CITY OF NEWTON

PURCHASING DEPARTMENT

CONTRACT FOR NEWTON COMMUNITY DEVELOPMENT AUTHORITY

PROJECT MANUAL:

Community Day Center of Waltham
20 Felton Street
Waltham, MA
Shelter Rehabilitation

INVITATION FOR BID #22-05

MANDATORY Pre-Bid Meeting: August 5, 2021 at 10:00 a.m.

Bid Opening Date: August 12, 2021 at 11:00 a.m.

July 2021

Ruthanne Fuller, Mayor

CITY OF NEWTON
PURCHASING DEPARTMENT
INVITATION FOR BID #22-05

The City of Newton (City) invites sealed bids from Qualified Contractors for the benefit of Community Day Center of Waltham (Applicant) with respect to Applicant's property located at 20 Felton St. Waltham, MA (Property). It is understood that, while the City is responsible for this procurement, the contract awarded will be between the Applicant and the Contractor, and that upon execution of the contract between the Applicant and the Contractor, the neither the Newton Community Development Authority (Authority) nor the City shall have any liability to either of them, for any reason whatsoever.

The contract is for the following purposes:

Renovations to the Property as set forth in the Project Manual (310 pp.)
attached as Attachment A (Project)

MANDATORY Pre-Bid Meeting: 10:00 a.m., Thursday, August 5, 2021, located at: 20 Felton St. Waltham.
This MANDATORY walk through of the work site may be held at such later date and time as the City shall specify in an email notice to all Bidders of record.

Bids will be received until: **11:00 a.m. , Thursday, August 12, 2021***
at the Purchasing Department, Room 108, Newton City Hall, 1000 Commonwealth Ave., Newton, MA 02459. Immediately following the deadline for bids all bids received within the time specified will be publicly opened and read aloud.

***To promote the health and safety of City workers and the public, Newton City Hall is still observing COVID restrictions. The City has adopted the following procedures that may affect your participation in this bid:**

1. **Bidders who wish to attend the Bid Opening can do so by telephone conference call. To attend, call 617.454.5555. When prompted, enter Participant Passcode 1220#. There will be no in person meetings.**

2. **You may drop off bids in Room 108. However, bids not received in Room 108 by mail or courier may, if you choose, may be dropped off in a locked drop box at the top of the stairs to left of the main door to City Hall. The box will be checked at the scheduled submission deadline.**

3. **Bids results will be scanned and posted as soon as practicable after the opening. Copies of bids will be available on written request.**

Contract Documents will be available on line at **www.newtonma.gov/bids** or for pickup at Newton City Hall, Room 108, Purchasing Department, 1000 Commonwealth Avenue, Newton Centre, MA 02459 after **10:00 a.m., July 29, 2021.**
There will be no charge for contract documents. Bid surety is not required with this bid.

Award will be made to the lowest, responsible, and responsive Qualified Contractor for **services** based on the Grand Total from Bid Form #22-05. Any bidder not providing prices for all line items may be deemed unresponsive and therefore rejected. **Provision of services is required to start upon the execution of this contract.** The dollar value of the contract may not be increased by an amount more than twenty five percent (25%) of the contract total. "Qualified Contractor" requirements are set forth at Section 7.5 below.

The term of the awarded contract **shall extend from the time of execution for approximately sixty (60) days or until the Project is finished.**

All bids shall be governed by the terms and conditions set forth in this Invitation For Bids (IFB). Any supplies subject to the bid shall be delivered F.O.B. Destination at the Property.

All bids shall be submitted as **one (1) ORIGINAL and two (2) COPIES.**

All City bids are available on the City's web site at **www.newtonma.gov/bids**. It is the sole responsibility of the contractors downloading these bids to ensure they have received any and all addenda prior to the bid opening. Addenda will be available online within the original bid document as well as a separate file. If you download bids from the internet site and would like to make it known that your company has done so, you may fax the Purchasing Department (617) 796-1227 or email to **purchasing@newtonma.gov** with your NAME, ADDRESS, PHONE, FAX AND INVITATION FOR BID NUMBER.

The City will reject any and all bids as permitted by law or if it is in the best interests of the City or the Applicant. In addition, the City reserves the right to waive any informalities in any or all bids, or to reject any or all bids (in whole or in part) if it be in the public interest to do so.

In the event that any person wishes to attend a bid opening or pre-bid meeting, accessible and reasonable accommodations will be provided to persons requiring assistance. If you need a reasonable accommodation, please contact the city of Newton's ADA Coordinator, Jini Fairley, at least two business days in advance of the meeting: jfairley@newtonma.gov or (617) 796-1253. For Telecommunications Relay Service, please dial 711.

CITY OF NEWTON

Nicholas Read
Chief Procurement Officer
July 29, 2021

CITY OF NEWTON

DEPARTMENT OF PURCHASING

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDER'S REPRESENTATION

1.1 Each General Bidder (hereinafter called the "Bidder") by making a bid (hereinafter called "bid") represents that:

1. The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.

2. The Bidder has attended the mandatory pre-bid meeting and walk through at the work site and is familiar with the local conditions for which the services are being procured.

1.2 Failure to so examine the Contract Documents and work site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUEST FOR INTERPRETATION

2.1 Bidders shall promptly notify the City of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.

2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the *Chief Procurement Officer*, at **purchasing@newtonma.gov** or via facsimile (617) 796-1227. The City will only answer such requests if received by **August 6, 2021 at 12:00 noon.**

2.3 Interpretation, correction, or change in the Contract Documents will be made by addendum which will become part of the Contract Documents. The City will not be held accountable for any oral communication.

2.4 Addenda will be emailed to every individual or firm on record as having taken a set of Contract Documents.

2.5 Copies of addenda will be made available for inspection at the location listed in the Invitation for Bids where Contract Documents are on file, in addition to being available online at **www.newtonma.gov/bids**.

2.6 Bidders contacting ANY CITY EMPLOYEE regarding an Invitation for Bid (IFB) outside of the Purchasing Department, once an IFB has been released, may be disqualified from the procurement process.

2.7 Bidders downloading information off the internet web site are solely responsible for obtaining any addenda prior to the bid opening. If the bidder makes itself known to the Purchasing Department, at purchasing@newtonma.gov or via facsimile (617) 796-1227, it shall be placed on the bidder's list. Bidders must provide the Purchasing Department with their company's name, street address, city, state, zip, phone, fax, email address and **INVITATION FOR BID #22-05**.

ARTICLE 3 – PRIVATE CONTRACT

The IFB is administered by the City of Newton and its Community Development Authority. However, the resulting contract will be between the Applicant and the contractor selected as the lowest responsive and responsible bidder. Even though funds are provided through the Authority, as the parties to the contract will be private persons, the contract shall not be deemed to be a public contract.

ARTICLE 4 - PREPARATION AND SUBMISSION OF BIDS

4.1 Bids shall be submitted on the "Bid Form #22-05" attached.

4.2 All entries on the Bid Form shall be made by typewriter or in ink.

4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and figures. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.

4.4 The Bid shall be enclosed in a sealed envelope with the following plainly marked on the outside:

* GENERAL BID FOR: **#22-05**
* NAME OF PROJECT: **Community Day Center of Waltham Shelter Rehabilitation**
* BIDDER'S NAME, BUSINESS ADDRESS, AND PHONE NUMBER
* BIDDER QUALIFICATIONS CERTIFICATE
* NEW CONTRACTOR APPLICATION (if applicable)

4.5 Date and time for receipt of bids is set forth in the IFB.

4.6 Timely delivery of a bid at the location designated shall be the full responsibility of the Bidder.

4.7 Bids shall be submitted with one **original** and two **copies.**

ARTICLE 5 - ALTERNATES

5.1 Each Bidder shall acknowledge alternates (if any) in Section C on the Bid Form.

5.2 In the event an alternate does not involve a change in the amount of the base bid, the Bidder shall so indicated by writing "No Change", or "N/C" or "0" in the space provided for that alternate.

5.3 Bidders shall enter on the Bid Form a single amount for each alternate which shall consist of the amount for work performed by the Contractor.

5.4 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 6 - WITHDRAWAL OF BIDS

6.1 Any bid may be withdrawn prior to the time designated for receipt of bids on written or telegraphic request. Telegraphic withdrawal of bids must be confirmed over the Bidder's signature by written notice postmarked on or before the date and time set for receipt of bids.

6.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

6.3 No bids may be withdrawn within sixty (60) days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

ARTICLE 7 - CONTRACT AWARD

7.1 One (1) contract will be awarded to the responsive and responsible Qualified Contractor providing the lowest bid for the housing rehab work described in Attachment A-Project Manual. The City will, on behalf of the Applicant, award the contractor to the Bidder submitting the lowest Grand Total within sixty (60) days (Saturdays, Sundays, and legal holidays excluded) after the opening of bids.

7.2 The City reserves the right to waive any informalities in or to reject any or all Bids if it be in the public interest to do so. While it is the intent of the City that this procurement follow as closely as possible the requirements of M.G.L. c.30B, it is not required to do so and it may therefore waive any requirements of that statute or this IFB as it deems necessary or appropriate.

7.3 The City reserves the right to reject any bidder who has failed to pay any local taxes, fees, assessments, betterments, or any other municipal charge, unless the bidder has a pending abatement application or has entered into a payment agreement with the collector-treasurer.

7.4 As used herein, the term "lowest responsible and responsive Bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who has met all the requirements of the invitation for bids; and (3) 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 in the work.

7.5 As used herein, “Qualified Contractor” means a contractor which has been pre-qualified by the City’s Rehab & Construction Coordinator. If a contractor is wishes to submit a bid but is not pre-qualified, it can apply for qualification on or prior to the bid submission date. The Contractor Application for qualification and related materials are attached hereto as Exhibit C.

7.6 Subsequent to identifying the lowest responsive and responsible bidder, and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature, the successful Bidder and the Applicant shall execute and deliver to the City a contract in such number of counterparts as the City may require.

7.7 In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

ARTICLE 8 - TAXES

8.1 Bidder shall include in this bid any tax imposed upon the sale or rental of tangible personal property in this Commonwealth, such as any and all building materials, supplies, services and equipment required to complete the work.

8.2 As the Applicant is a private person, there is no exemption from payment of the Massachusetts Sales Tax.

ARTICLE 9 – FEDERAL HOUSING ASSISTANCE REQUIREMENTS

Funds for the construction services procured hereby are provided through the federal programs designed to provide assistance to low and moderate income homeowners. Based on the amount of the contract, the Contractor will have to comply with one or more of the requirements of 24 CFR 135 of Section 3 of the Housing and Urban Development Act of 1968, 12 U.S.C. §17010.

END OF SECTION

CITY OF NEWTON

DEPARTMENT OF PURCHASING

BID FORM #22-05

A. The undersigned proposes to furnish all labor, materials, tools, equipment, transportation and supervision required to perform all work in accordance with the Project Manual to the Applicant named therein entitled:

Community Day Center of Waltham Shelter Rehabilitation
20 Felton St.
Waltham, Massachusetts

B. This bid includes addenda number(s) _____, _____, _____, _____,

C. The contract price(s) will be per attached Attachment A, Project Manual.

Price for All Work Set Forth in the Project Manual:$_____

_____ **and $** _____
(Written word) *(Numerical)*

(**From execution of the contract through completion of the Project)**

IMPORTANT: Award will be made to the lowest responsive and responsible bidder.

COMPANY NAME _____

D. Prompt Payment Discounts. Bidders are encouraged to offer discounts in exchange for an expedited payment. Payments may be issued earlier than the general goal of within 30 days of receipt of the invoice only when in exchange for discounted prices. Discounts will not be considered in determining the lowest responsible bidder.

Prompt Payment Discount _____%_____Days
Prompt Payment Discount_____%_____ Days
Prompt Payment Discount _____%_____Days

D. The undersigned has completed and submits herewith the following documents:

- ☐ Signed Bid Form, 2 pages
- ☐ Attachement A, Specs By Location/Trade, 6 pages
- ☐ Bidder's Qualifications and References Form, 2 pages
- ☐ Certificate of Non-Collusion, 1 page
- ☐ Certification of Tax Compliance, 1 page
- ☐ Certificate of Foreign Corporation (if applicable), 1 page
- ☐ Debarment Form, 1 page
- ☐ IRS W9 Form, 1 page
- ☐ Bidder's Qualifications Certificate, 1 page
- ☐ New Contractor Application (if applicable), 2 pages

F. The undersigned agrees that, if selected as general contractor, s/he will within five days (Saturdays, Sundays and legal holidays excluded) after presentation thereof by the City, execute a contract with the Applicant in accordance with the terms of this bid.

The undersigned hereby certifies that it will comply fully with all laws and regulations applicable to awards made subject to M.G.L. c.30B.

The undersigned further certifies under the penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this section the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from public contracting or subcontracting in the Commonwealth under the provisions of M.G.L. c.29, §29F or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date _____

_____
(Name of General Bidder)

BY: _____

_____
(Printed Name and Title of Signatory)

_____
(Business Address)

_____
(City, State Zip)

_____/_____
(Telephone) (FAX)

_____
(E-mail Address)

NOTE: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of all partners; if an individual, give residential address if different from business address; and, if operating as a d/b/a give full legal identity. Attach additional pages as necessary.

END OF SECTION

CITY OF NEWTON

BIDDER'S QUALIFICATIONS AND REFERENCES FORM

All questions must be answered, and the data given must be clear and comprehensive. Please type or print legibly. If necessary, add additional sheet for starred items. This information will be utilized by the City for purposes of determining bidder responsiveness and responsibility with regard to the requirements and specifications of the Contract.

1. FIRM NAME: _____

2. WHEN ORGANIZED: _____

3 INCORPORATED? _____ YES _____ NO DATE AND STATE OF INCORPORATION: _____

4. IS YOUR BUSINESS A **MBE**? _____YES _____NO **WBE**? _____YES _____NO or **MWBE**? _____YES _____NO

* 5. LIST ALL CONTRACTS CURRENTLY ON HAND, SHOWING CONTRACT AMOUNT AND ANTICIPATED DATE OFCOMPLETION:

_____

_____

_____

_____

_____

* 6. HAVE YOU EVER FAILED TO COMPLETE A CONTRACT AWARDED TO YOU?
_____ YES _____ NO
IF YES, WHERE AND WHY?

_____

_____

* 7. HAVE YOU EVER DEFAULTED ON A CONTRACT? _____ YES _____ NO
IF YES, PROVIDE DETAILS.

_____

_____

* 8. LIST YOUR VEHICLES/EQUIPMENT AVAILABLE FOR THIS CONTRACT:

_____

_____

_____

_____

_____

_____

_____

* 9. IN THE SPACES FOLLOWING, PROVIDE INFORMATION REGARDING CONTRACTS COMPLETED BY YOUR FIRM SIMILAR IN NATURE TO THE PROJECT BEING BID. A MINIMUM OF FOUR (4) CONTRACTS SHALL BE LISTED. PUBLICLY BID CONTRACTS ARE PREFERRED, BUT NOT MANDATORY.

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____

DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICLY BID? _____YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: ____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICLY BID? _____YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #: (____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICLY BID? _____YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON:_____ TELEPHONE #: (____)_____
CONTACT PERSON'S RELATION TO PROJECT?:_____
(i.e., contract manager, purchasing agent, etc.)

_____

PROJECT NAME: _____
OWNER: _____
CITY/STATE: _____
DOLLAR AMOUNT: $ _____ DATE COMPLETED: _____
PUBLICLY BID? _____YES _____ NO
TYPE OF WORK?: _____
CONTACT PERSON: _____ TELEPHONE #:(____)_____
CONTACT PERSON'S RELATION TO PROJECT?: _____
(i.e., contract manager, purchasing agent, etc.)

10. The undersigned certifies that the information contained herein is complete and accurate and hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City in verification of the recitals comprising this statement of Bidder's qualifications and experience.

DATE: _____ BIDDER: _____

SIGNATURE: _____

PRINTED NAME: _____ TITLE: _____

END OF SECTION

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 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 or individuals.

_____
(Signature of individual)

_____
Name of Business

CERTIFICATION OF TAX COMPLIANCE

Pursuant to M.G.L. c.62C, §49A and requirements of the City, the undersigned acting on behalf of the Contractor certifies under the penalties of perjury that the Contractor is in compliance with all laws of the Commonwealth relating to taxes including payment of all local taxes, fees, assessments, betterments and any other local or municipal charges (unless the Contractor has a pending abatement application or has entered into a payment agreement with the entity to which such charges were owed), reporting of employees and contractors, and withholding and remitting child support.*

_____
**Signature of Individual (Mandatory)

_____
*** Contractor's Social Security Number (Voluntary) or Federal Identification Number

Print Name: _____

Date: _____

OR

_____
Company Name
(Corporation, Partnership, LLC, etc.)

By: _____
**Corporate Officer (Mandatory)

Print Name: _____

Date: _____

* The provision in this Certification relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted until the City receives a signed copy of this Certification.

*** Your social security number may be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended.

CERTIFICATE OF FOREIGN CORPORATION

The undersigned hereby certifies that it has been duly established, organized, or chartered as a corporation under the laws of:

(Jurisdiction)

The undersigned further certifies that it has complied with the requirements of M.G.L. c. 30, §39L (if applicable) and with the requirements of M.G.L. c. 156D, §15.03 relative to the registration and operation of foreign corporations within the Commonwealth of Massachusetts.

Name of person signing proposal

Signature of person signing proposal

Name of Business (Please Print or Type)

Affix Corporate Seal here

City of Newton

Mayor
Ruthanne Fuller

Purchasing Department
Nicholas Read @ *Chief Procurement Officer*
1000 Commonwealth Avenue
Newton Centre, MA 02459-1449
purchasing@newtonma.gov

Telephone
(617) 796-1220
Fax:
(617) 796-1227
TDD/TTY
(617) 796-1089

Date

Vendor

Re: Debarment Letter for Invitation For Bid #_____

As a potential vendor on the above contract, the City requires that you provide a debarment/suspension certification indicating that you are in compliance with the below Federal Executive Order. Certification can be done by completing and signing this form.

Debarment:
Federal Executive Order (E.O.) 12549 "Debarment and Suspension" requires that all contractors receiving individual awards, using federal funds, and all sub-recipients certify that the organization and its principals are not debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from doing business with the Federal Government.

I hereby certify under pains and penalties of perjury that neither I nor any principal(s) of the Company identified below is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

_____ (Name)
_____ (Company)
_____ (Address)
_____ (Address)
PHONE _____ FAX _____
EMAIL _____

_____ Signature

_____ Date

If you have questions, please contact Nicholas Read, Chief Procurement Officer at (617) 796-1220.

Form **W-9**
(Rev. November 2017)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

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

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

Requester's name and address (optional)

6 City, state, and ZIP code

7 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 line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

		–						

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); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

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 for Part II, later.

Sign Here | **Signature of U.S. person** ▶ | **Date** ▶

General Instructions

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

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT

GENERAL TERMS AND CONDITIONS

1. The right is reserved to reject any and all bids, to waive informalities, and to make award as may be determined to be in the best interest of the City or the Applicant.

2. Interpretation, correction, or change in the Contract Documents will be made by Addendum which will become part of the Contract Documents. Neither the City nor the Applicant will be held accountable for any oral representation that is inconsistent with the terms of the Contract Documents.

3. Addenda will be emailed to every individual or firm on record as having downloaded a set of Contract Documents. Addenda will also be posted on the City's website at: **www.newtonma.gov/bids** . Any bidder downloading the IFB and any plans for a City bid shall email their company's information along with the IFB Number and Project Title that they downloaded. You will then be added to the bidder's list and email distribution list.

4. Prices quoted must include inside delivery to the destination specified on the Purchase Order.

5. No charges will be allowed for packing, crating, freight, Express or cartage unless specifically stated and included in the bid.

6. The award to the successful bidder may be cancelled if successful bidder shall fail to prosecute the work with promptness and diligence.

7. Time in connection with discount offered will be computed from the date of delivery, as specified on purchase order, or from date correct invoice is received, if the latter date is later than the date of delivery.

8. The successful bidder shall replace, repair or make good, without cost to the City or the Applicant, any defects or faults arising within one (1) year after date of acceptance of articles furnished hereunder (acceptance not to be unreasonably delayed) resulting from imperfect or defective work done or materials furnished by the Contractor.

9. The Contractor shall indemnify and save harmless the City, the Applicant, and all persons acting for on behalf of either of them from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment or apparatus, or any part thereof, which infringes or is alleged to infringe on any patent rights. In case such material, equipment or apparatus, or any part thereof, in any such suit is held to constitute infringement, the Contractor, within a reasonable time, will at it's expense, and as the City or Applicant may elect, replace such material, equipment or apparatus with non-infringing material, equipment or apparatus, or remove the material, equipment or apparatus, and refund the sums paid therefor.

10. All bids shall be based on the quantities set forth on the attached bid sheets. These quantities shall be used as a basis for the comparison of the bid proposals. It is agreed that the quantities given in this bid are assumed solely as a basis for the comparison of the bids. While the quantities are based on best estimates of the work to be performed during the term of this Contract, the City and the Applicant do not expressly or by implication agree that the actual amount of work will even approximately correspond herewith, and the they reserve the right to increase or diminish the amount of any class or portion of the work as it may deem necessary, without change of price per unit of quantity.

11. The successful bidder shall comply with all applicable Federal State and Local laws and regulations.

12. Purchases may be exempt from Federal excise taxes and bid prices must exclude any such taxes. Tax exemption certificates will be furnished upon request.

13. If so stated in the IFB the successful bidder will be required to furnish a performance and/or a labor and material payment bond, in an amount, in a form and with a surety satisfactory to the City. The bidder shall be responsible for the cost of the bond(s).

14. If the IFB requires bid surety, this surety shall be in the form of a cash, bid bond, cashier's check, treasurer's check, or certified check on a responsible bank, payable to the City of Newton, and must be filed with the original bid in the Office of the Purchasing Agent. Failure to do so will lead to rejection of bid. The bid surety will be returned to the successful bidder

within seven (7) days execution of awarded, and approval by the City of performance and/or payment bond(s). In case of default, the bid surety shall be forfeited to the City.

15. Verbal orders are not binding on the City or the Applicant and deliveries made or work done without formal Purchase Order or Contract are at the risk of the Contractor and may result in an unenforceable claim.

16. The Contractor shall agree to indemnify, defend and hold the City and Applicant harmless from any and all claims arising out of the performance of this contract.

17. "Or equal "- An item equal to that named or described in the specifications of the contract may be furnished by the Contractor and the naming of any commercial name, trademark or other identification shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design; (2) it will perform at least equally the function imposed by the general design for the work being contracted for or the material being purchased; and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications. The name and identification of all materials other than the one specifically named shall be submitted to the City in writing for approval, prior to purchase, use or fabrication of such items. Subject to the provisions of M.G.L., Ch. 30, Sec. 39M, approval shall be at the sole discretion of the City, shall be in writing to be effective, and the decision of the City shall be final. The City may require tests of all materials so submitted to establish quality standards at the Contractor's expense. All directions, specifications and recommendations by manufacturers for installation, handling, storing, adjustment and operation of their equipment shall be complied with; responsibility for proper performance shall continue to rest with the Contractor.

    For the use of material other than the one specified, the Contractor shall assume the cost of and responsibility for satisfactorily accomplishing all changes in the work as shown. If no manufacturer is named, the Contractor shall submit the product he intends to use for approval of the Applicant.

    Except as otherwise provided for by the provisions of M.G.L. c30, §39J, the Contractor shall not have any right of appeal from the decision of the Applicant rejecting any materials furnished if the Contractor fails to obtain the approval for substitution under this clause. If any substitution is more costly, the Contractor shall pay for such costs.

18. In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

19. Right To Know:
    Any Contractor 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 Contractor agrees to deliver all containers properly labeled pursuant to M.G.L. c.111F, §7 and the regulations contained in 441 CMR §21.05. Failure to submit an MSDS and/or label on each container will place the Contractor in noncompliance with the purchase order. Failure to furnish MSDSs and/or labels on each container may result in civil or criminal penalties, including bid debarment and action to prevent the Contractor from selling said substances or mixtures containing said substances within the Commonwealth. All Contractors furnishing substances or mixtures subject to M.G.L. c.111F are cautioned to obtain and read the law and rules and regulations referred to above. Copies can be obtained from the State House Book Store, Secretary of State, State House, Room 117, Boston, MA 02133, (617-727-2834) for $2.00 plus $.65 postage.

20. Funds for the construction services procured hereby are provided through the federal programs designed to provide assistance to low and moderate income homeowners. Based on the amount of the contract, the Contractor will have to comply with one or more of the requirements of 24 CFR 135 of Section 3 of the Housing and Urban Development Act of 1968, 12 U.S.C. §17010.

FAILURE TO COMPLY WITH ALL APPLICABLE TERMS AND CONDITIONS COULD RESULT IN THE CANCELLATION OF YOUR CONTRACT

CONTRACT FORMS

The awarded bidder will be required to complete and submit documents substantially similar in form to the following.

These forms may need to be modified on account of changed circumstances, and are provided for informational purposes only.

NEWTON HOUSING REHABILITATION PROGRAM

OWNER CONTRACTOR AGREEMENT

THIS AGREEMENT made as of this ____ day of _____ by and between _____ (hereinafter the "**Contractor**"), and _____**,** (hereinafter the "**Owner**"), of _____.

WHEREAS, the Owner desires to engage the Contractor in rehabilitation work to _____ using financial assistance in the form of federal Community Development Block Grant funds provided by the Newton Community Development Authority, an organization duly constituted under Chapter 705 of the Acts of 1975, as amended acting by and through its Housing Program Manager and/or her designated staff but without personal liability to her or her staff (hereinafter the "**NCDA**"); and

WHEREAS, the Contractor has 60 days from the date the Housing Rehabilitation Construction Manager issues a Notice to Proceed or _____ to complete project funded work.

NOW, THEREFORE, the parties do mutually agree as follows:

1. Employment of Contractor.

The Owner hereby engages the Contractor to perform the services and supply the materials hereinafter set forth.

2. Scope of Services.

The Contractor shall perform all the services and furnish all the material necessary to make the improvements described in this Agreement for the aforesaid property.

3. Improvements.

The improvements to be made and/or constructed by the Contractor are set forth in **Exhibit A**, **Work Write Up dated** _____ attached hereto and specifically incorporated by reference herein.

4. Time for Performance.

The Contractor has ten (10) calendar days from the date the Notice to Proceed is issued to begin project work. All project work to be performed by the Contractor shall be completed in accordance with the approved **Work Write Up dated _____, Exhibit A**, attached hereto and specifically incorporated by reference herein, and provided to the Newton Housing Rehabilitation Program staff from the Contractor.

5. NCDA as Agent of the Owner; Notice to Proceed.

(a) The Contractor agrees and understands that the Owner has designated the NCDA and its staff as agent of the Owner in the administration of this Construction Agreement, including the issuance of any orders and changes, inspection of work, resolution of disputes, and processing of payment.

(b) The Contractor shall not commence work until receiving a written Notice to Proceed signed by the NCDA. The Notice to Proceed shall be issued not more than ten (10) days from the Contract Date of this Agreement.

6. Subcontractors.

The Contractor shall not be required to employ any Subcontractor against whom he has a reasonable objection. The Contractor agrees that he is fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by him. Nothing contained in the Agreement documents shall create any contractual rights or obligations between any Subcontractor and the Owner and/or the NCDA. The Contractor shall submit to the NCDA a complete list of Subcontractors, upon request.

7. Insurance and Indemnification.

The Contractor shall maintain such insurance as will protect him from claims under Workmen's Compensation Acts and other employee benefits acts, from claims for damages because of bodily injury, including death, and from claims for damages to property which may arise both out of and during operations under this Agreement, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. General liability insurance protecting the Owner and the NCDA shall be written for not less than $500,000 per occurrence for bodily injury to persons and not less than $500,000 per occurrence for property damage. Certificates of insurance shall be filed with the NCDA prior to the commencement of work.

The Contractor shall defend, indemnify and hold harmless the Owner, the NCDA, and the City of Newton, and their respective officers and employees, from liability and claim for damages because of bodily injury, death, sickness, disease, property damage or loss and expense arising in whole or in part from any act or omission of the contractor, his sub contractor(s), or the employees, agents, or independent contractor(s) of either of them regardless of whether it is caused in part by any party indemnified hereunder from Contractor's operations under this Contract.

8. Changes.

All changes to this Agreement and Work Write Up shall be mutually agreed to in writing signed by the parties. Any changes not signed by all the parties to this Agreement shall be null and void.

9. Waiver of Liens.

The Contractor shall submit to the NCDA a waiver of all mechanics and material liens prior to final payment of the consideration set forth herein.

10. Compensation.

The Owner agrees to compensate the Contractor in the Compensation Amount of _____ for the services and the materials to be provided herein. **The City of Newton through the Newton Community Development Authority will provide a total of _____ to the Contractor for the satisfactory performance of work.**

11. Workmanship.

The work provided hereunder by the Contractor shall be executed as directed by the Work Write Up in the most sound, workmanlike and substantial manner; and all materials used in the construction, rehabilitation, renovating, remodeling, and improving shall be new unless otherwise expressly set forth in the specifications.

12. Defects after Completion.

The Contractor shall guarantee the work performed for a period of twelve (12) months from the date of final acceptance of all work required by the Agreement. Furthermore, the Contractor shall furnish the Owner, in care of the NCDA, with all manufacturers' and suppliers' written guarantees and warranties covering materials and equipment furnished under the Agreement. Any defects that appear within this twelve (12) month period and arise out of defective or improper materials or workmanship shall, upon direction of the Owner or NCDA, be corrected and made good by the Contractor at his expense.

13. Inspection of Work.

The NCDA shall at all times have access to the work. If the specifications, plans, instructions, laws, ordinances, or any public authority requires any work to be specifically inspected, tested or approved, the Contractor shall give the NCDA timely notice of its readiness for inspection and, if the inspection is by an authority other than the NCDA, the time fixed for such inspection. Inspections by the NCDA shall be promptly made. If any work should be covered up without approval or consent of the NCDA, it must, if required by the NCDA, be uncovered for examination at the Contractor's expense. If such work should be found not in accordance with this Agreement, including any incorporated plans and specifications, the Contractor shall pay costs of correcting the defective work; provided, however, if the Contractor can show that the defect was not caused by him or his subcontractors, then in that event, the Owner shall pay the cost of remedying such work.

14. Permits and Licenses.

All permits and licenses necessary for the completion and execution of the work shall be secured and paid for by the Contractor. If the Contractor observes that any drawings, plans and/or specifications are at variance with applicable laws, rules, ordinances, and/or regulations bearing on the conduct of the work, he shall promptly notify the NCDA in writing. Any necessary changes in project work shall be adjusted as provided for Section 8 of this Agreement. If the Contractor knowingly performs work contrary to such laws, ordinances, etc. and without notice to the NCDA, he shall bear all costs arising therefrom. All work shall be performed in conformance with applicable local codes and requirements whether or not covered by the specifications and drawings for the work.

15. Disputes.

All claims or disputes or matters in question between the Owner and Contractor arising out of, or relating to this Agreement or the breach thereof will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining or other alternative forms of dispute resolution or mediation acceptable to both parties, unless the parties mutually agree otherwise

No demand for arbitration of any such claim, dispute or other matter may be made until the matter has been submitted, by either party, to the NCDA for the NCDA's recommendation for resolution, and either (a) the NCDA has rendered its written recommendation or (b) fifteen (15) business days have passed since the NCDA's receipt of such submission. If the NCDA renders such a written recommendation, even if rendered

after arbitration proceedings have been initiated, such recommendation may be entered as evidence in the arbitration, but will not supersede the arbitration proceedings.

Notice of the demand for arbitration will be filed in writing with the American Arbitration Association and with the other party to the claim, dispute or other matter in question, provided however, that any such demand for arbitration of any such claim, dispute or other matter in question must be made within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitation.

No arbitration arising out of or relating to this Agreement shall include, whether by consolidation, joinder or in any other manner, as a party the NCDA, the City of Newton or the agents, employees or officials of either.

The award rendered by the arbitrators will be final and judgment may be entered upon it in any court having jurisdiction thereof.

The arbitrators may assess costs of arbitration and/or attorney's fees in favor of either party at the discretion of the arbitrators in accordance with said rules of the American Arbitration Association.

16. Equal Employment Opportunity.

During the performance of this Agreement, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, or national origin. 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 that may be provided by the NCDA.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Agreement so that such provisions will be binding upon each subcontractor provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

17. Compliance with Federal Law.

The parties to this Agreement agree to comply with the provisions of federal law, SECTION 3 OF HOUSING AND URBAN DEVELOPMENT ACT OF 1968, attached hereto as Exhibit A, and specifically incorporated by reference.

18. Executive Order 11246.

If the sum to be charged for the work is more than $10,000, the Contractor further agrees to comply with the provisions of EXECUTIVE ORDER 11246 OF SECRETARY OF LABOR: CONTRACTOR'S AGREEMENTS, attached hereto as Exhibit B, and specifically incorporated by reference.

19. Non-Liability of the NCDA.
The Contractor and Owner agree to hold the NCDA and the City of Newton harmless for any damages concerning the undertaking and execution of this Agreement.

20. Default.
In case of default by the Contractor, the Owner and the NCDA may procure the articles or services from other sources and hold the Contractor responsible for any excess cost occasioned thereby.

21. Termination.
In case the Contractor fails to furnish materials or execute work in accordance with the provisions of this Agreement or fails to proceed with or complete the work within the time limit specified in this Agreement or if the provisions of the Agreement are otherwise violated by the Contractor, then in any such case upon passage of ten (10) days after service of written notice, the violation shall cease or satisfactory arrangements shall be made for its correction; otherwise the Contractor, by written notice may be declared in default and his right to proceed under the Agreement terminated. In the event the Contractor is thus declared to be in default, the Owner, and the NCDA will proceed to have the work completed, shall apply to the cost of having the work completed any money due the Contractor under the Agreement, and the Contractor shall be responsible for any damages resulting to Owner by reason of said default.

22. Notice.
Notices to be given by the Owner or the NCDA to the Contractor shall be considered given for the purpose of this Agreement if mailed by regular mail to the Contractor's address. Notices to be given by the Owner or Contractor to the NCDA shall be considered given for the purpose of this Agreement if mailed by regular mail to the City of Newton, Planning and Development Department, 1000 Commonwealth Avenue, Newton, MA 02459. Notices to be given by the Contractor or the NCDA to the Owner shall be considered given for the purpose of this Agreement if mailed by regular mail _____

23. Assignment.
The Contractor shall not assign the Agreement without prior written consent of the Owner and the NCDA.

24. Contractor to Keep Premises Clean.
The Contractor shall keep the premises clean and orderly during the course of the work and shall remove all debris upon completion of the work. Materials and equipment that have been removed and replaced as part of the work shall belong to the Contractor.

25. Access to Utilities.
The Owner shall permit the Contractor to use at no cost existing utilities such as light, heat, power, and water necessary to the carrying out and completion of the work.

26. Cooperation.
The Owner shall cooperate with the Contractor to facilitate the performance of the work, including the removal and replacement of rugs, coverings, and furniture, as necessary.

27. Conflict of Interest.
No officer, employee or official of the City of Newton or of the NCDA shall participate in any decision relating to this Agreement which affects his or her personal interest or the interest of any corporation, partnership, or other business for profit, or association in which he or she is, directly or indirectly interested or has any personal or primary interest, direct or indirect.

****

SIGNATORIES

IN WITNESS WHEREOF the parties hereto have executed this Agreement in duplicate as of the date written above, in the City of Newton, Middlesex County, Massachusetts.

OWNER:

_____

_____

Witness

CONTRACTOR:

_____

By:

_____

Witness

EXHIBIT A

SECTION 3 OF HOUSING AND URBAN DEVELOPMENT ACT OF 1968

A. The improvements hereunder are funded by federal financial assistance from the U.S. Department of Housing and Urban Development. As such, the improvements are subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968 as amended, 12 U.S.C. 170. Section 3. The purpose of Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) (section 3) is to ensure that employment and other economic opportunities generated by certain HUD financial assistance shall, to the greatest extent feasible, and consistent with existing Federal, State and local laws and regulations, be directed to low- and very low-income persons, particularly those who are recipients of government assistance for housing, and to business concerns which provide economic opportunities to low- and very low- income persons. **For the purposes of this Agreement, a low- income household of one means a household whose income does not exceed $33,050, a moderate-income household of one means a household whose income does not exceed $47,150.**

B. The parties to this Agreement will comply with the provisions of the Act and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development, and all applicable rules and orders of HUD. The parties agree that they are under no contractual or other obligation that would prevent compliance with these the Act.

C. The Contractor agrees to send to each labor organization or representative of workers with which he has a collective bargaining agreement or other contract a notice that notifies the organization or workers representative of the Act. The Contractor further agrees to post copies of the notice in conspicuous places available to employees and applicants for employment and training.

D. The Contractor shall ensure that references to the applicable sections of the Act are in every subcontract in connection with the project. The Contractor agrees to take appropriate action, including legal action, in the event the subcontractor is in violation of 24 CFR 135. The Contractor shall not subcontract with any subcontractor where there is notice or actual knowledge that the subcontractor is in violation of the Act.

E. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of the contract shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, his successors, and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, his contractor and subcontractors, his successors, and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified by 24 CFR 135.

EXHIBIT B

EXECUTIVE ORDER 11246 OF SECRETARY OF LABOR: CONTRACTOR'S AGREEMENTS

A. The Contractor shall comply with all provisions of Executive Order 11246 of September 24, 1965, and the rules, regulations, and relevant orders of the Secretary of Labor. Section 202 of the provisions of Executive Order 11246 of Sept. 24, 1965, appear at 30 FR 12319, 12935, 3 CFR, 1964 - 1965 Comp., p. 339.

B. In the event of the Contractor's noncompliance with the Executive Order, or with any related rules, regulations, or orders, this Agreement may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts.

C. All Government contracting agencies shall include in every Government contract hereafter entered into the following provisions:

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

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. 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 to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of The provisions of Executive Order 11246 of Sept. 24, 1965, appear at 30 FR 12319, 12935, 3 CFR, 1964 - 1965 Comp., p. 339, unless otherwise noted.

EXHIBIT C

BIDDER QUALIFICATION CERTIFICATE
20 FELTON ST. WALTHAM, MA IFB #22-05

To: Newton Community Development Authority (Authority)

Reference is made to the above Invitation for Bid (IFB). This Certificate is required to be eligible for consideration under the IFB. Accordingly the undersigned hereby certifies that it has either (1) provided the following to the Authority which is currently in effect or (2) attached the following to this Certificate, which attachment are incorporated herein:

1. Copy of Unrestricted MA Construction Supervisor License.
2. Copy of MA Home Improvement Contractor Registration.
3. Copy of MA RRP Firm Certification.
4. Copies of RRP certification For Workers.
5. Copy of MA Deleader Contractor License.
6. Copies of MA Deleader Supervisors Licenses for all employees.
7. Copies of MA Deleader workers License for all employees.
8. At least 3 referrals for jobs over $25,000.00
9. Corporate name as it appears on Secretary of State's William Francis Galvin website for all corporations and LLCs.
10. Business certificate for all DBAs. List name and title of all authorized signatories
11. Proof of insurance pertaining to General Liability and Property Damage, in amounts not less than set forth below:
    Commercial General Liability - (Bodily Injury, including accidental death)
    $1,000,000 per occurrence and (Property Damage) $1,000,000 per occurrence.
12. Proof of Workers Compensation insurance – MA Statutory Requirements.

The undersigned certified further that in the event that it is the successful bidder or quoter, it will provide a certificate(s) of insurance coverage of the types and amounts required. The City of Newton shall be named in such policies as additional insured on said coverage and shall be a certificate holder thereof. The undersigned agrees also to contact its insurance company (ies) so that they notify the certificate holders of any reduction or cancellation of the insurance at least thirty (30) days prior to the effective date of such reduction or cancellation.

The undersigned acknowledges that if it does not have a current Deleaders Contractors' license, it will not be able to bid or quote on the lead abatement portion of any projects.

_____(Name of Bidder)
By:_____
Date:_____

Questions to regarding completion of this Certificate**:**
Doug Desmarais 617-796-1148
Housing Rehabilitation/Construction Manager
1000 Commonwealth Ave., Newton, MA 02459
Email: ddesmarais@newtonma.gov

Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Department of Planning and Development
1000 Commonwealth Avenue Newton, Massachusetts 02459

Telephone
(617) 796-1120
Telefax
(617) 796-1142
TDD/TTY
(617) 796-1089
www.newtonma.gov

NEWTON HOUSING REHABILITATION PROGRAM
1000 Commonwealth Avenue
Newton, MA 02459
617-796-1148

CONTRACTOR APPLICATION
(General Contractor)

Name of Contractor: _____

Name of Business (If different): _____

Business Address: _____

Email address: _____

Home Address: _____

Home Phone: _____Business: _____ Cell: _____

Email Address:

Number of years in business: _____

Federal ID or Social Security Number: _____

Types and Limit of Insurance:
(Please indicate carrier, limits and policy # (s))

_____

Customer reference: (property owners for whom you have recently completed work for in excess of $8,000.00).

Customer _____Phone_____

Address _____

Type of Job _____

Customer _____Phone_____

Address _____

Type of Job _____

Customer _____Phone_____

Address _____

Type of Job _____

Have you ever been debarred or has your Contractor's License ever been revoked?

If yes, give details:

Have subcontractors, suppliers or customers sued any member (s) of the firm within the past three years?

If yes, give details:

I certify that all information in this statement, and all information furnished in support of this statement, is true and complete to the best of my knowledge and belief:

_____ _____

Signature Date

_____

Title

CERTIFICATE OF AUTHORITY - CORPORATE

1. I hereby certify that I am the Clerk/Secretary of _____
(insert full name of Corporation)

2. corporation, and that _____
(insert the name of officer who signed the **contract and bonds**.)

3. is the duly elected _____
(insert the title of the officer in line 2)

4. of said corporation, and that on _____
(insert a date that is ***ON OR BEFORE*** the date the officer signed the **contract and bonds**.)

at a duly authorized meeting of the Board of Directors of said corporation, at which all the directors were present or waived notice, it was voted that

5. _____ the _____
(insert **name** from line 2) (insert **title** from line 3)

of this corporation be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

6. ATTEST: _____ *AFFIX CORPORATE SEAL HERE*
(Signature of **Clerk or Secretary**)*

7. Name: _____
(Please print or type name in line 6)*

8. Date: _____
(insert a date that is ***ON OR AFTER*** the date the officer signed the **contract and bonds**.)

* The name and signature inserted in lines 6 & 7 must be that of the Clerk or Secretary of the corporation.

NEWTON COMMUNITY DEVELOPMENT AUTHORITY

SCOPE OF SERVICES

GENRAL REHABILITATION CONSTRUCTION SERVICES

RE: Community Day Center of Waltham
20 Felton St.
Waltham, Massachusetts

1.0 Scope

1.1 Newton Community Development Authority, on behalf of the above-referenced applicant (Applicant) is accepting bids for construction services per the bid list attached. All bids must be submitted in the manner and form prescribed by the Specifications which control award of the contract. Bid award will be made to the lowest responsive and responsible bidder for all line items based on Grand Total. Any bidder not providing prices for all line items may be deemed non-responsive and therefore rejected.

1.2 Applicant intends to enter into a contract for services for construction services beginning upon contract execution and extending through project completion. These services are needed to for improvement to the above referenced Project.

2.0 Description and Quality

2.1 Wherever items are specified by trade name, manufacturer, or dealer's catalog number, or by any other reference, it shall be taken to mean the items as this described or any other item equal thereto in quality, finish, durability, compatibility, safety and serviceability for the purpose for which it is intended. If an alternate item is being proposed, the bidder shall so indicate by providing a full description of the proposed substitute as well as provide data sheets, catalog cuts, performance and test data, and any other information which will support or otherwise prove equality; such proof rests entirely with the bidder. When the bidder does not state the brand, it is understood that the offer is exactly as specified. Final decisions concerning the quality of items, other than those specifically designated, is to rest with the Applicant whose determination shall be final and conclusive. Vendors shall guarantee quality control of all goods at no additional cost to the Applicant. Samples shall be furnished free-of-charge upon request and may be retained for future comparisons. Samples and literature must be provided within three (3) days after the request.

2.2 The use of environmentally preferable products is encouraged, i.e., products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service: 1) emphasis on multiple environmental considerations such as recycled content, energy and water efficiency, renewable resource use and toxicity considerations rather than any single environmental feature; 2) evaluation of environmental impacts throughout the life cycle of the product which includes impacts during the manufacture, use and disposal of the product; and 3) recognition of cost and performance remain critical factors in all purchasing decisions.

2.3 Material Safety Data Sheets must be forwarded to the Newton Community Development Authority within thirty (30) days after the bid award. All products must be properly labeled with the product name, manufacturer’s name, address and emergency telephone number, ingredients, cautions, warnings, hazard rating and first aid.

3.0 Delivery of Services

3.1 Services shall be provided promptly from the time an order is placed via on-line, telephone or email. An exception is only allowed with pre-approval in writing by an authorized employee.

3.2 Services shall be provided during normal business hours, Monday through Friday.

3.3 The equipment used in the transportation and delivery of supplies procured shall be maintained in a sanitary condition at all times. The equipment shall be subject to unannounced inspections at any time. All vehicles must turn off their engines while services are being provided.

4.0 Payment

4.1 Invoices shall be billed to Planning and Development Attn: Doug Desmarais, Housing Rehab/Construction Manager, City of Newton 1000 Commonwealth Avenue, Newton, Massachusetts 02459, or via email ddesmarais@newtonma.gov.

4.2 Invoices must be in duplicate, by department, including the a) purchase order number, b) department name, c) item number, d) quantities, e) description, f) unit price and g) totals.

