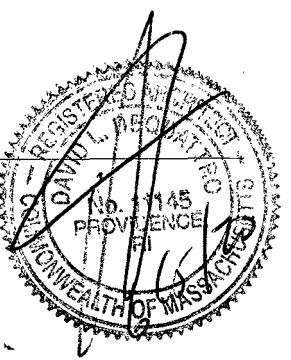
- A20 F#I NEW TOILET COMPARTMENT PARTITIONS AND DOORS.
- A21 F#I ADA WALL MOUNTED TOILET. REFER TO TYPICAL MOUNTING HEIGHTS
- A22 REINSTALL MIRROR. REFER TO TYPICAL MOUNTING HEIGHTS
- A23 REINSTALL FEMALE NAPKIN DISPOSAL. REFER TO TYPICAL MOUNTING HEIGHTS
- A24 F#I ADA COMPLIANT UNDER SINK PIPE PROTECTION
- A25 F#I NEW LOCKING MECHANISM FOR TOILET COMPARTMENT STALL DOOR
- A26 F#I NEW SURFACE MOUNTED SANITARY NAPKIN DISPENSER. (BOBRICK B-2706) REFER TO TYPICAL MOUNTING HEIGHTS
- A27 F#I NEW SANITARY NAPKIN DISPOSAL. (BOBRICK B-254). REFER TO TYPICAL MOUNTING HEIGHTS
- A28 F#I NEW PLUMBING WALL. 3-5/8" METAL STUD W/ TYPE X 5/8" GYP. BOARD TO UNDERSIDE OF DECK.
- A29 REINSTALL PAPER TOWEL DISPENSER. REFER TO TYPICAL MOUNTING HEIGHTS
- A30 F#I NEW PRIVACY LOCKSET FUNCTION FOR EXISTING DOOR. MATCH MANUFACTURER AND FINISH TO EXISTING HARDWARE SETS
- A31 F#I HORIZONTAL WALL-MOUNTED BABY CHANGING STATION (BOBRICK KB200-01)
- A32 INFILL TRENCH WITH CONCRETE ONCE NEW SANITARY CONNECTION IS IN-PLACE
- A33 F#I NEW CERAMIC FLOOR TILE. FLOOR TILE TO MATCH EXISTING COLOR AND SIZE
- A34 F#I NEW CERAMIC WALL TILE. WALL TILE TO MATCH EXISTING COLOR AND SIZE
- A35 F#I NEW WALL ASSEMBLY AND UL LISTING IF APPLICABLE TO MATCH EXISTING. NEW WALL TO EXTEND TO UNDERSIDE OF DECK. F#I NEW CEILING TILES AS NECESSARY TO MATCH EXISTING. MATCH WINDOW SYSTEM AS NECESSARY TO ACCOMMODATE NEW WALL LOCATION
- A36 F#I NEW HORN AND STROBE SYSTEM CONNECTED TO FIRE ALARM AND CIRCUITED TO THE NEAREST PANEL W/ SPACE TO ADD APPROPRIATE CIRCUITRY IF BATHROOM IS NOT EQUIPPED WITH HORN AND STROBE. CONTRACTOR TO INCLUDE ALL LABOR AND MATERIALS NECESSARY TO MAKE THE HORN AND STROBE SYSTEM MEET CODE AND BE OPERABLE AND IN TANDEN W/ EXISTING FIRE ALARM SYSTEM
- A37 PATCH HOLE FROM REMOVAL OF FLOOR TOILET AND/OR PATCH WALL FROM REMOVAL OF WALL MOUNTED FIXTURES. CONTRACTOR TO PREP FLOOR AND/OR WALL FOR NEW FINISH MATERIAL TO MATCH EXISTING. IF NEW MATERIAL CANNOT BE MATCHED, CONTRACTOR TO REPLACE ENTIRE FLOOR, WALL AND/OR CEILING SURFACE TO MATCH AND/OR BE SIMILAR IN MATERIAL AS THE EXISTING

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Certification



Drawn by AJG

Checked by DLD

Revised on

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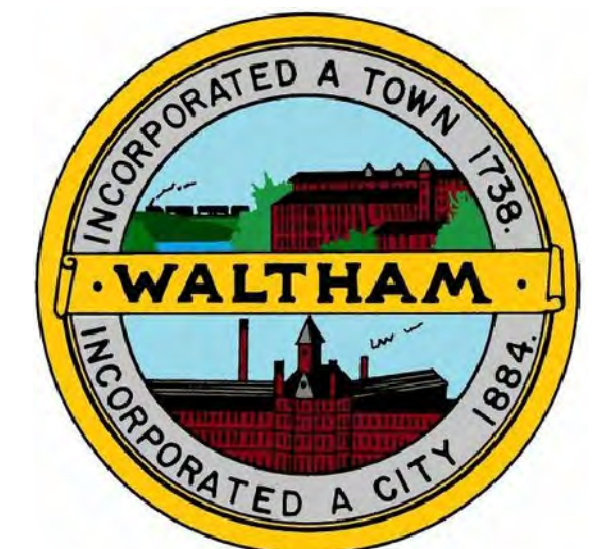
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Architecture - Project Management - Interior Design

Project

**CITY OF WALTHAM
ADA UPGRADES**



610 Main Street
Waltham, MA 02452

Drawing Status

**ISSUED FOR
CONSTRUCTION**

Issued On JUNE 5, 2020

Sheet Contents

**DEMOLITION &
PROPOSED FLOOR
PLANS-PUBLIC
LIBRARY**

Project Number. 6525

Drawing No.

A103

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