END OF SECTION

ATTACHMENT A

Attachment A consists of one (1) sets of specifications which are applicable to this project:

Project Manual

Community Day Center of Waltham
20 Felton St.
Waltham, Massachusetts

IFB #22-05

Project Manual

for

Community Day Center of Waltham

20 FELTON STREET ALTERATIONS

Waltham, Massachusetts

prepared by:

Beacon Architectural Associates
145 South Street
Boston, Massachusetts 02111

Date of Issue:

June 25, 2021

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SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

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C. Work by Owner.

D. Work restrictions.

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2. Access to Site.
3. Coordination with occupants.

E. Project Manual formats and conventions.

1.2 PROJECT DESCRIPTION

A. Work covered by Contract Documents: The Project consists of Alteration to the 2nd floor of 20 Felton Street for the Community Day Center of Waltham, and Accessible Route Improvements including Wheel Chair Lift and Exterior Ramp

1. Project Address:

Community Day Center of Waltham
20 Felton Street
Waltham, MA 02453

2. Completeness: The Work shall be as shown on the Drawings and be complete in every respect and in conformance with all applicable requirements of the governing laws and codes.

B. Work beyond Contract Limits: The Project additionally includes work in areas beyond the Contract Limits, where indicated in the Contract Drawings.

C. Contract time: The Contractor may begin on-site work on, or after receipt of a written Notice to Proceed, or suitable Letter of Intent. After commencement of work, the Contractor shall pursue the Work continuously and with diligence, and bring the Project to Substantial Completion prior to date stipulated in Owner-Contractor Agreement.

1. Substantial completion is the stage in the progress of the Work when the work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. This includes any and all permits required by governmental agencies necessary for occupancy and use.

D. Building Permits: Contractor is responsible to ensure all required permits are obtained, and that the work pertaining to permits is properly inspected and certified. subcontractors are required to obtain permits relating to their work.

1.3 DEFINITIONS - OWNER AND ARCHITECT

A. Wherever the term "Owner" is used in this specification, it refers to:

Community Day Center of Waltham
16 Felton Street
Waltham, MA 02453

1. The terms “Owner” and “Awarding Authority” as used in the Project Manual have the same meaning and are interchangeable in Contract Documents. Both terms refer to the same entity.
2. Important Tax Note: OWNER is a non-profit organization and exempt from certain taxes. It is therefore required that the Contractor and all Subcontractors purchasing taxable goods or services make known to suppliers that tax-exempt status of the Owner, in order that such taxes will not be applied to the goods under Contract. In the event that such taxes are paid on any items, the Contractor shall obtain rebates for the taxes and reimburse the Owner in the full amount by change order. The Owner will provide the necessary evidence and certificates of its tax-exempt status upon request of those concerned. The most prevalent taxes concerned are:
   a. Federal Excise Taxes as applied to articles which are taxable under Chapter 32 of the Internal Revenue Code of 1954, as amended. The Owner’s Excise Tax Exemption Certificate Number is applicable.
   b. Sales and Use Tax imposed by the Commonwealth of Massachusetts: The Owner has been assigned Exemption Certificate Number with respect to leases, rental, or purchase of “tangible personal property”, including building materials and supplies, subject to the Massachusetts Sales and Use Tax. This exemption does not apply to any equipment leased or rented by the Contractor for his own use on the construction of the Project.
   c. Sales and Use Tax imposed by the states where the Owner does not have exemption status: The Owner may choose to apply for tax exemption status in other states where major building materials and supplies are being purchased. In the event that the Owner obtains exemption status after bids are received, the Contractor shall adjust the Stipulated Sum by change order, for the amount equal to the scheduled taxes that where included in the Contractors Bid.
   d. Fines and Penalties: Contractor and subcontractors are fully responsible for payment of all penalties and fines accessed by authorities having jurisdiction for improper and illegal use of Owner’s tax exemption certificate number.
3. All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the contrary, be delivered to the office of the Architect:

B. Wherever the term "Architect", “Designer”, or “Architect/Engineer”, is used in the Contract Documents, it refers to:

Beacon Architectural Associates
145 South Street
Boston, Massachusetts 02111

1.4 WORK BY OWNER

A. Related work under separate agreements: The Owner will award separate contracts which may commence prior to, or during the work of this Contract. Work under separate agreements, in general include the following:

1. Owner Furnished and Installed (OFI) Products: The Contractor has coordinating responsibility for the following work, provided by others under separate agreement(s) with the Owner:

a. Telephone/Data and communications systems, including end devices and equipment.

b. Security alarm and detection systems.

c. Furnishings and equipment, artwork, loose casegoods and similar items.

B. Owner Furnished - Contractor Installed (OFCI) Products: The Contractor shall install the following Owner furnished items, and as specified herein.

1. As indicated on Drawings.

1.5 USE OF SITE

A. Use of, and access to, site may be subject to special requirements of the Owner, as directed.

1. Prior to beginning the Work of this Contract, the Contractor shall meet with the Owner and the Architect to determine procedures regarding access and use of the site, locations and access to staging and storage areas, tree protection, temporary barriers and fencing, and any special site conditions or restrictions regarding the use of the site areas surrounding the construction.

2. Hours of construction, **7:30 AM to 4:30 PM** local time, Monday to Friday. Provisions for working hours other than those specified, must be pre-arranged with the Owner.

3. Interior work involving cutting, drilling, hammering or other dust and noise generating procedures shall be completed during weekdays only, and between the hours of 9 AM and 4 PM, local time.

4. Security: Owner Staff access must be permitted at all times in all construction areas, for purposes of security.

B. Confine operations to areas within Contract limits indicated on the Drawings. Portions of the site and building beyond areas in which construction operations are indicated are not to be disturbed.

1. Use of on-site areas for storage of materials must be pre-arranged with Owner. Schedule deliveries to minimize requirements for storage of materials.

C. Contractor shall coordinate and permit uninhibited Owner’s access to site prior to Substantial Completion as required for installation of equipment and furnishings performed under separate contracts outside of this Work.

1.6 ACCESS TO SITE

A. The Owner intends to occupy parking areas and access roads during construction. Notify the Owner of work which will affect the use of these areas; coordinate work

schedule with Owner. The Contractor shall consult with the Owner on the best ways to provide access and on changes to access areas as the work progresses.

B. Keep all public roads and walks, and access drive to facility clear of debris caused by this Work during building operations.

1.7 COORDINATION WITH OCCUPANTS

A. General: Perform all work in such a manner as to prevent interference with the Owner's operation of the facility, nor endanger the health, safety and well-being of the facility's staff and building's occupants .

1. Take all measures to insure the safety of , staff and the general public. The Contractor must take every reasonable precaution and employ all necessary measures including extra cleaning, special supervisory personnel, and additional temporary barriers and signage to facilitate the clean, quiet, safe, and continual operation of the facility.
2. The work will be done in an occupied building active site accessible to the public. It is imperative that the Contractor, its subcontractors and all their personnel treat the staff and building's occupants with consideration and respect. No unnecessary noise or disruption of the activities of the will be permitted.

B. Interruption of services: Any major work entailing disruption to heating, lighting, life safety system utility connections or other similar major disruption to building functioning must be coordinated with the Owner, and temporary services, safety precautions, or connections provided. Do not shut down any service without approval of the Owner.

1. Provide both Owner and Architect with **72 hour (3 work days minimum)** notification for any disruption of service; provide notification for connecting, disconnecting, turning on or turning off any service which may affect Owner's operations.
2. Provide **one week (5 work days minimum)** notice to local fire department of disruptions in electrical services, fire alarm services and emergency power services.
3. Any action either planned or unplanned, by the Contractor which impairs the operation of anyone or the activation of the fire alarm detection and or suppression system shall cause notification of the appropriate party. In case of unplanned, accidental, impairment, the Contractor will immediately notify the Owner. The Contractor should be prepared to provide assistance as required to correct the problem.

1.8 PROJECT CONFIDENTIALITY

A. Project Confidentiality and Promotional Material: There shall be no information divulged concerning this Project to anyone including, for example information in application for permits, variances and other approval except such as in necessary to secure the same provided that all such applications shall be first submitted to Owner for approval.

B. Contractor, subcontractors and vendors shall not further refer to the Project in any of their advertising / promotional materials or other publications without the Owner's prior written consent.

1.9 PROJECT MANUAL FORMATS AND CONVENTIONS

A. Project Manual Format: The Project Manual is organized into Divisions and subdivided into Sections and Documents using Construction Specification Institute (CSI) publication "MasterFormat" numbering system, current edition.

1. Section Identification: Six/Eight digit Section numbers are utilized and cross-referenced throughout the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because only those Section numbers which are applicable to this Project are used.

2. Division One of the Project Manual governs procedural and administrative requirements of the Work. Division One requirements are applicable to all Sections and Documents in the Project Manual.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular as applicable to the context of the Contract Documents.

2. Imperative mood and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

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Section 01 25 13
PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Product options.

B. Product substitution procedures.

1.2 RELATED REQUIREMENTS

A. Section 01 60 00 - PRODUCT REQUIREMENTS: Basic product requirements.

1.3 PRODUCT OPTIONS

A. Product selections: Comply with the following for selection of products:

1. Products specified by reference standards or by description only: Provide any acceptable product meeting those standards or description.
2. Products specified by performance requirements only: Provide any acceptable product which has been tested to show compliance with specified requirements, including indicated performances.
3. Products specified by naming one or more manufacturers: Provide products of manufacturers named, or submit a request for substitution for any manufacturer or product not named in accordance with Massachusetts General Laws, Chapter 30, Section 39M(b).

B. Visual matching: Where Specifications require matching a sample, the Architect's decision on whether a proposed product matches is final. Where no product matches and complies with other requirements, comply with provisions for "substitutions" for selection of a matching product in another category.

1.4 PRODUCT SUBSTITUTION

A. Products specified by reference standards or by description only: Any product meeting those standards or description.

B. Pursuant to Massachusetts General Laws, Chapter 30, Section 39M(b), where products or materials are prescribed by manufacturer name, trade name or catalog reference, the word “or approved equal” shall be implied. The Architect will evaluate the proposed “equal” item on the following criteria:

1. The submitted “equal” item is at least equal in quality, durability, appearance, strength and design.
2. The submitted “equal” item is at least equal in function for the purpose intended by the design of the Work.
3. The submitted “equal” item conforms substantially to the detailed requirements for the items as indicated by the specifications.

C. The Architect's evaluation and decision on whether a proposed product is equal to that specified, based on the above evaluation requirements, is final. The Contractor

retains the right to appeal the Architect's determination of equality through regulated statutory provisions.

1. The Architect and Owner reserve the right to reject proposed substitutions where data for VOCs is not provided or where emissions of individual VOCs are higher than for specified materials.

D. Where Specifications require matching existing materials, the Architect's decision on whether a proposed product matches is final.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 26 13
REQUESTS FOR INTERPRETATION

PART 1 – GENERAL

1.1 SUMMARY

A. Administrative requirements for Requests for Information (RFI's).

1.2 DEFINITIONS

A. Requests for Information (RFI):
   1. A document submitted by the Contractor to the Architect requesting clarification of a portion of the Contract Documents, hereinafter referred to as RFI.
   2. A properly prepared RFI shall include a detailed written statement that indicates the specific Drawings or Specification in need of clarification and the nature of the clarification requested.
      a. Drawings shall be identified by drawing number and location on the drawing sheet.
      b. Specifications shall be identified by Section number, page and paragraph.
      c. The Contractor shall provide suggestions or alternate solutions to the RFI if such suggestions are known or should be known.

B. Improper RFI's:
   1. RFI's that are not properly prepared, as required above.
   2. Improper RFI's will be processed by the Architect, the Contractor is responsible for such costs which will be deducted from monies due the Contractor. The Contractor will be notified by the Architect of the "back charge" amounts.

C. Frivolous RFI's:
   1. RFI's that request information that is clearly shown on the Contract Documents.
   2. Frivolous RFI's will be returned unanswered.

1.3 CONTRACTOR'S REQUESTS FOR INFORMATION

A. When the Contractor is unable to determine from the Contract Documents, the material, process or system to be installed, the General Contractor shall submit an RFI to the Architect requesting a clarification of the indeterminate item.
   1. When possible, such clarification shall be requested at the next appropriate project meeting, with the response entered into the meeting minutes. When clarification at the meeting is not possible, either because of the urgency of the need, or the complexity of the item the Contractor shall prepare and submit an RFI to the Architect.

B. Each subcontractor shall endeavor to keep the number of RFI's to a minimum. In the event that the process becomes unwieldy, in the opinion of the Architect,

because of the number and frequency of RFI's submitted, the Architect may require the Contractor to abandon the process and submit future requests as submittals, substitutions, or requests for change.

C. RFI's shall be submitted on a form acceptable to the Architect. Forms shall be completely filled in, and if prepared by hand, shall be fully legible after photocopying or electronic transmission in PDF format. Each page of attachments to RFI's shall bear the RFI number in the lower right corner.

D. RFI's shall be originated by the Contractor or subcontractors as appropriate. The General Contractor shall endeavor to address and resolve subcontractor's RFI's to the extent possible for issues which are obviously covered by the Contract Documents, before forwarding to the Architect for processing.

1. RFI's from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by the General Contractor prior to submittal to the Architect.
2. RFI's shall be processed and sent to the Architect from the General Contractor only. RFI's received by the Architect or the Architect's consultants from other parties shall not be accepted and will be returned unanswered.

E. Each subcontractor shall carefully study the Contract Documents to assure that the requested information is not available therein. RFI's which request information available in the Contract Documents will be deemed either "improper" or "frivolous" as noted above.

F. In cases where RFI's are issued to request clarification of coordination issues, for example pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the Contractor shall fully lay out a suggested solution using drawings or sketches drawn to scale, and submit same with the RFI. RFI's, which fail to include a suggested solution, will be returned unanswered with a requirement that the Contractor submit a complete request.

G. RFI's used for the following purposes will be returned without review:

1. To request approval of submittals.
2. To request approval of substitutions.
3. To request coordination information already indicated in the Contract Documents.
4. To request changes which entail adjustments in the Contract Time or the Contract Sum (additional cost or credit).
5. To request different methods of performing work than those drawn and specified.
6. To request interpretation of Architect/Engineer's actions on submittals.
7. Incomplete RFI's or RFI's with numerous errors.

H. In the event the Contractor believes that a clarification by the Architect results in additional cost or time, Contractor shall not proceed with the Work indicated by the RFI without a written authorization from the Architect. RFI's shall not automatically justify a cost increase in the Work or a change in the Schedule.

1. Answered RFI's shall not be construed as approval to perform extra work.
2. Unanswered RFI's will be returned with a stamp or notation: Not Reviewed.

I. Contractor will prepare and maintain a log of RFI's and provide updated copies at the weekly Construction Progress Meetings showing outstanding RFI's.

J. RFI Response: The Architect will endeavor to respond in a timely fashion to RFI's, however, the following minimum time periods are required. RFI's which are received by the Architect after 1PM local time shall be considered received on the following working day.

1. RFI's which require only Architect's Response: Contractor shall allow up to Three (3) full work days review and response time,
2. RFI's which require Architect's and an Engineering or Consultant Response: Contractor shall allow up to Seven (7) full work days review and response time.

1.4 ARCHITECT'S RESPONSE TO RFI'S

A. Architect will respond to RFI's on one of the following forms:

1. Properly prepared RFI's:
   a. Response on the RFI form.
   b. Architect's Supplemental Instruction.
   c. Request for Proposal

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

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Section 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMARY

A. Schedule of Values.

B. Applications for payment.
   1. Procedures for application for payment.
   2. Initial application for payment.
   3. Monthly application for payment.
   4. Application for payment at substantial completion.
   5. Final payment application.

C. Payment for stored materials.

D. Change procedures.

1.2 COORDINATION

A. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
   1. Related Requirements:
      a. Section 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION: Contractor's Construction Schedule.
      b. Section 01 33 00 - SUBMITTAL PROCEDURES: Contractor's Construction Submittal Schedule.

1.3 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
   1. Schedule of values shall be used only as basis for Contractor's application for payment.

B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
   1. Contractor's construction schedule.
   2. Application for Payment form.
      a. List of subcontractors.
      b. List of products.
      c. List of principal suppliers and fabricators.
      d. Schedule of submittals.

C. Submit typewritten schedule of values to the Architect at least 10 days prior to submitting first application for payment.

D. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

E. Identification: Include the following Project identification on the Schedule of Values:
   1. Project name and location.
   2. Name of the Architect.
   3. Project number.
   4. Contractor's name and address.
   5. Date of submittal.

F. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
   1. Generic name.
   2. Related Specification Section.
   3. Name of subcontractor.
   4. Name of manufacturer or fabricator.
   5. Name of supplier.
   6. Change Orders (numbers) that have affected value.
   7. Dollar value.
   8. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

G. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
   1. Upon request by Architect, submit data that will substantiate values given.

H. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.

I. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

J. Unit Cost Allowances: Show line item value of unit cost allowances as a product of unit cost times measured quantity as estimated from the best indication in the Contract Documents.

K. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

L. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

M. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 PROCEDURES FOR APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.

D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours.

F. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.

1.5 INITIAL APPLICATION FOR PAYMENT

A. Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Schedule of principal products.
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 governing authorities for performance of the Work.
12. Initial progress report.
13. Report of pre-construction meeting.
14. Data needed to acquire Owner's insurance.
15. Initial settlement survey and damage report, if required.

1.6 MONTHLY APPLICATION FOR PAYMENT

A. Administrative actions and submittals that must precede or coincide with submittal of the period Application for payment, include the following:
1. As-built record documents, required documents and submittal records on site.
2. Contractor’s construction schedule, updated, with corrective action plan as applicable.
3. Weekly up-to-date, accurate, certified submission of payroll records.
4. Pre-installation meeting conducted in accordance with Section 01 31 00, prior to first billing for any activity.
5. Material Status Report.
6. Stored Materials forms.
7. Submittal Schedule and submittal status reports.
8. Monthly Progress report and Notarized Progress report Statement from the Contractor’s project manager stating that the work is on schedule and that the Contractor will meet the Substantial Completion date for the Work and the Substantial Completion dates for every portion thereof as established under Construction Phasing Schedule Section.
9. Construction progress photographs.
10. Quality control reports and procedures in compliance with Section 01 45 00 - QUALITY CONTROL.

1.7 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION:

A. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

B. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Start-up performance reports.

7. Change-over information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. Advice on shifting insurance coverage.
11. Final progress photographs.
12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

1.8 FINAL PAYMENT APPLICATION

A. Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
   1. Completion of Project Closeout requirements.
   2. Completion of items specified for completion after Substantial Completion.
   3. Assurance that unsettled claims will be settled.
      a. Assurance that Work not complete and accepted will be completed without undue delay.
   4. Transmittal of required Project construction records to Owner.
   5. Certified property survey.
   6. Proof that taxes, fees and similar obligations have been paid.
   7. Removal of temporary facilities and services.
   8. Removal of surplus materials, rubbish and similar elements.
   9. Change of door locks to Owner's access.

1.9 PAYMENT FOR STORED MATERIALS

A. Provide supporting documentation for the value of stored materials. Acceptable form of supporting documentation include a certified and notarized invoice from the manufacturer or supplier which indicates the actual amount due, including discounts to which the Contractor may be entitled, and the date which the invoice was paid.

B. Provide notice to Architect 48 hours in advance, and provide transportation for Architect and Owner’s Representative to the site where materials are stored to permit inspection of the materials.

C. With Application for Payment, submit notarized certificate of title and evidence of insurance for materials stored off-site.

D. With each subsequent Application for Payment, indicate in the appropriate columns the value of stored material which has been taken from off-site location and brought to the project site. Provide supporting documentation.

1.10 CHANGE PROCEDURES

A. The Architect will advise of minor change in the Work not involving adjustment to Contract Sum/Price or Contract Time as authorized under the General and

Supplementary Conditions of Contract, by issuing supplemental instructions on AIA Form G710.

B. The Architect may issue a Proposal Request or Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the request price will be considered valid. The Contractor will prepare and submit an estimate within 10 days.

C. The Contractor may propose changes by submitting a request for change to the Architect describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time and full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 25 13 - PRODUCT SUBSTITUTION PROCEDURES.

D. Stipulated Sum/Price Change order:

1. Based on Proposal Request or Notice of Change and Contractors price quotation or Contractors request for a Change Order as approved by the Architect.

E. Unit Price Change Order:

1. For a pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

F. Construction Change Directive:

1. Architect may issue a directive on AIA Form G713 Construction Change Directive signed by the Owner instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time.
2. Promptly execute the change.

G. Time and Material Change Order:

1. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
2. Maintain detailed records of work done on Time and Material basis. Document each quotation for a change in cost or time with sufficient data to allow evaluation of proposed changes and to substantiate changes in the Work.

H. Documentation of change in Contract Sum/Price and Contract Time:

1. Change order Forms: AIA G701 Change Order or AIA G701CM Change Order (as appropriate to Owner-Contractor Agreement).

2. Maintain detailed records. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
3. On request, provide additional data to support computations:
   a. Quantities of products, labor and equipment.
   b. Taxes, insurance and bonds.
   c. Overhead and profit.
   d. Justification for any change in Contract Time.
   e. Credit for deletions from Contract, similarly document.
4. Support each claim for additional costs and for work done on a time and material basis, with additional information:
   a. Origin and date of claim.
   b. Dates and times work was performed, and by whom.
   c. Time records and wage rates paid.
   d. Invoices and receipts for products, equipment , and subcontracts, similarly documented.

I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

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Section 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Project coordination.

B. Project meetings.

1.2 RELATED REQUIREMENTS

A. Section 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION.

B. Section 01 33 00 - SUBMITTAL PROCEDURES.

C. Section 01 73 29 - CUTTING AND PATCHING.

D. Section 01 78 00 - CLOSEOUT SUBMITTALS: Requirements for Project Record Drawings (As-built drawings).

E. Section 02 41 19 - SELECTIVE DEMOLITION.

1.3 GENERAL PROJECT COORDINATION

A. Coordination: The General Contractor is fully responsible for coordinating the Work of this Contract including scheduling, submittals, Work and other activities included in various Sections to assure efficient and orderly sequence of installation of interdependent construction elements. The General Contractor is responsible for coordinating actual installed location and interface of work, and to make provisions to accommodate items scheduled for later installation.

B. Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain efficient installation with the least amount of alterations, or cutting and patching, to completed Work.

1. The Contractor shall be responsible to uncover work completed in order to install ill-timed work, at no additional cost to the Owner.

C. Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.

D. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion and Owner's occupancy.

H. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.4 UTILITIES, MECHANICAL AND ELECTRICAL COORDINATION

A. Coordinate all Work of this Project. Provide full and complete coordination for utilities, mechanical and electrical work in Divisions 11, 13, 21 through 28 and 33, with Work of other Divisions.

1. Each subcontractor shall compare his drawings and specifications with those of other Trades and report any discrepancies between them to the General Contractor. The General Contractor shall obtain from the Architect written instructions for changes necessary in the mechanical or electrical work, to ensure that all work is installed in coordination and cooperation with other Trades installing interrelated work. Before installation, each subcontractor shall make proper provisions to avoid interferences in a manner approved by the Architect. All changes required in the work of each subcontractor caused by his negligence, shall be corrected by him at his own expense, to the Architect's satisfaction.

B. Give all advance notice to public utility companies as required by law, and provide proper disposition, subject to Architect's approval of all existing pipe lines, conduits, sewers, drains, poles, wiring, and other utilities that in any way interfere with the Work, whether or not they are specifically shown on the Drawings.

C. Coordination regarding existing utilities:

1. Notify Owner and appropriate authorities when coming across an unknown utility line(s), and await decision as to how to dispose of same.
2. When an existing utility line must be cut and plugged or capped, moved, or relocated, or has become damaged, notify the Owner and Utility company involved, and assure the protection, support, or moving of utilities to adjust them to the new work.
3. The Contractor shall be responsible for all damage caused to existing, active utilities located within the limits of this Contract, whether or not such utilities are shown on the Drawings, including resultant damages or injuries to persons or properties.

D. General coordination of piping, ductwork, conduits and equipment:

1. The Contract Drawings are diagrammatic only intending to show general runs and general locations of piping, ductwork, equipment and sprinkler heads. Determine exact routing and location of individual systems prior to fabrication of components or installation.
   a. Piping runs requiring pitch have "right-of-way" over those systems that do not pitch.

b. System components whose elevations cannot be changed have “right-of-way” over those components whose elevations can be changed.

2. Adjust locations of piping, ductwork, conduits and equipment as required to accommodate new work with interferences anticipated and as encountered during installation.
   a. Locate piping, conduits and ductwork to be clear of swinging doors, access doors, and clear for unimpeded equipment access.
3. Provide all offsets, transitions and changes of direction for all systems, as may be required to maintain proper clearances for headroom, and as may be required for coordination with other “fixed-in-place” building components (such as structural systems).
   a. Furnish all vents, drains and similar accessories as may be required for offsets, transitions and changes of direction.
4. Provide openings in the work for penetration of mechanical and electrical work.
5. Coordinate final locations of ceiling mounted devices (including air distribution devices, thermostats, heaters, control devices, sprinkler heads and similar work) with reflected ceiling plans. Review locations with Architect and obtain approval of all devices prior to installation.

E. Utility penetrations through rated construction: Notify Owner of all locations of every penetration in fire resistant rated partitions and walls, in smoke barriers, and in fire barriers, including but not limited to penetrations for elevators, plumbing, fire suppression, heating, ventilating and air conditioning, electrical systems, telephone systems, communications systems, building controls systems, and specialized wiring and piping for medical equipment.
   1. Comply with requirements of Section 07 84 00 – FIRESTOPPING for installation of fireproof firestopping, firesafing materials, smoke seals and related accessories.
      a. Provide removable (temporary) firestopping to maintain fire integrity until permanent firestopping assemblies can be installed.
   2. Allow for inspection prior to installation of suspended ceilings or concealed by other materials that may conceal firestopping work.

1.5 COORDINATION OF CUTTING AND PATCHING

A. Cutting and patching coordination: The General Contractor is responsible for coordination of all cutting and patching necessary for the completion of this Contract and for the quality and appearance of all patch Work in exposed-to-view finished materials.

B. General cutting and patching: Comply with requirements of Section 01 73 29 - CUTTING AND PATCHING.
   1. Do not drill through structural beams, slabs or columns. Core drilling through concrete unit masonry and stair platforms must be approved by the Architect.

1.6 GENERAL PROJECT ADMINISTRATION

A. Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.

B. Prepare similar memoranda for the Owner and separate contractors where coordination of their Work is required.

C. Conduct conferences amon subcontractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.

D. Administrative Procedures: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project Closeout activities.

1.7 SITE MOBILIZATION CONFERENCE

A. In addition to the pre-bid conference, the Architect may, prior to commencement of the Work, schedule a meeting at a meeting room provided by the Owner.

1. Attendance is required by Owner, Architect, Owner's Project Manager, engineering consultants, General Contractors' Project Manager and Superintendent, and major subcontractors, applicators, installers and suppliers. Other persons are required to attend as the Architect may direct or the General Contractor may wish to have present.
2. Items of Agenda:
   a. Use of premises by Owner, Contractor, and subcontractor(s).
   b. Owner's requirements.
   c. Demolition procedures, identity tagging of existing furnishings and equipment for salvage or disposal.
   d. Temporary utilities.
   e. Barricading and protection of the public, dust barriers.
   f. Potentially difficult areas of work.
   g. Project coordination.
   h. Security and housekeeping procedures.
   i. Construction schedules.
   j. Work beyond Contract Limit.
   k. Procedures for testing and inspection.
   l. Procedures for maintaining record documents.
   m. Requirements for equipment start-up.

n. Inspection and acceptance of equipment put into service during construction period.

1.8 PRE-INSTALLATION/PRE-FABRICATION CONFERENCES

A. When required in individual specification sections, prior to commencing the work of that trade, convene a pre-installation conference at work site, if possible, on same day as weekly progress meeting.

B. Notify Architect and Owner's Project Representative a minimum of 72 hours in advance of meeting date.

C. Attendance is required by Contractor's Project Manager and Superintendent, and parties directly affecting, or affected by, work of the Section.

1.9 PROGRESS MEETINGS

A. The General Contractor shall schedule and administer meetings throughout the progress of the Work at regular intervals; make arrangements for meetings, prepare agenda with copies for participants, preside at meetings and record minutes.

1. Distribute copies within one week to Architect, Owner and participants, and to those affected by decisions made.
2. Scheduled Frequency of Meetings: Weekly.

B. Attendance: Required are Contractor's Project Manager and Project Superintendent, and each subcontractor, applicator, installer, and supplier whose work is on-going or scheduled. Owner, Architect, engineering consultants, and other persons are required to attend as the Architect may direct. Subcontractors, vendors, suppliers shall be present at meetings upon request of Contractor.

1. Attendee Authority: Subcontractors and supplier representatives present at meetings shall have authority to act for and make commitments for, the entity which they represent.
2. Restricted Attendance: Owner and Architect reserve the right to expel or exclude from any Progress Meeting any person(s) or company representative(s) without statement of reason or excuse.
3. Attendance of Architect's Consultants: Contractor shall make an attendance request for specific Architect's consultants and engineers at least 72 hours in advance of the meeting. Clearly identify In the request all consultant related issues and topics to be discussed at the meeting. The Architect will decide if its consultant or engineer will attend.
4. Attendance of Owner's Independent Consultants: Contractor shall make an attendance request for specific Owner's consultants at least 72 hours in advance of the meeting. Clearly identify In the request all consultant related issues and topics to be discussed at the meeting. The Owner will decide if its consultant(s) will attend.

C. Items of Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.

4. Identifications of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Coordination of projected progress.
10. Maintenance of quality and work standards.
11. Progress of Work to be adjusted under coordination requirements, and effect of proposed changes on progress schedule and coordination.
12. Other business relating to Work.

D. Additional Special Meetings requested by the Architect or Owner: The Contractor along with any requested or necessary subcontractors, applicators, vendors or material suppliers shall attend additional meetings when requested by the Architect or Owner as they deem necessary. Such meetings may be convened on short notice if conditions at the project site so require and attendance is mandatory. The Architect and Owner are not limited as to the number of additional meetings that may be requested, or the agenda for such meetings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Scheduling of the Work.

B. Contract progress reporting.

1. Construction schedule updates.
2. Special Reports - Unusual Event Reporting.

C. Work Documentation:

1. Periodic site observations.
2. Construction progress photographs.

1.2 SCHEDULING OF THE WORK

A. Submit Gantt/Bar progress schedule in triplicate within 15 days after date of Owner-Contractor Agreement for Architect's review. Revise and resubmit as required.

B. Schedule shall be of format approved by Architect showing complete sequence of construction activity, identifying Work of separate stages and other logically grouped activities. For each separate phase, stage of Work and individual activities, indicate the early and late start dates, early and late finish dates, float dates, and duration.

1. The Schedule shall show the sequence and phasing of activities required and reflect the manner in which actual work will be performed. The number of activities shown in the Schedule must be at least equal and related to the number of items listed in the Schedule of Values including back-up detail.
2. Indicate implementation and termination of each temporary utility.
3. Define portions of work which are dependent on the schedule of other related activities and phasing.
4. Define activities on which the work is dependent, including:
    a. Submittal of shop drawings, equipment schedules, samples, color submission, coordination drawings, templates, fabrication and material delivery times.
    b. Architect/Engineer’s review of shop drawings, equipment schedules, samples and templates.
    c. Delivery times of equipment furnished under separate Contracts with Owner, where the Contractor has responsibility for installation or coordination.
5. Conclude all activities on one common end date, show contract completion date as a milestone activity on the Schedule.

1.3 CONTRACT PROGRESS REPORTING

A. Construction schedule updates:

1. During progress of Work, revise and resubmit with Applications for Payment in accordance with the provisions of the General Conditions and Supplementary Conditions.
2. Maintain progress schedule with project progress and utilize the plan in planning, coordinating and performing the work under this Contract.
3. Furnish copies of the Progress schedule, and revisions, to all subcontractors, installers, equipment vendors and suppliers.
4. Update schedule showing actual progress of Work in progress, identify Work started and completed during the previous update period. Show the estimated time required to complete each activity started but not yet completed, and reflect any changes in the schedule.
5. Prepare a Schedule Analysis for submission with revised project schedules. The Schedule Analysis shall include a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates, and an explanation of corrective action to be taken. All activities that are behind schedule by more than two weeks shall be addressed individually in the Schedule Analysis.
6. Submit revised schedules with attached Schedule Analysis, with each Application for Payment; clearly identify changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.

B. Look ahead activity reports: Prepare each week throughout the term of construction a listing of upcoming construction activities. Each weekly report shall include a listing of planned construction activities for the upcoming 2 weeks (14 calendar days). Submit a Look Ahead Activity Report at each job meeting to all participants. If no meeting is planned on a given week, mail the reports directly to both Architect/Engineer and Owner’s Project Representative.

1. Maintain a record of all Look Ahead Activity Reports in a 3-ring binder in the Contractor’s field office and make available for review by Architect/Engineer and Owner’s Project Representative.

C. Special Reports:

1. Unusual Event Reporting: 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.

1.4 WORK DOCUMENTATION - PERIODIC SITE OBSERVATIONS

A. Observe and maintain a record of tests. Record the following:

1. Specification section number, product(s), and name of subcontractor or installer.
2. Name of testing agency and name of inspector.
3. Name of manufacturer’s representative present.

4. Date, time and duration of tests.
5. Type of test and results.
6. Retesting required.

B. Observe startup and adjustments; record time and date of equipment start-up and results.

C. Observe equipment demonstrations to Owner; record times and additional information required for operation and maintenance manuals.

D. Assist Architect/Engineer with final inspections. Prepare list of items to be completed and corrected.

1.5 WORK DOCUMENTATION - CONSTRUCTION PROGRESS PHOTOGRAPHS

A. Furnish digital photographs of site and construction throughout the progress of Work, produced by a photographer acceptable to Architect.
   1. Submit photographic submittals on Discs: 2 copies, per submission.
      a. Progress photographs, submit monthly and at final project completion.
   2. Personal Privacy: After Owner occupancy, take special care not to photograph facility residents. All photographs having residents in them shall be destroyed by the photographer prior to submittal. The photographer will be required to take additional photographs to obtain the specified submission numbers specified.

B. Views: Take photographs from differing directions indicating the relative progress of the Work. Take photographs monthly on date for Application of Payment, and at final completion.
   1. Prior to start of demolition work take one set of exterior and interior photographs showing existing conditions.
   2. As a minimum each month during the Work, furnish the following number of views (as appropriate to Work being performed):
      a. Exterior views of building: 4.
      b. Interior views: 6, each floor.
   3. Take additional photographs for the following major portions of work:
      a. Completion of hazardous material abatement.
      b. Completion of excavations, prior to form work or footings.
      c. Completion of demolition.
      d. Completion of foundations.
      e. Each stage of completion of structural framing.

C. Submission of Discs: Identify each disc on the back with the following information:
   1. Project identification.
   2. Date and time of exposure , and orientation(s) of view.
   3. Photographer’s name, address and phone number.

D. Submission of Prints: if requested shall be furnished a prevailing commercial rates.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Submittal coordination.

B. Submittal procedures and grading.

C. Schedule of Submissions.

D. Shop drawings, product data and samples.

E. Manufacturer's instructions.

F. Manufacturer's certificates.

G. Emergency addresses.

1.2 SUBMITTAL COORDINATION

A. General: The Contractor is fully responsible for delay in the delivery of materials, progress of the Work and damages incurred due to Contractor's failure to submit, revise and resubmit submissions in accordance with the requirements herein, and in a coordinated and timely manner.

B. Make submittals in a proper and timely fashion, allowing for administrative procedures, Architect's review, corrections to submissions and resubmittal, if necessary, and fabrication of products without delaying the project. Minimum processing times required by the Architect are as follows:

1. Review for Architect's Office only: Allow a minimum of 10 working days for review and processing. Some submittals may require additional time.
    a. Simultaneous submission of a large number of shop drawings and product data may require longer than 10 working days for review. (In particular submittals for Divisions 3, 5, 6, 21, 22, 23, 25 and 26).
    b. Complex Systems (structural, mechanical, electrical) may require longer than 10 working days for review each time shop drawings, layout drawings, and product data are submitted or resubmitted.
2. Review by Architect and its consultant(s): Allow 10 working days for review and processing of submittals by Architect plus an additional 5 working days for review by each consultant as applicable.
3. Reprocessing of submittals: For submittals requiring resubmittal, re-processing time required shall be the same as first submittal.
4. No extension of Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of scheduled performance of Work.

C. Make submittals of similar items, systems, or those specified in a single specification section together.

D. Make submittals for products which other products are contingent upon, first.

E. The Contractor is fully responsible for delay in the delivery of materials or progress of work caused by late review of shop drawings due to failure of the Contractor to submit, revise, or resubmit shop drawings in adequate time to allow the Architect checking and processing of each submission or resubmission.

1.3 SCHEDULE OF SUBMISSIONS

A. Schedule procedure: Immediately after being awarded the Contract, meet with the Architect to discuss the schedule of submissions and then prepare and submit within 14 calendar days for approval a schedule of submissions for the Work. The schedule of submissions shall be related to the entire Project, and shall contain the following:

1. Shop Drawing Schedule (for shop and setting drawings to be provided by the Contractor).
2. Sample Schedule (for samples to be provided by the Contractor).
3. With respect to portions of the Work to be performed by Subcontractors, such schedule of submissions for the work of each Subcontractor shall be submitted for approval within 30 calendar days after execution of a subcontract with such Subcontractor.

B. List all submissions required of each trade:

1. Include the Specification Section number, name of subcontractor or vendor, submittal type, item, description, type, quantity and size (where applicable) of each submission.
2. For each submission, provide the following dates, as estimated:
   a. Scheduled date of submission.
   b. Required date of approval. (permit time for appropriate review and resubmissions as may be required).
   c. Estimated date of beginning fabrication or manufacture of product (where applicable).
   d. Required date of submission of product to testing laboratory.
   e. Required date of testing laboratory approval.
   f. Required date for delivery of product to site.
   g. Required date for beginning of installation of product.
   h. Required date for completion of installation (and in-place testing).
   i. Required dates for documentation as indicated in Section 01 78 00 – CLOSEOUT SUBMITTALS.
      1) Project record documents.
      2) Project record drawings.
      3) Required date for operation and maintenance data and preventative maintenance instructions.
      4) Materials and finishes manuals.
      5) Warranties and bonds.
      6) Maintenance contracts.
      7) Spare parts and maintenance materials.

C. For each submittal, schedule to allow adequate time for review by the Architect and its consultants. The Architect will not be responsible for Work performed in shop or field prior to approval. Long-lead items requiring expedited action must be clearly indicated.

1. The schedule shall be reviewed and resubmitted as necessary to conform to approved modifications to the construction Project Schedule, and shall be updated as may be required by the Architect.

D. Posting of submittal schedule: Print and distribute the submittal schedule to Architect, Owner, subcontractors and other parties affected. Post copies in field.

E. Update schedule throughout progress of the Project, coordinated with scheduling changes in the Work, and redistribute monthly in conjunction with submittal of Application for Payment.

1.4 SUBMITTAL PROCEDURES AND GRADING

A. Prepare and submit to the Architect, all specified and requested submittals.

B. Provide space for Contractor, Architect and engineering consultant review stamps, on the front page of each item's submittal copy. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and the Contract Documents. The Architect's stamp shall contain the following data (Engineering consultant review stamps may vary in language, but intent of language is similar):

_____ APPROVED
_____ APPROVED AS NOTED
_____ REVISE AND RESUBMIT
_____ REJECTED

1. The Architect will insert the date of action taken and an identification of the person taking the action.
2. Submittal grading:
   a. APPROVED - No corrections, no marks.
   b. APPROVED AS NOTED - Minor corrections required are as noted; all items can be fabricated as noted, without further correction and resubmission of original submission; checking is complete and all corrections are deemed obvious without ambiguity.
   c. REVISE AND RESUBMIT - Resubmission is required; checking may be incomplete; details of items noted by checker are to be clarified further before full review can be given. Correct and resubmit, do not fabricate noted items requiring correction.
   d. REJECTED - Submittal is rejected as not in accord with the Contract Documents, too many corrections, or other justifiable reasons. When returning submission, Architect will state reasons for rejection. Correct and resubmit, do not fabricate.
3. Review/approval neither extends nor alters any contractual obligations of the Architect, Engineer or Contractor.

C. Identify all variations from Contract Documents, and product or system limitations which may be detrimental to successful performance of the completed work.

D. Contractor's review: Review all shop drawings, product data and samples. Include, without limitation, verification of the following:

1. Proper title, original date, drawing number (which shall be changed if resubmitted), revision numbers and dates, designation of project contractor, subcontractor and/or supplier.
2. Identification of Shop Drawings, Product Data or Samples by Specification Section and subsection or paragraph where appropriate and identification of Contract Drawings by number and detail.
3. On each submittal, as a minimum, Contractor shall identify the following:
    a. Errors, inconsistencies, and omissions discovered in the contract documents and field conditions must be reported at once to the Architect.
    b. Any variations from code requirements contained in the contract documents must be reported promptly in writing to both the Architect and Owner.
    c. Promptly report to the Architect information that any design, process, or product infringes on a patent.
    d. Names of subcontractor(s) and supplier(s). Include name(s) of contact person(s), address, telephone and fax number(s).

E. Revise and resubmit submittals as required, identify all changes made since previous submittal. Distribute copies of reviewed submittals to concerned parties; instruct parties to promptly report any inability to comply with provisions.

1.5 SUBMISSION REQUIREMENTS AND QUANTITIES

A. General: Provide a cloud-based document management system such as Newforma™, Procore™, Skysite™, or similar system approved by Owner's Project Manager and Architect, dedicated for the exchange and storage of files related to this Project. All submissions (except physical samples) shall be processed through the electronic submittal system.

B. Furnish Architect with electronic files through the Adobe Acrobat Portable Document Format (PDF) files for each of the following submittal types:

1. Schedules, including, but not limited to:
    a. Construction Schedule.
    b. Schedule of Values.
    c. Schedule of shop drawings, product data, and samples.
    d. Schedule of Environmental Submissions.
2. Shop drawings.
3. Product data, manufacturer's instructions and certificates and similar submissions.
4. Emergency addresses: 1 file to Architect, and 1 file direct to Owner.

C. Furnish Architect with the following quantities of the following physical submittals:

1. Samples: Sets of 3 identical samples of each submission required.

D. General submission of physical submittals.; deliver to Architect at the following address:

Beacon Architectural Associates
145 South Street
Boston, MA, 02111

E. Transmit submittals to Architect at the above address, with individual transmittal forms, Document 00 62 12 – PRODUCT SUBMITTAL FORM for each submission. Document 00 62 12 is bound into the Project Manual; unbound copies are available from the Architect.

1. On transmittal form, identify Project, Contractor, subcontractor, installer, or supplier, pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate. Transmittals received by the Architect from sources other than the Contractor will be returned without any action taken.
2. Contractor shall number submittals sequentially by Specifications Section prior to submittal. Resubmitted items shall retain number and be noted as resubmitted (example 260000-1 R1).

1.6 SHOP DRAWINGS

A. General: Provide accurately prepared, large scale and detailed shop drawings prepared specifically for this Project. Shop drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Standard information prepared without specific reference to Project are not considered shop drawings.

1. Show adjacent conditions and related work. Show accurate field dimensions where appropriate.
2. Identify materials and products shown. Note all conditions where require coordination with other trades and special installation procedures.
3. Show gage and thickness of materials.
4. Indicate welding details and joint types.
5. Show every component of fabricated items, notes regarding manufacturing process coatings and finishes, identifying numbers conforming to the Contract Documents (i.e. stair numbers, door numbers and similar items), dimensions, and appropriate trade names.
6. Show anchorage and fastening details, including type, size and spacing.
7. Review each submittal for conformity with the Contract requirements prior to submittal, certify such review on each shop drawing with Contractor’s stamp, signature and date. Reference on shop drawings to other sections, installers, suppliers, or trade(s) shall designate the appropriate specification sections, and the term "by others" shall not be used.

B. Size of Format: Not less than 8-1/2 by 11 inches, and no larger than 30 by 42 inches, except for templates, patterns and similar full-size drawings.

C. The Architect's comments and corrections will be made on the electronic submission (PDF) and returned to the Contractor. If necessary, the Contractor then shall make the necessary corrections on the original drawings and resubmit the corrected drawings in electronic format (PDF) as specified. Prints of any submittals required for the Architect's own use, and those of engineering consultants, will be

made without cost to the Contractor. The Contractor is responsible to distribute and furnish (at no additional cost to Owner) all shop documents needed for use by the Contractor, subcontractors, installers, vendors and suppliers.

D. Drawing submittals returned "APPROVED" or "APPROVED AS NOTED" Obtain and distribute adequate prints for construction, including one print of each for designated Owner's and Architect's Project Representative(s), and then return the originals to the subcontractor or supplier from whom he originally received them.

E. Drawing submittals returned " REVISE AND RESUBMIT " or " REJECTED ": Contractor shall first obtain a record print and then forward them to source for correction of original drawings. Resubmit corrected documents in same manner as first submission.

F. Each drawing shall have a title block on the right hand side containing the following data:

Name of project -	Community Day Center Of Waltham Interior Atlerations at 20 Felton Street
Architect -	Beacon Architectural Associates
Contractor -	
Subcontractor/supplier -	
Date of submission -	

G. Each drawing shall have a clear space on the right hand side for review stamps of both the Architect and Contractor.

1. The Contractor's Review and Action Stamp: Provide suitable space on label or title block for Contractor's review and action stamp. Stamp and sign each submittal to show Contractor's review and approval prior to transmittal Architect. Submittals not signed and stamped by Contractor will be returned without action.

   a. Only submittals received from the General Contractor will be considered for review by the Architect. Contractor shall review each submittal for accuracy and conformance with the requirements of the Contract Documents, and particularly for field measurements and proper fit with adjoining work. Modify submittals as required to show interface with adjacent work and attachment to Building.

   b. The Contractor's Review and Action Stamp shall contain the following language or similar:

   APPROVED FOR CONFORMANCE
   WITH THE CONTRACT DOCUMENTS.

   All dimensions and quantities have been reviewed and are accepted by _____
   General Contractor's Name

   All dimensions and field conditions have been or will be verified prior to fabrication of the items described herein.

   c. Submittals received from the Contractor shall be signed and comply with review requirements. Submittals not certified or improperly certified (stamped but not reviewed) will be returned to the Contractor without Architect's review. Claims due to the return of uncertified, improperly prepared or inadequately reviewed submittals will be rejected.

1.7 PRODUCT DATA

A. Submit Product data as specified, and as the Architect may additionally prescribe. Product data includes, but is not limited to:
   1. Catalog cuts.
   2. Complete specifications.
   3. Standard color charts.
   4. Performance data.
      a. Compliance with recognized trade association standards.
      b. Compliance with recognized testing agency standards, labels and seals.
   5. Environmental data including, but not limited to:
      a. Chemical composition.
      b. VOC content.
      c. Material certifications as applicable to product.
   6. Certified laboratory test report data.
   7. Health and safety precautions.
   8. Illustrated capacities, characteristics, wiring diagrams, controls, and other pertinent information for complete product and product use description.

B. If more than one size or type is shown on any printed sheet, indicate clearly intended item(s).

1.8 SAMPLES

A. Submit samples clearly labeled as to its material, type or make, manufacturer, size or gauge, and other pertinent data, accompanied by an appropriate transmittal form. Samples shall show full range of color and texture variation that can be expected.
   1. When accepted or not accepted, the Architect will retain one set of samples and return the other to the Contractor. Samples will not be permitted for use in the project.

1.9 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, handling, storage, assembly, installation, start-up, adjusting, and finishing.

B. Identify conflicts between manufacturer's instructions and Contract Documents.

1.10 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturer's certificates and installer certificates to Architect for review.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

1.11 EMERGENCY ADDRESSES

A. Within 15 days of Notice to Proceed, submit in writing, the name, addresses and telephone numbers of key members of their organization including Contractor's Superintendent and personnel at the site, to be contacted in the event of emergencies at the building site, which may occur during non-working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section consists of:

1. Applicable codes and regulations.
2. Trade union jurisdictions.

1.2 DEFINITIONS

A. Regulations include 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, whether lawfully imposed by authorities having jurisdiction or not.

1.3 APPLICABLE CODES AND REGULATIONS

A. All work shall be performed in accordance with the latest version, by DATE OF ISSUE for Contract Documents, current on date of Owner-Contractor Agreement, except as indicated otherwise, of all applicable codes including the following:

1. 2015 International Building Code (IBC) with Massachusetts Building Code, Ninth Edition amendments (780 CMR).
2. 2015 International Energy Conservation Code with Massachusetts Building Code amendments, (Effective August 12, 2016 under the 780 CMR, Eighth Edition).
3. 2015 International Existing Building Code (IEBC) with Massachusetts Building Code, Eighth Edition amendments (780 CMR).
4. 2015 International Mechanical Code (IMC).
5. Massachusetts Electrical Code (2017 National Electrical Code [NFPA 70, 2017 edition], with Massachusetts modifications from 527 CMR 12.00).
6. Massachusetts Fuel, Gas, and Plumbing Code (2002 National Fuel Gas Code [ANSI Z223.1-NFPA 54], with Massachusetts modifications from 248 CMR 5.00).
7. Massachusetts Comprehensive Fire Safety Code (527 CMR) [2012 NFPA 1 as amended], effective January 1, 2015, as amended through November 4, 2016 and MGL Chapter 148.
8. Commonwealth of Massachusetts Regulation 521 CMR: *Architectural Access Board*.
9. City of Waltham Zoning Ordinance, as amended.
10. National Fire Protection Association: NFPA 241 – *Standard for Safeguarding Building Construction And Demolition Operations,* 2013 Edition.
11. United States Occupational Safety and Health Administration (OSHA): Standard Nº. 29-CFR-1926.59 - HAZARD COMMUNICATION STANDARD.

12. United States Department of Justice, Nº 28 CFR Part 36 - AMERICANS WITH DISABILITIES ACT, (Public Law 101-336).

B. Publication Dates: Where the date of issue of a code or regulation is not specified, comply with the standard in effect as of date of Contract Documents, or as otherwise required by authorities having jurisdiction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 41 17

UTILITIES NOTIFICATION

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Comply with all regulations and laws concerning excavation, demolition, or explosive work and be advised of utility notification requirements under Chapter 82, Section 40 of the Massachusetts General Laws.

1.2 ADMINISTRATIVE AUTHORITY

A. Notification of utilities within the Commonwealth is performed through the Utilities Underground Plant Damage Prevention System, commonly referred to as “Dig Safe”.

1.3 REGULATORY REQUIREMENTS

A. Contractors must notify “Dig Safe” by telephone before performing any earth moving operations including: digging, trenching, boring, site demolition, excavation, backfilling, grading, or explosive work in all public ways and private property.

B. This notification must be made at least 72 hours (excluding weekends and holidays) prior to the Work described above, but not more than 30 calendar days before commencement of the contemplated Work. Notification shall occur between 6:00 AM to 6:00 PM local time from Monday to Friday, except in cases of emergency.

1. The toll free phone number is: **811**.
2. Provide the following information:
    a. Municipality.
    b. Location of work.
    c. Intersecting street.
    d. Type of work.
    e. Starting date and time of work.
    f. Name and title of caller.
    g. Phone number of caller.
    h. Best time for “Dig Safe” to return calls.
    i. Company name of General Contractor.
    j. Company name of subcontractor performing subgrade work.

C. Member utilities of the Utilities Underground Plant Damage Prevention System are required to respond to the notice within 72 hours from the time said notice is received by designating at the locus the location of pipes, mains, wires, or conduits.

1. Locations of underground utilities will be marked by spray paint or stakes. Marks will be color coded with additional descriptions of letters and arrows as required.

D. Do not commence work until “Dig Safe” has been properly notified and has responded as described above.

E. Subsequently notify “Dig Safe” of unanticipated additional blasting required after the initial notification to “Dig Safe” has been made. Do not perform the additional blasting work in less than 4 hours following the subsequent notification.

1.4 PROTECTION

A. The Contractor is fully responsible for protection of the utility location markings, wherever these occur, on or off-site.

B. Perform Work in such a manner, and with reasonable precautions taken to avoid damage to utilities under the surface in said areas of work. Immediately notify any known or suspected damage to underground utilities to the owner of such utilities.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

End of Section

Section 01 42 00
REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Abbreviations and Acronyms.

B. Definitions

C. Reference Standards.

1.2 ABBREVIATIONS AND ACRONYMS

A. The following list of common abbreviations are referenced in individual specification sections. This list is provided for convenience to the Contractor and is not intended to define all abbreviations use in the Contract Documents.

1. Abbreviations for contract and specifications.

EPA	United States Environmental Protection Agency
HVAC	Heating, ventilating, and air conditioning
IAQ	Indoor Air Quality
IEQ	Indoor Environmental Quality
MEPA	Massachusetts Environmental Protection Agency
MGL	Commonwealth of Massachusetts General Laws
MHD	Massachusetts Highway Department (Mass Highway)
NIC	Not in Contract
OFCI	Owner Furnished, Contractor Installed
OFI or OFOI	Owner Furnished and Installed (Owner Furnished, Owner Installed)
SDS	Safety Data Sheet (formerly MSDS)
VOC	Volatile Organic Compounds

B. Abbreviations for measurements and quantities.

C	Celsius
cm	Centimeter
F	Fahrenheit
Hrs	Hours
Kg	Kilogram
L	Liter
M	meter
m^2 or SM	square meter
m^3 or CM	cubic meter
mm	Millimeter
Mths	Months
psi	Pounds per square inch
t	ton

1.3 DEFINITIONS

A. Definitions of contracting parties (Owner, Owner's Project Manager, Construction Manager, and Architect): Refer to Section 01 10 00 – PROJECT SUMMARY.

B. Definitions for terms utilized in the Contract Documents:

1. "As necessary," "as directed," "when directed," "satisfactory," "good and sufficient," "approved," or other general qualifying terms are used on the Drawings: These terms are deemed to be followed by the words, "in the opinion of the Architect," or "by the Architect," as the case may be."
2. "Addenda": written or graphic instruments issued prior to the execution of the Contract which modify or interpret the Bidding Documents, including the Drawings and Specifications, by additions, deletions, clarifications or corrections.
3. "Approval," "approved, "approved equal," "or equal," or "other approved" means as approved by the Architect."
4. The terms "Contractor", "General Contractor", and "Construction Manager" as used in the Project Manual have the same meaning and are interchangeable in Contract Documents. These terms refer to the same entity.
5. The term "Day": is defined as the following:
   a. The term "calendar day" is a full 24 hour period, starting from 12 AM (midnight), and includes all weekends and legal holidays.
   b. The term "working day" shall mean any calendar day except Saturdays, Sundays, and legal holidays at the place of the building.
   c. Where the term "day" is used without the adjective of "calendar" or "working", it shall mean "calendar day".
6. The terms "Designer", "Architect", and "Architect/Engineer" as used in the Project Manual have the same meaning and are interchangeable in Contract Documents. These terms refer to the same entity.
7. "Furnish and Install" or "Provide": items identified shall be furnished and installed under this Contract. The term "Furnish", when used separately, shall mean that the items referred to shall be furnished, only. Similarly the term "install", when used separately, shall mean that the items referred to shall be installed, only.
8. "Knowledge," "recognize" and "discover," their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize) and discovers (or should discover) in exercising the care, skill and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a Contractor familiar with the Project and exercising the care, skill and diligence required of the contractor by the Contract Documents.
9. "Not in Contract" or "N.I.C.": equipment, furnishings, or other materials not included as a part of this Contract.
10. "Product": materials, systems and equipment.

1.4 REFERENCE STANDARDS

A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by DATE OF ISSUE for Contract Documents, current on date of Owner-Contractor Agreement.

C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

D. The contractual relationship to the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

E. Schedule of References

1. Listed below are abbreviations for the names and titles of trade association names, federal government agencies and similar organizations which are referenced in the individual specification sections. The addresses and URL's (Uniform Resource Locators) provided are for the Contractor's convenience and are believed to be current and accurate, however addresses and URL's frequently change, and no assurance is made on their accuracy:

AA	Aluminum Association 900 19th Street N.W., Suite 300 Washington, DC 20006 www.aluminum.com
AAMA	American Architectural Manufacturer's Association 1827 Walden Office Sq., Suite 104 Schaumburg, IL 60173-4268 www.aamanet.org
ACI	American Concrete Institute, International 38800 Country Club Drive, Farmington Hills, Michigan 48331 www.aci-int.org
ADC	Air Diffusion Council 104 S. Michigan Ave, Suite 1500, Chicago, IL 60603 www.flexibleduct.org
AFPA	American Forest & Paper Association (Formerly NFPA National Forest Products Association) 1111 19th St. N.W., Suite 800, Washington, DC 20036 www.afandpa.org
AGAI	American Galvanizers Association Inc. 12200 E.Lliff Ave, Suite 204, Aurora, CO 80014-1252 www.galvanizeit.org
AIA	American Institute of Architects 1735 New York Avenue, N.W., Washington, DC 20006-5292 www.aia.org
AIHA	American Industrial Hygiene Association 2700 Prosperity Ave, Suite 250, Fairfax VA 22031 www.aiha.org

AISC	American Institute of Steel Construction 1 E. Wacher Dr., Suite 3100, Chicago,IL 60601-2001 www.aisc.org
AMCA	Air Movement and Control Association 30 W. University Drive, Arlington Heights, IL 60004-1893 www.amca.org
ANSI	American National Standards Institute 11 W. 42nd Street, 13 Floor, New York, NY 10036 www.ansi.org
APA	APA - The Engineered Wood Association (formerly APA - American Plywood Association) P.O. Box 11700, Tacoma, WA 98411-0070 www.apawood.org
ARI	Air-Conditioning and Refrigeration Institute 4301 N. Fairfax Dr., Suite 425, Arlington, VA 22203 www.ari.org
ASCA	Architectural Spray Coaters Association 230 West Wells Street, Suite 311, Milwaukee WI 53203 www.aecinfo.com
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers 1791 Tullie Circle NE, Atlanta GA.30329 www.ashrae.org
ASME	American Society of Mechanical Engineers 345 East 47th Street, New York, NY 10017-2392 www.asme.org
ASTM	ASTM International (*formerly American Society for Testing and Materials*) 100 Barr Harbor Drive, West Conshohocken, PA 19428*2959 www.astm,.org
AWCI	Association of the Wall and Ceiling Industry 513 West Broad Street, Falls Church, VA 22046 www.awci.org
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120, Potomac Falls, VA 20165 www.awinet.org
AWMAC	Architectural Woodwork Manufacturers Association of Canada Unit 02A 4803 Centre St. NW, Calgary, Alberta, Canada www.awmac.com
AWPA	American Wood Preservers' Association P.O. Box 286, Woodstock, MD 21163-0286 www.awpa.com
AWPI	American Wood Preservers' Institution 1945 Old Gallows Rd., Suite 150, Vienna, VA 22182 www.oas.org

AWS	American Welding Society 550 LeJeune Road, N.W., Miami, FL 33126 www.aws.org
BHMA	Builders Hardware Manufacturers Association, Inc. 355 Lexington Ave., 17 Floor New York, NY 10017 www.buildershardware.com
CISCA	Ceilings & Interior Systems Construction Association 579 W. North Ave., Suite 301, Elmhurst, IL 60126 www.cisca.org
CRI	Carpet and Rug Institute 310 Holiday Ave, Dalton, GA 30720 ww.carpet-rug.com
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road, Schaumburg, IL 60173-4758 www.crsi.org
CTIOA	Ceramic Tile Institute of America 12061 W.Jefferson BLVD, Culver City, CA 90230-6219 www.ctioa.org
DHI	Door and Hardware Institute 14170 Newbrook Dr., Chantilly, VA 22021-2223 www.dhi.org
GA	Gypsum Association 6525 Belcrest Road, Suite 480, Hyattsville, MD 20782 www.gypsum.org
GANA	Glass Association of North America 2945 S.W. Wanamaker Dr., Suite A, Topeka, KS 66612-5321 www.glass.org
GICC	Glazing Industry Code Committee 3310 Harrison St., Topeka, KS 66611-2279 www.glazingcodes.net
HPVA	Hardwood Plywood & Veneer Association 1825 Michael Faraday Drive Reston, Virginia 20190 www.hpva.org
IGCC	Insulating Glass Certification Council 3933 US Route 11, PO Box 2040, Cortland, NY 13045 www.igcc.org
ISO	International Standards Organization Geneva, Switzerland. www.iso.org
LSGA	Laminators Safety Glass Association 3310 Harrison Street, Topeka KS 66611-2279 www.glass.org

MIL	Military Specifications and Standards Naval Publications and Forms Center 5801 Tabor Avenue, Philadelphia, PA 19120 www.milspec.com
MSS	Manufacturers Standardization Society 127 Park St. NE., Vienna, VA 22180 http://msshq.org/
NAAMM	National Association of Architectural Metal Manufacturers 8 South Michigan Avenue, Suite 1000, Chicago, IL 60603 www.naamm.org
NEBB	National Environmental Balancing Bureau 8575 Government Circle, Gaithersburg, MD 20877-4121 www.nebb.org
NEMA	National Electrical Manufacturers' Association 1300 N. 17th St., Suite 1846, Rosslyn, VA 22209 www.nema.org
NFPA	National Fire Protection Association 1 Battery March Park, PO Box 9101, Quincy, MA 02269 www.nfpa.org
NFRC	National Fenestration Rating Council 6305 Ivy Lane, Greenbelt MD 20770 www.nfrc.org
NTMA	National Terrazzo and Mosaic Association 110 E. Market St., Suite 200A, Leesburg, VA 20176 www.ntma.com
PCA	Portland Cement Association 5420 Old Orchard Road, Skokie, IL 60077-1083 www.cement.org
PS	Product Standard U. S. Department of Commerce www.omg.org
SDI	Steel Door Institute 30200 Detroit Road, Cleveland, OH 44145-1967 www.steeldoor.org
SGCC	Safety Glass Certification Council RMS, P.O. Box 9 Henderson Harbor, NY 13651 www.sgcc.org
SIGMA	Sealed Insulating Glass Manufacturers Association 401 N. Michigan Ave., Suite 2400, Chicago, IL 60611 www.glasschange.com
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Dr., Chantilly, VA 22022-1209 www.smacnapa.org

SPIB	Southern Pine Inspection Bureau 4709 Scenic Highway, Pensacola, FL 32504-9094 www.spib.org
SSMA	Steel Stud Manufacturer's Association 8 South Michigan Avenue, Chicago IL 60603 www.ssma.com
SSPC	The Society for Protective Coatings 40 24th Street, 6th Floor, Pittsburgh PA 15222-4623 www.sspc.org
SWRI	Sealant, Waterproofing & Restoration Institute 2841 Main Street, Suite 585, Kansas City, MO 64108 www.swrionline.org
TCNA	Tile Council of North America, Inc. 100 Clemson Research Blvd., Anderson, SC 29625 www.tileusa.com *(formerly TCA, Tile Council of America)*
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road, Northbrook, IL 60602 www.ul.com
UNI	Uni-Bell PVC Pipe Association 201 E. John Carpenter Freeway, Suite 750, Irving, TX. www.uni-bell.org
WDMA	Window & Door Manufacturers Association (formerly National Wood Window & Door Association, NWWDA) 205 E. Touhy Avenue, Suite G-54, Des Plaines, IL 60018 www.nwwda.org
WI	Woodwork Institute PO Box 980247 West Sacramento, CA 95798 www.woodworkinstitute.com

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

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Section 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. General quality assurance and control of installation.

B. Site safety, worker safety and training.

C. Contractor’s quality control (QC) program.

D. Source quality control.

E. Field samples and mock-ups.

F. Testing laboratory and inspection services.

G. Manufacturer’s field services and reports.

H. Field quality control, Owner’s right for confirmation.

1.2 GENERAL QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including performance of each step in sequence. Notify Architect when manufacturers' instructions conflict with the provisions and requirements of the Contract Documents; obtain clarification before proceeding with the work affected by the conflict.

C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate high standards or more precise workmanship.

D. Perform work by persons qualified to produce workmanship of specified quality.

E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 SITE SAFETY, WORKER SAFETY AND TRAINING

A. General: The Contractor shall, at all times, exercise reasonable precautions for the safety of all persons. All rules, regulations, and laws concerning safety that are in effect at the work site, and in particular, all applicable regulations of the Occupational Safety and Health Administration (OSHA) of the U.S. Government, in addition to specified requirements shall be complied with in all respects.

1. Contractor's responsibility for safety shall apply continuously twenty four (24) hours per Day during the term of this Contract and is not limited to normal working hours.

B. Contractor's safety program: Prior to commencement of the Work, the Contractor shall develop and implement a Safety and Health Plan to comply with the Occupational Safety and Health Administration (OSHA) standards for the Construction Industry and all other applicable Federal, State, local laws and regulations. Contractors Safety and Health Plan, and included health and safety procedures and policies, shall be submitted to the Architect and Owner's Representative within fifteen (15) Days after the date of Notice to Proceed and in no event later than commencement of the Work, whichever occurs first.

1. Perform pre planning to ensure access Is provided to Fire Department for all areas of the work site throughout the duration of the Contract. The Contractor shall provide the Fire Department site access maps, updated regularly, to reflect changes in the layout of the work site and shall notify the Fire Department when each update is made
2. Post and maintain, at prominent locations throughout the Project site, emergency telephone numbers and shall insure that all personnel on site are continuously aware of this information.
3. Ensure safe access to the Work for the Owner, Architect, Architect's consultants, their designated representatives, and all others charged with inspection, testing and monitoring of the Work, and visitors to the site. The Contractor shall furnish site visitors with safety equipment, test equipment, safety apparel and instructions that are required to insure their safety on site, and In the performance of their duties related to the Work of this Contract

C. All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is at least 10 hours in duration. The OSHA training and certification course shall occur at the time each employee begins work. Furnish documentation to Owner and Architect, for each employee documenting successful completion of the OSHA safety training and certification course. Submit with the first certified payroll report.

1.4 CONTRACTOR'S QUALITY CONTROL PROGRAM

A. Procedures: Contractor and each subcontractor shall include all labor, materials, equipment, services and incidental items necessary to implement quality control procedures to the extent necessary to demonstrate and maintain compliance with the Contract Documents.

B. Quality Control Plan: Within 20 days after Notice to Proceed, the Contractor shall submit a Quality Control (QC) Plan to the Owner's Representative and Architect for approval. The plan shall address the following, as a minimum:

1. The Contractor's commitment to quality and implementing and managing the QC program.
2. Identification of the Contractor's onsite QC Manager, with name, qualifications, duties and responsibilities. The QC Manager shall have the authority to direct the removal and replacement of non-conforming work. The QC Manager shall be present for all QC meetings, inspections and tests during the project.
3. Procedures for addressing and commenting QC with Contractor's staff, all subcontractors and suppliers, and Owner, Architect and Owner's representative.

4. Procedures for review of submittals and submittal status, and documentation of same.
5. Procedures for pre-installation meetings and documentation of same.
6. Procedures for inspections of deliveries and documentation of same.
7. Procedures for benchmark inspections, defined as initial installations, and documentation of same.
8. Procedures for mockup inspections and documentation of same.
9. Procedures for equipment in place, inspections and documentation of same.
10. Procedures for inspections prior to closures of concealment and documentation of same.
11. Procedures for start-up and commissioning and documentation of same.
12. Procedures for turnover and documentation of same.
13. Procedures for identifying, recording, tracking correcting and reporting items requiring rework, using a Rolling Completion list chronological item number, phase area, date listed, description, party responsible for correction, date notified, and date corrected.
14. Procedures for testing and documentation of same.
15. Procedures for corrective action on Architect's Field Reports and Testing Agency reports and documentation of same.

C. Procedures for reporting on all of the above on a monthly basis as a condition precedent to review of the Contractor's application for payment.

1.5 SOURCE QUALITY CONTROL

A. 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.

B. 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.

C. Product Labeling: Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code(s).

1. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.
    a. Model number.
    b. Serial number.
    c. Performance characteristics.

1.6 FIELD SAMPLES

A. Install field samples demonstrating quality level for the Work, at the site as required by individual specifications Sections for review and acceptance by Architect. Remove field samples prior to date of Final Inspection, or as directed.

1.7 TESTING LABORATORY AND INSPECTION SERVICES

A. Contractor shall appoint, employ, and pay services of an independent firm to perform inspection and testing and other services specified in individual specification Sections and as required by the Architect.

1. Contractor will employ services of an independent firm to perform inspection and testing and other services specified in individual specification Sections and as additionally required by the Architect. Submit to Owner at least three qualified testing firms for Owner's review and acceptance.

B. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

1. Notify Architect and independent firm 48 hours prior to expected time for operations requiring services.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

C. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum.

1.8 MANUFACTURER'S FIELD SERVICES AND REPORTS

A. When called for by individual Specification Sections, provide at no additional cost to the Owner, manufacturers' or product suppliers' qualified staff personnel, to observe site conditions, start-up of equipment, adjusting and balancing of equipment, conditions of surfaces and installation, quality of workmanship, and as specified under the various Sections.

1. Individuals shall report all observations, site decisions, and instructions given to applicators or installers. Immediately notify Architect of any circumstances which are supplemental, or contrary to, manufacturer's written instructions.

2. Submit full report within 30 calendar days from observed site conditions to Architect for review.

1.9 FIELD QUALITY CONTROL

A. The Owner reserves the right to take samples and perform, at random, tests of approved materials delivered to the job site to verify compliance of actual materials with specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Requirements for temporary facilities and controls.

1.2 GENERAL REQUIREMENTS

A. The General Contractor shall provide and maintain all temporary facilities, controls, and construction aids as specified herein until they are replaced by permanent work, or until Project Substantial Completion, as appropriate.

1. Temporary facilities removed from the Project shall remain the property of the Contractor, except as otherwise specified.

B. Except where specifically noted otherwise, cost or use charges for temporary facilities, utility services, controls, and construction aids and similar items specified in this Section or as required to perform the Work, are not chargeable to the Awarding Authority or Architect, and will not be accepted as a basis of claims for a Change Order.

C. Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time when they are no longer needed, or when permanent facilities have, with authorized use, replaced the temporary facilities.

1. Locate temporary facilities where they will serve Project adequately and result in minimum interference with performance of the Work.

1.3 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.
2. Schedule showing implementation and termination of each temporary utility within 15 days of commencement of the Work.
3. Shop drawings:
   a. Temporary signage.
   b. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.4 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ANSI A 10 - Safety Requirements for Construction and Demolition.
2. NFPA 70 - National Electrical Code.

3. NFPA 241 - Building Construction and Demolition Operations.

1.5 TEMPORARY WEATHER PROTECTION

A. Weather Protection Standards: The following weather protection standards pursuant to Sections 44F and G of Chapter 149 of the General Laws, are hereby incorporated into this specification, and shall be considered supplementary to the temporary heating and temporary enclosure requirements specified elsewhere in this Section and in individual specification Sections.

1. Limitation of Weather Protection Standards: Under the provisions of Chapter 149, Section 44F(1) and Section 44G, Para. D, of the Massachusetts General Laws (MGL), General Contractors are required to provide weather protection to allow building construction to be carried on between the dates of November 1 to March 31 (inclusive).

a. These standards do not require enclosures for heat for operations that are not economically feasible to protect in the judgment of the Awarding Authority; including for example, site work, excavation, pile driving, steel erection, erection of certain exterior panels, roofing and the similar construction elements.

2. Definition of Weather Protection: “Weather Protection” means temporary protection of work which may be adversely affected by moisture, cold, heat, and wind by the use of temporary covers, enclosures, and heat. Maintain at least the minimum temperatures specific. Comply with specific requirements which are specified within individual Specification Sections.

a. Temperature at the working surface shall be at least forty degrees Fahrenheit (40 degrees F). This provision does not supersede any specific greater requirements for methods of construction of curing of materials.

3. General Contractors Responsibilities:

a. The General Contractor shall furnish and install all “weather protection” Both (exterior and interior) during the time period from November 1 to March 31 (inclusive). The General Contractor is responsible to ensure that protection is provided for the building INTERIOR and all materials and equipment from weather at all times (year round).

b. At completion of work, the General Contractor shall remove temporary weather protection and restore all surfaces to first class condition.

4. Proposed Plan: The General Contractor shall within 30 calendar days after Award of Contract, submit three copies of a typewritten proposed plan for “Weather Protection” and obtain the Architect’s and Owner’s written approval.

5. Reporting Requirements:

a. Within thirty calendar days after Contract award, the General Contractor shall submit in writing to the Owner for approval, three copies of its proposed plan for weather protection.

b. The General Contractor shall furnish and install accurate Fahrenheit thermometers at places designated by the Owner to determine whether the required temperature is being maintained.

6. Weather protection materials, equipment, and the installation thereof, shall comply with all the safety rules and regulations including provisions for adequate ventilation and fire protection devices.

7. Use of Permanent Heating System(s): The General Contractor may choose, if the Owner approves, to use the permanent heating system for temporary heat after the building is enclosed and the system has been tested and is ready to operate.
    a. The General Contractor shall thoroughly clean and restore to first class condition, acceptable to the Owner, all portions of the permanent heating system that are used for heating during construction.
    b. Use of the permanent heating system for weather protection shall not affect any heating system guarantee that may be due to the Owner; such guarantee shall begin to run only when the Owner accepts the building.

B. Additional weather protection requirements: The General Contractor is responsible to ensure that the protection is provided by for the building interior and all materials and equipment from weather at all times (year round).
1. Where removal of existing roofing, roof sheathing, windows, doors, and other items is necessary to accomplish work, have materials and workmen ready to provide adequate and approve temporary covering of exposed areas.
2. Temporary coverings shall be attended as necessary to insure effectiveness and to prevent displacement.
3. Contractor shall repair or replace all elements of the building damaged by failure to properly protect them from the weather to the satisfaction of the Architect at no additional cost to the Owner.

1.6 TEMPORARY UTILITIES, GENERAL REQUIREMENTS

A. General Installation: Install temporary utility service(s), or connect to existing service(s) as indicated, and as specified. Comply with all applicable laws, regulations, and requirements of authorities having jurisdiction.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 TEMPORARY UTILITIES, ELECTRICITY

A. Temporary electricity: The Owner will pay for electrical energy required for temporary light and power. The Contractor is required to hire an electrician licensed where project is located to provide temporary feeders of sufficient capacity from the facility’s power lines, at the point coordinated with the Owner, to furnish electric light and power requirements for the work, while under construction.
1. Metering: The Owner reserves the right to require separate metering and for the Contractor to pay for electricity used, if, in the Owner’s opinion, electricity is being wasted.
2. Electric power service: Use of existing electric power service will be permitted, as long as equipment is sufficient for Contractor’s needs and is maintained in a condition acceptable to Owner. Provide additional weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics as required to furnish temporary electricity for construction operations. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.

a. Connect temporary service to Owner's existing power source, as directed by Owner.

b. Heavy electrical loads such as welding and other equipment with similar special power requirements must be powered by individual installers using portable electric generators at each user's own cost.

1) Except as otherwise specifically provided, all additional costs resulting from such use shall be borne by the Contractor.

3. Distribution: A grounded receptacle (outlet) for an extension cord shall be provided by the Electrical subcontractor within one hundred (100) feet of any part of the building. Individual users are responsible for their own work lamps and extension cords.

1.8 TEMPORARY UTILITIES, LIGHTING

A. Temporary lighting: The Electrical subcontractor shall provide lighting with local switching to fulfill security requirements and provide illumination for construction operations and traffic conditions. Maintain lighting, replace broken lamps and provide routine repairs.

1. Temporary lighting shall be based on the following requirements:

a. Rooms or spaces under 250 square feet: Two 100 watt lamps.

b. Rooms or spaces over 250 square feet and under 500 square feet: Four 100 watt lamps.

c. Rooms or spaces 500 square feet and over: Two 200 watt lamps for spaces 500 to 1000 square feet, and two 200-watt lamps for every additional 1000 square feet or fraction thereof.

d. Provide sufficient additional fixtures and lamps to insure proper lighting in stairwells, corridors and passage areas.

2. Lamps: The Electrical subcontractor shall furnish and install all lamps, both initial and all required replacements until the date of Substantial Completion.

3. Use of Permanent lighting fixtures.

a. Permanent building lighting may be utilized during construction.

b. Permanent lighting fixtures which have been used during Construction shall be thoroughly cleaned by the Electrical subcontractor.

c. Immediately prior to the Architect's inspection for Substantial Completion the Electrical subcontractor is required to replace all lamps, which are broken, burned out or are producing reduced light output.

B. Protective night lighting is required at all times (24 hours a day, seven days a week). General Contractor is required to arrange for adequate outdoor lighting to illuminate staging, stockpiles, trenches, dangerous projections, excavations and similar conditions and as additionally required to protect the safety of workmen, other personnel, and the public and as an aid in the protection against theft and vandalism.

1. Shield lighting to protect overflow beyond Contract limits, protect neighbors from night light overflow.

1.9 TEMPORARY UTILITIES, TELEPHONE

A. Temporary telephone service: Provide telephone service at time of project mobilization, and pay all costs for installation, maintenance, and removal. The General Contractor shall pay service charges for local calls; toll charges shall be paid by party who places call. Service and equipment required includes the following:

1. For Contractor's Field Office .

a. Provide one direct line service dedicated for use by the Contractor, Subcontractors, and personnel engaged in construction.

b. One answering machine or phone service with messaging.

c. One (direct) separate line for facsimile (FAX) machine.

d. Cellular (mobile) phone service for Contractor's Superintendent, continuously maintained until Project Substantial Completion.

e. Other instruments at the option of the Contractor, or as additionally required by Authorities having jurisdiction.

B. Temporary internet service: Provide internet service at time of project mobilization, and pay all costs for installation, maintenance, and removal. The General Contractor shall pay service charges through date of Substantial Completion.

1. For Awarding Authority's Representative's Field Office, General Contractor shall provide and maintain internet access consisting of digital signal 1 (T1), digital subscriber line (DSL), cable or, Fiber-Optic Service (FiOS) services, (dial-up modem service is not acceptable). Internet service shall include e-mail account allowing a minimum of 5mb attachments to ensure exchange of all construction related e-mail to the Architects/Owner's Representative's Field Office.

2. For Contractor's Field Office, General Contractor shall provide and maintain internet and email service. Internet service shall include e-mail account allowing a minimum of 5mb attachments to ensure exchange of all construction related e-mail to Contractor's field office.

1.10 TEMPORARY UTILITIES, WATER

A. Temporary water: Contractor is permitted to use existing hose bib(s). Awarding Authority will pay for water necessary for the Work; exercise measures to conserve water.

1. Contractor is responsible for connections to existing water supply, and any required distribution of temporary water services as required for construction.

2. Protect piping and fittings against freezing.

1.11 TEMPORARY UTILITIES, FUEL FOR HEATING (OIL, PROPANE, NATURAL GAS)

A. Provide all fuel required to maintain temporary heating systems, including temporary use of permanent heating systems. All fuel costs up to time of Project Substantial Completion shall be borne by the General Contractor, at no additional cost to the Owner.

1.12 TEMPORARY HEATING AND COOLING

A. General, Temporary 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.

B. Temporary heat: 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. Heating Units: UL 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.

a. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

b. Vent heaters directly to outside air, in areas where concrete is less than 15 days old.

2. In enclosed areas, maintain a minimum temperature of 50 degrees Fahrenheit; provide higher temperatures where required by individual specification sections. General Contractor is required to provide enclosures necessary to maintain specified temporary heat.

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. Coordinate with work of Division 23, Heating Ventilating and Air Conditioning (HVAC). Replace all air filters immediately prior to occupancy.

1.13 TEMPORARY VENTILATION AND HUMIDITY CONTROL

A. General:

1. Humidity Control: Monitor and regulate relative humidity as required for the installation of all interior products. Relative humidity shall be maintained within the limits set by manufacturers of all interior materials and equipment. Refer to individual specification sections in Divisions 6, 8, 9, 10, 11 and 12 for additional environmental requirements.

a. Contractor shall enclose interior work areas, protect from weather, and maintain specified temperature and humidity prior to commencement of construction activities relating to interior finishes.

2. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

a. During construction, Contractor shall meet or exceed the minimum requirements of the SMACNA IAQ Guideline for Occupied Buildings under Construction, 2008 edition.

B. Monitor Humidity: Provide Hygrometer to measure temperature and relative humidity in each construction area.

1. Provide dehumidifier(s), as required to maintain humidity of enclosed areas below 70 percent. Humidity level shall be maintained in all areas where interior finish work is being performed, and all areas where interior finishes has been completed.
2. Provide fans as specified herein, and as required to eliminate significant variation in humidity levels within enclosed spaces.

C. Temporary Construction Ventilation: Contractor shall maintain sufficient temporary ventilation of areas where materials are being used that emit VOC's and maintain ventilation continuously during installation and until emissions dissipate after installation. If continuous ventilation is not possible via the building's HVAC system(s) then Contractor shall supply ventilation via open windows and temporary fans, sufficient to provide no less than three air changes per hour.
1. Vent all areas directly to outside. Areas shall not be vented to other enclosed areas.
2. During dust producing activities (e.g. drywall installation and finishing) Contractor shall turn off ventilation system and protect openings in supply and return HVAC system from dust infiltration. Provide temporary ventilation as required.
3. Dissipation of VOC's: The period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. A minimum time period of 72 hours is required except where longer periods of time are specified under individual specification sections.

D. Preconditioning: Prior to installation, Contractor shall allow products which have odors and VOC emissions to off-gas in dry, well-ventilated space outside of building for 14 calendar days, in order to allow for reasonable dissipation of odors and emissions.

1.14 FIELD OFFICES AND SHEDS

A. General: Designated existing spaces may be used for field offices and for storage.
1. Availability: Provide offices ready for occupancy within 15 days after date fixed in Notice to Proceed.
a. Offices and sheds located within the construction area, or within 30 feet of building lines shall be of noncombustible construction. Comply with requirements of NFPA 241.
b. Construction of offices shall have sound insulation adequate to exclude sounds of routine construction activities and reduce server noise to less than 70 dB.
2. General:
a. Contractor shall provide periodic cleaning and maintenance of field offices and storage areas.
b. Provide air conditioning and heating to maintain a temperature range of 65 to 78 degrees F.
c. Provide sufficient lighting for 50 foot candles at desk top level over 100 percent of floor area.

d. Excluding computer, computer software and related equipment; all other non-consumed furnishings and equipment, will be returned to contractor upon project completion.

B. Contractor's field office(s): Provide habitable office(s) or space, of size to accommodate personnel, include as a minimum the following:
   1. Size: For Contractor's needs and to provide space for project meetings.
   2. Furnishings:
      a. Conference table of sufficient size with seating to accommodate personnel and anticipated visitors for specified conferences and weekly progress meetings.
      b. Racks and files for Contract Documents, submittals and Project Record Documents.
   3. Outdoor weather thermometer.
   4. Hard-hats for site visitors.
   5. Duplex convenience outlets, at least one per wall.
   6. Telephone service as specified herein above.
   7. Other equipment and furniture as the Contractor deems necessary.

C. Storage and fabrication sheds: Provide as required, sheds, equipped to accommodate materials and equipment involved.
   1. Subcontractor's are responsible for their own storage facilities, coordinate locations.

D. Maintain approach walks to field office and storage/fabrication sheds free of mud, water, and snow.

E. When permanent facilities are enclosed with operable utilities, relocate offices and storage into building, with written agreement of Owner, and remove temporary buildings.

1.15 SANITARY FACILITIES

A. Sanitary facilities: Designated existing facilities may be used.
   1. At times when existing facilities are not available: Provide self-contained single-occupant chemical toilet units, wash facilities and drinking water fixtures.

B. Provide toilet tissue, paper towels, paper cups, cleaning compounds and similar materials.

C. Maintain facilities, through-out term of construction, and keep clean, provide covered waste containers for used material.

1.16 CANTEEN SERVICES

A. Canteen vehicles must access the worksite at predetermined times coordinated with the Owner, and are limited to service within the construction site only.

1.17 FIRST AID AND FIRE EXTINGUISHERS

A. First aid supplies: Comply with governing regulations.

B. Fire extinguishers: Provide and maintain on site, adequate fire extinguishers UL rated for A-B-C type fires. Provide red-painted plywood standards for each extinguisher. Additionally, provide a dry chemical fire extinguisher at each location where welding, torch cutting and other similar hazardous work is in progress.

1. At welding and heat cutting work: Provide not less than a Multi-purpose dry chemical type (mono amonium phosphate) fire extinguisher, 20-pound capacity, multi-purpose rated “2A, 120 B:C”.

1.18 CONSTRUCTION AIDS - TEMPORARY HOISTS AND CRANES

A. Hoisting equipment and machinery: Furnish all hoisting equipment, crane services and lift machinery required to perform the Work of this Contract. Install, operate and maintain in safe condition.

1. Do not charge applicators and installers for these services during normal working hours.

1.19 CONSTRUCTION AIDS - SCAFFOLDING, PLATFORMS, STAGING, CHUTES

A. Provide all ladders, ramps, runways, platforms, railings, chutes, and other mounted or installed construction aids as specified herein and as required to facilitate the Work. Furnish and erect construction aids and maintain in safe condition for the use of all subcontractors, installers and applicators.

B. Furnish and erect scaffolds, staging, and maintain in safe condition, dismantle when no longer required. The General Contractor shall provide scaffolds, staging, and other similar raised platforms, required to access the Work.

1. General Contractor is responsible to provide, maintain and remove when no longer required, all tarpaulins and enclosures necessary to cover scaffolding (including that furnished by subcontractors) to maintain specified temporary heat as specified herein under Article entitled “TEMPORARY WEATHER PROTECTION” from the dates of November 1 to March 31.

2. Enclose all exterior scaffolding with 8 foot height plywood enclosure at end of each work day to prohibit access to the scaffolding by unauthorized individuals.

C. Ladders, temporary stairs, platforms and railings, shall comply with OSHA guidelines.

1. Provide and maintain temporary stairs until permanent stairs are in place and functional. When permanent stairs are erected, provide temporary railings and guards. Protect permanent stairs with temporary covers and protective treads.

2. Portable ladders and mobile platforms of all required heights, shall be provided by individual users.

D. Temporary chutes: Provide, erect, and maintain properly supported and covered chutes from openings in exterior walls of each building level in convenient and accessible locations for use of all trades, that will permit direct disposal of rubbish and debris directly into trucks or disposal units.

1. Do not drop or throw any materials, rubbish, or debris from openings in the exterior walls of the project, or from roof.

1.20 VEHICULAR ACCESS AND PARKING

A. Provide and maintain access to fire hydrants free of obstructions. Provide unimpeded access for emergency vehicles. Maintain 20 foot width driveways with turning space between and around combustible materials.

B. Vehicular Parking: There is no on-site parking available to the Contractor. Existing parking facilities shall not be used by construction personnel.

1. Arrange for off-site parking areas to accommodate construction personnel.

2. Parking on public streets: Limited on-street parking is available. The Contractor's personnel are fully responsible to abide by all Municipal Laws and Regulations for on street and public parking. The Contractor and its personnel are additionally fully responsible for all costs incurred by the Contractor or its personnel for parking.

1.21 SNOW AND ICE REMOVAL

A. Snow and ice removal: Maintain all vehicular and pedestrian access roads and walkways free from ice and snow during the winter season for the duration of the Project.

1.22 VEHICULAR TRAFFIC CONTROL

A. The Contractor shall not close or obstruct any portion of any street public or private, without obtaining permits therefore from the proper authorities.

1. Provide and pay for police traffic details at anytime that construction takes place in a public street (right of way). The Contractor is responsible for coordinating, requesting. and paying the prevailing rate of wage for police traffic details directly with the Waltham Police Department.

B. Construction parking control: Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

1. Monitor parking of construction personnel private vehicles in existing facilities. Maintain free vehicular access to and through parking areas. Prohibit parking on or adjacent to access roads, or in non-designated areas.

C. Vehicle and Equipment Security: Lock all unattended vehicles including construction machinery and equipment. Do not leave vehicles or equipment unattended accessible to public with the motor running, or with keys easily accessible.

D. Haul routes: Consult with governing authorities and establish public thoroughfares which will be used as haul routes and site access. Confine construction traffic to designated haul routes.

1. Confine construction traffic to designated haul routes.

2. Provide traffic control at critical areas of haul routes to expedite traffic flow and to minimize interference with normal public traffic.

E. Traffic signals and signs: Provide, operate and maintain temporary equipment, services, and personnel, with traffic control and protective devices, as required to direct and maintain an orderly flow of traffic in all areas under Contractors control, or affected by Contractors operations, including but not limited to haul routes, at site entrances, at on-site access roads, and parking areas during construction.

1. Provide traffic control and directional signs as needed to direct construction and public traffic.
2. Provide warning signs for public traffic and "STOP" signs for entrance onto public roads.
3. Comply with signage and traffic control requirements of authorities having jurisdiction.

1.23 DUST CONTROL

A. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1. Take all necessary measures and provide equipment and materials to minimize dust from rising and blowing across the site and also to control surface water throughout the operation so that it does not run onto paved ways without being filtered. Control all dust created by construction operations and movement of construction vehicles, both on site and on paved ways.
2. During the progress of the work, maintain the areas of construction activities including sweeping and sprinkling of streets as necessary. Provide and use calcium chloride for more effective dust control, when deemed necessary by regulatory agencies, without additional cost to the Owner.

B. Prevent air-borne dust from dispersing into ducts (air supply and return) during construction. Seal all open ends of completed ductwork, and overnight work-in-progress. Inspect ducts on daily basis to ensure seals are intact. Protect ductwork waiting, to be installed with surface wrapping.

1. Ductwork protection during construction is a joint responsibility between the General Contractor and HVAC subcontractor.
2. HVAC subcontractor is responsible to wipe down internal surfaces of ductwork immediately prior to installation to remove all dust and debris.

C. Prevent air-borne dust from dispersing into ducts (air supply and return) during construction. Seal all open ends of completed ductwork, and overnight work-in-progress. Inspect ducts on daily basis to ensure seals are intact. Protect ductwork waiting to be installed with surface wrapping.

1. Ductwork protection during construction is a joint responsibility between the General Contractor and HVAC subcontractor.
2. HVAC subcontractor is responsible to wipe down internal surfaces of ductwork immediately prior to installation to remove all dust and debris.

D. Prevent air-borne dust from dispersing into occupied spaces. Provide interior dust-tight temporary partitions as specified under the Article entitled “Interior enclosures”.

1. Provide air-filters over openings and grilles in air-return ducts occurring within construction areas.
2. Provide openings in temporary partitions where air-return grilles occur outside of work areas. In each opening, provide standard 2 inch thick, throw-away

type filter having a rated efficiency of 35 percent. Review with Architect size requirements of filtered openings, locations of openings and how many are required.

3. Replace air filters as required to maintain their efficiency.

1.24 NOISE CONTROL

A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.

B. Execute construction work by methods and by use of equipment which will reduce excess noise.

1. Equip air compressors with silencers, and power equipment with mufflers.
2. Manage vehicular traffic and scheduling to reduce noise

C. Interior work involving cutting, drilling, hammering or noise generating procedures shall be completed during times scheduled with the Owner in advance.

1.25 TEMPORARY INTERIOR ENCLOSURES

A. Provide temporary partitions and ceilings to separate work areas from Owner's occupied areas, to prevent penetration of dust and moisture into Owner's occupied areas and to prevent damage to existing materials and equipment.

1. Temporary enclosures must seal construction areas and prohibit passage of dust and debris, and inhibit noise transmission.
2. Temporary enclosures and doors through them, shall be erected in manner to provide code mandated egress from the occupied portions of the building. Provide fire-resistant rated enclosures where required to maintain protected paths of egress.

B. Construction: Wood framing and polyethylene [plywood] sheet materials with closed joints and sealed edges at intersections with existing surfaces with Flame Spread Rating of 75 or less in accordance with ASTM E84.

1. Construct closures, using new materials only, in accordance with the general carpentry requirements in Section 06 10 00 - ROUGH CARPENTRY and Section 09 29 00 - GYPSUM BOARD.
2. Studs, sill plate, and header: Hem-Fir, Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried, utility grade or better.
   a. Minimum stud size:
      1) Partition height 10’-0” and less: minimum nominal 2 by 4 inches.
      2) Partition height over 10’-0”: minimum nominal 2 by 6 inches.
3. Polyethylene: Flame and smoke rated Class 1/A per ASTM E84.
4. Plywood: APA graded CDX, minimum 1/2 -inch thickness.
5. All door openings within temporary partitions shall have pressed metal frames, 1-3/4" thick solid core wood doors, door closer and lock set.

1.26 TEMPORARY PROTECTION OF EXISTING FINISHES

A. General: Take all required measures to protect the existing building (contents, surfaces, or materials) and site from damage of any kind when performing the Work.
   1. Take any special steps necessary to protect entrances and areas around building and to prevent persons from coming in contact with material or construction operations.
   2. Protect utility services, pavements, sidewalks, landscaping, and all other site elements scheduled to remain.

B. Provide all temporary protections as may be required to ensure that all components of existing building indicated to remain are not damaged during the execution of the Work.
   1. Protection may be required to remain in place for the duration of the project. As such, materials should be installed to provide adequate protection throughout the full extent of construction activities. Repair or reinstall protection throughout the duration of construction as required.

C. Dust Protection Path: Areas where demolition work is required.
   1. Seal all floor, wall and ceiling openings to prevent the intrusion of dust into these spaces. Provide dust curtains at doors.
   2. Construct temporary partitions surrounding the area of construction in these areas.
   3. Dust-Proof Wrap: Cover surfaces with polyethylene plastic. Seal seams completely with duct tape. Anchor to protection wherever possible. Attach to historic materials with preservation tape. Do not use duct tape or mechanical fasteners on historic materials.
   4. Dust-Proof Temporary Partitions: Comply with Article above entitled TEMPORARY INTERIOR ENCLOSURES.

1.27 TEMPORARY BARRICADES

A. Provide barriers and barricades to prevent unauthorized entry to construction areas.
   1. Comply with standards and code requirements for erection of barricades, where required provide lighting, including flashing lights.
   2. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against.
   3. Provide special barriers necessary to protect entrances and areas around building and to prevent persons from coming in contact with material or construction operations.

B. Provide temporary enclosures, as required, for protection of existing facilities and new construction from exposure to weather, other construction operations and similar activities. Where heat is needed and the building envelope is incomplete, provide enclosures where there is no other provision for containment of heat.
   1. Provide doors with self-closing hardware and locks.

2. Provide barricades and protective entrances at least 48 inches high around openings in floors.

C. Provide temporary roofing as needed to maintain the building water tight.

1.28 POLLUTION CONTROL

A. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by, the discharge of noxious substances from construction operations.

1. Comply with all applicable Federal, State, County, and municipal laws regarding pollution.

2. Prevent pollution of streams, lakes, or reservoirs with fuels, oils, bitumens, calcium chloride, acids, waste products, effluents, chemicals or other harmful substances. Prevent from such substances from entering storm drains and sanitary sewers.

B. Provide equipment and personnel, perform emergency measures required to contain any spillage and to remove contaminated soils or liquids.

1. Excavate and legally dispose of any contaminated earth off-site, and replace with suitable compacted fill and topsoil.

1.29 FIRE PREVENTION MEASURES

A. The Contractor shall take all necessary precautions for the prevention of fire during construction. Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes. Ascertain and comply with requirements of Project insurance carrier, local fire department and the state fire marshal.

1. Maintain the area within contract limits orderly and clean.

a. Remove combustible rubbish promptly from the site and when required, store combustible materials in containers in fire-safe locations.

2. Maintain clear access to exits from within the building.

3. Smoking is not permitted in the building or adjacent areas.

B. Establish procedures for fire protection for welding, cutting and open torch work, and other potentially hazardous operations. Obtain permission from local authorities having jurisdiction for such work as required by law. Provide special fire extinguishers at welding and torch cutting work.

1. Maintain a fire watch when existing fire protection and warning systems have been temporarily de-activated. Maintain watch during all working hours for full period of de-activation.

2. The Contractor will assign personnel to inspect all construction areas at the end of each day’s work for fire hazards prior to lock-up.

C. Provide for outside storage of gas tanks, sufficiently clear of any structure. Promptly remove welding and cutting equipment from the building when no longer required. Do not store welding or cutting materials within the building when work is not being performed.

D. Permanent fire protection system may be activated to meet these requirements. Replace fusible link heads and other expended or discharged components at time of Substantial Completion.

E. Open Flame: Cutting and welding torches will be allowed **only** under the following conditions:

1. Contractor shall provide continuous and adequate supervision, fire watches, and emergency fire protection apparatus to assure that sparks or drops of hot metal do not start fires.
2. The following pre-conditions are required at each location where cutting or welding is to occur, prior to commencement of cutting or welding work.
   a. Each area where cutting or welding work is to occur shall be completely cleared of all flammable materials.
   b. Designated fire watch personnel with extinguishers shall be posted at the work areas for the duration of the work, and for 30 minutes after completion of work.
   c. At each location where cutting or welding work occurs, provide a 20 pound capacity, multi-purpose ABC rated extinguisher.
   d. Cutting and welding operations shall cease 2 hours prior to the close of construction (each day) to minimize the risk of undetected smoldering fire.

1.30 SECURITY MEASURES

A. Protect Work, existing premises and Owner's operations from theft, vandalism, and unauthorized entry. Maintain security program throughout construction period until Owner occupancy precludes the need for Contractor security.

1. General contractor is responsible for security of site during construction, including prevention of illegal trespassing, unauthorized entry, theft and vandalism. All losses and damages which occur are the full responsibility of the General Contractor, who shall bear all costs incurred.

1.31 PROJECT IDENTIFICATION AND TEMPORARY SIGNAGE

A. General: Signs other than those specified herein are not permitted, except those required by law or expressly authorized by the Awarding Authority .

1. At all times during the project, signage must clearly direct occupants and the general public in the safe use of the building. Signs must clearly indicate areas of no admittance, and further must clearly define and direct users to building entries, exits, and other important destinations.
   a. All such interim signage must be painted by a professional sign painter on 3/4-inch medium density overlay plywood with letters no less than 3 inches in height.
   b. Coordinate required signage with Architect.

B. Project sign:

1. Provide 8 foot wide by 4 foot high project sign of exterior grade MDO plywood and wood frame construction, painted, with die cut vinyl, self-adhesive letters and self-adhesive corporate logo, to Architect's design and colors.

2. List title of project, names of Awarding Authority, Owner, User Agency, Architect, professional sub-consultants, Contractor, and major subcontractors.
3. Erect on site at location established by Architect.

C. Signage at perimeter of construction site: Provide clear and visible warning signage with appropriate language such as: “Prohibited Access – Hard Hat Only – No Admittance – Authorized Personnel Only”.

1.32 REMOVAL OF TEMPORARY UTILITIES, CONTROLS, AND FACILITIES

A. Remove temporary materials and construction prior to Substantial Completion.

B. Restore existing facilities used during construction to original conditions. Restore permanent facilities used during construction to specified condition.

C. Clean and repair damage caused by installation or use of temporary work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Definition of Terms

B. Basic product requirements.

C. Owner furnished products.

D. Product delivery and handling requirements.

E. Product storage and protection requirements.

1.2 RELATED REQUIREMENTS

A. Section 01 25 13 - PRODUCT SUBSTITUTION PROCEDURES:
1. Product options.
2. Product substitution procedures.

1.3 DEFINITION OF TERMS

A. “Products” is defined as new material, machinery, components, equipment, fixtures, and systems used in the Work. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for re-use.

B. "Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

D. “Fasteners” include all products required for mechanical connections and include, but are not limited to: nails, screws, bolts, expansion bolts, chemical bolts, epoxy anchors, pins, powder-actuated devices, and similar fasteners, anchors, and connections.

E. Definitions in this article are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

1.4 BASIC PRODUCT REQUIREMENTS

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

1. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

B. To the fullest extent possible, provide products of the same kind, from a single source.

C. Provide interchangeable components of the same manufacturer, for similar components.

D. When the Contractor has the option of selecting two or more products, ensure that products selected shall be compatible with products previously installed or approved.

E. Provide all products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

F. Galvanic Corrosion: Install materials in manner which will effectively isolate dissimilar metals which may potential for galvanic corrosion. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.

1. For non-humidity controlled environments, and all building shell components, the following applies:

a. For all fasteners, anchors, and connections, provide types of metal to prevent galvanic corrosion. Small anodic areas (fasteners) relative to the cathodic areas (field) should be avoided. Utilize same metal or more noble metals (cathodic) for fasteners and bolts.

1) Apply corrosion-inhibiting pastes or compounds under heads of screws or bolts inserted into dissimilar metal surfaces whether or not the fasteners had been previously plated.

b. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.

c. Seal faying edges to preclude the entrance of liquids.

G. Fasteners, Anchors, and Connections: Provide all fasteners, anchors, and connections needed to safely, securely, and appropriately secure all Work permanently in place.

1. General: The Contractor is solely responsible for the capacity, suitability, adequacy, and safety of all welded, fastened and anchored connections.

a. Comply with applicable code requirements regarding fastener selection and installation.

b. Provide at least two fasteners for each individual item being fastened.

c. Utilize fastener manufacturer’s published load tables for working loads to assist in determining fastener size and space. Do not use ultimate load capacity in determining fastener selections.

d. Provide a minimum safety factor of 4.

e. Select and utilize fasteners having minimum galvanic corrosion factor (refer to above Paragraph F.)

f. Hydrogen embrittlement prevention:

1) Do not use high-strength and low-alloy fasteners which have been subjected to an acid pre-treatment (because they can become brittle and fail), utilize instead equivalent capacity and size bi-metal, stainless steel or high strength aluminum fasteners, as appropriate to the conditions and materials where being used.
2) Utilize low-hydrogen electrodes for welding high-strength steels to prevent hydrogen embrittlement.

2. To permit the Contractor control over means and methods, some fastener conditions may not be fully defined in the Contract Documents. In particular, individual specification sections that require delegated independent engineering. In such instances the Contractor is fully responsible to determine method of fastening appropriate for each condition. The Contractor shall take into consideration substrate material(s) and product(s) being fastened, live and dead loading, and both atmospheric and visual exposure considerations. Contractor is responsible to determine fastener type, material, finish, size, diameter, length and spacing.
3. Torque structural fasteners as recommended by fastener manufacturer, or as otherwise specified in the Contract Documents.

H. Permanent Labels and Nameplates:
1. Restrictions:
a. Do not provide exposed-to-view labels, nameplates, or trademarks which are not required by code, or regulations.
b. Do not expose manufacturers, suppliers, or installer's name, logo, or trade names on normally visible surfaces.
c. Do not provide labels, nameplates or trademarks when individual specification sections specifically exclude them.
d. All exposed-to-view advertising and name-brand labels shall be fully removed without damage to substrate finish.
2. Location for required labels: Required labels, approval plates and stamps shall be located on a concealed surface, or where required for observation after installation on accessible non-conspicuous surface.
3. Data Plates: Provide permanent data plate on each item of service-connected or power-operated equipment.
a. Data Plate Information: Include manufacturer, model, serial number, date of manufacture, capacity, ratings, power requirements, and all other similar essential data.
b. Locate data plates on easily accessible surface that is inconspicuous in occupied spaces.

1.5 GENERAL ENVIRONMENTAL REQUIREMENTS FOR PRODUCTS

A. General: Prohibit the use of or incorporation into the work of materials which contain toxic, hazardous and harmful materials.
1. Hazardous materials: Defined as pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA), the International Agency for Research on Cancer (IARC) or regulated under OSHA Hazard Communication Standard, 29 CFR 1910.1200.

2. Harmful materials: Defined as materials which contain the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
3. Owner restricted materials: Defined as all products to which the Owner has a reasonable objection because of its content, composition, properties, or characteristics.

B. Vapors, Gases, Fumes, Odors:
1. General: Comply with all state and federal VOC requirements. Where ever possible use non-VOC materials.
a. Limit use of products to the greatest extent possible which have "off-gassing", fumes, flammability, and other harmful characteristics.
1) Prohibit use of products which contain substances that contribute significantly to the production of photochemical smog, tropospheric ozone, or poor indoor-air quality.
b. Limit use of ozone-depleting compounds to the greatest extent possible. An ozone-depleting compound is any compound with an ozone-depletion potential greater than 0.01 (CFC 11 = 1).
c. Use organic and biodegradable cleaners to the greatest extent possible.
2. Do not install, use for installation, and use for cleaning those materials which may produce objectionable (to Owner and public) vapors, gases, fumes, odors, or similar conditions.
3. Do not install or use products which may have possible chemical or biological reactions with other on-site materials.

C. Toxicity of prefabricated wood products (composite wood and agrifiber products): Products shall contain no added urea-formaldehyde resins.
1. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.

D. Adhesives: Provide adhesives approved by the manufacturers of the products being adhered which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free.
1. Comply with Commonwealth of Massachusetts Adhesives and Sealants Regulations 310 CMR 7.18 (30).
a. Architectural Applications — VOC Limit [g/L less water]
1) Outdoor floor covering adhesives — 250
2) Non-membrane Roof Installation and Repair Adhesive — 300
3) Single-ply Roof Membrane Roof Installation and Repair Adhesive — 250
b. Specialt Applications — VOC Limit [g/L less water]
1) Thin-Metal Laminating — 780
2) Waterproof Resorcinol Glue — 170
c. Substrate Specific Applications — VOC Limit [g/L less water]
1) Flexible Vinyl — 250

2)	Rubber	250
3)	Other Substrates	250

d. Adhesive Primers	VOC Limit [g/L less water]
1) Plastic Cement Welding	650
2) Single-ply Roof Membrane	250
3) Traffic Marking Tape	150
4) Other	250

E. Interior Paints: Provide products that comply with specified VOC limits, refer to Section 09 91 00 – PAINTING for additional requirements.

F. Sealants: Provide products that comply with specified VOC limits. Comply with Commonwealth of Massachusetts Adhesives and Sealants Regulations 310 CMR 7.18 (30). Refer to Section 07 92 00 – JOINT SEALANTS, and as specified herein, for additional requirements.

1. Only use sealants and primers that comply with the following limits for VOC content:

a. Sealants	VOC Limit [g/L less water]
1) Architectural	250
2) Single-Ply Roof Membrane	450
3) Non-membrane Roof	300
4) Roadway	250
5) Marine Deck	760
6) Other	420

a. Sealant Primers	VOC Limit [g/L less water]
1) Architectural Non Porous	250
2) Architectural Porous	775
3) Marine Deck	760
4) Other	750

G. Safety Data Sheets (SDS) {*formerly Material Safety Data Sheets, MSDS*): Obtain and maintain on-site record data sheets for each product brought onto the Site.

1. Maintain an organized file of Material Safety Data Sheets at the job-site for quick reference.
2. Furnish SDS for all finishes, paints, coatings, curing compounds, sealers, adhesives, mastics, waterproofing, dampproofing, sealants, cleaning chemicals, carpets, upholstery, fabrics and all similar products.

H. Cleaning and maintenance products:

1. Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products utilized. These procedures are for final Contractor cleaning of the project prior to substantial completion and for provided materials and products as required by the specific specification sections.
   a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1% of the total mass of the cleaning

product is a carcinogen or reproductive toxicant as defined in the lists in this specification section.

b. For purposes of reporting, identification of product VOC contents shall not be limited to those regulated.

2. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra fine particulate matter in indoor air.

I. Establish written Contractor's safety and emergency response procedures for safety precautions, accidents, emergency conditions, and clean-up methods.

1.6 OWNER FURNISHED PRODUCTS

A. Owner Furnished Products: As provided in the General Conditions, the Owner will provide products by others under a separate agreements.

1. Owner's responsibilities regarding Owner furnished products:

a. Arrange for and deliver Owner reviewed shop drawings, product data, and samples to Contractor.

b. Arrange and pay for product delivery to site.

c. On delivery, inspect products jointly with Contractor.

d. Submit claims for transportation damage, and replace damaged, defective, or deficient items.

e. Arrange for manufacturers' warranties, inspections, and service agreements.

2. Contractor's responsibilities regarding Owner furnished products:

a. Review Owner reviewed shop drawings, product data, and samples to Contractor.

b. Handle, store, and provide temporary protection.

c. Repair or replace items damaged after receipt.

d. Provide protection of installed work.

e. When not installed under this Contract, the Contractor shall coordinate Owner installed work with interfacing work of this Contract. The Contractor shall provide temporary protection and final cleaning of Owner installed products, except as directed otherwise.

3. Items noted in Drawings as "Not in Contract" or "N.I.C.", identify work or products which either exist, or are furnished by Owner; such work requires coordination with the Work of this Contract and may even require installation by this Contractor.

B. The Contractor has coordinating responsibility for Testing laboratory services as identified under Section 01 45 00 – QUALITY CONTROL and as specified under individual specification sections.

1.7 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions and as specified in individual specification sections.

B. Schedule deliveries to avoid delays in installation of products, to minimize long-term storage, to prevent overcrowding of construction . Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

D. Provide equipment and personnel to handle and store products by methods to prevent soiling, disfigurement, or damage.

1.8 PRODUCT STORAGE AND PROTECTION REQUIREMENTS

A. Store and protect products in accordance with manufacturer's instructions and as specified in individual specification sections.

1. Provide all necessary equipment and personnel to store products by methods to prevent soiling, disfigurement and damage.
2. Store and protect products with seals and labels intact and legible.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection.

1. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
2. Store sensitive products in weather-tight, climate controlled enclosures.

D. Store loose granular materials on solid flat surfaces in a well-drained area; prevent mixing with foreign matter.

E. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

F. Store heavy materials in locations and in a manner that will not damage or disfigure existing, or new construction.

1.9 MOLD PROTECTION OF PRODUCTS PRIOR TO INSTALLATION

A. General:

1. Keep building materials dry to prevent the growth of mold and bacteria, including, but not limited to: gypsum wallboard, wood, porous insulation, paper, and fabric.
2. Cover materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate between the ground and the materials.
3. Thoroughly dry all water damaged materials within 24 hours from time of moisture damage. Materials that have been damp or wet for more than 24 hours shall not be incorporated into the Work.
    a. Review moisture damaged materials for signs of mold and mildew, including any with moisture stains, from the site and properly dispose of them.

b. Replace water damaged and moldy materials with new, undamaged materials.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 73 00
EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Examination of existing conditions and acceptance of conditions.

B. Project preparation.

C. Execution of the Work.

D. Cleaning.

E. Protecting installed work.

1.2 RELATED REQUIREMENTS

A. Section 01 73 29 - CUTTING AND PATCHING: Administrative and procedure requirements for cutting and patching.

B. Section 02 41 19 - SELECTIVE DEMOLITION: Demolition of selected portions of the building for new construction.

1.3 EXAMINATION OF AND ACCEPTANCE OF EXISTING CONDITIONS

A. The Contractor, its subcontractors shall inform themselves of existing conditions before submitting his bid, and shall be fully responsible for carrying out all work required to completely and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed, except those conditions described in the General Conditions.

B. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing damage to structure surfaces, equipment, or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Architect prior to starting work.

1.4 PROTECTION OF ADJACENT ELEMENTS

A. Protect installed Work and provide special protection where called for in individual specification Sections.

B. Protect existing facilities and adjacent properties from damage from construction and demolition operations. Provide temporary and removable protection for installed products and occupied areas.

C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials. Coordinate with requirements under individual specification sections.

D. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

E. Protect all existing landscape areas [not indicated to be cleared]. Do not deface, injure, or destroy trees or other plant life. Do not remove or cut trees or other plant life, without authorization from the Owner. Do not attach any anchorages, ropes, cables or guys to any trees scheduled to remain.

1. Prohibit traffic from landscaped areas.

F. Protect non-owned vehicles, stored materials, site and structures from damage.

G. Refer to respective Sections for other particular protection requirements.

1.5 PROTECTION OF INTERIOR CONCRETE SLABS

A. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from the concrete surface. Prevention is therefore essential for areas scheduled to receive concrete stains and sealers, specified under Division 3.

1. All hydraulic powered equipment must be diapered to avoid staining of in-place concrete.
2. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
3. No pipe cutting machine will be used on the inside floor slabs.
4. Steel will not be placed on interior slabs to avoid rust staining.

1.6 EXECUTION REQUIREMENTS FOR INSTALLATION, APPLICATION AND ERECTION

A. Inspection of conditions: The Installer of each component shall inspect the substrate and conditions under which Work is performed. Do not proceed until unsatisfactory conditions have been corrected.

B. Resource Efficiency of Materials:

1. Use construction practices such as material reduction and dimensional planning that maximize efficient use of resources and materials.
   a. Recheck measurements and dimensions, before starting installation.
2. Provide materials that utilize recycled content to maximum degree possible without being detrimental to product performance or indoor air quality.
3. Where possible and feasible, provide for non-destructive removal and re-use of materials after their service life in this building.

C. Manufacturer's instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.

D. Inspect material immediately upon delivery and again prior to installation Reject damaged and defective items.

E. Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.

F. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.

G. Limiting exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure.

1. Such exposures include, but are not limited to the following:

a. Excessive static or dynamic loading.

b. Excessive internal or external pressures.

c. Excessive weathering.

d. Excessively high or low temperatures or humidity.

e. Air contamination or pollution.

f. Water or ice.

g. Chemicals or solvents.

h. Heavy traffic, soiling, staining and corrosion.

i. Rodent and insect infestation.

j. Unusual wear or other misuse.

k. Contact between incompatible materials.

l. Theft or vandalism.

H. Provide attachment and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.

I. Visual effects: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect or to match existing joints, where new construction is to be integrated with existing construction to remain. Refer questionable choices to the Architect for decision.

J. Mounting heights: Where mounting heights are not indicated, review heights with Architect, prior to commencement of Work.

K. Cleaning and protection: During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

L. Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

1.7 PROGRESS CLEANING AND DISPOSAL OF WASTE MATERIALS

A. General: Maintain site in a clean and orderly condition. Maintain work and surrounding areas free of waste materials, debris, and rubbish; remove from site on a on-going basis through-out the term of construction.

1. Adjacent Areas: Keep adjacent areas, neighboring properties, public ways, and all nearby areas clean and free of construction debris and dirt including wind blown debris.

2. Subcontractors are responsible for clean-up and removal of their own rubbish, debris, shipping materials and waste materials through-out the term of their work.

3. General Contractor shall furnish dumpsters and provide general site cleaning services, except as explicitly specified otherwise under individual Sections of the Specifications.

B. Control accumulation of waste materials and rubbish; periodically dispose of off-site. The General Contractor shall bear all costs, including fees resulting from such disposal.

C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on site.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.
4. Comply with requirements of authorities having jurisdiction including, without limitation, requirements related to fire prevention, rodents, pests, vermin, waste storage, waste trucking, waste removal, waste disposal, street cleaning, truck tire cleaning, and other requirements.

D. Clean interior areas prior to start of finish work and maintain areas free of dust and other contaminants during finishing operations.

E. Maintain project in accordance with all local, Commonwealth of Massachusetts, and Federal Regulatory Requirements.

F. Store volatile wastes in covered metal containers, and remove from premises daily.

G. Prevent accumulation of wastes which create hazardous conditions.

H. Provide adequate ventilation during use of volatile or noxious substances.

1. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
2. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

I. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

J. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.

K. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.

L. Provide on-site containers (dumpsters) for collection and containment of, waste materials, debris and rubbish.

M. General Contractor shall provide on-site containers (dumpsters) for collection and containment of, waste materials, debris and rubbish.

1. Trash Barrels and Containers: Use containers with tightly fitting lids. Use only steel containers and lids when there is any evidence of rodent or pest activity.

N. Remove waste materials, debris, and rubbish from site at least once weekly, and dispose off-site. Comply with NFPA 241 for removal of combustible waste.

O. Handle material in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

P. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.

1.8 SITE MAINTENANCE AND CLEANING

A. Maintain traffic and parking areas in a sound condition, free of excavated material, construction equipment, products, mud, snow, and ice.

1. Provide means of removing mud from vehicle wheels before entering public streets and Owner's parking areas and access.

B. Maintain existing and permanent paved areas used for construction.

1. If any street or private way shall be rendered unsafe by the Contractors operations, the Contractor shall make such repairs or provide such temporary ways or guards as shall be acceptable to the governing authority.
2. Promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

1.9 FINAL CLEANING

A. Scheduling: Perform final cleaning immediately prior to the Architect's review of the project for issue of the Certificate of Substantial Completion.

1. Re-clean all surfaces, materials and products of the Work immediately prior to Owner's occupancy of the Project.
    a. Should the Owner occupy any portion of the Work prior to completion of the Contract, the responsibilities for interim and final cleaning shall be in accordance with the General Conditions.

B. Qualifications: Commercial cleaning firm, with a minimum of 3 years experience specializing in the post-construction cleaning of facilities.

C. Protection: During the operation of final cleaning, protect surrounding materials and finishes against undue damage by the exercise of reasonable care and precautions. Clean, or repair all products and surfaces which are soiled or otherwise damaged by Work of this Section, to match original profiles and finishes. Materials and finishes which cannot be cleaned, or repaired shall be removed and replaced with new work in conformance with the Contract Documents.

D. General cleaning requirements:

1. Remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.
2. Remove all advertising matter and temporary instructional material from exposed surfaces throughout.
3. Use only methods and cleaning materials which are compatible with and as recommended by the manufacturer of the material being cleaned.

4. Finished surfaces: Remove paint smears, spots, marks, dirt, mud and dust and similar disfigurement created by the Work, from all exposed to view existing or new interior and exterior finished surfaces.
5. Polished surfaces: Apply the polish recommended by the manufacturer of the material being polished.
6. Cleaning Materials: Only non-hazardous cleaning materials shall be used in the final cleanup.

E. Exterior building surfaces:
1. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
2. Remove all traces of splashed materials from adjacent surfaces.
3. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
4. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the Owner.
5. Concrete: Clean exposed concrete free of all foreign matter. If, in the opinion of the Architect, further cleaning of specific areas is required, they shall be scrubbed with water or other cleaning agents. Acid cleaners shall not be used, except as may otherwise specifically permitted in the trade sections.

F. Bright metal: Clean metal surfaces, hardware, fixtures, appliances, equipment, and similar items free of all foreign matter. As required, lightly scrub specific stains with clean water, mild soap, and soft rags, thoroughly rinsed and wiped with clean, soft white rags. Do not use abrasive cleaners.

G. Glass: Replace broken, chipped and defective glass. Remove from glass: stains, spots, marks, paint smears; dirt and foreign materials. Clean and polish both surfaces of all interior and exterior glass. Clean and polish mirrors.

H. Carpet: Vacuum clean carpet and remove all spots and stains.

I. Hardware: Clean and polish finished hardware, remove marks, stains, scratches and blemishes.

J. Tile: Clean and polish floor and wall tile, remove grout film and excess grout.

K. Woodwork: Dust and clean architectural millwork, and finish woodwork items, remove all stains, spots, and foreign matter using methods and cleaning agents which will not harm the various finishes.

L. Site: Sweep exterior paved surfaces broom clean; rake clean unpaved surfaces.

M. Equipment: Thoroughly clean all items of mechanical and electrical equipment; remove excess oils and grease from exposed surfaces.
1. Clean permanent filters and replace disposable filters if ventilating units were operated during construction.
2. Clean ducts, blowers and coils, if units were operated without filters during construction.

1.10 PROTECTING INSTALLED WORK

A. Protect all built, and in-place Work. In addition to requirements specified elsewhere, the Contractor shall protect all installed work from subsequent damage or deterioration from construction activities, and atmospheric damage until Owner's Substantial Completion and occupancy precludes the need for protection activities. No attempt is made in this Section to list all elements requiring protection or to describe how each element will be protected. It is the responsibility of the Contractor to determine for itself the scope and nature of protection required.

1. Protection of some products/building elements may be required to remain in place for a large portion duration of the project. As such, materials should be installed to provide adequate protection throughout the full extent of construction activities. Repair or reinstall protection throughout the duration of construction as required.

B. Finish Products: Some finishes may need to be physically isolated from construction operations by means of protective barriers and coverings.

1. General: After installation, provide coverings to protect products from damage due to traffic and construction operations. Replace protective coverings which may become wet, torn, or ineffective. Remove coverings when no longer needed.
2. Doors, door frames and hardware: Protect from damage due to traffic and construction operations.
3. Floor and Finished Surfaces Protection: Protect against construction traffic, rolling loads, static loads, damage from material movement and storage, or similar causes of damage.
4. Walls: Protect from impact, dents, marks, water damage, and similar damage.
5. Glass: Protect from damage including etching and staining. Keep glass clean.
6. Protect products sensitive to water damage from becoming wet.
7. Protect products sensitive to ultra-violet exposure and atmospheric exposure by limiting exposure to within limits recommended by respective product manufacturer.
8. Protect products from biological growth, molds and mildew.
9. Protect products from rodents and other animals, birds and insect damage.

C. General Protection from chemicals:

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Do not clean surfaces during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
3. Neutralize and collect alkaline and acid wastes and dispose of off-site.

4. Dispose of runoff from chemical operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Examination of existing conditions and acceptance of conditions.

B. Administrative and procedural requirements for cutting and patching, including attendant excavation and backfill as required to complete the Work. General Contractor is responsible for all cutting and patching work, including but not limited to:

1. Perform all cutting, altering, patching, and fitting of the Work (new and existing) as necessary for the Work and the existing improvements. Fully integrate with existing and new construction, all cutting, alterations and patching, to present the visual appearance of an entire, completed, and unified project.
    a. Make all products and their components of the work fit together properly.
2. Provide openings in elements of the Work, and the patching of same, for penetrations required by all trades, including but not limited to mechanical, plumbing, fire protection and electrical work.
    a. Individual trades are responsible for designated types of coring and drilling penetrations for piping, conduit, ducts and other penetrations as defined elsewhere in this Section.
3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
4. Remove and replace work not conforming to requirements of the Contract Documents or as otherwise determined to be defective.
5. Patch and match all surfaces and products disturbed or damaged by the Work.
6. Remove samples of installed work as specified for testing.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Demolition of selected portions of the building for new construction.

B. Individual product specification Sections:

1. Cutting and patching of not-exposed-to-view materials incidental to work of the Section.
2. Core drilling (up to 8 inches in diameter) of interior building components, incidental to work of individual Sections.
3. Cutting and Patching work of particular exposed-to-view finish work, performed by trades as specified herein.

1.3 SUBMITTALS

A. Submit written proposals to perform cutting and patching under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES. Describe cutting and patching procedures in advance of the time cutting and patching.

1. Submit a written request when cutting work affects the following:
   a. Structural integrity of any element in the project.
   b. Integrity of weather-exposed or moisture-resistant elements.
   c.
   d. Interruption or disturbance of utilities service. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
   e. Efficiency, maintenance, or safety of operational elements and systems.
   f. Aesthetic and visual qualities of exposed-to-view elements.
   g.
   h. Work of Owner or work performed under separate Contract.
   i. Owners on-going operations or schedule.
2. Include in the request:
   a. Identification of project.
   b. Location and description of affected work.
   c. Necessity for cutting or alteration.
   d. Alternatives to cutting and patching.
   e. Scope of proposed cutting, patching, alteration or excavation.
   f. List of tradespeople who will execute the work.
   g. Description of products to be used.
   h. Extent of refinishing and cleaning to be performed.
   i. Effect on work by Owner or work performed under separate Contract, and written permission of affected party.
   j. Date and time cutting and patching is scheduled to be executed.
   k. Cost proposal, when applicable.
   l. Written permission of separate contractor(s) whose work will be affected.
3. Review by the Architect does not waive the Architect's right to later require complete removal and replacement of Work found to be unsatisfactory.
4. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit a request for substitution in accordance with Section 01 25 13 - PRODUCT SUBSTITUTION PROCEDURES.

1.4 QUALITY ASSURANCE

A. Only tradespersons skilled and experienced in cutting and patching shall perform such Work.

B. In performing Work which requires cutting, fixing, or patching, Contractor and subcontractors shall utilize best efforts to protect and preserve the visual appearance and aesthetics of the Project to the reasonable satisfaction of both Owner and Architect.

1.5 PERFORMANCE REQUIREMENTS

A. General performance requirements: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

B. Structural elements: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Always obtain written approval of the cutting and patching proposal before cutting and patching structural elements.

1. Do not drill through structural beams, slabs or columns. Core drilling through concrete block walls and stair platforms must be approved by the Architect.
2. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

C. Exposed elements:

1. Employ original installer of new construction to perform cutting and patching for weather exposed and moisture resistant elements, and sight exposed surfaces.
2. Employ an appropriate tradesperson to perform cutting and patching of existing weather-exposed and moisture-resistant construction, and exposed-to-view surfaces.

D. Penetrating elements: Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to applicable codes and regulations, and compatible to surrounding construction.

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

1. General: Restore work with new products in accordance with the requirements of the Contract Documents.
2. Engage a firm recognized and experienced in firestopping for patching of existing firestopping, smoke seals and firesafing in compliance with applicable codes and as additionally required by authorities having jurisdiction. Comply with requirements of Section 07 84 00 - FIRESTOPPING.

F. Operational and safety limitations: Do not cut and patch operating elements or safety components in a manner that would reduce their capacity to perform as intended, or would increase maintenance, or decrease operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
    a. Primary operational systems and equipment.
    b. Fire resistance rated barriers and smoke barriers.
    c. Fire protection systems.
    d. Noise and vibration control elements and systems.

e. Control systems.
f. Communication systems.
g. Electrical wiring systems.

1.6 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void existing applicable warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Patching Materials: Use patching materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible. Use materials whose installed performance will equal or surpass that of the existing materials. Comply with specifications and standards for each specific product involved.
1. All materials used shall be approved by the Architect for consistency with the existing surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Pre-bid examination: General Contractor and subcontractors shall inform themselves of existing conditions before submitting bids, and are fully responsible for carrying out all work required to completely and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions which are inconsistent with those assumed, except for fully concealed conditions.

B. Examination - General: Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, inspect conditions affecting performance of work. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

3.2 PREPARATION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing damage to structure surfaces, equipment, or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Architect prior to starting work.

B. Protection:
1. Provide temporary supports to ensure structural integrity of the Work.
2. Protect existing construction during cutting and patching to prevent damage.
3. Provide protection from adverse weather conditions.

4. Provide protection from elements for areas which may be exposed by uncovering work.

3.3 GENERAL CUTTING AND PATCHING

A. Performance: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive repairs, patching, and finishing.

B. Execute cutting, fitting, and patching, including excavation and fill, to complete the work.

1. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not permitted without prior approval, from Architect
2. Fit products together, to integrate with other work.
3. Uncover work to install ill-timed work.
4. Remove and replace defective or non-conforming work.
5. Remove samples of installed work for testing, when requested.
6. Provide openings in the work for penetration of mechanical and electrical work.

C. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
4. Comply with requirements of applicable Division 31 - EARTHWORK Sections where cutting and patching requires excavating and backfilling.
5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

3.4 FINISHING OF PATCHED AREAS:

A. General: Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break; for assemblies, refinish entire unit.

1. Patching: Patch with durable seams that are as invisible as possible, showing no evidence of patching and refinishing. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction Comply with specified tolerances.

a. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to

applicable codes and regulations, and compatible to surrounding construction.

b. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Provide vapor and air seal when penetrating existing vapor and air seals.

c. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat. Extend re-painting to entire surface plane up to where plane changes direction.

3. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.5 CORING AND DRILLING

A. Coring and Drilling of holes incidental to work of individual sections shall be performed by the trade requiring the penetration, except as follows:

1. Coring and Drilling of holes greater than 8 inches in diameter in concrete decks and slabs.

2. Coring and drilling requiring patching of existing surfaces shall be performed by the General Contractor with patching performed by the appropriate trade or subcontractor.

3. The General Contractor is responsible for performing core drilling in wall and roof surfaces leading to, or from, the outside of the Building.

4. The General Contractor is responsible for coordination of all coring and drilling and resultant patches necessary for the completion of this Contract and for the quality and appearance of all patch Work in exposed-to-view finished materials.

3.6 CLEANING

A. Cleaning patched areas: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and similar items.

End of Section

Section 01 75 00

STARTING AND ADJUSTING

PART 1 - GENERAL

1.1 SUMMARY

A. Testing, adjusting, and balancing.

B. Operation, maintenance, and service.

1.2 TESTING, ADJUSTING, AND BALANCING

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

1. Contractor is advised that testing and balancing agents may be required during commissioning activities or as may be additionally directed by Architect/Engineer.

B. Contractor will employ services of an independent firm to perform testing, adjusting and balancing. Submit to Owner at least three qualified testing firms for Owner's review and acceptance.

C. Subcontractors under Division 21 – Fire Suppression, Division 22 – Plumbing and Division 23 – Heating, Ventilating and Air Conditioning are all responsible for primary system testing and balancing as specified under their respective Sections. General Contractor will be required to coordinate these services.

D. The independent firm will perform services specified under Division 21 - Fire Suppression, Division 22 - Plumbing, and Division 23 - Heating, Ventilating, and Air Conditioning.

E. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

1.3 AIR QUALITY TESTING

A. Air quality testing: The Owner reserves the right to employ the services of an independent testing agency to perform air quality testing. Testing will occur prior to Contractor's request for inspection for Substantial Completion. The intent of testing is to certify that the building is "Clear" of airborne contaminants.

1.4 OPERATION, MAINTENANCE, AND SERVICE

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect/Engineer and Owner 7 days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report in accordance with Section 01 77 00 - CLOSEOUT PROCEDURES that equipment or system has been properly installed and is functioning correctly.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Closeout procedures.

B. Conferences occurring after Substantial Completion.

1.2 RELATED REQUIREMENTS

A. Section 01 78 00 - CLOSEOUT SUBMITTALS: Requirements for project record documents.

B. Section 01 78 36 - WARRANTIES: Administrative and procedural requirements for warranties, guarantees and bonds.

1.3 CLOSEOUT PROCEDURES - SUBSTANTIAL COMPLETION

A. Prior to requesting inspection for certification of Substantial Completion, complete the following:

1. On Application for Payment, show 100 percent completion for portions of work claimed as substantially complete.
    a. Submit list of incomplete items (Punch List), value of incomplete work, and reasons work is not complete.
2. Obtain evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:
    a. Certificate of Final Inspections, “signed off” by authorities having jurisdiction.
    b. Certificate of Occupancy.
3. Submission of product and installation warranties, workmanship bonds, maintenance agreements, installer certifications and similar documents specified in individual sections.
4. Submission of test/adjust/balance reports.
5. Change-over permanent locks and transmit keys to the Owner.
6. Remove temporary facilities and services that are no longer required.
7. Remove field samples and similar items.
8. Complete final cleaning, including repair and restoration, or replacement of damaged Work.
9. Remove surplus materials, rubbish and similar elements.
10. Application for reduction of retainage.
11. Consent of Surety.
12. Advise the Owner of the change-over in security provisions.
13. Notification of shifting insurance coverage.
14. Final progress photographs.

B. Within 2 weeks after receipt of the notice of Substantial Completion from the Contractor, the Architect will inspect to determine status of completion.
   1. Should the Architect determine that the Work is not substantially complete:
      a. The Architect will notify the Contractor in writing, stating the reasons therefore.
      b. The Contractor shall remedy the deficiencies and send a second written notice of Substantial Completion to the Architect, requesting re-inspection.

C. When the Architect concurs that the Work is substantially complete:
   1. The Architect will prepare AIA Document G 704 - CERTIFICATE OF SUBSTANTIAL COMPLETION, in accordance with the requirements of the GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS, accompanied by the Contractor's list of items to be completed or corrected, as verified by the Architect.
   2. The Architect will submit the Certificate to the Owner, and to the Contractor, for their written acceptance of the responsibilities assigned to them in the Certificate.

1.4 CLOSEOUT PROCEDURES - FINAL ACCEPTANCE

A. Prior to requesting inspection for certification of Final Acceptance and final payment, perform the following:
   1. Completion of incomplete Work. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
   2. Prove that all taxes, fees and similar legal obligations have been paid.
   3. Submit final payment requests with release of all liens, and supporting documentation.
   4. Provide written assurances that all unsettled claims are in the process of and will be resolved.
   5. Submit updated final statement, including accounting for final additional changes to the Contract Sum. Show additional Contract Sum, additions and deductions, previous Change Orders, total adjusted Contract Sum, previous payments and Contract Sum due.
   6. Submit consent of surety to Final Payment.
   7. Submit evidence of continuing insurance coverage complying with insurance requirements.
   8. Remove remaining temporary facilities and services.
   9. Deliver to Owner and obtain receipts for:
      a. Operation and Maintenance Manuals for items so listed in individual Sections of the Specifications, and for other items when so directed by the Architect.
      b. Project Record Documents (as-builts), including CAD format drawings.
      c. Warranties and bonds specified in individual Sections of the Specifications.
      d. Keys and keying schedule.
      e. Spare parts and materials extra stock.

f. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights weekends, and holidays.

10. Submit Certification stating Work has been inspected for compliance with the Contract Documents.

11. Submit Certification stating equipment and systems have been tested in presence of Owner's representative and are fully operational.

12. Submit Certification stating that Work is 100 percent complete and ready for final inspection.

B. Within 2 weeks after receipt of the request for Final Acceptance from the Contractor, the Architect will inspect to determine status of completion.

1. Should the Architect determine that the Work is incomplete or defective:

a. The Architect will notify the Contractor in writing, stating the reasons listing the incomplete or defective work.

b. The Contractor shall take immediate steps to remedy the deficiencies and send a second written notice of request for Final Acceptance to the Architect.

c. Costs relative to the Architects re-inspection due to failure of Work to comply with claims made by the Contractor, will be compensated by the Owner, who will deduct the amount of such compensation from the Final Payment due to the Contractor.

C. After the Architect finds the Work acceptable, the Architect will review the Final Close-out submittals.

D. Application for Final Payment: Submit Application for Final Payment in accordance with procedures and requirements of the General Conditions and Supplementary Conditions.

1. The Architect will prepare a Final Change Order, reflecting approved adjustments to the Contract Sum not previously made by other Change Orders.

1.5 CONFERENCES AFTER SUBSTANTIAL COMPLETION

A. The Owner reserves the right to call for conferences commencing with the date of Substantial Completion and continuing for one year thereafter, for purposes of inspecting the Work and to plan correction of any deficiencies or failures discovered during this period.

1. Attendance is required by Contractor's Project Manager, Architect, and each applicator, installer, and supplier as the Owner may direct or the Contractor may wish to have present. All representatives attending such meetings shall be the same persons, or shall have the same powers and authority, as those attending progress meetings occurring prior to the Date of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 78 00
CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 SUMMARY

A. Project record documents.

B. Record Project Manual.

C. Project Record Drawings (As built drawings).

D. Operation and maintenance data, preventive maintenance instructions.

E. Maintenance contracts.

F. Spare parts and maintenance materials.

1.2 RELATED REQUIREMENTS

A. Section 01 78 36 – WARRANTIES: Administrative and procedural requirements for warranties, guarantees and bonds.

1.3 PROJECT RECORD DOCUMENTS

A. General: Record documents shall reflect actual “as-built” condition and the products installed. Include all changes and deviations from original Contract Documents, and incorporate information from:

1. Original Contract Documents.
2. Addenda.
3. Change orders.
4. Construction change directives.
5. Field directives, and instructions from the Owner, Architect or regulatory authorities having jurisdiction.

B. Project Record Documents include, but are not limited to:

1. Record Project Manual.
2. Project record drawings (as built drawings).
3. Final Site Survey.
4. Operation and maintenance data, preventive maintenance instructions.
5. Materials and finishes manual.
6. Product warranties and bonds.
7. Maintenance contracts.
8. Record of all test reports and inspections.
9. Wall charts and data such as valve diagrams, electrical panel board directories, and similar information.

C. Labeling and identification of Record Documents

1. Clearly label all record documents with name of Project and the words “Record Document”.
2. Date progressive entries of information as appropriate.
3. Date Record Documents with the final submission date.

1.4 SUBMITTAL QUANTITY REQUIREMENTS

A. Furnish Architect with the following quantities of each submittal:
   1. Record Project Manual:
      a. 2 electronic (PDF) copies.
   2. Project record drawings (as-builts):
      a. 1 “blackline print” set of Drawings.
      b. 2 electronic (PDF) copies.
   3. Operation and maintenance data, preventive maintenance instructions:
      a. 2 electronic (PDF) copies.
      b. 1 bound hard copies (paper).
   4. Product warranties and bonds:
      a. 2 electronic (PDF) copies.
      b. 1 bound hard copies (paper).
   5. Maintenance contracts:
      a. 2 electronic (PDF) copies.
      b. 1 bound hard copies (paper).
   6. Record of all test reports and inspections:
      a. 2 electronic (PDF) copies.
      b. 1 bound hard copies (paper).

1.5 RECORD PROJECT MANUAL

A. The General Contractor is responsible to maintain a Project Manual reflecting revisions and changes to the Original Issue Project Manual.
   1. Clearly label the Record Project Manual as “Record Document Specifications, in a three ring binder.
   2. Do not use Record Project Manual for construction purposes; protect from loss in a secure location.
   3. Record all variations and deviations to the Contract Documents, including changes made by Addenda, Bulletin, Change Order, Change Directive and other modifications to the Contract.
      a. Cut and paste revisions into their applicable specification section.
      b. Identify all changes with cross-reference to appropriate Addendum Number, Modification Number, Change Order Number
   4. In each individual Specification Section, under “*Part 2 – Products*”, identify all manufacturers and products which are actually used as part of the Work.
   5. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

B. Record Project Manual: Provide prior to request for Final Acceptance.

1. Manuals shall be in 8-1/2 by 11 inch pages and bound in 3-ring (D-shape) binders with durable plastic covers. Internally subdivide the binder contents by Division with permanent page dividers.
2. Label front cover and spine of each binder with laser printed titles, dates, and project information.
3. All information from “in-progress” manual shall be clearly and completely transferred.
4. Pages shall be undamaged.

1.6 PROJECT RECORD DRAWINGS

A. The General Contractor is responsible to maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and shop drawings for preparing the record drawings.

1. Where shop drawings are used, record a cross-reference at the corresponding location on the Contract Documents.

B. Do not use Record Documents for construction purposes; protect from loss in a secure location. Mark-up these drawings to show clearly and completely the actual installation reflecting all changes made in the Work during construction.

1. Mark whichever drawing is most capable of showing conditions accurately.
2. Record all variations and deviations to the Contract Documents, including changes made to schedules, details, and all architectural changes to structure, exterior enclosure, interior partitions and ceilings.
3. Record new information that is important to the Owner, but was not shown on the Contract Drawings or shop drawings.
4. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

C. The fire protection, plumbing, mechanical and electrical trades shall be responsible to the Contractor to keep the record documents for their portions of the work marked currently to record all changes in the mechanical and electrical work made during construction.

D. The Architect may periodically inspect these record drawings, and their proper maintenance may be a condition precedent to approval of applications for periodic payments.

E. Deliver all Project Record Documents, shop drawings, product data, and samples to the Architect for the Owner’s use, upon completion of the Work and prior to request for Final Acceptance of the Work.

F. In addition at the completion of the work, the General Contractor is responsible for the preparation and submittal of neat, clean well drafted, and complete record drawings, at no additional costs to the Owner. These reproducible Project Record Documents shall be transmitted to the Architect as a condition precedent to final payment, and include documents prepared by the fire protection, plumbing, mechanical and electrical trades.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Prepare data in the form of an instructional manual. Furnish manuals which contain all of the following groups of equipment:

1. Wheelchair lift.
2. Fire protection system.
3. Utilities and plumbing systems.
4. Heating, ventilation and air conditioning system.
5. Electrical systems.

B. Furnish bound and properly identified Manuals prior to request for Final Acceptance.

1. Manuals shall be in 8-1/2 by 11 inch pages and bound in three “D ring” capacity binders with durable plastic covers. Internally subdivide the binder contents with permanent page dividers.
   a. Arrange content by section number and systems, process flow, under section numbers and sequence as listed in the Table of Contents of this Project Manual.
   b. Drawings: Preferable 11 inches in height bound in with text with reinforced punched binder tab. Fold drawings larger than 8-1/2 by 11 inches to size of text pages. Provide a drawing pocket for Drawings larger than 11 by 17 inches; locate pocket inside rear cover or bound in with text.
2. Each manual shall include the same following minimum information:
   a. Table of Contents.
   b. Directory of Contractor, subcontractors, and major equipment supplies listing addresses, phone numbers and appropriate emergency phone numbers.
      1) Include local sources of supplies and replacement parts.
   c. Directory of Architect and consultants listing addresses and phone numbers.
   d. Operation and maintenance instructions. Provide schematic diagrams of control systems, circuit directories for each electric panel and charts showing the tagging of all valves.
   e. Air and water test and balancing reports.
   f. Maintenance and cleaning instructions for finishes.
   g. Product and manufacturer's Certificates.
   h. Photocopies of all extended warranties and bonds.
3. Submit one copy of completed volume in final form 21 days prior to Final Inspection. This copy will be returned after final inspection with Architect's comments; Revise and submit all volumes to Owner.

C. For each item of equipment, include description of equipment, component parts and accessories. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts. Additionally provide the following for each item:

1. Panel board circuit directories: Provide electrical service characteristics, controls and communications.
2. Include color coded wiring diagrams as installed.
3. Operating procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
4. Maintenance requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and re-assembly instructions; alignment, adjusting, balancing, and checking instructions.
    a. Maintenance drawings: Supplement product data to illustrate relation of component parts of equipment and systems, to show control and flow diagrams. Do not use project Record Documents as maintenance drawings.
5. Provide servicing and lubrication schedule, and list of lubricants required.
6. Include manufacturer's printed operation and maintenance instructions.
7. Include sequence of operation by controls manufacturer.
8. Provide control diagrams by controls manufacturer as installed.
9. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
10. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
11. Provide original manufacturer's parts (OEM) list, illustrations assembly drawings, and diagrams required for maintenance.
    a. Provide list of original manufacturer's spare parts (OEM), current prices, and recommended quantities to be maintained in storage.
    b. Include local source of supplies and replacement parts, and any other data pertinent for procurement procedures.
12. Additional requirements: As specified in individual specification Sections.

D. Standards:

1. Measurements: Provide all measurements in U.S. standard units such as feet and inches, pounds, and cfm; provide additional measurements in the "International System of Units" (SI).
2. Abbreviations: Provide complete nomenclature of all parts of all equipment; include part numbers of all replaceable parts.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver materials to on-site location designated by the Owner; obtain receipt.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

Section 01 78 36
WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

A. General: This Section specifies general administrative and procedural requirements for warranties, guarantees and bonds required by the Contract Documents, including manufacturers standard warranties on products and special warranties. Warranty, Guarantee and Bond requirements of this Section are applicable to all trades, all Divisions of the Specifications, and applies to all Work performed under this Contract.

1. Warranties required under the Contract are in addition to and not in lieu of any remedy or warranty to which the Owner is entitled under law.
2. Warranties required under the Contract are not a waiver of Owner’s legal rights.

B. Contractor's Procurement Obligations: Do not purchase, subcontract for, or allow others to purchase or sub-subcontract for material or units of work for project where a special project warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.

1.2 RELATED REQUIREMENTS

A. General provisions of the Contract, including General and Supplementary Conditions apply to this Section.

B. Section 01 78 00 – CLOSEOUT SUBMITTALS: Administrative and procedural requirements for submitting warranties.

C. Individual Specification Sections contain additional specific requirements for warranties and bonds.

D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.3 DISCLAIMERS AND LIMITATIONS

A. General Limitations: It is recognized that specific warranties are intended primarily to protect Owner against failure of the work to perform as required, and against deficient, defective, and faulty materials and workmanship, regardless of sources.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor .

1. Pro-rating of warranties: Except where explicitly specified otherwise, each warranty issued shall cover the full cost of warranty-related repairs throughout the full term of the warranty.

1.4 DEFINITIONS

A. Categories of Specific Warranties: Warranties on the work are in several categories, including those of General Conditions, and including (but not necessarily limited to) the following specific categories related to individual units of work specified in sections of Divisions 2 through 50 of these Specifications:

1. General Contractor's Comprehensive Warranty: The General Contractor shall provide a comprehensive one-year warranty covering all labor, materials, equipment and work related to the entire Contract, and shall promptly repair or replace defective and deficient work.
2. Special Project Warranty (Guaranty): A warranty specifically written and signed by contractor for a defined portion of the work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor. Special Warranties extend time limits provided by standard warranties or to provide greater rights for the Owner.
3. Specified Product Warranty: A warranty which is required by Contract Documents, to be provided for a manufactured product incorporated into the work; regardless of whether manufacturer has published a similar warranty without regard for specific incorporation of product into the work, or has written and executed a special project warranty as a direct result of Contract Document requirements.
    a. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
4. Coincidental Product Warranty: A warranty not specifically required by Contract Documents (other than as specified in this Section), but which is available on a product incorporated into the work, by virtue of the fact that manufacturer or product has published warranty in connection with purchases and use of product without regard for specific applications except as otherwise limited by terms of warranty.

1.5 WARRANTY REQUIREMENTS

A. Warranty Period Commencement Date: Effective stating date for Warranty periods is the Date of Substantial Completion for Project.

1. Equipment and systems start-up, operation and use, occurring prior to Project Substantial Completion, will not be considered commencement of warranty period under any terms of this Contract.
2. Exceptions: Starting dates for warranties prior to the Project Date of Substantial Completion are not permitted, except for the two conditions below:
    a. Warranty requirements specified in individual specification sections explicitly specify that a required warranty or guarantee shall be effective on date of shipment, date of manufacturer, or date of installation.
    b. Warranties for Incomplete work: The effective date for warranty of work which has not been completed prior to the Date of Substantial Completion, shall be effective on the date of Final Completion and Owner's acceptance of the Work.

B. Related Damages and Losses: In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which

has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

C. Reinstatement of Warranty Period: Except as otherwise indicated, when work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement starting on date of acceptance of replaced or restored work.

1. Reinstated warranty value: The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
2. Reinstated warranty period: A period of time ending upon date original warranty would have expired, if there had been no failure, but not less than half of original warranty period of time.

D. Warranties are Irrevocable: Warranties issued to the Owner are irrevocable.

1. Non-Payment: If warrantor refuses to issue warranty, or attempts to revoke warranty due to lack of payment by any party other than the Owner, the Contractor shall resolve the payment conflict, and cause the warranty to be issued or reinstated.
2. Incomplete or incorrect Installation: If warrantor refuses to issue warranty, or attempts to revoke warranty due to improper installation or other deficiency, the Contractor shall correct the deficiency and cause the warranty to be issued or reinstated.

E. Transferable Warranties: All warranties shall permit Owner to transfer or assign warranties to future owners or other assignors at no additional cost to the Owner for the full warranty period.

F. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful service life.

1. Work repairs or replaced under warranty shall be warranted for the full duration of the original warranty.

G. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

H. Rejection of Warranties:

1. Owner reserves the right, at time of substantial completion or thereafter, to reject coincidental product warranties submitted by Contractor, which in opinion of Owner tend to detract from or confuse interpretation of requirements of Contract Documents.
2. Owner reserves the right to reject warranties and to limit selection to products with warranties which are not in conflict with the requirements of the Contract Documents.

I. Owner's right to refuse Work: The Owner reserves the right to refuse to accept work for the project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.6 COMPREHENSIVE WARRANTY

A. Comprehensive Warranty: In addition to all other warranties, the General Contractor shall issue a Comprehensive Total Contract Warranty which shall include all work of this Contract, without limitation including consequential damages.

1. Duration of Comprehensive Warranty: One full year from date of Substantial Completion.
2. Consequential damages: Warranty includes consequential damages which relate to a warranty claim, these include without limitation:
   a. All costs required to uncover and repair all work related to warranty claim.
   b. All costs relating to repair and restoration of damaged property, resulting from warranty claim.
   c. All costs resulting from failure to conform to the Contract Documents, and for required rebuilding, construction or reconstruction to correct work.
   d. Perform to the satisfaction of the Owner all repairs, reconstruction, and restoration to original condition of adjacent and related work affected by damage under a warranty claim.

B. Warranty Claims: Owner will notify General Contractor in writing of each warranty claim. Warranty repairs shall be completed within 30 days of written notice, except as pre-approved by Owner.

1. In the event of an emergency condition, where in the reasonable opinion of the Owner an immediate repair under warranty is necessary, warranty repairs shall be completed within 14 calendar days from date of notice.
2. Owner's right to correct: In the event the Contractor fails to respond to a warranty claim within the specified time limits, the Owner reserves the right to make the necessary corrections or repairs and recover all costs and expenses from the General Contractor .

C. Contractor's responsibilities under Comprehensive Warranty:

1. Notify in writing each affected warrantor and original subcontractor, installer, vendor as appropriate to the warranty claim.
2. Manage the warranty claim for the Owner.
3. Assist the Owner in obtaining warranty satisfaction.
4. Arrange and manage all warranty related work including work relating to consequential damages.

1.7 SUBMITTALS

A. Submit written warranties to the Owner prior to the date certified for Substantial Completion. In compliance with requirements specified under Section 01 77 00 – CLOSEOUT PROCEDURES and Section 01 78 00 – CLOSEOUT SUBMITTALS.

1. When a designated portion of the Work is completed and occupied, or used by the Owner by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within 14 calendar days of completion of the designated portion of Work.
2. Refer to individual section of Divisions 2 through 50 for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).
3. Specific Warranty Forms: Where a special project warranty (guaranty) or specified product warranty is required to be executed, prepare a written document to contain terms and appropriate identification, ready for execution by all required parties (including manufacturers, vendors, and subcontractors). Submit draft to Owner (through Architect) for approval prior to final executions.

B. Form of Submittal: At Final Completion, compile three (3) copies of each required warranty and bond properly executed by the General Contractor, or by the General Contractor , subcontractor, supplier or manufacturer. Organize the warranty documents into an orderly sequence based on the Table of Contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
2. Provide heavy paper dividers with celluloid-covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
3. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the project title or name, and the name of the General Contractor .
4. When operating and manuals are required for warrantied construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 SCHEDULE

A. Provide warranties on products and installations as specified in individual Specification Sections.

End of Section

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Section 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Demonstrating equipment.

B. Instruction and training of Owner's personnel.

1.2 DEMONSTRATING EQUIPMENT

A. Demonstrate operation and maintenance of Products to Owner's personnel 2 weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months from date of Substantial Completion.

C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.

E. Prepare and insert additional data in operations and maintenance manuals specified under Section 01 78 00 - CLOSEOUT SUBMITTALS when need for additional data becomes apparent during instruction.

1.3 INSTRUCTION AND TRAINING OF OWNER'S PERSONNEL

A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.

B. For equipment requiring seasonal operation, perform instructions for other seasons within six months .

C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

E. Provide sufficient formal instructional time for training Owner's personnel, so that the Owner's personnel will fully comprehend operation and maintenance of the facility's equipment and systems. Contractor's personnel designated for Owner training shall be competent and knowledgeable and have good communication skills.

1. Training sessions shall be pre-arranged directly with the Owner.

a. Instructors shall arrive at pre-scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.
b. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increased cost to the Owner.

2. Training shall include the following:
   a. General overview of Record Documents:
      1) Record Drawings.
      2) Record Project Manual.
      3) Operation and Maintenance Manuals.
      4) Finishes.
      5) Warranty and maintenance agreements.
      6) Test reports and inspections.
   b. Fire suppression systems and equipment.
   c. Fire alarm systems and equipment.
   d. HVAC systems and equipment.
   e. Plumbing systems and equipment.
   f. Electrical systems and equipment.

F. Training Personnel:
   1. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
      a. Designated personnel for Owner training shall be competent and knowledgeable and have good communication skills.
   2. Instructors shall arrive at scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.
   3. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increase cost to the Owner.

G. 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 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 02 41 19
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. General: The work described in this Section consists of selective demolition, cleaning, removal and legal disposal of all structures, equipment and materials indicated for demolition, or careful removal and temporary storage of materials and equipment indicated for salvage and re-use, or salvage and delivery to Owner. No attempt is made in this Section to list the entire scope of selective demolition required on this project or to describe each element to be removed. Drawings indicate both existing construction and final construction. It is the responsibility of the Contractor to determine for itself the scope and nature of the existing materials, equipment and finishes required for removal or salvage, based on the information provided in the full set of Contract Documents.

1. Comply with requirements of Section 01 73 29 - CUTTING AND PATCHING.

B. Permits: Obtain and pay for all demolition and construction permits required by local authorities having jurisdiction and other regulatory agencies and utility companies.

C. Selective demolition and removal work includes the following at indicated locations, but is not limited to:

1. Cut existing concrete slabs and trench at floor drains and plumbing located beneath slabs-on-grade.
2. Remove existing lights, diffusers, grilles, speakers and similar equipment where scheduled to be replaced.
3. Remove designated exterior walls, interior partitions, ceiling and suspension systems, and flooring systems
4. Remove designated building specialties.
5. Remove designated doors, frames and associated hardware. Disconnect abandoned wiring and accessories for electrified hardware.
6. Remove all furnishings, utilities, equipment and fixtures, not indicated for salvage or re-use, and abandoned materials of all kinds.
7. Remove from site all abandoned, disconnected and dismantled fire protection, plumbing and mechanical equipment, including piping, conduits, system wiring, meters and other devices.
8. Remove from site all abandoned, disconnected and dismantled electrical fixtures and equipment, including conduits, wiring, meters and other devices.
9. In addition to demolition specifically shown, cut, move or remove existing construction to remain as necessary to provide access or to allow alterations and new work to proceed. Coordinate such relocation’s and removal to accommodate the demands and requirements of other trades.
10. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.

D. Remove, salvage and provide storage for removed materials, equipment and furnishings indicated for re-use, including but not limited to:

1. [___].

E. Remove, salvage, and furnish to Owner for maintenance stock, or other future use, the following products. Carefully package and clearly identify prior to delivery to Owner.

1. [___].

F. Identify locations of utilities for work of other sections.

1.2 RELATED REQUIREMENTS

A. Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS: Procedural and administrative requirements for temporary facilities and controls, including:

1. Temporary heat.
2. Temporary barriers and barricades.
3. Temporary fire protection.

B. Section 01 73 29 - CUTTING AND PATCHING:

1. Procedural and administrative requirements for cutting and patching.

C. Individual specification sections: Cutting and patching incidental to work of individual specification sections shall be performed by respective trades, except as specified in Section 01 73 29 – CUTTING AND PATCHING.

D. Individual specification sections: Utility shutoffs by respective trades.

1.3 REFERENCES

A. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ANSI A10.6 – Safety Requirements for Demolition Operations.
2. NFPA 241 – Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.4 OWNERSHIP OF REMOVED MATERIALS

A. If during the work, articles of unusual value, or of historical or archaeological significance, are encountered the ownership of such articles is retained by the Owner, and information regarding their discovery shall be immediately furnished to the Architect. Resolution shall be handled as a Change in the Work.

B. Ownership of materials, equipment and furnishings designated for salvage for re-use in this Project or designated for Owner’s use is retained by the Owner.

C. Ownership of materials, equipment and furnishings to be removed from the Project which are not defined by the above two paragraphs is retained by the Contractor; if any of these are considered of salvageable value to the Contractor, they may be removed from the Project as work progresses.

1. On-site storage or sale of removed items is prohibited.

1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Comply with all requirements of this contract relative to protection, scheduling and coordination with the Owner.
2. Hazardous materials: When hazardous materials are encountered, they shall be handled, removed, and disposed of in accordance with all regulatory agency requirements.
3. Coordinate and arrange with utility, mechanical and electrical trades for their disconnecting, rerouting and maintenance of existing services leading to adjacent occupied buildings, as part of the work of this Contract.
4. Coordinate Work of this Section with related utilities work identified in the Contract Documents.
    1) Coordination scheduling with Owner's ongoing operations.

B. Sequencing:

1. Coordinate and arrange with mechanical and electrical trades for their disconnecting, rerouting and maintenance of existing services in the buildings as required, as part of the work of this Contract.

C. Scheduling:

1. Comply with all requirements of this contract relative to protection, scheduling, phasing, and coordination with the Owner.

1.6 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Schedule: Prior to commencement of work, prepare a schedule indicating proposed methods and sequence of operations for demolition work.
    a. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.
    b. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations. Receive acceptance from Architect prior to commencing work.
2. Shop drawings: Indicate demolition sequencing and locations of salvageable items.
3. Design Data: Submit calculations for bracing and shoring, signed and sealed by professional engineer registered in the Commonwealth of Massachusetts.
4. Permits: Submit copy of permits required by regulatory agencies for demolition.
5. Special Procedure Submittals: Submit copies of written agreements from private landowners, landfill operators, or other agencies accepting disposal of demolished materials at least two weeks prior to commencement of demolition work.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Record Documentation: Indicate actual location of capped site utilities.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable codes for demolition work, safety of structure, dust control, and disposal of debris. Conform to procedures applicable when discovering hazardous materials or contaminated substances.

1. The Contractor is directed not to disturb or attempt removal of any discovered hazardous materials or contaminated substances. Immediately notify both the Owner and the Architect upon discovery of such conditions.

B. Obtain and pay for required permits and licenses required from authorities prior to commencing demolition work. Arrange and pay for legal disposal of removed materials and equipment, obtain proper disposal receipts for verification.

C. Notify affected utility companies and Owner before starting work and comply with utility company requirements.

D. Do not close or obstruct egress width to exits. Do not disable or disrupt building fire or life safety systems without 3 days prior written notification to the Owner.

1.8 QUALITY ASSURANCE

A. General: Conduct the work in a manner giving prime consideration to protection of the public; protection from the weather, control of noise, shocks and vibration; control of dirt and dust; orderly access for and storage of materials; protection of existing buildings; protection of adjacent surfaces and property; coordination and cooperation with the Owner at all times.

1. Comply with all requirements of this contract relative to protection, scheduling and coordination with the Owner.

B. Qualifications:

1. Demolition subcontractor: Company specializing in performing work of this section with minimum 3 years documented experience.

2. Shoring and bracing design: Design shoring, and bracing, under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.9 SITE CONDITIONS

A. Comply with wind and weather conditions established at pre-demolition meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Condition of Structures: Owner assumes no responsibility nor makes any claim as to the actual condition or structural adequacy of any existing construction to be demolished. The Contractor shall investigate and assure himself of the condition of

the work to be demolished and shall take all precautions to ensure safety of persons and property.

1. Notify both Owner and Architect, if any type of hazardous chemicals, gases, explosives, flammable material, unmarked containers, or similar dangerous substances are discovered. Cease work in affected areas until directed by Architect. Continue work in other areas.

B. The Contractor shall have examined the existing conditions per requirements of the Conditions of the Contract and Division 1 - General Requirements, and reviewed Contract Documents prior to commencement of demolition. Coordinate and verify scope of selective demolition with other portions of work specified in other sections, and under separate Contract. Change orders will not be issued for the removal of any exposed to view materials or equipment, which are either indicated on the Drawings for removal, or not indicated, but necessary to remove for the Work of this Project.

3.2 PREPARATION

A. General: Provide necessary protection of non-work areas during demolition operations. Provide, erect and maintain temporary barriers as required to protect non-construction related pedestrian and vehicular traffic using the adjacent portions of the site and building.

1. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy of adjacent facility.

B. Protect existing structures which are not to be demolished. Protect designated materials and equipment to be removed and retained by Owner.

1. Cover or otherwise protect as necessary existing equipment, furniture and furnishing located beyond the immediate demolition work.
2. Protect existing landscaping materials, structures, and appurtenances which are not to be demolished.

C. Prevent movement of structure; provide required bracing and shoring.

1. Protect existing active utility services and structures from damage during selective demolition work including during installation of bracing and removal of same. Repair or replace damages to satisfaction of Owner.

D. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations.

3.3 GENERAL REQUIREMENTS FOR SELECTIVE DEMOLITION

A. Conduct demolition to minimize interference with adjacent and occupied building areas, in compliance with governing laws and buildings, with prime consideration given to the safety, protection and convenience of the public and Owner's personnel.

1. Maintain protected egress and access to the Work at all times.

B. Perform selective demolition in an orderly and careful manner. Carefully cut materials to be removed to eliminate damage to portions to remain. Protect existing structure designated to remain.

1. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.
2. Except as otherwise required by Project phasing requirements, 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.
3. Locate equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
4. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent. Do not throw trash from windows or from roof.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
7. Pull nails and fasteners which remain after removal of attached material. Remove lath, strapping and other substructures associated with finishes to be removed.
8. Where existing finishes are indicated to be removed, remove down to bare subsurface without causing damage to the subsurface.
    a. After removal of non-asbestos finish flooring materials, remove underlying mastic and prepare substrate to receive new flooring materials by Shot Blasting method. Create a uniform 20 mil profile. Mechanically scarify areas which cannot be profiled by shot blast method. Thoroughly wash all flooring substrate and leave clean and dry ready for application of new flooring materials.

C. Remove foundation walls and footings as indicated on Drawings, and where indicated, to a minimum of two feet beyond area of new construction.

D. Cutting openings and holes: Neatly cut openings and holes plumb, square, and true to dimensions required. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces. 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.
    1. All penetrations in floors and roof shall be framed with miscellaneous metal work prior to cutting and demolition of deck and concrete.
    2. Repair damage done to existing elements of building to remain, except repairs specified to be provided under other Sections. Repairs shall be done in such manner as to closely match construction, appearance and quality of original work.

E. Use of cutting torches:
    1. Do not use cutting torches until work area is cleared of flammable materials.
    2. Maintain adequate ventilation when using cutting torches.
    3. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations.

4. Maintain fire watch and portable fire-suppression devices during flame-cutting operations. Comply with fire prevention measures specified under Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.

F. Carefully observe existing structure during demolition operations, cease operations immediately if structure appears to be in danger. Immediately notify both Architect and Owner's Project Representative. Do not resume demolition operations until directed.

G. Disconnect, cap and clearly identify designated utilities within demolition areas.

1. Cap and remove abandoned existing utilities back to locations indicated, or to limit line of Contract where terminations are not indicated.

a. Pipes to be demolished that require a connection shall be removed to the extent required to install the new connection. Remove pipe sections by saw-cutting, removing a complete pipe section to an existing joint, or other adequate means which results in a clean joint.

2. Protect and maintain conduits, drains, sewers, pipes, and similar utilities that are not to be demolished

H. Disconnect existing equipment and fixtures to be removed, or services abandoned, and piping, wiring, and conduit which would otherwise be exposed in the finished work. Remove from site disconnected equipment and fixtures and piping not to be reused.

1. Contractor to remove and dispose of all equipment not tagged or scheduled for reuse.

I. Abandoned Equipment, Utilities, Systems: Remove in their entirety. Abandonment in place is not acceptable, except where an item is specifically indicated to be abandoned in place.

1. "Abandoned" means the item is not operational in the completed Contract.

2. Without limitation, remove abandoned pipes, tubing, conduits, wires, cables, ducts, equipment, machines, and all elements and items related to abandoned work including, without limitation, hangers, connectors, anchors, valves, drains, strainers, sumps, panels, mounting boards, grounding rods, ground connectors, boxes, dampers, plenums, insulation, escutcheons, trims, and all other related items.

3. Where an existing element is indicated to be abandoned in place, the abandoned item shall be cut off and, if hollow, capped.

a. Cut off sufficiently below the finished plane to permit space for patching over the abandoned element. The General Contractor shall provide all cutting and chipping required to recess the cut element, and to coordinate depth of cut-offs required for finishing.

3.4 BRACING

A. Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move a brace, install new bracing prior to removal of original brace. Provide suitable bracing materials which will support loads imposed

B. Do not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to Architect.

C. Install internal bracing, if required, to prevent spreading or distortion to braced frames.

D. Maintain bracing until structural elements are rebraced by other bracing or until permanent construction is able to withstand designed live and dead loads.

E. Remove bracing in stages to avoid disturbance or damage to existing structure.

F. Repair or replace adjacent work damaged or displaced through installation or removal of bracing work.

3.5 GENERAL DUST CONTROL

A. Contractor shall employ dust and pollution prevention procedures at all times. Compliance with requirements for dust protection and air quality control is required for work areas which abut Owner occupied areas. Dust removal and periodic cleaning requirements apply to all work. Contractor shall employ dust and pollution prevention procedures so that a healthy Owner's environment is fully maintained at all times. Compliance with the requirements in Division One for dust control is mandatory and may not be compromised at any point during construction.

1. Clean up loose debris daily, or more frequently as required, to prevent the wind spreading debris. Keep dumpsters covered when not in use.
2. Cover handcarts carrying debris being transported through Owner occupied areas.
3. Wet down debris (as appropriate) to prevent air pollution by dust rising from demolition work. Wet down dumpsters to prevent fires caused by vandals.
4. Employ tarpaulins on all trucks carrying debris.

3.6 SALVAGE MATERIALS AND PRODUCTS

A. Carefully salvage and provide safe storage for products designated for salvage, reuse, as indicated on the Drawings, as specified herein, or as requested by Owner for reuse on the project, or to be stored for Owner's future use. Take particular care with finished items and items requiring special handling.

1. Remove items indicated to be salvaged with extreme care to prevent damage.
2. All components and parts of salvaged items shall be saved and packaged.

B. 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 designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
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.

D. 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.

3.7 SPECIFIC DEMOLITION REQUIREMENTS FOR MATERIALS AND SURFACES.

A. Floors, General:
1. Completely remove existing flooring located in areas scheduled to receive new flooring surfaces and as additionally indicated. Remove all finish flooring layers of flooring down to the existing substrate.
a. Completely remove flooring systems to substrate, including full removal of all setting beds and adhesives.
2. Except for vinyl asbestos tile (VAT), remove resilient flooring and adhesive in strict accordance with the technical bulletin entitled " Recommended Work Practices for the Removal of Resilient Floor Covering", as issued by Resilient Floor Covering Institute (RFCI).
3. The General Contractor shall provide all patching of flooring substrates and subfloors. Respective finish flooring trades and subcontractors are responsible for patching of finish flooring systems matching abutting surface. Subcontractors patching work is as follows:
a. Ceramic tile flooring.
b. Vinyl composition tile flooring.

B. Walls, General:
1. Remove interior walls and partitions as indicated and as needed to accommodate new work.
2. Where existing walls-to-remain are indicated to receive new finishes, completely remove trim and fasteners.
3. The General Contractor shall provide patching of substrates and back-up systems except where such materials are specified as part of a Filed Subcontractors system. Finishes work shall be provided under individual product specification sections.

C. Ceilings, General:
1. Where ceilings are indicated to be removed, also remove ceiling mounted systems and equipment leaving only bare structure free from hangers.
2. Patching: The General Contractor shall provide patching of substrates and back-up systems except where such materials are specified as part of a Filed Subcontractors system. Ceiling work shall be provided under individual product specification sections.

D. Doors and Frames: Where doors and frames are indicated to be removed from walls or partitions which are to remain, remove doors and frames carefully so as to minimize damage to wall. Repair and patch wall as necessary to accommodate new door frame or other new work.

E. Concrete, General: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

F. Fire suppression Equipment: Fire Protection subcontractor is responsible to drain, disconnect, cap and lower to floor items required to be removed. General Contractor is responsible for removal from site and proper disposal.

G. Plumbing Equipment: Plumbing Subcontractor is responsible to disconnect, cap and lower to floor items required to be removed, including but not limited to fixtures, equipment, water heaters, piping, hangers, valves, and insulation

H. Heating, Ventilation, Air Conditioning. and Refrigeration (HVAC) Equipment:

1. Drain system components designated for disposal of all lubricants, hydraulics, and refrigerants without releasing into atmosphere.
2. HVAC Subcontractor(s) is responsible to disconnect, cap and lower to floor items required to be removed, including but not limited to, ductwork, piping, fans, VAV boxes, unit ventilators, and all similar system equipment. General Contractor is responsible for removal from site and proper disposal.

I. Electrical Equipment and Lighting Fixtures:

1. Electrical Subcontractor is responsible to disconnect, cap and lower to floor items required to be including but not limited to, panelboards, light fixtures, and overhead devices including, fire alarm, intercom, bus ducts. General Contractor is responsible for removal from site.

3.8 REPAIRS

A. Repair all damage done to elements of buildings and structures to remain, except repairs specified to be provided under other Sections, or as indicated for removal in subsequent project phase(s). Repairs shall be done in such manner as to closely match construction, appearance and quality of original work.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated or specified 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. As work progresses, regularly remove demolished materials from site. Do not allow demolished materials to accumulate on-site, except as required for materials determined to be reused, salvaged, or as required to comply Commonwealth of Massachusetts regulations on specific banned materials prohibited from incineration or landfill disposal.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Liquid Waste Management: Dispose of liquid waste in accordance with all applicable regulations. Consult all regulations (federal, provincial, state, local) or a qualified waste disposal firm when characterizing waste for disposal. Contact manufacturer f or MSDS sheets for product information, and recommendations for proposal disposal. Utilize licensed waste disposal companies as may be required.

B. Do not burn or bury demolished materials on site, arrange for legal disposal of the same.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.10 CLEANING

A. Daily cleaning: Sweep all street and roads affected by demolition operations.

B. Upon completion of the work of this Section; remove unused tools and equipment, surplus materials, rubbish, debris, and dust. Leave area in raked or broom-clean condition, as appropriate.

C. Upon completion of the work of this Section; clean adjacent structures and facilities of dust, dirt and debris caused by demolition work to the satisfaction of Owner, owner(s) of adjacent properties, and authorities having jurisdiction.

End of Section

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Section 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. General: The work of this Section consists of miscellaneous metals, and ornamental iron where shown on the Drawings, as specified herein, and as required for a complete and proper installation.

B. Furnish and install:

1. Interior handrails, shop primed.
2. Exterior handrails and guardrails galvanized and shop primed.

C. Perform all shop-painting for all surfaces of exposed to view galvanized and non-galvanized metals, and post-erection touch-up of shop prime coat, using the same material as shop-prime coating.

D. Perform application of liquid zinc touch-up to all welds of galvanized steel items furnished hereunder.

1.2 RELATED REQUIREMENTS

A. Section 09 91 00 - PAINTING: Applied finish coatings other than those specified herein.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM A53 – Pipe, Steel, Black and Hot-Dipped, Zinc-coated, Welded and Seamless Steel Pipe.
2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A153 – Standard Specification for Zinc-Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
5. ASTM A361 (Withdrawn Standard) - Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process for Roofing and Siding.
6. ASTM A385 – Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
7. ASTM A386 (Withdrawn Standard) – Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products.

8. ASTM A446 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) By The Hot-Dip Process, Structural (Physical) Quality.
9. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
10. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
11. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
12. AGAI - Inspection Manual for Hot-Dipped Galvanized Products.
13. AISC - Code of Standard Practice for Steel Buildings and Bridges.
14. AISC - Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.
15. AWS - Standard Code for Arc and Gas Welding in Building Construction.
16. MIL-P-21035B - Paint High Zinc Dust Content, Galvanizing Repair (Metric) (superseding DOD-P-21035A).
17. NAAMM publication AMP 500 – Metal Finishes Manual
18. NAAMM publication AMP 510 – Metal Stairs Manual.
19. NAAMM publication AMP 521 – Pipe Railing Manual
20. NAAMM publication AMP 555 – Code of Standard Practice for The Architectural Metal Industry.
21. SSPC standards referenced herein, and the following:
    a. SSPC-SP1, Surface Preparation – Solvent Cleaning,
    b. SSPC-SP2, Surface Preparation – Hand Tool Cleaning.
    c. SSPC-SP3, Surface Preparation – Power Tool Cleaning
    d. SSPC-SP8, Surface Preparation - Pickling.
    e. SSPC-Paint 20, Zinc-Rich Coating (Type 1) Inorganic and (Type II) Organic.
    f. SSPC-Paint 29, Zinc Dust Sacrificial Primer Performance.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate work of this Section with that of other trades, affecting or affected by this work, and cooperate with the other trades as is necessary to assure the steady progress of work.
2. Be responsible for establishing locations and levels for all work of this Section, except such parts as may be delivered to others and set by them. In such cases assist them in properly locating said parts.

B. Sequencing:
1. Do not order or deliver any materials until all submittals have been received and approved by the Architect.
2. Before proceeding with installation work, inspect all project conditions and all work of other trades to ensure that all such conditions and work are suitable to

satisfactorily receive the work of this Section and notify the Architect in writing of any which are not. Do not proceed further until corrective work has been completed or waived.

3. Field Measurements
   a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
   b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

C. Scheduling:
   1. Coordinate the work of this Section with the respective trades responsible for installing inserts and anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
   1. Product Data: Manufacturer's complete product data and specifications for all prefabricated items, shop primer paints, liquid zinc coating, and hydraulic cements, to be furnished hereunder.
      a. For epoxy anchoring systems: Furnish ICC-ES Code approvals and performance data that includes recommended loading for each application.
   2. Shop Drawings, bearing registration stamp of a Professional Structural Engineer registered in Commonwealth of Massachusetts.
      a. General requirements:
         1) Include large scale details showing proposed methods of anchorage to surrounding structure and conditions.
         2) Indicate and detail all field installation connections.
         3) Indicate weld types and length.
         4) Indicate blocking locations.
      b. Include large scale details of railings.
   3. Selection Samples:
      a. Sample card indicating Manufacturer's full range of colors of shop applied finishes available for selection by Architect.
   4. Verification Samples: Accepted samples will be used to establish the quality standard for fabrication, workmanship and finish.
      a. Factory/shop finishes: 3 inch by 6 inch samples of factory-applied coatings and colors proposed for use for approval prior to coating application.
   5. Certificates:
      a. Certificate of Compliance from Galvanizer: Submit notarized Certificate of Compliance with application for payment for galvanizing, signed by galvanizer, indicating compliance with requirements of specifications.

Include scope of services provided, and quantity and itemized description of items processed.

b. Welders certificates as specified under Article entitled “QUALITY ASSURANCE”.

6. Delegated Design Submittals: Provide calculations for loading and stresses for the work of this section, bearing the Professional Structural Engineer’s seal. Show how design load requirements and other performance requirements as required by the Massachusetts State Building Code have been satisfied.

a. Work scope requiring loading and stress calculations includes, but is not limited to the following:

1) Railings.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Special Inspections: Submit prior to request for Certificate of Occupancy, to both Architect and local Building Official having jurisdiction, the following:

a. All certifications, reports and programs required by Chapter 17 of the Massachusetts State Building code for work engineered by Contractor’s Professional Engineer under the requirements of this Section.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1. Galvanizer’s tagging: The galvanizer shall mark all lots of material with a clearly visible stamp or tag indicating the name of the galvanizer, the weight of the zinc coating, and the applicable ASTM Specification Numbers.

B. Qualifications:

1. Fabricator/Installer: Minimum of 5 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.

2. Welders: Utilize only qualified welders employed on the Work. Submit verification that Welder’s are AWS D1.1 and D1.4 qualified within the previous 12 months.

3. Licensed Professionals: Provide the services of a Professional Structural Engineer, registered in the Commonwealth of Massachusetts to design and certify that the work of this section meets or exceeds the performance requirements specified in this section and as required by the 2015 International Building Code with Massachusetts Building Code, Ninth Edition amendments.

a. Prepare Shop Drawings for under direct supervision of a same Engineer experienced in design of this work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not order or deliver any materials until all submittals, required in the listed Specification Sections included as part of this Section, have been received and approved by the Architect.

B. Storage and Handling Requirements:

1. Handle and store materials under cover in a manner to prevent defacement, deformation, or other damage to the materials and to shop finishes, and to prevent the accumulation of foreign matter on the metal work. All such work shall be repaired and cleaned prior to erection.

1.8 WARRANTY

A. General: Submit the following warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS, and in compliance with Section 01 78 36 – WARRANTIES.

B. Manufacturer's Warranty (for factory prefabricated products): In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: All materials shall be new stock, free from defects impairing strength, durability or appearance, and of best commercial quality for each intended purpose. Unless specifically called for otherwise, work shall be fabricated from the following:

1. Carbon Steel:

a. Steel pipe: ASTM A53, grade A, seamless pipe, black finish unless otherwise noted.

b. Structural steel tubing, square and rectangular shapes: ASTM A500, Grade B.

c. Steel tubular shapes: ASTM A501.

B. Steel materials: to be hot dip-galvanized: Provide steel chemically suitable for metal coatings complying with the following requirements: Carbon below 0.25 percent, silicon below 0.24 percent, phosphorous below 0.05 percent, and manganese below 1.35 percent. Notify galvanizer if steel does not comply with these requirements to determine suitability for processing.

C. Metal surfaces, general: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.

D. Welding rods: AWS E70XX grade, or select in accordance with AWS specifications for the metal alloy to be welded and in accordance with the recommendation of the welding rod manufacturer.
   1. Where stainless steel is welded to mild steel, select rods to minimize dilution effects on the stainless steel component.

2.2 UNIVERSAL GRID SYSTEM

A. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Unistrut US (Atkore Unistrut), Harvey, IL.
   1. Acceptable Manufacturers and products: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following.
      a. Unistrut US (Atkore Unistrut), Harvey, IL, product “Unistrut”.
      b. Cooper US, Inc., Houston TX., product “Cooper B-Line”.
      c. Gleason Partners, LLC., Grand Rapids, MI., product “Strut Channel Systems”.
      d. Thomas & Betts Corporation, Memphis TN, product “Kindorf Superstrut”.
   2. There are no other manufacturers of this product type available in the United States, fabricators may choose to fabricate grid system components using structural steel shapes, with submittal and approval of complete engineering Drawings and calculations as a substitution.
   3. Finish:
      a. Rust inhibiting acrylic enamel paint applied by electro-deposition, after cleaning and phosphating, and thoroughly baked. Color is per Federal Standard 595a color number 14109 (dark limit V-). Finish to withstand minimum 400 hours salt spray when tested in accordance with ASTM B117.

B. All channel members shall be fabricated from structural grade steel confirming to the following ASTM specifications:
   1. ASTM A653 Grade A

C. All fittings shall be fabricated from steel conforming to one of the following ASTM specifications:
   1. ASTM A36, A575, or A 576.

D. All materials shall be stamped and identifiable by manufacturer and part number (where appropriate). Materials that appear damaged, distressed, unidentifiable or rusted shall not be used and will not be accepted.

2.3 FASTENERS

A. General: Provide all fasteners and attachments as required for work specified herein and as indicated on the Drawings.
   1. In general,
      a. Provide all fasteners and attachments of the same material and finish as the metal to which it is applied unless otherwise noted.

1) Provide Type 304 stainless-steel fasteners for exterior use.

B. Steel Bolts, Nuts and Washers: ASTM A307, galvanized to ASTM A153 for galvanized components.

C. Anchor Bolts: ASTM F 1554, Grade 36.

1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

D. Eyebolts: ASTM A 489.

E. Machine Screws: ASME B18.6.3.

F. Lag Bolts: ASME B18.2.1.

G. Wood Screws: Flat head, ASME B18.6.1.

H. Plain Washers: Round, ASME B18.22.1.

I. Lock Washers: Helical, spring type, ASME B18.21.1

2.4 ACCESSORIES

A. Adhesive for attaching anchors and for direct pinning: high-modulus, high strength, moisture tolerant, epoxy adhesive, two-component 100 percent solids, epoxy resin complying with ASTM C881.

1. Minimum performance properties (as cured at 70 degrees F. and 50 percent relative humidity):

a. Minimum Compressive Strength, tested per ASTM D695:

1) at 3 days: 11300 psi (31.0 MPa).
2) at 7 days: 11800 psi (44.8 MPa).
3) at 28 days: 12200 psi (58.6 MPa).

b. Shear Strength, tested per ASTM D732 at 14 days: 6200 psi (43 MPa)

c. Minimum Flexural Strength tested per ASTM D790 at 14 days: 10700 psi (74 MPa).

d. Minimum Bond Strength tested per ASTM C882 at 14 days:

1) Plastic Concrete to Hardened Concrete 2200 psi (13.8 Mpa).
2) Plastic Concrete to Steel 2000 psi (13.8Mpa).

e. Maximum Water Absorption, tested per ASTM D570: 24 hour 0.27%

f. Minimum Tensile properties tested per ASTM D638: Tensile Strength 6900 psi (48 Mpa).

2. Products which may be considered as equal include the following, or approved equal:

a. Sika Corporation, Lyndhurst NJ., product: “Sikadur 32 Hi-Mod Gel.

b. Simpson Strong Tie, Pleasanton, CA., product “SET High Strength Epoxy”.

c. Symons Corporation, Des Plaines, IL., product “Rescon Gel anchor 304”.

B. Grout: Ready mixed, non-metallic high-strength controlled expansion grout of flowable consistency, conforming to ASTM C1107 with minimum compressive strength of 8,000 pounds per square inch (55.2 MPa) at 28 days.

1. Products which may be considered as equal include the following, or approved equal:
   a. Five Star Products, Inc., Fairfield CT, product “Five Star Grout.”
   b. L&M Construction Chemicals, Omaha NE, Product: “Crystex.”
   c. BASF Construction Chemicals, Cleveland, OH., product “Masterflow 713”.
   d. Sika Corporation, Lyndhurst, NJ., product “SikaGrout 212”.
   e. ChemMasters, Madison, OH., product “Conset”.

C. Metal paste filler: 2 component epoxy, high strength, structural adhesive putty:

1. Products which may be considered as equal include the following, or approved equal:
   a. Abatron, Inc. Gilberts IL, product: “Ferrobond-P”.
   b. Dynatron/Bondo Corp., Atlanta, GA, product: “Bondo Plastic Filler”.
   c. U.S. Chemical & Plastics Company., Massillon OH, product “Metal filled epoxy”.

D. Liquid zinc coating, for touch-up of welds, field cuts, scratches, and abrasions in galvanized steel: Low VOC organic zinc-rich coating containing 92% metallic zinc, by weight in the dried film (ASTM D520, Type III) and conforming to SSPC Paint 20, Type II, Level 1. Liquid zinc coating shall be recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to MIL-P-21035B and SSPC Paint 29, Type II, Level I, for repair of hot-dip galvanizing and meeting the requirements for Zinc-Rich Paints.

1. VOC limit: not more than 250 g/L.

E. Primer for non-galvanized steel surfaces, modified alkyd rust-inhibitive, high solids primer:

1. Products which may be considered as equal include the following, or approved equal:
   a. Benjamin Moore product: “Metal Primer KP14-70”, Gray Primer.
   b. Rust-Oleum: 6100, Gray Primer.
   c. Sherwin Williams: Kem Flash 500 Primer, Gray Primer E61A750.
   d. Tnemec: V10-1009 Gray Primer.

2.5 FABRICATION - GENERAL

A. Metal surfaces shall be clean and free from mill scale, flake, rust and rust pitting; well formed and finished to shape and size, true to details with straight, sharp lines, and angles and smooth surfaces. Curved work shall be to true radii. Exposed sheared edges shall be eased.

B. Shop fabricate items wherever practicable, accurately fitting all parts and making all joints tight. Do not fabricate materials until all specified submittals have been submitted to, and approved by, the Architect.

C. Do all cutting, punching, drilling, and tapping required for attachment of anchor bolts and other hardware and for attachment of work by other trades. All such work shall be done prior to hot-dip galvanizing of the various components.

D. Grind all edges of bars and plates completely free from nicks and machine marks, prior to galvanizing and/or shop priming.

E. Grind all exposed-to-view welds completely smooth and flush to the surface plane of the base metals. Perform welding work prior to galvanizing in all cases, except where field welding is necessary, in which case, completely coat all such welds with two coats of specified liquid zinc coating, after performing grinding operations.

1. Finish welds on exposed to view components to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.

F. Use screws and bolts only where welding cannot be performed, of sufficient size to ensure against loosening from normal usage of miscellaneous metal items furnished hereunder.

1. Countersink all screw heads and bolt heads as far as practicable. Use not less than two screw, bolts, or other anchorage items, at each connection point.
2. Draw up all threaded connections tightly, after buttering same with pipe joint compound, to exclude water.

G. Provision for Thermal Movement: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Design, fabricate and install for temperature change range of 120 degrees F, ambient temperature and 180 degrees F, material surfaces.

H. Carefully coordinate the installation of metal fabrications with the work of trades responsible for the installation of interfacing work, and for the installation of work into the various assemblies furnished hereunder, and permit the installation of the related materials to be made at the appropriate times.

I. Fit and assemble metal fabrications in largest practical sections for delivery to site, ready for installation.

1. Galvanized assemblies: Where size of assembly is too large for galvanizing kettle, galvanize components prior to fabrication and assemble after galvanizing.

2.6 FABRICATION - RAILINGS

A. Refer to the Drawings for location and details of steel railings to be furnished and installed hereunder.

1. Verify heights shown in Drawings comply with referenced codes and regulations.

B. Railing performance requirements; conform to all requirements of those codes and regulations referenced under Section 01 41 00 - REGULATORY REQUIREMENTS.

1. Railings: Design, fabricate and install all railings in a manner which will ensure the railings will be capable of withstanding loads as follows and as required

under Section 1607 of 2015 International Building Code with Massachusetts Building Code, Ninth Edition amendments.

a. Resist a load of 50 pounds per linear foot (0.73 kN/m) applied in any direction at the top and to transfer load through railing supports to structure.

b. Resist a single concentrated load of 200 pounds (0.89kN) applied in any direction at any point along the top, and to transfer load through railing supports to structure. Concentrated loading requirements are not concurrent with other loading requirements.

c. Intermediate rails, balusters and panel fillers shall resist a horizontally applied load of 200 pounds (0.89 kN) on an area equal to 1 square foot (.093m2), including openings and space between rails. Reactions due to this loading are not required to be superimposed with loadings specified for top rail.

C. Fabrication, Railings: Fabricate to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads and deflection criteria. Indicate on shop drawings sizes of all members, gages and configurations of handrails, and guardrails.

1. Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

a. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.

2. Form changes in direction of railings as indicated on drawings, with radius bends of radius indicated. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

3. Close exposed ends of railing members with prefabricated end fittings.

4. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

5. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

a. Connect posts to stair framing by direct welding unless otherwise indicated.

2.7 FABRICATION - SUPPORTS

A. Design, engineer and fabricate structural overhead support for equipment, furnishings, and products furnished under Sections, which includes, but is not limited to:

1. Equipment furnished by subcontracttors.

B. Fabricate support system to carry the entire load of supported products to building structure above without transferring any horizontal or vertical load to ceiling system(s). Provide frequently spaced holes for multiple adjustment. Provide diagonal bracing. Use of a “Universal Grid” system members is acceptable.

C. Fabricate supports for equipment, fixtures, and appurtenances utilizing a “Universal Grid” system with rails extending wall-to-wall, perpendicular to the path of travel of the same.

1. Design, engineer and fabricate supporting framework to support a concentrated load at any single point along the exposed rails, as exerted by the equipment to be purchased by the Owner.
    a. Installed framework shall have a minimum loading safety factor of 2.5, based upon ultimate strength under static loading conditions.
    b. The concentrated load shall be the maximum that will be encountered by positioning the equipment at the extremities of its travel (maximal load configurations).
    c. Base loads on the most severe conditions as may be encountered by any of the manufacturers producing equipment for the type of services of the rooms indicated.
2. Rail shall be on centers as required by equipment manufacturer and allow continuous attachment along any point on the rail.
3. System shall be true, plumb and level to the tolerances indicated, with no more than 1/720th of the span maximum deflection in either plane, when maximum loading conditions are applied due to equipment operations.

2.8 FINISHES - HOT-DIP GALVANIZING

A. Surface preparation prior to galvanizing: Pickle steel prior to galvanizing in conformance with SSPC-SP8. Remove all rust, dirt, weld flux, weld spatter, and other foreign matter.

B. Hot-Dip Galvanizing: For steel exposed to the elements, weather or corrosive environments and other steel indicated to be galvanized, provide coating for iron and steel fabrications applied by the hot-dip process.

1. Basis-of-Design: “Duncan Galvanizing, Everett, MA., product “Duragalv.”
2. Comply with ASTM A123 for fabricated products and ASTM A153 for bolts, nuts, washers, and other rough hardware. Provide thickness of galvanizing specified in referenced standards.
3. Wherever possible, perform galvanizing after assembly of items.
4. Galvanized items shall be straightened to remove all warpage and distortion caused by the galvanization process.
5. Fill vent holes after galvanizing (if applicable), and grind smooth.
6. Touch-up all breaks on hot-dip surfaces caused by cutting, welding, drilling or undue abrasion with liquid zinc coating as specified herein above. Apply liquid zinc by brush or spray on all damaged areas in two coats to a total dry film thickness of not less than 3 mils. Apply first coat within two hours after damage to hot-dip film to prevent undue oxidation of exposed surface. On all welds remove weld spatter by power wire brushing or equivalent before applying liquid zinc coating. Repair material should extend at least 3 inches

beyond all edges of the damaged galvanized area as possible to assure continuity of galvanic protection.

7. Touch-up of galvanized surfaces with aerosol spray, silver paint, bright paint, brite paint, or aluminum paints is not acceptable.

2.9 FINISHES - SHOP APPLIED COATINGS

A. Schedule: Shop applied coatings as indicated on Drawings, and as additionally specified and scheduled in this Section.

B. For non-galvanized steel surfaces:

1. Surface preparation prior to priming: Thoroughly clean all steel of all loose mill scale by power wire brushing or sandblasting. Remove all rust, dirt, weld flux, weld spatter, and other foreign matter by wire-brushing or scraping (power wire-brushing, if necessary). Grind smooth any sharp projections.

2. Shop apply specified primers thoroughly and evenly on the surfaces and worked into the joints and other open areas on the surfaces. Surfaces inaccessible after assembly shall be given two coats. Dry film thickness of primer shall be not less than 2.4 mils per coat.

C. For hot-dipped galvanized steel items scheduled for field applied painted finish:

1. Touch-up all breaks on hot-dip surfaces caused by cutting, welding, drilling or undue abrasion with liquid zinc coating as specified above under the Article entitle “Hot Dip Galvanizing”.

2. Factory-Applied Primer over Galvanized Steel: Provide factory-applied prime coat, certified OTC/VOC compliant less than 2.8 lbs/gal. and conforming to EPA and local requirements. Apply primer within 12 hours after galvanizing at the same galvanizer’s plant in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer. Primer coat shall exhibit a rugosity (smoothness) not greater than 4 rug (16-20 microns of variation) when measured by a profilometer over a 1 inch straight line on the surface of architectural and structural elements that are less than 24 pounds per running foot. Profilometer shall be capable of operating in 1 micron increments. Blast cleaning of the surface is unacceptable for surface preparation. Primer shall have a minimum two year re-coat window for application of finish coat. Coatings must meet or exceed the following performance criteria as stipulated by the coating’s manufacturer:

a. Basis-of-Design: Duncan Galvanizing, Everett, MA., product “PrimerGalv”.

b. Abrasion Resistance: ASTM D4060 (CS17 Wheel, 1,000 grams load).1kg load, 200 mg loss.

c. Adhesion: ASTM D4541, 1050 psi.

d. Corrosion Weathering: ASTM D5894, 13 cycles, 4,368 hours; rating 10 per ASTM D714 for blistering and rating 7 per ASTM D610 for rusting.

e. Direct Impact Resistance: ASTM D2794, 160 in. lbs.

f. Flexibility: Method: ASTM D522, 180-degree bend, 1 inch mandrel, passes.

g. Pencil Hardness: ASTM D3363, 3B.

h. Moisture Condensation Resistance: ASTM D4585, 100 degrees F, 2000 hours; passes, no cracking or delamination.

i. Dry Heat Resistance: Method: ASTM D2485, 250 degrees F.

3. Touch-up finish in conformance with manufacturer's recommendations. Provide touch-up such that repair is not visible from a distance of 6 feet.

D. Field touch-up: Shall be the responsibility of the installing contractor and shall include the filling, and touch-up of exposed job made bolt or screw holes, refinishing of raw surfaces resulting from job fitting, repair of job inflicted scratches and marks, and final cleaning up of the finished surfaces.

1. Touch-up finishes shall be fully compatible with, and exactly match shop applied finish, color, texture and sheen.

PART 3 - EXECUTION

3.1 ERECTION - GENERAL

A. General: Accurately set all work to established lines and elevations, and rigidly fasten in place with suitable attachments to the construction of the building. At the completion of the work, check all work, re-adjust as required, and leave in perfect condition. Grind all exposed to view welds smooth to the touch.

B. Setting bearing and leveling plates:

1. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

2. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.

a. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.

b. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

C. Miscellaneous framing and supports: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and additional requirements indicated on Shop Drawings.

1. Anchor supports for operable partitions, and similar products, securely to and rigidly braced to building structure.

3.2 FIELD BOLTING

A. Accurately drive all bolts into holes, protecting the bolt heads so as not to damage the thread during the driving. Ensure that bolt heads and nuts rest squarely against the metal. Where structural members have sloping flange faces, provide approved beveled washers at the bolted connections to afford square seating for bolt heads or nuts. Nick bolt threads for unfinished bolts to prevent the nuts from backing off.

1. Bolt Head Orientation: All bolt heads shall be oriented as indicated on the contract documents. Where bolt-head alignment is specified, the orientation

shall be noted for each connection on the erection drawings. Where not noted, the bolt heads in a given connection shall be oriented to one side.

B. Use an approved calibrated manual or power torque wrench to obtain the proper torque and tension as recommended by the bolt manufacturer for all ASTM A 325 bolts.

3.3 INSTALLATION OF RAILINGS

A. Secure handrails to wall with wall brackets and end fittings. Provide bracket with not less than 1-1/2 inch clearance from inside face of handrail and finished wall surface. Locate brackets as indicated, or if not indicated, at spacing required to support structural loads. Secure rails to walls with wall brackets, wall return fittings and anchor plates, in a manner required to meet code requirements, and as follows:

1. Each bracket shall be fastened with not less than 2 bolts.
2. For wood stud partitions, use lag bolts set into wood blocking or backing between studs. Coordinate with stud installations for accurate location of blocking or backing members.

3.4 TOUCH-UP

A. Touch-up all welds, scratches, abrasions, and other surface damaged on shop-primed or painted metals, using the same coatings as specified under shop applied finishes, herein above.

3.5 SUPPLEMENTAL SCHEDULES

A. General: Items listed herein below provide further description of those already indicated in the Drawings. This list does not represent a complete list of miscellaneous metal components or types required to complete the Work.

1. Carefully review all Drawings and furnish and install metal fabrications required by the various trades, whether or not specifically listed herein, such as miscellaneous clip angles, miscellaneous steel bracketing, and other miscellaneous metal items as indicated on the Drawings, reasonably implied therefrom, or reasonably necessary for the thorough completion of the work.

B. Interior railings, as detailed on the Drawings. Connections and sizing to conform to engineering and code requirements specified herein above, shop p[rimed.

C. Exterior railings: 1-1/4 inch (I.D.) steel pipe as detailed on the Drawings. Fabricated assemblies shall be hot-dipped galvanized, shop primed.

1. Pipe railings: To prevent unnecessary damage to the galvanized coating by field welding, provide slip-fit method of connecting pipe railings. Fabricate pipe railing from mechanical steel tubing internally vented with holes 3/4 the size of the pipe's internal diameter.

End of Section

Section 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. General: The work of this Section consists of rough carpentry as specified herein, where shown on the Drawings, and as additionally required for a complete and proper installation.

B. Furnish and install the following:

1. Wood framing at areas of new construction and to supplement existing framing.
2. Laminated Veneer Lumber (LVL).
3. Fire retardant treated plywood backer panels for mounting of electrical panelboards, telephone/data backboards, HVAC and fire control equipment and other equipment.
4. Sub-floors and plywood underlayment.
5. Wall sheathing.
6. Wood firestopping in walls at intersection of wall and floor as required.
7. Blocking-in openings in roof sheathing, floors and walls.
8. Various wood blockings, edgings, nailers, curbs, cants, grounds, furring, sheathing, framing members including wood preservative, as required for receipt of various finishes and surfacing materials, not described herein above.
9. Rough installation hardware, including bolts, screws, spikes, nails, clips, and connection assemblies, as needed for installation of the rough carpentry work.

C. Install the following furnished under the designated Sections:

1. Concealed anchorage devices for handicap handrails in toilet rooms: Section 10 28 13 - TOILET ACCESSORIES.

D. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry work. Furnish and install furring, blocking, and shims, and other usual items of normal rough carpentry work as required by the various trades for the proper completion of the project.

1. The applicable requirements specified in Part 1 - GENERAL and Part 3 - EXECUTION of the individual specification sections furnishing materials to be installed under this Section, shall be included in and made a part of this Section.

E. No attempt is made in this Section to list all elements of rough carpentry required on this project or to describe how each element will be installed. It is the responsibility of the Contractor to determine for itself the scope and nature of the work required for a complete installation from the information provided herein and in the Drawings.

1.2 RELATED REQUIREMENTS

A. Section 09 29 00 - GYPSUM BOARD: Wall board construction work, having taped and compounded joint finish.

B. Section 09 91 00 - PAINTING: Applied primer and finish coatings to exposed to view rough carpentry work.

C. Section 10 28 13 - TOILET ACCESSORIES: Providing anchorage devices and mounting templates for toilet accessories.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. APA - applicable grades and specifications.
2. APA PRB-108 Performance Standards and Policies for Structural-Use Panels..
3. ASTM D 3201 - Test Method for Hygroscopic Properties of Fire-Retardant Wood.
4. AWPA Standards and references for preservative treated wood including Standards UC1, UC2, UC3A, UC3B, UC4A, and P5
5. AWPA Standard UCFA – Fire Protection as Required by Codes Above Ground Interior Construction.
6. AWPA Standard UCFB – Fire Protection as Required by Codes Above Ground Exterior Construction.
7. AWPA M4 – Care Of Preservative Treated Wood Products.
8. NER-643: ACQ Preserve® and ACQ Preserve Plus® Wood Preservative Treatment, ICBO Evaluation Service.
9. MIL L-1914OE - Lumber and Plywood, Fire Retardant Treated.
10. SPIB Grading Rules, current edition.
11. UL - Building Materials Directory
12. US. Department of Commerce Voluntary Product Standard PS1 for Construction and Industrial Plywood.
13. US. Department of Commerce Voluntary Product Standard PS2 for Wood-Based Structural-Use Panels.
14. US. Department of Commerce Voluntary Product Standard PS-20 - American Softwood Lumber Standard.
15. U.S. Department of Commerce Simplified Practice Recommendation R-16, for sizes and use classifications of lumber
16. American Lumber Standards Committee, National Lumber Grades Authority for Canadian Lumber, and applicable grading rules and standards of the various lumber associations whose species are being used for grades specified.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work of this Section with the respective trades responsible for locating anchorages installed into blocking which is provided under this Section.
2. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for products specified herein.
2. Shop Drawings: Furnish complete Shop Drawings bearing the seal of the registered professional engineer, licensed to practice in the Commonwealth of Massachusetts.
   a. Provide complete schedule of prefabricated structural members, including but not limited to LVL's. Identify all live and dead loading conditions. Provide calculations for joist loading analysis and deflection. Calculations shall be stamped by registered professional engineer with structural engineering credentials, licensed to practice in the Commonwealth of Massachusetts.
3. Certifications:
   a. Written certification from the respective treatment plants indicating types of wood preservative treatment and fire-retardant treatment used, treatments method, applications instructions, and conformance to the requirements specified herein.
      1) Provide certification that fire retardant treatment materials do not contain ammonium phosphate.
      2) Provide report from ICC Evaluation Service on fire retardant treated wood flame spreading, strength, corrosion and hygroscopic properties.
      3) Provide report from ICC Evaluation Service on pressure preservative treated wood strength, corrosion, anti-fungi, and anti-insect properties.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1. All lumber shall:
   a. Be new, dressed four sides (S4S), clear and free from warping and other defects.

b. Have a moisture content not exceeding 19 percent when delivered to the project.

c. Be in accordance with the grading rules of the lumber manufacturer's association under whose jurisdiction the lumber is produced and bear the mark of grade and mill identification.

B. Certifications:

1. Plywood: Conform to the requirements of Product Standard PS-1, and bear applicable APA grade trademarks.

a. Plywood for electrical boards treated for retardance, meet Class I or a flame spread rating of 25 or less and bear U.L. label "Classified FRS".

1.7 DELIVERY, STORAGE AND HANDLING

A. Store all materials in an elevated dry location, protected by waterproof coverings.

PART 2 - PRODUCTS

2.1 BOARD AND SHEET MATERIALS

A. Framing Lumber for studs, beams, joists, rafters, and headers: No. 2 Spruce/Pine/Fir (SPF), or No. 2 Southern Pine, Grade-stamped S-Dry or other surface dried wood species, Number 2 grade or better having a minimum bending stress Fb of 775 PSI (890 PSI repetitive) and modulus of elasticity E not less than 1100 KSI.

B. Lumber for beams and headers: No. 1 Hem/Fir, or No. 2 Southern Pine, Grade-stamped S-Dry or other surface dried wood species, Number 1 grade or better having a minimum bending stress Fb of 1200 PSI.

C. Lumber for studs: Hem-Fir, Eastern Hemlock, Eastern Spruce, or Southern Pine, surface dried Number 2 Grade or better, with an Fc parallel to the grain of 550 PSI or greater.

D. Lumber for blocking, nailers and curbs as indicated or required: Hem-Fir, Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried stud or utility grade. Wood members shall be of sizes indicated on the Drawings or of the same size as the members being braced.

1. 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.

2. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

E. Furring: Nominal 1 by 3 inches or 1 by 4 inches Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried construction grade.

F. Plywood and sheet products:

1. Exterior wall sheathing: APA RATED SHEATHING, 1/2 inch (12.7 mm) thick having a minimum span rating 32/16, oriented strand board, or 5 ply/5 layer plywood touch-sanded.

2. Exterior wall sheathing: APA RATED SHEATHING, 5/8 inch (15.9 mm) thick having a minimum span rating 40/20, oriented strand board, or 5 ply/5 layer plywood touch-sanded.
3. Subflooring: 3/4 inch (19.1 mm) thick having a minimum span rating 48/24, APA RATED SHEATHING, STRUCTURAL 1, exposure durability classified, EXPOSURE 1, touch-sanded.
4. Flooring underlayment: Square edge APA UNDERLAYMENT, Exposure 1 Species Group 1 with sanded face.
    a. Thickness: 1/4 inch (6.4 mm) thick, except as otherwise indicated on the Drawings.
5. For unspecified exterior applications (including plywood blocking, nailers, and backing for exterior finish materials, roofing and flashing) : APA graded B-C, Exposure 1, EXT, Group 1 species, 5 ply/5 layer plywood, touch-sanded, thickness as indicated on approved shop drawings.
6. For electric panel board mountings and similar uses: APA graded B-D INT, Group 2 species, touch-sanded, fire-retardant treated, 3/4 inch thick, except as otherwise indicated on the Drawings.
7. For unspecified interior concealed from view locations: APA graded C-D PLUGGED INT, Group 2 species, thickness as indicated on the Drawings.

2.2 LAMINATED VENEER LUMBER (LVL)

A. Laminated Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
    1. Minimum design performance values:
        a. Extreme Fiber Stress in Bending (Fb), edgewise; 2600 pounds per square inch.
        b. Horizontal shear (Fv); 285 pounds per square inch.
        c. Compression perpendicular to grain (Fc) for bottom lamination; 750 pounds per square inch.
        d. Tension parallel to grain (Ft); 1550 pounds per square inch.
        e. Compression parallel to grain (Ft); 2510 pounds per square inch.
        f. Modulus of elasticity (E), edgewise; 2,000,000 pounds per square inch.
    2. Veneers: Douglas Fir, Southern Pine, Yellow Poplar, or better
    3. Veneer adhesive: waterproof type conforming to ASTM D-2559.

B. Laminated Veneer Lumber shall be identified by a stamp indicating the product type, manufacturer’s name, plant number and the independent inspection agency logo and evaluation report number.

2.3 WOOD TREATMENTS

A. Treated wood products shall be produced by a single treatment plant, fully licensed by the chemical manufacturers, and conforming to the requirements specified herein.
    1. Toxicity and Environmental Quality:

a. Products containing chromium will not be permitted.
b. Products containing arsenic will not be permitted.
c. Fire-retardant-treated wood products shall be free of halogens, sulfates, ammonium phosphate and formaldehyde.

2. Dye wood or otherwise color code all treated wood at treatment plant to clearly distinguish the different treatments in the field.
3. Kiln dry all treated lumber and plywood to the following maximum moisture content after treatment.
   a. Lumber: 19 percent.
   b. Plywood 15 percent.
   c. Discard pieces with defects which might impair quality of work.
4. Quality marks: Each piece of lumber and plywood shall be permanently affixed with a quality mark, containing the following information:
   a. Identification of the inspection agency.
   b. Standard to which material was treated.
   c. Identification of the treating plant.
   d. Fire retardant treated wood shall include: stamp signifying a FR-S rating
   e. Preservative treated wood shall include: Retention and end use for which product is suitable.

B. Fire retardant treated wood. Designated as “FRTW”
1. Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include:
   a. Arch Wood Protection, Atlanta, GA., product, “Dricon FRT Wood”.
   b. Flameproof Companies., Montgomery, IL, product: “FlameTech”.
   c. Hoover Treated Wood Products, Inc., Thomson, GA product “PyroGuard”.
   d. Osmose, Inc., Griffin GA., product “FirePro”.
   e. Viance, LLC., Charlotte, NC, product: “D-Blaze FRT”.
2. Fire retardant treated wood shall comply with the following requirements:
   a. All fire-retardant lumber and plywood must have an Underwriters Laboratories stamp signifying a FR-S rating certifying a 25 or less flame spread and smoke developed value, when tested in accordance to ASTM E-84, or UBC Standard No. 42-1.
   b. Corrosion rates: Less than one mil per year for carbon steel, galvanized steel, aluminum, copper and red brass in contact with the fire retardant treated wood when tested in accordance with Federal Specification MIL-L-19140E Paragraph 4.6.5.2.
   c. The fire retardant treated wood must have an equilibrium moisture content of not more than 25 percent when tested in accordance with ASTM D 3201 procedures at 95 percent relative humidity and 80 degrees Fahrenheit.
   d. Fire retardant chemical: Registered for use as a wood preservative by the U.S. Environmental Protection Agency.

e. Testing: Fire performance and strength properties for both lumber and plywood, of the fire retardant treated wood shall be recognized by issuance of a ICC Evaluation Service Report. Fire retardant chemical must not damage the middle lammella of the wood structure when exposed to 170 degrees Fahrenheit and 90 percent relative humidity for 23 days.

C. Pressure preservative treated wood. Designated as “PT”

1. Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include:
   a. Osmose, Inc., Griffin GA., product “NatureWood”.
   b. Flameproof Companies., Montgomery, IL, product: “ACQ Preserve”.
   c. Universal Forest Products, Inc., Grand Rapids MI., product “ProWood ACQ”.
   d. Viance, LLC., Charlotte, NC., product “Preserve”
2. Treatment: Ammoniacal Copper Quaternary Compound (ACQ), arsenic-free and chromium-free chemical “ACQ Preservative” in accordance with AWPA Standards. Apply the preservative in a closed cylinder by pressure process in accordance with AWPA Standard C15.
   a. Minimum preservative retention for floor plates, framing, lumber and plywood above ground use: 0.25 pounds per cubic foot (4.0 kg/m^3) of ACQ chemical, in accordance with AWPA UC1, UC2, UC3A, and UC3B, or NER-643 as appropriate.
   b. Minimum preservative retention for framing, lumber and plywood in contact with water, ground, concrete and masonry: 0.40 pounds per cubic foot (6.4 kg/m^3) of ACQ chemical, in accordance with AWPA UC4A, UC4B, UC4C, or NER-643 as appropriate.
   c. Minimum preservative retention for lumber and plywood in permanent wood foundations: 0.60 pounds per cubic foot (9.6 kg/m^3) of ACQ chemical, in accordance with AWPA UC4B, or NER-643.
3. Fixation of Chemical: Treated wood shall not be shipped from treatment plant until fixation of the preservative has occurred in the wood.

2.4 METAL FRAMING ANCHORS

A. General: Provide framing anchors made from metal indicated, of structural capacity, type, and size indicated, and as follows:

1. Research/Evaluation Reports: Provide products acceptable to authorities having jurisdiction and for which model code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with building code in effect for Project.
2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

C. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.
   1. Thickness: 0.050 inch (1.3 mm).
   2. Thickness: 0.062 inch (1.6 mm).

D. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
   1. Strap Width: 1-1/2 inches (38 mm).
   2. Strap Width: 2 inches (50 mm).
   3. Thickness: 0.050 inch (1.3 mm).
   4. Thickness: 0.062 inch (1.6 mm).

E. Bridging: Rigid, V-section, nailless type, 0.062 inch (1.6 mm) thick, length to suit joist size and spacing.

F. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

G. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
   1. Width: 3/4 inch (19 mm).
   2. Width: 1-1/4 inches (32 mm).
   3. Thickness: 0.050 inch (1.3 mm).
   4. Thickness: 0.062 inch (1.6 mm).
   5. Length: 16 inches (400 mm).
   6. Length: 24 inches (600 mm).
   7. Length: As indicated.

H. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band joists and lower floor studs, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick by 36 inches (914 mm) long.

I. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.
   1. Bolt Diameter: 5/8 inch (15.8 mm).
   2. Bolt Diameter: 3/4 inch (19 mm).
   3. Width: 2-1/2 inches (64 mm).
   4. Width: 3-3/16 inches (81 mm).
   5. Body Thickness: 0.108 inch (2.8 mm).
   6. Body Thickness: 0.138 inch (3.5 mm).
   7. Base Reinforcement Thickness: 0.108 inch (2.8 mm).
   8. Base Reinforcement Thickness: 0.239 inch (6.1 mm).

J. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches (29 mm) wide by 9/16 inch (14 mm) deep by 0.034 inch (0.85 mm) thick with hemmed edges.

K. Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch (24 by 24 by 1 mm) thick with hemmed edges.

2.5 ACCESSORIES

A. Adhesives:

1. General: Provide adhesives approved which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free,.
2. Adhesive for lamination and fabrication of wood and plywood items: Exterior adhesives containing no urea formaldehydes, having a VOC limit of 70 g/L.
3. Adhesive for subfloors and underlayment: High strength, waterproof and non-freezing adhesive complying with AFG-01 “Frozen Lumber Test” and ASTM 3498, and having a VOC limit of 50 g/L.

B. Nails (interior and exterior): Galvanized common nails, of size and type to suit application and as required by state and local building codes.

C. Screws:

1. Screws for interior applications: Flat head electroplated-galvanized wood screws of the appropriate sizes.
2. Screws for exterior applications:
   a. For ACQ pressure preservative treated wood: Flat head type 304 or 316 stainless steel only, wood screws, of the appropriate sizes. Aluminum, galvanized steel, and coated metal fasteners are prohibited.
   b. For general application (non-pressure preservative treated wood): Flat head hard aluminum, or stainless steel, wood screws, of the appropriate sizes.

D. Anchor bolts, expansion bolts and lag screws: Hot-dipped galvanized steel, of the following types:

1. For lumber having actual thickness of 1-1/2 inches or greater to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, 3/8-inch minimum diameter, spaced as shown on drawings, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.
2. For lumber having actual thickness of greater than 7/8-inch but less than 1-1/2 inches to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, at least 1/4-inch diameter of the most appropriate lengths for the specific application, spaced as shown, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.
3. For lumber having actual thickness of 7/8-inch and less: Anchor bolts or expansion bolts, at least 1/4-inch in diameter; or screws, of the most appropriate sizes; in lengths most suitable for the specific application, countersunk, spaced, and staggered.

PART 3 - EXECUTION

3.1 PREPARATION

A. All materials shall be inspected before use, with all checked, split and otherwise deficient stock rejected, or used only for miscellaneous blocking, furring or other incidental use. The Contractor shall be responsible for replacing all lumber which, due to warpage, twist, splitting, or checking, results in unsatisfactory work. Such replacement shall be required at any time, whether before or after application of finish material under other Sections.

B. Verify exact locations of toilet accessories, door stops and similar items with Architect prior to installation of blocking for accessories.

3.2 INSTALLATION - GENERAL

A. Closely coordinate the installation of the rough carpentry work with the work of other trades responsible for the installation of interfacing or overlaying materials, so as not to delay the work of the related trades.

B. Erect all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction, all in a first class workmanlike manner. Counterbore for bolt heads, nuts, and washers where required to avoid interference with other materials. Bear complete responsibility for structural integrity, connections, and anchorage of all rough carpentry work.

1. Bolt Fastening: Pre-drill holes 1/6 inch larger in diameter than bolt size, perpendicular to wood being bolted.
2. Screw Fastening: Pre-drill holes having same diameter as root diameter (minor diameter).
3. Nail Fastening: Nail tight without splitting wood, pre-bore as required. Set common nails flush with surface; Counter sink finish nails. Remove split wood members and replace.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Use as long lengths as practicable for wood nailers, blockings, and curbs, to minimize number of joints, and attach the members with the types, and spacing, of fasteners specified herein.

E. Install blocking, grounds and furring, as required for proper attachment of the work of other trades, in accordance with the requirements provided by the respective related trades.

1. Spacing for furring and strapping shall not exceed 16 inches on center.

F. Field cuts of fire retardant treated lumber: Do not rip or mill fire retardant treated lumber. Only end cuts, drilling holes and joining cuts are permitted.

G. Field cuts of ACQ pressure-treated lumber: Apply solution of copper naphthenate containing a minimum of 2 percent metallic copper in-solution, in accordance with AWPA standard M4. Brush liberally all cuts and holes.

H. Install concealed from view plywood with specified fasteners spaced not more than 10 inches on centers.

I. Install fire-treated plywood backer boards with counter-sunk galvanized fasteners, of specified sizes, spaced not more than 12 inches on centers.

3.3 FRAMING

A. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

B. Place horizontal members flat, crown side up.

C. Construct framing and curb members full length without splices.

D. Double members at openings over 24 inches wide. Space jack studs over and under opening to stud spacing.

E. Construct double joint headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joints.

F. Bridge joists which span in excess of 8 feet; fit bridging at midspan of joists. Provide solid blocking between framing which vertically spans in excess of 10 feet.

G. Curb roof openings, except where prefabricated curbs are provided. Form corners by alternating lapping side members. Coordinate curb installation with installation of interfacing work of other Sections.

3.4 INSTALLATION - WALL SHEATHING

A. Install wall sheathing, in accordance with APA construction standards, using Number 8 screws or 8d ring shank nails, spaced 6 inches on centers around panel edges, and 12 inches on centers at intermediate supports.

B. Secure sheathing with long dimension either parallel or perpendicular to wall studs with ends over firm bearing, stagger joints where possible.

3.5 INSTALLATION - SUBFLOORING AND UNDERLAYMENT

A. Install plywood subflooring and underlayment, in accordance with APA installation standards, using Number 8 screws or 8d ring shank nails, spaced 6 inches on centers around panel edges, and 12 inches on centers throughout the remainder of the panel. Spacing at panel edge joints shall be as follows; provide staggered panel end joints.

1. Beneath tile finish floors: 1/4 inch spacing at all panel edge joints and 1/8 inch spacing at end joints)
2. Beneath resilient floors: 1/16 inch (minimum) to 1/8 inch (maximum) spacing all edge and end joints.

B. Secure subfloor sheets perpendicular to floor framing with end joints staggered and ends over firm bearing. Attach sheets to joists with subfloor adhesive and fasten in accordance with the above paragraph.

C. Place 15 pound felt paper between subfloor and underlayment.

D. Install underlayment after dust and dirt generating activities have ceased. Apply perpendicular to subflooring, stagger joints, secure to joists with Number 8, 2-1/2 inch long flat-head wood screws, countersunk, spaced per this Article.

3.6 INSTALLATION – EQUIPMENT BACKBOARDS

A. Provide panel mounting backboards for HVAC, Fire Prevention, Electrical and telephone/data equipment. Fabricate panels using fire-retardant treated 3/4 inch thick panels mounted to fire-retardant treated 2 by 4's. Provide a nominal space of 3-1/2 inches behind panels to permit wiring.

3.7 TOLERANCES

A. Framing members: Maximum deviation more than 1/4 inch in 10 feet from true or plumb position.

3.8 CLEANING

A. Daily clean work areas by sweeping and disposing of scraps and sawdust.

B. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

3.9 SCHEDULES

A. Wood treatment schedule:

1. Pressure preservative treat all concealed or exposed-to-view:
   a. Lumber and plywood which comes in contact with concrete, masonry, or earth.
   b. Lumber and plywood nailers, blocking and curbing directly related to roofing, flashing, skylights, roof hatches, and roof accessories.
   c. Lumber and plywood rough-bucks, blocking and nailers directly related to windows, curtainwall and storefront systems.
2. Fire retardant treat all equipment backer boards, additionally provide fire retardant treated lumber and plywood where indicated or noted on Drawings.

B. Wood blocking schedule: The following schedule lists common items for which blocking is required and may not be indicated on the Drawings. It is not the intention of this schedule to list all conditions requiring blocking or limit the extent of blocking required for completion of the Work; provide all wood blocking, edgings, nailers, required for receipt of various finishes and surfacing materials. Securely anchor wood blocking and run continuous between framing.

1. Blocking sizes indicated below are minimum sizes for conditions which not otherwise sized or indicated on Drawings. In case of conflict, sizes identified on Drawings govern.

Items	Nominal size of blocking with fastener notes

Door frames, having openings exceeding 4 feet in width;	2 by 4 inch, full height of wall framing
Door frames, cross corridors;	2 by 4 inch.
Door stops, wall mounted;	1 by 3 inch.
Grab bars;	2 by 6 inch, with 1/4 inch dia. toggle bolts.
Lavatories;	3/4 inch plywood extending full height from floor to top of wall framing. Install lavatories with 1/4 inch dia. toggle bolts
Mirrors, framed;	2 by 4 inch
Shower rods;	2 by 4 inch
Soap dispensers, wall mounted;	1 by 3 inch
Paper towel dispensers, waste receptacles, feminine napkin dispensers;	1 by 3 inch.
Toilet paper dispensers;	2 by 4 inch
Towel bars;	2 by 6 inch, ¼ inch diameter toggle bolts
Wall mounted railings;	2 by 8 inch

End of Section

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Section 07 46 33
PLASTIC SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following:
1. Preformed vinyl siding.
2. Preformed vinyl soffits.
3. Exterior vinyl finish trim and accessory components, matching siding.

1.2 RELATED REQUIREMENTS

A. Section 07 92 00 - JOINT SEALANTS.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. ASTM D 638 - Tensile Properties of Plastics.
2. ASTM D 696 - Coefficient of Linear Thermal Expansion of Plastics Between -30 Degrees C and 30 Degrees C.
3. ASTM D 790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
4. ASTM D 1435 - Outdoor Weathering of Plastics.
5. ASTM D 1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
6. ASTM D 1929 - Ignition Properties of Plastics.
7. ASTM D 2843 - Density of Smoke from the Burning or Decomposition of Plastics.
8. ASTM D 3679 - Rigid Poly (Vinyl Chloride) (PVC) Siding.
9. ASTM D 4226 - Impact Resistance of PVC Building Products.
10. ASTM D 5206 - Windload Resistance Test.
11. ASTM E 84 - Surface Burning Characteristics of Building Materials.
12. ASTM E 119 - Fire Tests of Building Construction and Materials.

1.4 PERFORMANCE REQUIREMENTS

A. PVC Fire Resistance: Provide vinyl siding products that meet or exceed the following ratings:
1. Flame spread 25, fuel contribution 0, smoke density 330, per ASTM E 84.
2. Minimum self-ignition temperature of 824 degrees F, per ASTM D 1929.
3. Fire endurance classification of 1 hour, per ASTM E 119.

1.5 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTALS: PROCEDURES

1. Literature: Manufacturer's product data sheets, specifications, performance data, installation instructions for siding and accessories furnished hereunder.
2. Shop drawings: Large scale design details, minimum 1-1/2 inch to one foot scale, jointing and fastening methods; and complete installation details.
3. Samples: Provide samples as requested by Architect for initial selection of colors and finishes.

1.6 QUALIFICATIONS

A. Applicator, with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

A. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.

B. Deliver materials in original packages, containers or bundles bearing brand name, identification of manufacturer.

C. Store materials under cover, and in manner to keep them dry, protected from surface contamination, dirt, and damage from construction traffic and other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Vinyl siding and related components: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Certain-Teed Corporation, Valley Forge PA.
2. Wolverine Technologies, Livonia MI.
3. Royal Building Products, New Hyde Park, NY.

2.2 MATERIALS

A. Polyvinyl Chloride: Provide siding materials made of PVC resin with cell classification of 13344-B, as defined by ASTM D 1784, meeting or exceeding the following properties:

1. Impact strength: 2.20 ft-lbs per inch at test temperature of 73 degrees F., and 1.30 ft-lbs per inch at test temperature of 32 degrees F, per ASTM D 4226.
2. Tensile strength: 7,344 psi.
3. Flexural modulus of elasticity in tension: 455,750 psi.
4. Deflection temperature under load of 264 psi: 168 degrees F.
5. Coefficient of expansion: .000034 in/in/degree F.

6. Chemical resistance: Excellent.

B. Vinyl Components: Provide products made of extruded polyvinyl chloride as specified in this section and manufactured to comply with requirements of ASTM D 3679.
   1. Provide elongated nailing slots on nailing flanges to allow for movement.
   2. Factory-notch ends of horizontal panels to form overlapping joints.
   3. Provide products that meet weathering requirements of ASTM D 1435.

C. Vinyl siding: Integally colored, extruded polyvinyl chloride complying with ASTM D 3679, minimum 0.44 inch thickness, double board - clapboard profile, complying with 4-1/2 inch exposure, textured face, and low gloss finish equal to Certainteed "**Monogram**" series in manufacturer's standard colors as selected by the Architect and having the following characteristics.
   1. Style: Double 4 inch clapboard profile, cedar grain finish.
   2. Provide elongated nailing slots on nailing flanges for movement.
   3. Factory-notch ends of horizontal panels to form overlapping joints.
   4. Provide products that meet weathering requirements of ASTM D 1435.
   5. Provide siding panels tested per ASTM D 5206 to withstand 78 psf negative wind pressure.

D. Provide siding panels tested per ASTM D 5206 to withstand 58 psf negative wind pressure.

E. Nominal Panel Thickness: 0.042 inches.

F. Nominal Butt Height: 5/8 inches, with post-formed locking system for secure installation.

G. Finish: Low-gloss, cedar-like texture.

2.3 TRIM COMPONENTS

A. General: Provide coordinating vinyl accessories for complete and proper installation, whether or not specifically shown on the drawings.

B. Soffit board:
   1. Style: Beaded style Panel, triple 2 inch panels, .039 inches nominal thickness, matte finish.
      a. Solid type.
      b. Invisibly vented type, with 1.2 sq. inches free air space per square foot of soffit.
   2. Trim: Facias, starter strips, trim, inside corners, outside corners, and drip caps of same material and finish as siding; ribbed for strength and rigidity. Accessories include but are not limited to:
      a. Starter strip: Vinyl.
      b. Undersill trim: Standard type.
      c. Outside corners: 4-piece system, including 5 inch lineals, quarter round insert, and universal corner starter.

d. Inside corner post.
e. Window starters: 3-1/2 inch lineals.
f. Window and door trim: 2-1/2 inch standard casing.
g. Gable trim: 5 inch lineals.
h. Frieze board: 5 inch lineals.
i. Soffit trim: F-channels.
j. Soffit trim: Soffit cove molding.
k. Miscellaneous channels and dividers to suit project conditions.

C. Trim component and soffit colors: As selected by Architect from manufacturer's full available range.

2.4 ACCESSORIES

A. Fasteners: Manufacturer’s standard corrosion resistant nail; size and strength to securely and rigidly retain siding, soffits and accessory components in place.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify adequacy of blocking and support sheathing for siding work.

B. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 INSTALLATION

A. Install siding and soffits in accordance with manufacturer’s instructions. Securely fasten in place, properly aligned level, and plumb.
1. Fabrication of component profile on site not permitted.
2. Ensure site cuttings or burred edges do not remain on finish surfaces.

B. Nailing: Nail horizontal panels by placing nail in center of slot. Nail vertical panels by placing first nail at top of top slot and remaining nails in center of slots. Drive nails straight, leaving 1/16 inch space between nail head and flange of panel.
1. Use concealed fasteners except where approved by the Architect.

C. Spacing: Allow space between both ends of siding panels and trim for thermal movement. Overlap horizontal panel ends one-half the width of factory pre-cut notches.

D. Joints in Horizontal Siding: Stagger lap joints in uniform pattern as successive courses of siding are installed.

E. Joints in Vertical Siding: Install J-channel and flashing to accommodate successive courses of vertical siding. Install wood shims at building corners to bring cut edges of vertical siding out to correct plane.

F. Place sealant or gaskets to arrest weather penetration. Maintain neat appearance.

3.3 TOLERANCES

A. Maximum variation for siding from true position of 1/8 inch in 8 feet for plumb and level.

3.4 CLEANING

A. Upon completion of the work of this Section, remove tools, equipment and all rubbish and debris from the work area; leave area in raked condition.

B. Wash down siding and trim with a solution of mild detergent in warm water, and rinse with clean water. Remove stains as recommended by siding manufacturer.

End of Section

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Section 07 84 00
FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install fireproof firestopping, firesafing materials, smoke seals and related accessories required for this Project for all penetrations through fire resistance rated construction, including, but not limited to, penetrations for plumbing, fire suppression, heating, ventilating and air conditioning, electrical systems, and specialized equipment.

1. Fire resistance rated construction requiring firestopping includes, but is not limited to: floors, rated partitions, smoke barriers, smoke partitions, partitions in rated corridors, passageways and stairs, shaft partitions, shaft wall (vertical and horizontal), area separation fire walls, party wall systems, and temporary fire resistant rated partitions and barriers.

2. Provide removable temporary firestopping (pillows) as required to maintain fire integrity prior to Owner's final acceptance, to permit installation of electrical, telephone, data and sound system wiring. Replace temporary firestopping with permanent, after wiring systems are completed.

B. Furnish and install firestopping/smoke seals at construction joints occurring at tops of fire resistance rated partitions, smoke partitions, and temporary partitions between top of partition and underside of deck above.

C. Furnish and install all firestopping, firesafing, and smoke seals at perimeter of floor/roof construction and exterior wall systems, as indicated and where required by applicable codes.

D. Furnish and install all firestopping, firesafing, and smoke seals at expansion joints in chase walls where expansion joints are not exposed to view.

E. Firestop all existing penetrations and openings in fire resistant rated partitions and floor assemblies which are discovered during the work and are not currently firestopped, or are improperly firestopped.

F. Furnish and install all firestopping, firesafing, and smoke seals where required by applicable codes and as additionally required by authorities having jurisdiction at no additional cost to the Owner.

1.2 RELATED REQUIREMENTS

A. Section 01 73 29 - CUTTING AND PATCHING: Procedural and administrative requirements for cutting and patching.

B. Section 09 29 00 - GYPSUM BOARD: Gypsum wallboard fireproofing.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to

establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Method for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Test Method of Fire Tests of Through-Penetration Firestops.
4. ASTM E2174 - Standard Practice for On-site Inspection of Installed Fire Stops
5. ASTM E2393 - Standard Practice for On-site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers
6. NFPA 70 - National Electrical Code.
7. UL - Fire Resistance Directory.
8. UL 1479 - Fire Tests of Through Penetration Firestops.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, and physical properties.
    a. Indicate requirements for manufacturer’s descriptive data for products and related materials with FM, UL or Warnock-Hersey illustrations showing systems and approval of materials in systems.
2. Certificates:
    a. Manufacturer's written certification stating that firestopping materials, meet or exceed the requirements specified under this Section and that all fire-resistive requirements for the indicated combustibility, Flame (F-rating) and Temperature (T-rating) Ratings have been met.
3. Manufacturer’s installation instructions.
4. Test reports: Submit fire test reports from recognized, independent testing agent(s) indicating the following:
    a. Fire test report of firestop material applied to substrate and penetration materials similar to project conditions. Tests to indicate both Flame (F-rating) and Temperature (T-rating) Ratings.
    b. Test reports of products to be used shall indicate conformance to ASTM E814.
5. On-site sample installation to be included in Work: Minimum thirty days prior to application in any area, provide samples of firestop and smokeseal materials and installation in accordance with the following requirements.
    a. Apply one sample of appropriate firestop and smokeseal material for each different penetration and fire rating required for the work.
    b. Sample areas will comply with thickness, fire resistance ratings, and finished appearance of the project and applicable fire code.
    c. Acceptance samples will constitute standard of acceptance for method of application, thickness, and finished appearance for firestop and

smokeseal application. The sample(s) shall remain visible during completion of the work and shall remain as part of the completed work.

6. Shop drawings indicating requirements for penetrations in wall/deck intersections, change of planes, control joints, expansion joints and blank openings.

1.5 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain firestop and smokeseal products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of fireproofing, except as otherwise approved by Architect

C. Environmental Requirements for Volatile Chemicals: Use firestopping caulks that comply with the following limits for VOC content:

1. Firestopping caulks: VOC not more than 250 g/L.

D. Special Inspections: Allow for 3 percent of each type of firestopping system to be removed and inspected for conformance with approved submittals.

1. Firestopping shall be inspected prior to installation of suspended ceilings or concealed by other materials.

E. Qualifications:

1. Installer: a specialized subcontractor having not less than 3 years documented experience demonstrating previously successful work of the type specified herein.

a. The manufacturer of the firestop material shall submit written certification that the firm to be used for the firestop products has been trained in the application of the products by the manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver and store firestopping materials in original, sealed, packages showing manufacturer’s identification and date of packaging.

B. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering similar products include the following, or approved equal:

1. Bio Fireshield (A Division of Rectroseal), Houston TX.
2. Dow Corning Corporation, Midland MI.
3. Hilti, Inc. Tulsa OK.
4. 3M Company, Saint Paul MN.

5. Specified Technologies, Inc., Somerville NJ.
6. Metacaulk, (A Division of Rectroseal), Houston TX.
7. Tremco, Inc., Beachwood OH.

2.2 PERFORMANCE REQUIREMENTS

A. General: Provide materials and work to conform to Building Code Requirements in fire resistant wall and floor assemblies.

B. Regulatory Requirements:
1. Conform to applicable code for fire resistance ratings and surface burning characteristics.
2. Obtain certificate of compliance from authority having jurisdiction indicating approval of combustibility.

C. Manufacturer’s certified product test requirements:
1. All firestop/smokeseal material shall be tested by a recognized, independent testing agency and shall conform to both Flame (F-rating) and Temperature (T-rating) requirements of ASTM E814.
2. Conform to UL Fire Hazard Classification Requirements.
3. Tested and classified non-combustible per ASTM E84.

D. Firestops in place shall be of sufficient thickness, width, and density to provide a fire resistance rating at least equal to the floor, wall, or partition construction into which it is installed.

E. Non-combustible dams shall be constructed:
1. As necessary to achieve fire rating as tested and rated.
2. In conformance with installation requirements for type of floor, wall, and partition construction.
3. As recommended by firestop/smokeseal manufacturer.

F. Combustible damming materials, if used, must be removed after proper curing.

2.3 MATERIALS

A. Firestop mortar: asbestos free, cementitious mortar, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM/UL1479.
1. Acceptable products, or approved equal:
a. Bio Fireshield, product “Novasit K-10”.
b. Hilti, Inc., product “CP 637 Firestop Mortar”.
c. Specified Technologies, Inc., product “SSM Firestop Mortar”.
d. Tremco Inc., product “Tremstop M”.

B. Firestop sealant: Single component, non-combustible firestop sealant, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E814/UL1479.
1. Acceptable products, or approved equal:

a. Bio Fireshield, product product “Biotherm 100" (Gun Grade) or “Biotherm 200" (Self Leveling).
b. Hilti, Inc., product “CFS-S SIL GG” (Gun Grade).
c. Specified Technologies, Inc., product “SpecSeal SIL300 Sealant (gun grade)” or “SpecSeal SIL300SL" (Self Leveling).
d. 3M Company, product “Fire Barrier Silicone Sealants”.
e. Tremco Inc., product product “Tremstop" (Gun Grade) or “Tremstop S/L" (Self Leveling).

2. Sealants will not dissolve in water.

C. Intumescent firestop sealant and caulks: Acrylic based, water resistant sealant, which will not re-emulsify after drying.

1. Acceptable products, or approved equal:
a. Bio Fireshield, product “Biostop 500".
b. Hilti, Inc., product “FS-ONE Intumescent Firestop Sealant” or “FS 657 Fireblock”.
c. Specified Technologies, Inc., product “SpecSeal SSS".
d. 3M Company, product “Fire Barrier Caulk CP25WB+".
e. Tremco Inc., product “Tremstop 1A".

D. Firestop putty: sticks or pads.

1. Acceptable products, or approved equal:
a. Bio Fireshield, product “Moldable Putty”.
a. Hilti, Inc., products “CP 617 Firestop Putty Pads”, “CP 618 Firestop Putty Stick,” and CFS-D 1 inch Firestop Putty Disk.”
b. Specified Technologies, Inc., product “SpecSeal Putty Bars and Pads”.
c. 3M Company, product “Fire Barrier Moldable Putty”.
d. Tremco Inc., product “Flowable Putty”.

E. Firestop collars: Pre-manufactured fire protective pipe sleeve, UL classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E814/UL1479.

1. Provide separated (two piece) firestop collar for application when plastic pipe system is already in place. Provide non-separated firestop collar for application prior to installation of plastic pipe system.
2. Acceptable products, or approved equal:
a. Bio Fireshield, product, product “Fireshield Pass-through Device”, or “Biostop Intumescent Sleeve.”
b. Hilti, Inc., product “CP 643 Firestop Collar”.
c. Specified Technologies, Inc., product “SpecSeal Collars”.
d. 3M Company, product “Fire Barrier PPD’s”.
e. Tremco Inc., product “Fyrecan sleeve”.

F. Firestop pillows: UL Classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E814/UL1479.

1. Acceptable products, or approved equal:
    a. Bio Fireshield, product “Fireshield Firestop Pillows”.
    b. Hilti, Inc., product: “CFS-BL Firestop Block.”
    c. Specified Technologies, Inc., product “SSB Firestop Pillows”.
    d. Tremco Inc., product “Tremstop P.S”.

G. Wrap strips:
1. Acceptable products, or approved equal:
    a. Bio Fireshield, product “FS-195”.
    b. Hilti, Inc., product “CP 645-E Endless Wrap Strip, or CP 648-S Firestop Wrap Strip”.
    c. Specified Technologies, Inc., product “Spec Seal Wrap Strip”.
    d. 3M Company, product “Fire Barrier FS195 Wrap Strip”.
    e. Tremco Inc., product “Tremco W.S”.

H. Mineral wool fiber / ceramic wool non-combustible insulation (fire safing): Conforming to ASTM C665, Type 1, ASTM C612, and ASTM C553 with a minimum density of 4 pounds per cubic foot.
1. Flame Spread Classification: Material shall be classified non-combustible per ASTM E814.
2. Recycled content of slag: Use maximum available percentage of material (slag). Mineral wool insulation products incorporated into the work shall contain not less than 75 percent of recycled material (slag) by weight.
3. Acceptable products include:
    a. Fibrex Insulations Inc. Sarnia Ontario, Canada, product: “Fibrex FBX” Industrial board.
    b. Hilti, Inc., product, “CP 767 Speed Strips” or “CP 777 Speed Plugs”.
    c. Rock Wool Manufacturing Company, Leeds, AL, product: “Delta Safing Mineral Wool”.
    d. Roxul, Inc., product “Roxul Safe”.
    e. Thermafiber, Inc. product “Safing 4.0 pcf”.
4. Accessories: Provide galvanized steel safing clips as required for installation of insulation.

I. Elastomeric Firestopping: Non halogenated latex based elastomeric coating applied by airless spray.
1. Acceptable products, or approved equal:
    a. Bio Fireshield (A Division of Rectroseal), product “Biostop 750.”
    b. Hilti, Inc., product “CP 601S.” or “CFS-SP-WB”
    c. Specified Technologies, Inc., product “Spec Seal Elastomeric Firestop Spray”.

2.4 ACCESSORIES

A. Forming and damming materials: Mineral fiberboard or other type as recommended by firestopping manufacturer.

B. Primer, sealant and solvents: As recommended by manufacturer.

C. Woven wire mesh: Galvanized 20 gage woven wire mesh “chicken wire” or “poultry fencing”, 1 inch spacing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Inspect areas and conditions where firestops are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

1. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

A. Surface to receive firestops shall be free of dirt, dust, grease, oil, form release agents, or other matter that would impair the bond of the firestop material to the substrate or penetrating item(s).

B. Voids and cracks in substrate shall be filled and unnecessary projection removed prior to installation of firestops.

C. All penetrating items shall be permanently installed prior to firestop installation.

D. Substrate shall be frost, free and, when applicable, dry.

3.3 INSTALLATION

A. General

1. Installation of firestops shall be performed by applicators/installers qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures.
2. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations. Meet building code requirements.
3. Coordinate with plumbing, mechanical, electrical, and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire rated construction have been permanently installed prior to installation of firestops. Schedule and sequence the work to assure that partitions and other construction which would conceal penetrations are not erected prior to the installation of firestops.
    a. Ensure that all firestopping is inspected prior to installation of suspended ceilings or concealed by other finished materials.

B. Dam construction

1. Install dams when required to properly contain firestopping materials within openings and as required to achieve required fire resistance rating. Combustible damming material must be removed after appropriate curing. Incombustible damming material may be left as a permanent component of the firestop system.
2. Placement of dams shall not interfere with function or adversely affect the appearance of adjacent construction.

C. Installation of single component silicone firestop

1. Apply with manual or powered caulking gun.
2. Apply minimum 1/2 inch thickness for 2 hour rating. Apply 1/2 inch to both sides of wall penetrations; one side only in floor penetrations.
3. Use incombustible insulation as required to achieve fire resistance rating.
4. Surface of gun grade silicone firestop may be tooled using clean, potable water.
5. Clean excess material off of adjacent surfaces and tools within 10 minutes using either water or Xylol where the use of such would not be hazardous.

D. Installation of cementitious firestop mortar.

1. Add dry powder to water and mix with mechanical mixer or hand mixing tools as recommended by firestop mortar manufacturer. Allow a average mixing time is 3 minutes and provide a average wet density of 70 pounds per cubic foot, plus or minus 5 PCF.
2. Do not apply if ambient or substrate temperature is less than 35 degrees Fahrenheit during 24 hours after application.
3. Wet all surfaces prior to application of firestop mortar.
4. Mortar may be hand applied or pumped into the opening.
5. Exposed surfaces shall be finished using conventional plastering tools prior to curing.
6. When installation around layered cables, it is recommended to increase the fluidity of the firestop mortar to provide a better fill around the cables. Vibrate or move the cables slightly to prevent voids from forming between the cables.
7. Allow 48 hours for initial cure prior to form removal. For full cure allow 27 days.
8. Wet material may be cleaned with water. Dry material may require scraping or chipping.

E. Installation of firestop collars (plastic pipe only)

1. Firestop collars may be surface mounted to a slab or wall or imbedded in Firestop Mortar to a maximum depth of 2 inches.
2. For wall penetrations with ABS pipe firestop collars must be installed on both sides of the penetration to provide a 2 hour F and T Rating. All other applications required installation on one side only to provide a 2 hour F and T Rating.

F. Firesafing insulation: Install firestopping safing insulation on safing clips spaced as needed between each stud and floor slab, leaving no voids. Secure safing clips to

slab using fasteners recommended by insulation manufacturer. Install sealant over mineral wool in accordance with test requirements.

G. Conclusion of work day: Wherever work is performed in areas which abut or are adjacent to Owner occupied areas, at the conclusion of the work day ensure that all penetrations and perimeter construction joints are firestopped and that there are no openings, penetrations or construction joints left unprotected.

3.4 LABELING

A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems.

1. Include the following information on labels

WARNING: THROUGH-PENETRATION FIRESTOP SYSTEM-DO NOT DISTURB. NOTIFY FACILITY MANAGER OF ANY DAMAGE.

- *Contractor's name, address, and phone number.*
- *Through-penetration firestop systems designation of applicable testing and inspecting agency.*
- *Date of installation.*
- *Through-penetration firestop systems manufacturer's name.*
- *Installer's name.*

3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified independent inspecting agency to inspect through-penetration firestop systems and to prepare test reports.

1. Inspecting agency will state in each report whether inspected through-penetration firestop systems comply with or deviate from requirements.

B. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued.

C. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

3.6 SCHEDULE

A. General: Typical penetrations are indicated below with list of standard firestopping/smokeseal approaches. Actual firestopping materials and combination of materials will vary with size of penetration and with individual firestopping manufacturer's approved UL Design System Requirements. Use only UL Design System materials for each penetration that best matches the wall and floor construction.

1. Where penetrations occur for which no listed UL or WH Design System test exists, obtain from the firestop system manufacturer an engineered system acceptable to the authorities having jurisdiction for firestopping such penetrations. Engineered system from manufacturer shall include a detail drawing showing the engineered system and shall contain no disclaimers.

B. Single metal pipe (non-insulated) and conduit penetrations through floors:
   1. Firestop mortar.
   2. Silicone Firestop sealant.
   3. Intumescent firestop sealant.
   4. Firestop putty, sticks or pads.
   5. Mineral fiber / ceramic wool non-combustible insulation (fire safing) in conjunction with a firestop sealant.

C. Single metal pipe (non-insulated) and conduit penetrations through walls:
   1. (masonry and concrete walls only) Firestop mortar and putty.
   2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
   3. Intumescent firestop sealant with wrap strips.

D. Multiple metal pipe and conduit penetrations through floors:
   1. Firestop mortar and wrap strips.
   2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).

E. Multiple metal pipe and conduit penetrations through walls:
   1. Firestop mortar and putty.
   2. (through masonry walls only) Firestop pillows with woven wire mesh.
   3. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).

F. Insulated metal pipe penetrations through floors:
   1. Firestop mortar and wrap strips.
   2. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
   3. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
   4. Silicone Firestop sealant over wrap strip.
   5. Mineral fiber / ceramic wool non-combustible insulation (fire safing) in conjunction with a firestop sealant.

G. Insulated metal pipe penetrations (single and multiple) through walls:
   1. Firestop mortar with wrap strips.
   2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
   3. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) and Wrap strips.
   4. (multiple penetrations through masonry walls only) Firestop pillows with woven wire mesh.

H. Duct penetrations through floors or walls:

1. Rectangular and square ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing), and steel flanges provided under Division 23.
2. Round ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).

I. Combustible plastic pipe and conduit penetrations through floors:
1. Firestop mortar with wrap strips.
2. Firestop mortar with firestop putty and firestop collars.
3. Silicone firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
4. Silicone firestop sealant and firestop collars.
5. Intumescent firestop sealant and firestop collars.
6. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) with firestop collars.
7. (maximum pipe size 2 inches) Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) with wrap strips.

J. Combustible plastic pipe and conduit penetrations through walls:
1. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
2. Intumescent firestop sealant with firestop collars.

K. Cable penetrations through floors:
1. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).

L. Cable penetrations through walls:
1. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
3. (single penetrations only) Firestop putty.
4. (electrical boxes) Firestop pads.
5. Firestop putty over mineral fiber / ceramic wool non-combustible insulation (fire safing).

M. Bus ducts through floors:
1. Firestop mortar and wrap strips.
2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) and 28 gage (minimum) steel cover plate.

N. Blank openings:
1. Firestop mortar.

2. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).

O. Fire rated joints:

1. Silicone Firestop sealant over backer rod or bond breaker.

P. Construction joints at head of wall/floor assemblies:

1. Silicone Firestop sealant/mastic over mineral fiber / ceramic wool non-combustible insulation (fire safing).
2. Elastomeric spray over mineral fiber / ceramic wool non-combustible insulation (fire safing).

Q. Smoke barrier sealant for dampers, fire door frames:

1. Silicone Firestop sealant.

R. Temporary sealing of openings and penetrations:

1. Firestop putty, sticks or pads.
2. Firestop pillows.

End of Section

Section 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. General: The work of this Section consists of sealants and backing materials where shown on the Drawings, as specified herein, and as required for a complete and proper installation.

1. This Section specifies general requirements, definition of joint sealer types, and application requirements for sealant work specified within other individual specification sections.

B. Prepare sealant substrate surfaces, including removal of existing sealant and backing, and thorough cleaning of joints.

C. Furnish and install sealant and backing materials.

1.2 RELATED REQUIREMENTS

A. Section 01 73 29 - CUTTING AND PATCHING: Procedural and administrative requirements for cutting and patching.

B. Section 02 41 19 - SELECTIVE DEMOLITION: Removal of existing finishes, partitions and walls as indicated in the Drawings

C. Section 07 84 00 - FIRESTOPPING: Firestopping sealants and related backing materials.

D. Section 09 29 00 - GYPSUM BOARD: Application of concealed acoustical sealant used in conjunction with gypsum board work at abutting surfaces (perimeter of partitions and walls).

E. Section 09 30 00 - TILING.

F. Section 09 91 00 - PAINTING: Caulks used in preparation of applied finish coatings.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
2. ASTM C790 – Guide for Use of Latex Sealants
3. ASTM C804 - Use of Solvent-Release Type Sealants.
4. ASTM C834 - Latex Sealing Compounds.
5. ASTM C919 - Use of Sealants in Acoustical Applications.

6. ASTM C920 - Elastomeric Joint Sealants.
7. ASTM C962 - Use of Elastomeric Joint Sealants.
8. ASTM C1193 - Guide for Use of Joint Sealants.
9. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
10. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
11. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
1. SWRI – Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, chemical and physical properties and installation instructions for each item furnished hereunder.
2. Selection Samples: Sample card indicating Manufacturer's full range of colors available for selection by Architect.
3. Verification Samples: 12 inch long samples of sealant for verification of color, installed where directed by Architect.
4. Certificates: Manufacturer's certification that the Products supplied meet or exceed specified requirements.
5. Test and Evaluation Reports:
a. Compatibility and adhesion test reports: Test reports from sealant manufacturer indicating that sealant proposed for use have been tested for compatibility and adhesion with actual samples of substrates to be used on this project. Include sealant manufacturer’s interpretation of test results, and recommendations for primers and substrate preparation specific to this Project.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Bonds and Warranty Documentation: Manufacturer’s standard Warranties and Guarantees.

1.5 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Provide sealants from a single manufacturer for all work of this Section to the greatest extent possible. Each individual type of sealant installed in the Work shall be from a single manufacturer.

C. Qualifications:

1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

1.6 DELIVERY, STORAGE AND HANDLING

A. Each container and package must bear an unbroken seal, test number and label of the manufacturer upon delivery to the site. Failure to comply with these requirements shall be sufficient cause for rejection of the material in question, by the Architect and his requiring its removal from the site. New material conforming to said requirements, shall be promptly furnished at no additional cost to the Contract.

B. Store sealants within sealant manufacturer's recommended optimum temperature range for at least 16 hours before use. Store backer rod and bond breaker tape in clean dry areas at 70 deg. F so that will not become damp, wet, or frost covered

1.7 SITE CONDITIONS

A. Do not install single component solvent curing sealant in enclosed building spaces.

B. Environmental Requirements: Maintain temperature and humidity recommended by the sealant manufacturer during and 24 hours after installation. Do not proceed with installation of joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are below 40 degrees F.
2. When joint substrates are wet due to rain, frost, condensation, or other causes.

C. Do not proceed with installation of joint sealers until contaminates capable of interfering with their adhesion are removed from substrates.

1.8 WARRANTY

A. General: Submit manufacturer’s warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

B. Manufacturer’s warranties shall guarantee sealants installed are free of manufacturing defects and conforms to the published physical properties and referenced standards effective at time of installation.

1. Sealant performance: Manufacturer’s warranties shall include coverage for the following listed failures, when sealants are applied in accordance with manufacturer’s written instructions. Warranty to include coverage for:
   a. Sealant will not become brittle, tear or crack due to normal exposure or normal expansion or contraction.
2. Warranty period:
   a. Silicone sealants on vertical surfaces: 20 years.
   b. Urethane sealants on vertical surfaces: 5 years.
   c. Urethane sealants on horizontal surfaces: 5 years.

C. Special Manufacturer's Warranty - Five years from date of Substantial Completion manufacturer agrees to furnish material only to repair or replace those joint sealants that do not comply with the performance or other specified requirements in the Section. Warranty: Include coverage of installed sealants that fail to achieve

air tight and watertight seal, exhibit loss of cohesion or adhesion, or do not cure. Include coverage of sealants that revert to an uncured state. Warranty shall be transferable with no dollar limit and shall be non-pro-rated. Warranty shall not require Owner's signature to be effective.

D. Special Installer's Warranty: Provide 3 year warranty or bond which shall include coverage of installed sealant and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

1. Installer’s warrant shall include coverage for sealant that fails cohesively or adhesively. Installer agrees to provide material and labor to repair or replace joint sealants that do not comply with the performance or other specified requirements in the Section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Specified Manufacturers and Products: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the products specified under this section for each individual sealant type, for the applications scheduled at the end of Section, and as may be additionally identified on the Drawings.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. BASF Construction Chemicals (Sonneborn), Shakopee MN.
2. Bostik, Inc., Wauwatusa, WI.
3. Dow Corning Corporation, Auburn MI.
4. GE Construction Sealants, Huntersville, NC.
5. Momentive Performance Materials (GE Silicones), Waterford NY.
6. Owens Corning, Toledo, OH.
7. Pecora Corporation, Harleysville PA.
8. Phenomenal Brands, Baltimore, MD.
9. Sika Corp, Lyndhurst NJ.
10. Tremco, Inc., Beachwood OH.

2.2 SEALANT MATERIALS

A. Sealant Materials, General Requirements:

1. Only use sealant and primers that comply with the following limits for VOC content:
   a. Architectural Sealants: 250 g/L.
   b. Roofing Sealants: 420 g/L.
   c. Roadway Sealants: 250 g/L.
   d. Sealant primer: 250 g/L.

2. Sealants containing aromatic solvents, fibrous talc, formaldehyde, halogenated solvents, mercury, lead, cadmium, chromium and their compounds, are not permitted.

B. Joint Sealer Type AA (Acrylic acoustical): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.
   1. Owens Corning, product: “QuietZone Acoustical Sealant.”
   2. Pecora, product “AC-20 FTR”.
   3. Tremco, product “Tremco Acoustical Sealant”.

C. Joint Sealer Type AP (Acrylic Painters caulk): One component acrylic latex caulking compound, conforming to ASTM C834 Type P, Grade NF, paintable within 24 hours after application, with a minimum movement capability of ±12.5 percent, equal to one of the following:
   1. BASF (Sonneborn), product, “MasterSeal NP520”.
   2. Tremco, product, “Tremflex 834”.
   3. Bostik, product, “Chem-Calk 600”.
   4. Pecora, product “AC-20+”.

D. Joint Sealer Type PU35 (Polyurethane 1-component): Low modulus single component gun-grade polyurethane sealant, non-sagging, conforming to ASTM C920, Type S, Class 35, Grade NS, use NT,M, A and O with a minimum movement capability of ±35 percent, equal to the following:
   1. BASF (Sonneborn), product “MasterSeal NP1”.
   2. Sika, product “Sikaflex 1a”.
   3. Tremco, product “Vulkem 116 FC”, or “Dymonic 100”.

E. Joint Sealer Type PU50 (Polyurethane 1-component): Very low modulus single component gun-grade polyurethane sealant or silyl-terminated polyurethane, non-sagging, conforming to ASTM C920, Type S, Class 50, Grade NS, use M, A and O with a minimum movement capability of ±50 percent, equal to the following:
   1. BASF (Sonneborn), product “MasterSeal NP100”.
   2. Sika, product “Sikaflex 15LM”.
   3. Tremco, product “ “Dymonic 100”.

F. Joint Sealer Type SC (Silicone, general construction): One-part medium modulus, natural cure, synthetic sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C920, Type S, NS, Class 50, use NT, G, A, M, O with a minimum movement capability of ±50 percent, equal to the following:
   1. Dow Corning, product, “791”.
   2. GE Silicones, product, “Silpruf”.
   3. Pecora, product, “895”.
   4. Sika, product, “Sika Sil-C 995”.
   5. Tremco, product, “Spectrem 2”.

G. Joint Sealer Type SE (Silicone, Exterior construction): Ultra-low modulus, moisture or neutral curing, synthetic rubber sealant, having a useful life expectancy of at

least 20 years, conforming to ASTM C920, Type S, grade NS, Class 100/50, with a minimum movement capability of +100 percent and -50 percent, equal to the following:

1. Dow Corning, product, “790”.
2. GE Silicones, product, “SCS2700 SilPruf LM”.
3. Pecora, product, “890NST”.
4. Sika, product “Sikasil-WS-290”.
5. Tremco, product “Spectrem 1”.

H. Joint Sealer Type SM (Silicone, Mildew-resistant): USDA approved one component acetoxy silicone rubber, mildew resistant, acceptable to local health officials, conforming to U.S. Food and Drug Administration regulation 21 CFR 177.2600, and ASTM C920, Type S, Class 25, Grade NS, use NT,G and A with a minimum movement capability of ±25 percent, and a Shore A hardness of 20, equal to the following:

1. BASF (Sonneborn), product "OmniPlus".
2. Dow Corning, product "786".
3. GE Silicones, product "Sanitary 1700".
4. Tremco, product "Tremsil 200 Sanitary".
5. Pecora, product "898NST".

I. Joint Sealer Type ST (Silicone, at Tile): medium modulus, neutral cure silicone sealant, having a useful life expectancy of at least 20 years, conforming to ASTM C920, Type S, NS, Class 25, Use: T1, T2, NT, I, M, G, A and O. with a minimum movement capability of +25 percent and -25 percent, equal to the following:

1. Mapei Corporation, Elk Grove IL., product: “Mapesil T”.
2. Custom Building Products, product: “Commercial 100% Silicone Sealant.”
3. Laticrete: product “Latasil.”

2.3 ACCESSORIES

A. Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin or polyurethane foam rod complying with ASTM C1330, Type C (losed cell material with a surface skin), 25 to 33 percent greater in diameter than width of joint. Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. Provide one of the following, or equal.

1. Construction Foam Products (Division of Nomaco, Inc.), Zebulon, NC, product “HBR Closed Cell”.
2. Industrial Thermo Polymers Ltd., Brampton, Ontario CN, product “ITP Standard Backer Rod”.
3. BASF Construction Chemicals (Sonneborn), Shakopee MN, product "Sonolastic Closed Cell Backer Rod".
4. W.R. Meadows Inc., Hampshire, IL, product “Sealtight Kool-Rod”.

B. Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function.

C. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application, and completely free from contaminants which would adversely affect the sealant and caulking materials.

1. Liquid bond breaker and duct tape are not permitted.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Inspect existing joints to be renovated.

1. Verify joint sealants, backing, and other materials containing PCBs and other hazardous materials have been removed.
2. Verify joint substrates and adjoining materials are structurally sound.
3. Verify joints to be renovated can be satisfactorily repaired with specified methods and materials.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General:

1. Weather conditions must be dry and of the temperature, as recommended by sealant manufacturer, during application operations.
2. Surface receiving work of this section must be absolutely dry and dust free. All joints receiving sealant/caulking materials and primers shall be subject to the approval of the sealant manufacturer for proper use of specified materials.

B. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.

1. Clean ferrous metals of all rust and coatings by wire brush, grinding or sandblasting. Remove oil, grease and protective coatings with cleaners recommended by sealant manufacturer.
2. Where sealant is indicated to replace existing, thoroughly remove existing sealant and backing, scrape and clean surfaces. Renovate sealant joints in accordance with manufacturer’s instructions and reviewed shop drawings. Remove all existing sealant residue from joint surfaces using chemical cleaners and solvents which are acceptable to sealant manufacturer.

C. Prime joint substrates**,** as recommended in writing by joint-sealant manufacturer**,** as based on preconstruction joint-sealant-substrate tests or as based upon prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

D. Verify that joint backing and release tapes are compatible with sealant.

E. Perform preparation in accordance with ASTM C804 and C790 for solvent and latex base solvents, respectively.

3.3 PREPARATION FOR REPLACEMENT OF EXISTING SEALANT

A. Remove existing joint sealants and backing as shown on drawings and identified during pre-installation conference and inspection (Article 3.1 herein above). Do not remove silicone joints to be recapped and joints to be covered with silicone seals.

B. Cut existing sealant close to joint edges.

C. Clean joint with power or hand wire brush, grinding, saw cutting, or solvent cleaning to depth at which replacement backing and sealant are to be installed.

D. Blow out dust, loose particles, and debris with moisture and oil-free compressed air. Remove any pieces of caulk and backer rod lodged in joint.

E. Repair deteriorated or damaged substrates as recommended by sealant manufacturer to provide suitable substrate for new sealant. Allow patching materials to fully cure.

3.4 INSTALLATION

A. General: Conform to SWRI requirements, and sealant manufacturer’s written requirements for installation.

B. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.

1. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
2. Do not stretch back-up material into joints.

C. Install bond breaker in joints where shown in the Drawings and wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.

D. Apply masking tape or other precautions to prevent migration or spillage of materials onto adjoining surfaces.

E. Apply urethane sealants, silicone sealants, and latex caulking materials into joints in accordance with manufacturer's instructions, using mechanical or power caulking gun equipped with nozzle of appropriate size, with sufficient pressure to completely fill the joints.

1. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
2. Maintain the outer edge of the sealant and caulking materials, where side faces of joints are in the same plane, back 1/8-inch from the faces.
3. Apply sealant in continuous beads without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.

4. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
5. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

3.5 CLEANING

A. Clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealant and caulking materials with solvents which will not damage the surfaces in any way.

3.6 PROTECTION

A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.7 SCHEDULE

A. General: Seal joints indicated and all interior and exterior joints, seams, and intersections between dissimilar materials.

B. Sealant Colors:
1. Colors for Sealant Types “PU35”, “PU50”, “SC”, “SE”, and “SM”: As selected by the Architect from manufacturer’s standard colors.
2. Colors for Sealant Type “ST”: Matching tile grout color.
3. Color for Sealant Types “AA” and “AP”: White.
4. In concealed installation, and in partially or fully exposed installation where so approved by the Architect, standard gray or black sealant may be used.

C. Specialty Joint Conditions:
1. Sealant at tiling: Type ST.

D. Exterior joints (Listed by primary building material abutting sealant joints):
1. Concrete (including precast):

Joint Condition	Sealant Type
a. Concrete to concrete, vertical control joints:	SE
b. Concrete to all items which penetrate exterior concrete walls, including, but not necessarily limited to, door frames, louver frames, pipes, vents, and similar items:	PU50

2. Exterior Metal:

Joint Condition	Sealant Type
a. Metal to metal:	PU50 or SE
b. Metal to glass:	SE

3. Exterior wood and plastic:

Joint Condition	Sealant Type
a. Wood to wood (natural or stained finishes):	PU35
b. Wood to wood (painted opaque finishes):	PU35
c. Wood to metal:	PU35
d. Wood to Cellular PVC:	PU35
e. Cellular PVC to Cellular PVC:	PU35

4. Exterior PVC:

Joint Condition	Sealant Type
a. PVC to PVC:	SC
b. PVC to wood (natural or stained finishes):	SC
c. PVC to wood (painted opaque finishes):	SC
d. PVC to masonry:	SE

E. Interior joints (Listed by primary building material abutting sealant joints):

1. Interior Concrete:

Joint Condition	Sealant Type
a. Concrete to concrete, vertical joints:	SC
b. Concrete to all items which penetrate concrete walls, including, but not necessarily limited to, door frames, louver frames, pipes, vents, and similar items:	SC

2. Gypsum Board:

Joint Condition	Sealant Type
a. Gypsum board to metal or wood trim:	AP
b. Gypsum board to abutting surfaces at exposed tops and bottoms partitions and walls:	AA
c. Gypsum board to masonry:	SC
d. At gaps and spaces between gypsum board to interior door and window frames, penetrating conduits and piping, building specialty items, ductwork, and similar items:	AP
e. Gypsum board to plumbing fixtures:	SM

3. Interior metal:

Joint Condition	Sealant Type
a. Metal to metal:	SC

4. Interior floor drains:

Joint Condition	Sealant Type
a. Floor drains to concrete slab:	SE
b. Floor drains to resilient sheet flooring:	SE

5. Acoustical ceilings:

Joint Condition	Sealant Type
a. Acoustical ceiling edge angle to irregular wall surface	AP

6. Tile:

Joint Condition	Sealant Type
a. Tile to tile vertical, and horizontal non-traffic joints:	SM
b. Tile to tile, horizontal pedestrian traffic joints:	HLM

7. Sanitary plastic wall and ceiling panels to abutting surfaces

Joint Condition	Sealant Type
a. Sanitary plastic panels to abutting materials:	SM

8. Interior Wood:

Joint Condition	Sealant Type
a. Wood to wood (natural or stained finishes)	SC
b. Wood to wood (painted opaque finishes)	AP or SC
c. Wood to metal	SC
d. Wood base to wall surfaces	SC

End of Section

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Section 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL

1.1 SUMMARY

A. General: The work of this Section consists of hollow metal doors and frames where shown on the Drawings, as specified herein, and as required for a complete and proper installation.

B. Provide the following products:

1. Flush UL-Labeled and non-labeled steel doors and frames, complete with internal reinforcing, hardware cut-outs; and provided with glazing openings, where so indicated; installed under requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION
2. Hollow metal frames for fixed-glazed lites, complete with internal reinforcing; installed under requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY: Wood framing, blocking, and nailers.

B. Section 07 92 00 - JOINT SEALANTS.

C. Section 08 14 16 - FLUSH WOOD DOORS: Furnishing wood doors to be installed in hollow metal frames.

D. Section 08 71 00 - DOOR HARDWARE: Furnishing finish hardware, and installation templates for hardware cut-outs and reinforcing.

E. Section 09 91 00 - PAINTING: Applied finish coatings.

F. Division 26 – ELECTRICAL: Wiring connections for electrified door hardware.

G. Building-in of frame anchors to wall and partition construction: By trade responsible for wall and partition erection.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.

2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.8 – *R2008* (formerly SDI 100) - Recommended Specifications for Standard Steel Doors and Frames.
4. ANSI/SDI A250.11 – Recommended Erection Instructions for Steel Frames.
5. ASCE-7 – Minimum Design Loads and Associated Criteria for Building and Other Structures.
6. SDI 111 Series (111A-111F): Recommended Details, Steel Doors and Frames.
7. SDI 117-93: Manufacturing Tolerances for Standard Steel Doors and Frames.
8. NFPA publication 80 - Fire Doors and Windows.
9. NFPA publication 105 – Standard for the Installation of Smoke Door Assemblies.
10. UL publication 10B - Fire Tests of Door Assemblies.
11. UL publication 10C – Positive Pressure Fire Tests of Door Assemblies.
12. UL 1784 – Air Leakage Tests of Door Assemblies.
13. All applicable federal, state and municipal codes, laws and regulations for exits.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
2. Coordinate the work of this Section with the respective trades responsible for furnishing hardware and installing doors and frames.
3. Ensure that the work performed hereunder is coordinated with issued templates authorized by the hardware supplier.
4. Do not fabricate doors or frames before receiving a copy of the approved hardware schedule, submitted by the hardware supplier, reviewed by the Contractor and accepted by the Architect. Verify that issued templates are coordinated with the approved schedule; immediately notify the Architect, in writing, of any conflicts.

B. Sequencing:

1. Field Measurements:
   a. Take field measurements before preparation of shop drawings and fabrication of frames scheduled for existing openings, to ensure proper fitting of Work.
   b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, for doors, frames and shop applied finishes.
2. Shop Drawings:
   a. Door and Frame Schedule: A complete schedule coordinated with, and using same identifier designations as, the door and frame schedule contained in the Contract Drawings.
   b. Large scale details of each type door and frame construction, indicating all gages, reinforcing, and anchorage.
      1) Indicated cutouts for glazing.
3. Certificates: Manufacturer's written certification stating that doors, frames, and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section; that specified galvanized and shop priming has been performed; and that all U.L. fire-resistive requirements for the indicated Labels have been met.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Bonds and Warranty Documentation: Manufacturer’s standard warranty.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards, existing materials, and existing methods of construction.

B. Sole Source: Obtain doors and frames specified in this Section from a single manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Prior to shipping, identify each frame and door with a removable metal or plastic label which corresponds with door schedule identifying opening number and location.
2. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
3. Deliver doors and frames boxed or crated to provide protection during transit and job storage.
4. Inspect doors and frames upon delivery for damage. Minor damage may be repaired provided the refinished items are equal in respects to new work and acceptable to the Architect; otherwise remove and replace damaged items.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures.

2. Store doors and frames at the building site upright and under cover. Place the units on wood dunnage and cover in a manner that will prevent rust and damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Hollow metal doors and frames:
   a. Amweld Building Products, Inc., (A Division of Amweld International, LLC), Coppell TX.
   b. Ceco Door Products (A Division of Assa Abloy Group Company), Milan TN.
   c. Curries Company (A Division of Assa Abloy Group Company), Mason City IA.
   d. Republic Doors and Frames, McKenzie TN.
   e. Steelcraft (A Division of Allegion Company), Cincinnati OH.

2.2 DESCRIPTION

A. Regulatory Requirements:

1. Fire resistance rated door construction shall conform to UL publications 10B and 10C.
   a. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Fire resistance rated borrowed light assemblies: NFPA 80.
3. Corridor door assemblies shall be tested and listed per UL 1784.
4. Smoke Control Door Assemblies: Comply with NFPA 105.
   a. Smoke "S" Label: Doors to bear “S” label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors
5. Install fire rated door assemblies in compliance with NFPA 80.

2.3 PERFORMANCE CRITERIA

A. Exterior Openings: Comply ASTM C1363 for minimum thermal ratings. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.

1. Thermal Performance (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:
   a. Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.29, R-Value 3.4, including insulated door, thermal-break frame and threshold.

1) Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.36 and R-Value 2.7, including insulated door, kerf type frame, and threshold.

2. Air Infiltration (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283 to meet or exceed the following requirements:
   a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

2.4 DOORS

A. General: Refer to the Drawings for design of doors, sizes, glazing cut-outs in doors, and details.

B. Construction: Full flush commercial type, 1-3/4 inches thick, unless noted otherwise, meeting or exceeding the materials, gages, construction, and testing requirements of the referenced ANSI and SDI publications.
   1. Exterior Door Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 “Laminated Core”.
      a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5 inches on- center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
      b. Exterior Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
   2. Interior Door Core Construction: Manufacturer's standard 99-pound (basis weight) kraft-paper honeycomb.
      a. Interior Fire Door Core: Mineral board core, as required to provide fire-protection and temperature-rise ratings indicated.

C. Interior Doors 1-3/4 inch thick (44.4 mm): ANSI 250.8, Level 2, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Heavy Duty) having 18-gage, minimum 0.042 inch (1.0 mm) steel faces, with a minimum STC rating of 32.
   1. Fire-rated doors: Modify specified construction to meet all construction requirements required for fire-resistive rating.
      a. Affix appropriate UL, FM or Warnock Hersey labels to each rated door, indicating applicable rating.

D. Exterior Doors: ANSI 250.8, Level 3, Model 2 (Seamless), ANSI A250.4 Physical Performance Level B, (Extra Heavy Duty) having 16-gage, 0.058 inch thick (1.46 mm) A60 galvannealed steel faces, with a minimum core R-value of 6.25.
   1. Visible edge seams: Epoxy fill edge seams and finish for seamless appearance (Model 2).
   2. Visible edge seams: weld edge seams and finish for seamless appearance (Model 2).

E. Removable Glazing stops: Rectangular channel sections, not less than 20-gage, 0.032 inch thick (0.8 mm) steel; pre-drilled and loosely attached within the glazing

cut-outs with countersunk tamper-resistant stainless steel screws; sized to properly accommodate the designated thicknesses of glass and glazing materials; and external edges set flush with, or slightly behind, door face. Modify glazing stops for UL Label doors to conform with UL fire rating requirements.

F. Hardware reinforcing: Welded in place steel reinforcement, hot rolled pickled and oiled steel per ASTM A569. Provide G-60, hot-dipped galvanized reinforcing for all exterior openings, and locations where galvanized doors and frames are scheduled. Reinforcing shall be not less than the following minimum steel thicknesses:

1. Hinges: 7 gage, minimum 0.167 inch (4.2 mm) thick.
2. Closers: Box/channel-shape reinforcing, 14 gage, minimum 0.067 inch (1.6 mm) thick.
3. Locks: Box/channel-shape reinforcing,
   a. Cylindrical locks: 16 gage, minimum 0.053 inch (1.3 mm) thick.
   b. Mortise locks: 14 gage, minimum 0.067 inch (1.6 mm) thick.
4. Kick plates: 18 gage, minimum 0.042 inch (1.0 mm) thick.
5. All other hardware: 14 gage, minimum 0.067 inch (1.6 mm) thick.
6. Locations for reinforcing shall be determined from information and templates provided under Section 08 71 00 - DOOR HARDWARE.

G. Provide UL approved welded steel astragal at each UL pair of fire doors.

H. Fabrication

1. Fabricate exposed faces of door panels from cold-rolled steel only.
2. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at manufacturer's option).
3. Fabricate doors with hardware reinforcement welded in place.
4. Attach fire rated label to each door unit.
5. Close top and bottom edge of exterior doors with flush end closure. Seal joints watertight.

2.5 HOLLOW METAL FRAMES

A. General: Refer to the Drawings for various types of frames, sizes, and profiles, UL fire-resistive Label frames, and other characteristics of frames and related items.

1. Frame type (all frames): Shop welded frames with mitered joints arc-welded, reinforced and ground smooth.
2. Frame type (frames in existing construction), non-rated frames and fire-resistance rated frames: Knock-down slip-on type frames with hairline mitered joints and concealed clip reinforcement.

B. Materials for frames, reinforcement, anchors, anchor clips and related items: commercial grade cold-rolled steel conforming to ASTM A109 or commercial grade hot-rolled and pickled steel conforming to ASTM A415.

1. Frame gage:
   a. Interior frames: 16-gage, 0.053 inch thick (1.3 mm), except as otherwise required for specific U.L. Label.

b. Exterior frames: 14-gage, 0.067 inch thick (1.7 mm), with an A60 zinc coating (galvannealed), supplied by the hot-dip process conforming to ASTM A653, Grade 37, with coating applied in accordance with A 924.

2. Hinge reinforcement: 7 gage, minimum 0.167 inch (4.2 mm) thick.
3. Lock and strike reinforcement: 16 gage, minimum 0.053 inch (1.3 mm) thick.
4. Door closer reinforcement: 14 gage, minimum 0.067 inch (1.6 mm) thick.
5. Floor clips: 16 gage, minimum 0.053 inch (1.3 mm) thick.
6. Splice plates or channels: same gage as door frame.
7. Removable Glazing stops: Rectangular channel sections, not less than 20-gage, 0.032 inch thick (0.8 mm) steel; pre-drilled and loosely attached within the glazing cut-outs with countersunk tamper-resistant stainless steel screws; sized to properly accommodate the designated thicknesses of glass and glazing materials; and external edges set flush with, or slightly behind, door face. Modify glazing stops for UL Label doors to conform with UL fire rating requirements.

C. Frame construction:

1. Fire-rated frame assemblies: Modify specified construction to meet all construction requirements required for fire-resistive rating.
   a. Affix appropriate UL, FM or Warnock Hersey labels to each rated frame assembly, indicating applicable rating.
2. Shop-fabricate frames as whole single units per door opening, except when frame size is too large to ship as a single unit. Oversized frames may be shipped in large sections as practicable for field assembly with concealed splice plates or channels.
   a. Frame corner construction: Refer to paragraph A of this Article.
3. Reinforcements, stiffeners, and base angle clips: Welded to interior surfaces of frames to provide a stable base and so as to not interfere with installation of hardware.
4. Appearance of finished frames: Strong, rigid, completely free from warp and buckle, with miters well-formed and in true alignment, and with surfaces smooth and free from defects of any kind.
5. Silencer holes: Prepare frames for silencers at non-gasketed doors, coordinate with Section 08 71 00 – DOOR HARDWARE and Hardware Schedule. Provide three single silencers for single doors, and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.
6. Glazing beads: Carefully place to properly accommodate the various thicknesses of glass and glazing materials, and loosely-attach to frames with flathead galvanized steel screws through pre-drilled holes having countersunk depressions.

D. Anchorage:

1. Anchor clips for frames in metal stud partitions: Steel clips, 18-gage (minimum 0.042 inch [1.0 mm] thick), 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 09 22 16 - NON-STRUCTURAL METAL FRAMING.

2. Anchor clips for frames in wood stud partitions: 18-gage steel (minimum 0.042 inch [1.0 mm] thick), with 3/4-inch high bendable straps, or equivalent type standard with the manufacturer, contained, for screw attachment to wood studs.
3. Provide the following number of anchors, clips, or bolts, per jamb:
   a. For frames 7'-6" in height or less: 3 anchors per jamb.
   b. For frames 7'-6" in height or less and having doors exceeding 3'-0" feet width, and for cross corridor frames: 4 anchors per jamb.
   c. For frames greater than 7'-6", up to 10'-0" in height: 4 anchors per jamb.
   d. For frames greater than 7'-6", up to 10'-0" in height, and having doors exceeding 3'-0" feet width, and for cross corridor frames: 5 anchors per jamb.
   e. For frames over 10'-0' in height: 5 anchors per jamb.

2.6 FABRICATION

A. General: Do not fabricate materials until all specified submittals have been submitted to, and approved by, the Architect.

B. Fabrication Tolerances, Maximum variation for doors and frames: Maximum diagonal distortion 1/16 inch measured with straight edge, corner to corner.

2.7 FINISHES

A. Preparation: Pressure-sand all surfaces of all doors, frames, accessory items, anchors, and related items, to remove blemishes and foreign matter and provide paint grip. Spot-fill imperfections with metallic filler, and sand smooth. Thoroughly clean the surfaces by applying hot or cold phosphate treatment standard with the manufacturer.

B. Following cleaning apply one dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer to all surfaces, including those which will be concealed after erection. Bake, or oven dry, the primer at time and temperature recommended by the manufacturer for developing maximum hardness and resistance to abrasion.

PART 3 - EXECUTION

3.1 ERECTION AND INSTALLATION

A. Installation of frames and doors, including all accessories and related items furnished hereunder, will be performed under Section 08 05 13 – COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION.
   1. Section 08 05 13 – COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION shall place frames in correct position within specified tolerances.

B. Final installation of loosely-attached glazing stops will be performed under Section 08 80 00 - GLAZING.

End of Section

Section 08 14 16
FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide the following products:

1. Flush solid core wood doors, complete with necessary blocking, hardware cut-outs; installed under requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Remove designated portions of partitions as required to provide or enlarge for new door openings.

B. Section 06 10 00 - ROUGH CARPENTRY: Wood blocking, and nailers; installation of steel door frames.

C. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Hollow metal frames scheduled to receive wood doors.

D. Section 08 71 00 - DOOR HARDWARE (*not bound herewith, refer to Drawings*): Furnishing finish hardware, and installation templates for hardware cut-outs.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
2. ANSI A 208.1 - Wood Particleboard.
3. ASTM D523 - Specular Gloss.
4. ASTM D5456 –Evaluation of Structural Composite Lumber Products..
5. ASTM E152 - Methods of Fire Tests of Door Assemblies.
6. NFPA publication 80 - Fire Doors and Windows.
7. UBC 43.2 – Fire Tests of Door Assemblies.
8. UL 10B - Fire Tests of Door Assemblies.
9. UL 10C – Positive Pressure Fire Door Test Method.
10. Warnock-Hersey - Certification Listings for fire doors.
11. All applicable federal, state and municipal codes, laws and regulations for exits.

B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. WDMA Industry Standard IS 1A-13.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for furnishing hardware and installing doors and frames. Ensure that the work performed hereunder is coordinated with issued templates authorized by the hardware supplier.

B. Pre-installation Meetings: Installer of the Work of this Section is required to attend pre-installation conference specified under Section 08 05 13 - COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION.

C. Sequencing:

1. Field Measurements

a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.

b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

D. Scheduling:

1. Do not fabricate doors before receiving a copy of the approved hardware schedule, submitted by the hardware supplier, reviewed by the Contractor and approved by the Architect. Verify that issued templates are coordinated with the approved schedule; immediately notify the Architect, in writing, of any conflicts.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Literature: Fabricator’s product data sheets, specifications, and performance data.

2. Certification:

a. General: Fabricator’s written certification stating that doors, meet or exceed the requirements specified under this Section; that specified shop finishing has been performed; and that all fire-resistive requirements for the indicated Labels have been met.

b. Provide signed certification by agent of door manufacturer stating that machining, glazing and finishing of doors shall be performed by only by the manufacturer in its facilities.

3. Door schedule: All doors specified under this Section, coordinated with the both door and hardware schedules contained in the Contract Drawings.

a. Indicate doors to be factory finished and finish requirements.

b. Indicate fire protection ratings for fire rated doors.

4. Shop drawings: Elevations, and large scale sections and details of door construction, indicating profiles, core construction, joinery, edges, and cut-outs for hardware.
    a. Indicate dimensions and locations of mortises and holes for hardware.
    b. Indicate dimensions and locations of cutouts.
    c. Indicate requirements for veneer matching.
5. Verification samples:
    a. Corner section of specified flush type door, showing core construction and joinery.
    b. For transparent finishes: submit two 8 by 10 inch mounted finished samples of each specie of veneer specified.
    c. Louver blade and frame sections, 6 inches (150 mm) long, for each material and finish specified.
    d. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Bonds and Warranty Documentation:
    a. Manufacturer’s Warranties and Guarantees as specified elsewhere herein this Section.

1.6 QUALITY ASSURANCE

A. All materials and workmanship shall conform in all respects to the specified grades of the Window and Door Manufacturer’s Association (WDMA) Industry Standard IS 1A-13, except as modified herein.

B. Sole Source: Obtain doors specified in this Section from a single manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:
1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. The Contractor is responsible to make certain that wood doors are not delivered until the building and storage areas are sufficiently dry so that the doors will not be damaged by excessive changes in ambient humidity and relative moisture content.
3. Deliver wood doors in resilient non-staining moistureproof packaging, provide protection during transit and job storage. Clearly identify doors with door opening number, matching those indicated on the approved Door Schedule.
4. Inspect doors upon delivery for damage. Minor damage may be repaired provided the refinished items are equal in respects to new work and acceptable to the Architect; otherwise remove and replace damaged items.

B. Storage and Handling Requirements:
1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.

2. Store doors flat on a level surface, in protected, elevated, dry areas; protect from exposure from all sources of light and moisture. When required to maintain manufacturer's warranty, seal top and bottom edges if stored more than one week. Break packaging seal on-site to permit ventilation.
3. Protect doors from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weather tight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period

1.9 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.10 WARRANTY

A. Provide the following warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Manufacturer's Warranty: Provide coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction, all as defined by .
2. Warranty length:
a. Interior doors: Manufacturer's lifetime warranty.
3. Warranty coverage shall include all labor and material costs of delivery, re-hanging, re-finishing, glass and glazing to produce a complete installation of replaced or repaired doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
1. Lambton Doors, Lambton Quebec Canada.
2. Masonite Architectural, Tampa FL..
3. VT Industries Inc., Holstein IA.
4. Lambton Doors, Lambton Quebec Canada.
5. Oshkosh Door Company, Oshkosh WI.

2.2 DESCRIPTION

A. General Description: Flush wood doors conforming to the requirements set forth in the designated Sections of the (WDMA) Industry Standard IS 1A-13, and the applicable requirements of U.S. Commercial Standard CS 171, as amended. Refer

to the Drawings for sizes, locations of each type door, and other characteristics of doors to be furnished hereunder.

1. Door Grade: Premium.
2. Door Facing:
    a. Face veneer: WDMA Industry Standard, “A’ Grade veneer minimum 1/50 inch (0.6 mm) thick, mechanically spliced.
        1) Wood Species and cut: Red Oak (Quercus rubra), Quarter Sliced.
        2) Matching of adjacent pieces of veneer: book matched.
        3) Panel face assembly: Balanced.
    b. Crossbanding: Hardwood veneer or composite product at least 1/16 inch thick.
3. Regulatory Requirements:
4. Fire rated door construction shall conform to UL publications 10B (neutral pressure testing) and 10C (positive pressure testing).
5. Install doors in compliance with NFPA publication 80.
6. Corridor door assemblies shall be tested and listed per UL 1784.

2.3 NON-RATED SOLID-CORE DOORS

A. General Construction: WDMA Industry Standard, Veneer, Particleboard Core Bonded, Premium Grade Door.
    1. WDMA Specification Description: “PC-5”.
    2. Door thickness: 1-3/4 inches, unless indicated otherwise.

B. Door facing: As specified herein above under Article 2.2 – DESCRIPTION.

C. Core construction:
    1. Core: Particleboard complying with ANSI A208.1 Type 1, Grade 1-LD-2 High density particleboard, minimum 37 pounds per cubic foot, which meets or exceeds WDMA Extra Heavy Duty performance requirement for face screw holding.
    2. Stiles: Stile construction that meets or exceeds WDMA Extra Heavy Duty performance. Structural composite lumber with minimum 1/2" hardwood outer stile of same specie as face veneer, minimum overall 1 inch after trimming.
    3. Top and bottom rails: Maple, Birch, Structural Composite Lumber (SCL) or UL approved composite material to meet label requirements, minimum 7/8 inch width.
    4. Blocking: Provide blocking for securing surface applied hardware without the use of through bolts.
        a. For doors scheduled to receive screw-mounted surface closers, provide top rail blocking.
        b. Provide additional blocking for all other surface mounted hardware.

D. Adhesives: Type 1 (waterproof) for both face and core assembly.

2.4 FABRICATION

A. Fabricate doors in accordance with specified manufacturer's requirements. Fabricated rated doors in compliance with WHI, or UL requirements as appropriate.

B. Laminate door facing, cross banding and assembled core in a hot press.

C. Bond stiles and rails to cores, sand for uniform thickness. Factory sand assembled door leaf.

D. Factory-machine doors to receive hardware from templates furnished under Section 08 71 00 - DOOR HARDWARE. Do not machine for surface hardware.

1. Provide inner blocks at lock edge and top of door for closer hardware reinforcement.
2. Cut and configure door edges to receive scheduled gasketting and intumescent edging specified under Section 08 71 00 – DOOR HARDWARE.

E. Factory fabricate doors for undercut where scheduled.

F. Fabrication tolerances: Maximum diagonal distortion (warp): 1/4 inch (6 mm) measured with straight edge from corner to corner over a maximum 42 by 84 inch surface area.

2.5 FACTORY FINISHING

A. General: Factory finish to be to comply with EPA Title 5 guidelines for Volatile Organic Compound (VOC) emissions limitations.

B. Transparent finish: WDMA Factory Finish System TR-6 Catalyzed Polyurethane having water based stain and ultraviolet (UV) cured polyurethane sealer and topcoat, with a satin sheen of 31° to 35° gloss units per ASTM D523.

1. Finish system shall include the following:
   a. Finish sanding.
   b. Stain application.
   c. Stain curing.
   d. Sealer application - first coat.
   e. Sealer gel cure.
   f. Sealer application - second coat.
   g. Sealer gel cure
   h. Sealer application - third coat
   i. Sealer full cure
   j. Sealer sanding
   k. Topcoat application - first coat
   l. Topcoat application - second coat
   m. Topcoat full cure

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood doors, including all accessories and related items under the requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION.

End of Section

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Section 08 87 00

GLAZING SURFACE FILMS

PART 1 – GENERAL

1.1 SUMMARY

A. Furnish and install the following:

1. Privacy glazing film at shower room window.

1.2 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASHRAE - American Society for Heating, Refrigeration, and Air Conditioning Engineers; Handbook of Fundamentals.
2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E308 - Standard Practice for Computing the Colors of Objects by Using the CIE System.
4. ASTM E903 - Standard Test Method for Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
5. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
6. All Applicable federal, state and municipal codes, laws, and regulations for exits.

1.3 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Provide chemical, functional, and environmental characteristics, size limitations, special application requirements. Identify available colors.

1.4 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.6 SITE CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's limits.

PART 2 - PRODUCTS

2.1 GLAZING FILMS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following:

1. CPFilms, Inc., Martinsville, VA.
2. Decorative Films, LLC, Frederick MD.
3. 3M Window Film, St. Paul, MN.

B. Basis of Design: 3M Window Film, St. Paul, MN., product: “Fasara – Milky Milky (Milano)” Decorative / Privacy Glazing Film (ASTM E903, ASTM E308):

1. Ultraviolet Transmittance: 0.1 percent.
2. Visible Light Transmittance: 21 percent.
3. Visible Light Reflectance - Interior: 43 percent.
4. Solar Heat Transmittance: 25 percent.
5. Solar Heat Reflectance: 34 percent.
6. Shading Coefficient at 90 Degrees (Normal Incidence): 0.44.

2.2 ACCESSORIES

A. Slip solution: Composed of one capful of baby shampoo or dishwashing liquid to 1 gallon of water, or as otherwise recommended by glazing film manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

1. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

A. Surface Preparation: Clean surfaces thoroughly prior to installation.

1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 APPLICATION

A. Install in accordance with manufacturer's instructions.

B. Cut film edges neatly and square at a uniform distance of 1/8 inch to 1/16 inch of window sealant. Use new blade tips after 3 to 4 cuts.

C. Spray slip solution on window glass and adhesive to facilitate proper positioning of film.

D. Apply film to glass and lightly spray film with slip solution.

E. Squeegee from top to bottom of window. Spray slip solution to film and squeegee a second time.

F. Bump film edge with lint-free towel wrapped around edge of a 5-way tool.

G. Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

3.4 CLEANING

A. Touch-up, repair or replace damaged products before Substantial Completion.

B. After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.

End of Section

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Section 09 29 00
GYPSUM BOARD

PART 1 – GENERAL

1.1 SUMMARY

A. Patch all existing gypsum board finishes disturbed by new construction.
   1. Patch cracks, holes and defects in existing gypsum wall-board surfaces which are to remain and which are indicated or as additional required by field conditions requiring a painted or applied wall-covering finish.

B. Furnish and install:
   1. Taped, compounded and sanded gypsum board finishes.
   2. All trim and accessory components related to gypsum board work. Acoustical joint sealant and backing at perimeter of gypsum board partitions.

C. Install access panels occurring in gypsum board work furnished by Section 08 31 00 - ACCESS DOORS AND PANELS, and by trades requiring the same.

1.2 RELATED REQUIREMENTS

A. Section 01 73 29 - CUTTING AND PATCHING: Procedural and administrative requirements for cutting and patching.

B. Section 02 41 19 - SELECTIVE DEMOLITION: Removal of existing finishes, partitions and walls as indicated in the Drawings.

C. Section 06 10 00 - ROUGH CARPENTRY: Supplemental wood framing and blocking supporting gypsum board.

D. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Furnishing steel door frames.

E. Section 09 30 00 - TILING: Ceramic tile finishes over backer board substrate installed by this Section 09 29 00.

F. Section 09 51 00 - ACOUSTICAL CEILINGS: Suspended acoustical tile ceilings.

G. Section 09 91 00 - PAINTING: Applied finish coatings.

H. Division 21 - FIRE SUPPRESSION: Sprinkler heads in ceiling system.

I. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Supply and return air registers.

J. Division 26 - ELECTRICAL: Independent hangers for suspended lighting fixtures.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with

other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
2. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
3. ASTM C754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
4. ASTM C919 - Use of Sealants in Acoustical Applications.
5. ASTM C1002 - Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
6. ASTM C1047 - Accessories for Gypsum Wallboard and Veneer Base.
7. ASTM C1396 - Gypsum Wallboard.
8. ASTM C1658 - Glass Mat Gypsum Panels.
9. ASTM D3678 - Polyvinyl chloride material for indoor exposure.
10. ASTM D1784 - Polyvinyl chloride material for outdoor exposure.
11. ASTM E90 - Method of Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
12. ASTM E119 - Fire Tests of Building Construction and Materials.
13. GA 201 - Gypsum Board for Walls and Ceilings.
14. GA 214 - Recommended Specifications for Levels of Gypsum Board Finish, Glass Mat and Fiber-Reinforced Gypsum Panels.
15. GA 216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
16. GA 220 - Recommended Specifications for Gypsum Board Winter Related Job Problems.
17. UL - Fire Resistance Directory.
18. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
19. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
2. Work of this Section shall be closely coordinated with the work of Section 06 10 00 - ROUGH CARPENTRY, to assure the steady progress of the Contract.

B. Sequencing: Do not install gypsum board until all pipes, ducts, conduits, and other such items which are to be enclosed thereby, have been permanently installed, inspected and approved.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Shop Drawings:
   a. Details of any special conditions associated with fireproofing.
   b. Mark-up a set of blackline interior elevations indicate corrections to grid layout and provide dimensioning showing locations of all proposed control joints and expansion joints.
      1) Provide interior elevation drawings for interior elevations which are not included as part of the Contract Drawing set.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum board.

C. Qualifications - Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Storage and Handling Requirements:

1. Store materials inside, under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.
   a. Neatly stack board materials flat to prevent sagging.
2. Handle board materials so to prevent damage to edges, ends and surfaces.
3. Protect trim, accessories and corner beads from being bent or damaged.

1.8 SITE CONDITIONS

A. Environmental Conditions: In accordance with GA 216, maintain minimum ambient temperature of 50 degrees Fahrenheit 48 hours before, during taping and compounding, and until completely dry thereafter.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Gypsum board products:
   a. United States Gypsum Company, Chicago IL. (USG).
   b. National Gypsum Company, Charlotte NC. (Gold Bond and ProForm Brands).
   c. G-P Gypsum Corporation, Atlanta GA.
   d. Continental Building Products, Hendron VA.
2. Polyvinyl chloride trim and accessories:
   a. Plastic Components, Inc., Miami FL.
   b. Trim-Tex Drywall Products, Lincolnwood IL.
   c. Vinyl Corporation, Miami FL.
   d. Alabama Metal Industries Corporation, (AMICO)Birmingham, AL.
3. Joint sealants:
   a. Tremco, Beachwood OH.
   b. Pecora Corporation, Harleysville PA.
   c. Owens Corning, Toledo OH.
   d. Specified Technologies, Inc. (STI), Somerville NJ.

B. The design and details as shown on the Drawings and the model numbers specified herein are to establish the standards of design and quality and not to limit competition.

C. Acceptable Substitutions: To establish a minimum standard of quality, design and function desired, the Schedule at the end of this Section indicates a single manufacturer of each product, other manufacturers will be considered for acceptance per the following:

1. Contractor must provide appropriate product data with bid for the Architect to consider the substitutions as “equal” to the manufacturer and product specified.
2. Contractor must include unit prices showing any add or deduct costs for all recommended substitutions which have a greater or lesser cost than furnishing and installing the specified manufacturer and product.

2.2 DESCRIPTION

A. Regulatory Requirements

1. Obtain certificate of compliance from authority having jurisdiction indicating approval of specified products.
2. Fire resistance ratings: Where gypsum board systems with fire-resistance ratings are indicated, provide materials and assemblies of the rating required, tested per ASTM E119, which are identical to those indicated by reference to

Gypsum Association file numbers in "Fire Resistance Design Manual" or to design designation in the Underwriters Laboratories "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction and to the Owners' insurance underwriters.

3. Seismic Compliance: Nonstructural components that are permanently attached to structures and their support attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance to local jurisdiction.

2.3 BOARD MATERIALS

A. Non-rated and Fire rated gypsum board (for wall fire resistant ratings 120 minutes and less): UL fire resistance rated, ASTM C1396 ‘Type X’ board, 5/8 inch thick, 48 inch width, of lengths to minimize end joints, with tapered edges.

1. Acceptable products include the following, or approved equal:
   a. USG Sheetrock brand “Firecode Core”
   b. National Gypsum Company, Gold Bond brand product “Fireshield Gypsum Board”.
   c. G-P Gypsum Corporation product, “ToughRock Fireguard”.
   d. Continental Building Products, product “Firecheck Type X”.

B. Sag-resistant gypsum board ceiling panels: Non-rated 1/2 inch thick, 48 inch width, of lengths to minimize end joints, with tapered edges, conforming to ASTM C1396.

1. Acceptable products include the following or approved equal:
   a. USG Sheetrock brand product “Ultralight Panels Mold Tough”.
   b. National Gypsum Company, Gold Bond brand product “High Strength Ceiling Board”.
   c. G-P Gypsum Corporation product, “ToughRock CD Ceiling Board”.
   d. Continental Building Products, product “Sagcheck”.
2. At fire-resistant rated ceilings, provide 5/8 inch thick fire-rated gypsum board as specified herein.

C. “Paper-less” moisture and mold resistant board: 5/8 inch thick Glass mat, water-resistant, mold-resistant interior wall panel: Coated inorganic glass mat-faced, with Type “X” water-resistant, treated core gypsum wallboard. Physical properties conforming to the applicable sections of ASTM C1177 and ASTM D3273.

1. Acceptable products include the following or approved equal:
   a. USG Sheetrock brand product “Mold-Tough Firecode X”.
   b. National Gypsum Company, Gold Bond brand product “eXP Interior Extreme Gypsum Panel”.
   c. G-P Gypsum Corporation product, “DensArmor Plus Paperless Interior Panel.
   d. Continental Building Products, product “Weather Defense Platinum Interior, Type X”.

2.4 TRIM AND EDGE COMPONENTS

A. Polyvinyl chloride (PVC) trim accessories, conforming to ASTM D1784 and C 1047.

1. J Bead: Edge trim with exposed 1/2 inch face cap, furnish trim model number corresponding to the board thickness where installed.
    a. Plastic Components model number: 200X-50 (for 1/2 inch thick board) or 200S-58 (for 5/8 inch thick board).
    b. Trim-Tex, model: 1110 (for 1/2 inch thick board) or 1210 (for 5/8 inch thick board).
    c. Vinyl Corporation model number: JB50 (for 1/2 inch thick board) or JB58 (for 5/8 inch thick board).
    d. AMICO model number: AMJB50 (for 1/2” thick board) or AMJB58 (for 5/8” thick board).
2. L Bead: casing edge trim, furnish trim model number corresponding to the board thickness where installed
    a. Plastic Components model number: 221-50 (for 1/2 inch thick board) or 221-58 (for 5/8 inch thick board).
    b. Trim-Tex, model: 1710 (for 1/2 inch thick board) or 1810 (for 5/8 inch thick board).
    c. Vinyl Corporation model number: SB50 (for 1/2 inch thick board) or SB58 (for 5/8 inch thick board).
    d. AMICO model number: AMSB50 (for 1/2 inch thick board) or AMSB58 (for 5/8 inch thick board).
3. Corner beads, 90 degree with 1-1/4 inch flanges:
    a. Plastic Components model number: 209.
    b. Trim-Tex model: 4010.
    c. Vinyl Corporation model number: CB125.
    d. AMICO model number: AMCB125.
4. Control joints: “V” type joint with nominal 3/16 inch reveal and removable temporary tape:
    a. National Gypsum model “EZ Strip Expansion Joint”.
    b. Plastic Components model number: 2027-16.
    c. Trim Tex model: 093V.
    d. Vinyl Corporation model number: CJV16.
    e. AMICO model number: AMDCJV16.

2.5 ACCESSORIES

A. Tapes and compound:
1. Joint tape (at paper-faced gypsum): Nominal 2 inch wide, high strength, cross-fibered paper drywall tape.
2. Joint tape (at fiberglass faced gypsum): Nominal 2 inch wide, self adhering (adhesive backed), fiberglass mesh tape.
3. Joint Compound for setting fiberglass joint tape:
    a. Cetainteed, Valley Forge PA., product “ProRock Moisture and Mold Resistant 90”.
    b. Georgia Pacific Gypsum LCC., Pittsburgh PA, product “Densarmor Cote”

c. CTS Cement Manufacturing Corporation, Cypress CA., product “Rapid Set OnePass”.

4. Joint Compound for setting paper joint tape: ‘Speed-setting type compound’, field mixed.
   a. Acceptable products, or approved equal:
      1) USG product “Durabond 20”.
      2) ProForm Brand product “ProForm QuickSet 20”.
      3) Georgia Pacific Gypsum LCC, product “ToughRock All-Purpose Dry Mix”

5. Joint Compound for finishing: field mixed joint compound or factory pre-mixed compound.
   a. Field-mixed compounds: acceptable products, or approved equal:
      1) USG product “Durabond 90”.
      2) ProForm Brand product “ProForm QuickSet 90”.
      3) Georgia Pacific Gypsum LCC, product “ToughRock Setting Compound 90”.
   b. Factory pre-mixed compounds: acceptable products, or approved equal:
      1) USG product “Ready-Mixed Joint Compound”.
      2) ProForm Brand product “ProForm All Purpose Compound”.
      3) Georgia Pacific Gypsum LCC, product “ToughRock Ready Mix All-Purpose Compound”

B. Fasteners (interior board systems):
   1. Type W, bugle head screws complying with ASTM C1002, for applying gypsum board to wood framing and furring.
      a. Not less than 1-1/4 inch [31mm] long for single layer gypsum board
      b. Not less than 1-5/8 inch [41mm] long for double-layer gypsum board,

C. Laminating adhesive: Ready mix joint compounds as specified herein above.

D. Joint Sealers (Acoustical Sealant): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.
   1. Acceptable products include the following, or approved equal.
      a. Owens Corning, product: “QuietZone Acoustical Sealant.”
      b. Pecora Corporation, Harleysville PA.; product “ AC-20 FTR”.
      c. Specified Technologies, Inc. (STI), product “Smoke ‘N” Sound Acoustical Sealant”.
      d. Tremco, Beachwood OH.; product, “Acoustical Sealant”.

2.6 SOURCE QUALITY CONTROL

A. Obtain gypsum board and finishing products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that all items which are to be enclosed by Work of this Section, have been permanently installed, inspected and approved.

B. Inspect framing and other substrates; verify that they are in proper condition to receive the work of this Section.

C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 PREPARATION

A. During the operation of gypsum board work, protect all wood, metal, glass, flooring, and other finished materials against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.3 INSTALLATION - GENERAL

A. General: Perform erection procedures for the various gypsum board system conditions, except as otherwise specified, as set forth in GA 201, GA 216,GA 220, the written instructions of gypsum board manufacturer, together with the additional requirements specified herein and as indicated on the Drawings.

B. Where fire-resistive rated assemblies are indicated, erect gypsum board systems in strict accordance with the manufacturers' UL listed test constructions for the required fire rating on each specific assembly.

3.4 INSTALLATION OF GYPSUM BOARD

A. Screw fasten only, gypsum board to framing and furring, with ends and edges occurring over firm bearing. At all door jambs screw fasten gypsum panels 8 inches on center to both box studs

1. Erect single layer fire-resistance rated gypsum board vertically.
2. Erect standard and moisture resistant layer board in most economical direction.
3. Erect ceiling and soffit gypsum boards to meet UL requirements, where applicable, stagger end joints over supports. Secure gypsum board with fasteners inserted through ceiling buttons; anchor fasteners directly to framing or suspended support system.

B. Wherever items penetrate the gypsum board surfaces, use extra care in cutting the gypsum board to ensure a uniformly-dimensioned joint between the penetrating item and the gypsum board, and fill joints with specified sealant material. Verify the expected deflection factor of the penetrating members, and cut the gypsum accordingly, to prevent damage thereto from the deflecting members.

C. Installing Trim Accessories:

1. General: For trim with back flanges intended for fasteners, attach to framing with same screw fasteners used for gypsum board. Otherwise, attach trim according to manufacturer's written instructions.
    a. Nailing, stapling, or crimping methods to install trim components is prohibited.
2. Install corner beads at all exterior corners of gypsum boards.
3. Install casings (PVC trim) wherever gypsum board meets a dissimilar material, and in other locations indicated on the Drawings, except at floors where bottom of the board will be concealed by base, integral with flooring, resilient base, wood base or carpeted base.

3.5 PATCHING EXISTING GYPSUM WALLBOARD

A. Patch existing gypsum wallboard surfaces disturbed by new construction.

B. All patching material shall be flush with, and match, existing surfaces to be patched.

C. Install metal framing necessary for the support of new wallboard.

D. Finish new wallboard as specified. Finish shall match surrounding surfaces for texture.

3.6 APPLICATION OF ACOUSTICAL SEALANT

A. General: Install sealant and backing in accordance with the recommendations of ASTM C919 and sealant manufacturer’s recommendations.
    1. Perform preparation in accordance with C790. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.
    2. If so recommended and furnished by the specific sealant manufacturer, apply primer to all joint surfaces, taking care not to stain adjacent surfaces.

B. Seal all partition perimeters prior to taping or compounding. Where perimeters are edged with metal trim, apply sealant and backing material between trim and dissimilar material.

C. Seal all penetrations in partition types designated for “acoustical” insulation. Penetrations to receive sealant include electrical boxes, plumbing, heating and air conditioning ducts, telephone, intercom hookups and similar items.
    1. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.
        a. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
        b. Do not stretch back-up material into joints.
        c. Install bond breaker wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.

2. Apply sealant in continuous beads without open joints, voids or air pockets
    a. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
3. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

3.7 APPLICATION OF JOINT TREATMENT

A. Install joint tape at all joints where gypsum boards abut and where boards form internal corners, whether or not such joints will be concealed from view.

B. Apply compound to all joints, edges, corners, fastener head depressions and abrasions in the surfaces, whether or not such conditions will be concealed from view. Sand completely smooth all compound surfaces, which will be exposed to view, and leave ready to receive applied coatings or finish.

C. Provide the minimum levels of gypsum board finishes as defined by the Gypsum Association recommended specifications GA-214 and GA-216, per the following:
    1. At areas hidden from view, except as otherwise specified: Level 1.
    2. At areas hidden from view, requiring a fire rating: Level 1.
    3. At concealed plenum spaces above ceilings attic spaces: Level 1.
    4. At non-occupied spaces (i.e. attics): Level 1.
    5. At surfaces scheduled to receive painted finishes: Level 4.

3.8 TOLERANCES

A. Maximum variation for gypsum board partitions and ceilings from true flatness: 1/8 inch per 10 feet, noncumulative.

3.9 CLEANING

A. Daily clean work areas by sweeping and disposing of debris, scraps, and deposits of compound and gypsum fill.

B. After completion of the work of this Section, remove equipment, and clean all wall, partition, and floor areas free from deposits of gypsum fill, and other materials installed under this Section.

End of Section

Section 09 30 00

TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following:
   1. Interior floor and wall tile.
   2. Tile base and trim.
   3. Stone thresholds and saddles.
   4. Fluid applied waterproofing membrane at wet floor areas occurring over occupied spaces and where additionally indicated.
   5. Anti-fracture membrane at slab on grade conditions and “dry” flooring areas.
   6. Cementitious tile backer board.
   7. Installation systems, adhesives, mortars and grouts.
   8. Control joints in tiled floors.

B. Install the following furnished under the designated Sections:
   1. Install access panels into tiled walls as specified under Section 08 31 00 - ACCESS DOORS AND PANELS.

C. Clean and re-grout existing ceramic tile flooring where shown on the Drawings and as indicated in the Room Finish Schedule.

D. Perform drilling and cutting in tile surfaces, as required to accommodate penetrating items of other trades, from templates and instructions furnished by the respective trades.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Removal of existing tile and pavers.

B. Section 06 10 00 - ROUGH CARPENTRY: Wood blocking, base backing, subfloor and underlayment.

C. Section 07 92 00 - JOINT SEALANTS: Backer rod and sealant at control joints.

D. Section 09 29 00 - GYPSUM BOARD: Gypsum board construction substrate for tile.

E. Section 10 28 13 - TOILET ACCESSORIES: Furnishing toilet accessories and installation templates.

F. Division 22 - PLUMBING: Floor drains.

G. Division 26 – ELECTRICAL: Receptacles/outlets.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of

Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ANSI A108.1A - Installation of Ceramic Tile in the Wet Set Method, with Portland Cement Mortar.
2. ANSI A108.1B - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar.
3. ANSI A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.
4. ANSI A108.10 - Installation of Grout in Tilework.
5. ANSI A108.11 - Interior Installation of Cementitious Backer Units.
6. ANSI A118.1 - Dry-Set Portland Cement Mortar.
7. ANSI A118.4 - Latex-Portland Cement Mortar.
8. ANSI A118.6 - Ceramic Tile Grouts.
9. ANSI A118.7 – Polymer Modified Cement Grouts
10. ANSI A118.9 - Cementitious Backer Units.
11. ANSI A118.10 - Waterproofing.
12. ANSI A137.1 - Specifications for Ceramic Tile.
13. ANSI A10.20 - Safety Requirements for Ceramic Tile, Terrazzo and Marble Work.
14. ASTM C144 - Aggregate for Masonry Mortar.
15. ASTM C150 - Portland Cement.
16. ASTM A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
17. ASTM C627 - Evaluating Ceramic Floor Tile Installation Systems.
18. ASTM C920 - Specifications for Elastomeric Joint Sealant.
19. ASTM C1026 - Measuring Resistance of Ceramic Tile to Freeze Thaw Cycles
20. ASTM C1027 - Determining Visible Abrasion Resistance of Glazed Ceramic Tile
21. ASTM D226 - Asphalt Saturate Felt used in Roofing and Waterproofing.
22. ASTM D2103 – Polyethylene Film
23. ASTM E119 – Fire Test of Building Construction and Materials.

B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. TCNA (formerly TCA) - Handbook for Ceramic Tile Installation, latest edition.

C. Definitions: For the purposes of these specifications the following terms are defined:

1. Wet Areas: Rooms/spaces which has plumbing fixtures, sinks, toilets, or floor drains. Wet areas additionally include rooms/spaces which are exposed to weather.

2. Dry Areas: Rooms/spaces which have no plumbing, sinks, toilets, or floor drains.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Sequencing:

1. Do not order or deliver any materials until all submittals, required in the this Specification Section have been received and approved by the Architect.
2. Sequence tile installation with adjoining and related work to minimize damage and soiling during construction.

C. Scheduling: Before proceeding with installation work, inspect all project conditions and all work of other trades to assure that all such conditions and work are suitable to satisfactorily receive the work of this Section and notify the Architect in writing of any which are not. Do not proceed further until corrective work has been completed or waived.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
   a. Include maintenance data and recommended cleaning materials, and cleaning and stain removal methods.
2. Shop Drawings: 1/4 inch scale elevations and plans of tile patterns.
3. Selection Samples:
   a. Manufacturer's sample boards for each type and color group of tile specified, and grout colors, for selections by the Architect.
4. Verification Samples:
   a. Mount tile and apply grout on one 24 by 24 inch cement backerboard board, for each tile type and selected color, to indicate color and texture variations, tile flatness and joint size variations.
   b. Trim shapes and base, in selected colors in types and shapes indicated for project conditions.
   c. Stone threshold, 12 inch long samples in shaped profile.
5. Source Quality Control Submittals:
   a. Grade Certificates: Manufacturer's Master Grade Certificates submitted prior to shipment of tile to project.
      1) Comply with ANSI A137.1 for special purpose tiles.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Bonds and Warranty Documentation:
2. Record Documentation:
3. Sustainable Design Closeout Documentation:

C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage.
   1. Extra Stock Materials: Upon completion of the Work of this Section, deliver to the Owner extra materials in, an amount equal to 3 percent of tile and trim of each color, finish and type installed.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
   1. Conform to ANSI/TCNA A 137.1 and TCNA Handbook for Ceramic Tile Installation.
   2. Tiles delivered to the job or installed in the work which do not fall within the accepted color and texture range demonstrated by the samples shall be removed from the site and replace with acceptable materials.

B. Sole Source: Obtain installation products required for the Work of this Section from a single manufacturer.

C. Qualifications:
   1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

1.7 MOCK-UPS

A. Provide mock-up under provisions of Section 01 45 00 - QUALITY CONTROL.

B. Provide mock-up panels, illustrating color, texture and finish, and demonstrating the minimum standard for the Work.
   1. Mock-up size requirements vary per size of tile, as follows:
      a. Tile sizes up to 12 by 12 inches (144 square inches), provide Mock-up size minimum 3 by 3 feet (9 square feet).
      b. Tile sizes up to 24 by 24 inches (576 square inches), provide mock-up size 6 by 6 feet (36 square feet).
      c. Tile sizes over 24 inches in any dimension up to 48 inches, provide mock-up size 12 by 12 feet (144 square feet).
      d. Tile size over 48 inches in any dimension, provide mock-up having not less than 8 tile.
   2. Mock-up will demonstrate quality of work, construction methods, color and texture of tile, flatness of installation, joint spacing and color of grout. Include typical tile accessories and a control joint.
   3. Locate mock-up adjacent to existing tile work. Mock-up will demonstrate tile blend and match with existing work.

4. Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.

C. Accepted mock-ups may remain as part of the work; the number of mock-ups shall not be restricted.
   1. Protect mock-up from dust, soiling and damage until Project Substantial Completion.

D. Accepted mock-ups may not remain as part of the work. Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.

1.8 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:
   1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
   2. Deliver tile in manufacturer's sealed cartons, grade-sealed by the manufacturer in accordance with ANSI A 137.1, with grade-sealed unbroken, and clearly marked as to contents, color, and quantity.
   3. Deliver and store tile setting materials in original, sealed, containers showing manufacturer's identification, year of production, new weight, date of packaging, and location of packaging.

B. Storage and Handling Requirements:
   1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
   2. Store and protect containers above floor level, keep dry until ready for use.
   3. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.9 SITE CONDITIONS

A. Environmental conditions:
   1. General: Maintain ambient temperatures between 50 (10º C) and 80 (26º C) degrees Fahrenheit in tiled areas, for 24 hours prior to installation, during installation and for 7 days after completion.
   2. When temperature of substrate exceeds 90 (32º C) degrees Fahrenheit, contact manufacturer for instructions.

B. Do not install setting or grouting materials in a closed, unventilated environment. Ventilate propane or fossil fuel heaters to prevent damage to tile work from carbon-dioxide build up.

C. Shade work areas in direct sunlight during installation to prevent rapid evaporation caused by excessive heat.

1.10 WARRANTY

A. General: Submit warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

B. Manufacturer Warranty: The manufacturer of installation systems, adhesives, grouts and mortars shall provide a comprehensive non pro-rated written five (5) year warrantee against defective products which covers replacement materials and labor costs for demolition, tile accessories, and installation systems.

1. Warranty to provide for tile lifting or separation from substrate, and setting bed/grout deterioration, when products have been installed with referenced TCNA setting systems using specified setting and grout materials.
2. Warranty excludes structural failure, movement or cracking of substrate materials, and workmanship performed not in accordance with manufacturer's instructions and industry standard guidelines.

C. Special Warranty: Provide 2 year, non pro-rated warranty which shall include provisions for cracking, breakage or failure of tile due to defective workmanship

1. Materials must be compatible and from one source, single source responsibility for waterproofing, installation, mortars and grouts. Job-site mixtures of sand portland cement and site dilution of additives shall not be permitted.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Floor and wall tile:
   a. American Olean Tile Company, Lansdale PA.
   b. Dal-Tile Corporation, Dallas TX.
   c. Sikes Corp., Florida Tile Division, Lakland FL.
   d. United States Ceramic Tile Company, Sparta OH.
2. Mortars, adhesives and grouts:
   a. Ardex Americas, Aliquippa, PA.
   b. Bostik Corp. (Hydroment), Middleton MA.
   c. C-Cure Chemical Company, Inc., Houston TX
   d. Custom Building Products, Inc., Seal Beach, CA.
   e. Laticrete International, Inc., Bethany CT
   f. MAPEI Americas USA, Deerfield Beach, FL.
   g. TEK Special Construction Brands, Inc. (division of HB Fuller), Arlington Heights IL.
3. Cementitious tile backer board ("Cement board"):
   a. Custom Building Products, Inc., Seal Beach, CA.
   b. Fin Pan, Inc., Hamilton OH.
   c. Unifix, Inc., division of National Gypsum Company, Charlotte, NC.
   d. United States Gypsum Company, Chicago, IL.
4. Edging materials:

a. Schlüter Systems L.P., Plattsburgh NY.
b. Custom Building Products, Inc., Seal Beach, CA.
c. Ceramic Tool Company Inc., Waukesha WI.

2.2 TILE

A. Tile: Types, sizes and colors as scheduled on Drawing A-103 – FINISH PLAN.

B. Base trim and special shapes: Provide all bases, caps, stops, returns, trimmers, and other shapes indicated or required to produce a completely finished installation.
1. Except as may be otherwise indicated, provide color and finish matching adjacent field tile.

2.3 STONE THRESHOLDS

A. Where indicated on the Drawings, provide marble thresholds complying with Class "A" of the Marble Institute of America, in color selected by the Architect from standard colors of the approved fabricator, shaped to provide a comfortable transition between tile and other floor finishes, with smooth matte surface finish and in the dimensions and thickness shown on the Drawings.

B. Thresholds at every door leading into a tiled room: Unfading "Clear Black" slate as fabricated by Hilltop Slate, Inc, Middle Granville, NY. (518) 642-2270; in the dimensions and thickness shown on the Drawings.

2.4 SETTING MATERIALS

A. Thin-Set Mortar: Polymer-modified Portland cement dry-set mortar, complying with the bond strength requirements of ANSI A118.4.
1. Acceptable products include the following or approved equal:
a. Ardex Americas: Product "Ardex S28."
b. Mapei product: "Grani-Rapid".
c. Laticrete product number "254 Platinum".
d. Custom Building Products " FlexBond"

B. Self-leveling cementitious underlayment (factory pre-mixed) with primer. Provide primer at substrate conditions as recommended by manufacturer:
1. Acceptable products include the following, or approved equal:
a. Ardex Americas: Product "Ardex TL 1000."
b. Mapei product: "Ultra/Plan Extreme" with primer.
c. Laticrete product: "86 LatiLevel", with primer.
d. Custom Building Products "Level Quik RS", with primer.

C. Anti-fracture membrane for crack suppression and substrate crack isolation. Two component system (liquid and fabric) complying with TCNA performance level: Extra Heavy Service".
1. Acceptable products include the following, or approved equal:
a. Mapei product: "Plani/Lastic".

b. Laticrete product “Blue 92”.
c. Custom Building Products “Crack Buster Pro” or Fracture Free
d. TEC product 1flex Crack Isolation Membrane.
e. Bostik Corp. (Hydroment), product “Hydroment Gold”.

D. Cementitious tile backer board (“cement board”): 1/2-inch nominal thickness manufactured for exterior application, glass fiber reinforced.
1. Acceptable products include the following:
a. W.R. Bonseal Inc., product: “Ultil-a-Crete”.
b. Unifix, Inc., division of National Gypsum Company, Charlotte, NC., product “PermaBase”.
c. United States Gypsum Company, product: “Durock”.

2.5 COMPOSITE SHEET WATERPROOFING SYSTEM

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Schluter Systems LP., Plattsburgh NY.

B. Waterproofing: Schluter Systems LP., Plattsburgh NY, product “Kerdi” composite sheet membrane 0.008 inch (0.2 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides, which is listed by cUPC to meet or exceed requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).
1. Corners and seals:
a. Provide matching preformed inside corners.
b. Provide matching preformed outside corners.
c. Provide matching preformed pipe seals.

2.6 GROUTING MATERIALS

A. Grout for floors, and walls: Single component, acrylic modified Portland cement grout conforming to ANSI 118.6. Acceptable products are limited to:
1. Ardex Americas: Product “Ardex FL.”
2. Mapei product: “Ultracolor Plus.”
3. Laticrete product “Permacolor”.
4. Custom Building Products: “Fusion Pro”.

2.7 ACCESSORIES

A. Pre-fabricated metal edge treatments and transition strips. Extruded aluminum and stainless steel in profiles as indicated on drawings, with integral provision for anchorage to setting mortars and substrate.
1. Basis of design is Schluter Systems, Plattsburgh, New York.

2. Corner guard / corner edge trim: Stainless steel, having #4 polish finish, in full height (floor to ceiling) as required for tile thickness with a perforated anchoring leg.
   a. Type 1: Tile Column Enclosure corners: Schlüter, product:”Quadec-k”.
   b. Type 2: Schlüter, product: ”ECK”, radius 5/8 inch.
   c. Type 3: Schlüter, product:”Rondec”.
3. Termination trim: 16 gauge stainless steel, having #4 polish finish, in height as required for tile thickness with a perforated anchoring leg. Schlüter, product:”Quadec”.
4. Floor to wall transition trim in Toilet Rooms: Schlüter, product: ”Dilek-AHKA”, in clear anodized finish.
5. Trim at new entry tile: Schlüter, product: ”Jolly”, clear anodized finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
   1. Verify that all concrete substrates are at least 28 calendar days old, completely cured and free of negative hydrostatic conditions or moisture problems.

B. Beginning of installation means acceptance of substrate and site conditions.

3.2 PREPARATION

A. During the operation of work of this Section, protect existing finishes against undue soilage and damage by the exercise of reasonable care and precautions. Clean, or repair all existing materials which are soiled or otherwise damaged by Work of this Section, to match original profiles and finishes. Existing materials and finishes which cannot be cleaned, or repaired shall be removed and replaced with new work to match existing.

B. Ensure that all anchors, plugs, electrical and mechanical work to be in or underneath tile have been installed.

C. Vacuum clean substrate surfaces.

D. Seal concrete substrate structural cracks with filler; level concrete substrate to acceptable flatness tolerances.
   1. The use of PVA bonding agents or gypsum based leveling materials is prohibited.

E. Apply conditioner or primer to surfaces as recommended by adhesive manufacturer.

F. Upon receipt of tile, check tile for demonstratable warpage and other product defects. Advise Architect in advance of installation if specified maximum tile lippage tolerance cannot be maintained due to tile warpage.

3.3 INSTALLATION - GENERAL REQUIREMENTS

A. Installation Standards: 2016 TCNA Handbook for Ceramic, Glass, and Stone Tile Installation and The American National Standard Specifications for the Installation of Ceramic Tile, 2017 edition (ANSI A108-A118-A136.1), is hereby made a part of this specification. All work of this Section shall be installed in accordance with the requirements contained in referenced standards, and as additionally specified below, and in accordance with the manufacturer's specifications of those products used.

B. Installation Methods: Schedule of substrate conditions, generic type of tile used, with appropriate setting and grouting methods are listed at end of this Section.

1. Use trowel shapes and sizes as recommended by setting materials manufacturer.
2. Back-butter tiles as required to provide coverage indicated, except for tiles exceeding 144 square inches which require a complete back application of mortar (100% coverage).

C. Crack Suppression:

1. Locate sealant filled movement joints including control, contraction and isolation joints where indicated on required and approved shop drawing submittal. Construct joints in accordance with TCNA joint design guideline EJ171 and as specified in Article entitled "INSTALLATION OF CONTROL JOINTS."
2. Dry-Areas (as defined herein): Install anti-fracture membrane over existing cracks and non-movement joints in substrate materials, prior to tile/stone installation.
3. Wet-Areas (as defined herein): Install waterproofing systems over all substrate materials (100 percent coverage) prior to tile/stone installation.

D. Tile Patterns and types: Tile patterns are shown on the Drawings, if more information is required, obtain the necessary information from the Architect. Do not interrupt tile pattern around openings.

E. Tile Layout and installation

1. Layout tile on room axis, leaving equal sized border units of not less than one-half tile width.
2. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align base and wall joints.
3. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, full without voids, cracks, excess mortar, or excess grout.
4. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated.
5. Do not align joints of base units and lowest course of tile, offset joints by one-half of unit width.
6. Soft Joints: Provide 3/8 inch sealant joint where floor tile terminates at non-tiled vertical surfaces (walls, planters and similar built-in place elements).

F. Tile Lippage: Maximum 1/32 inch; remove and replace tiles exceeding this requirement.

3.4 INSTALLATION OF CEMENT BOARD

A. Walls:

1. Wall framing substrate: Do not install cement board directly over protrusions from stud plane such as heavy brackets or fastener heads.
2. Make necessary cut-outs. Install cement board horizontally leaving 1/8 to 3/16 space at all joints, including joints with dissimilar materials. Stagger board joints with those of adjacent rows.
3. Fasten cement board with 1-1/4 inch length type S bugle head screw. Fasten boards every 8 inches on center in field and along edges. At edge conditions, locate fasteners between 1/2 inch to 2 inches from board edge.
4. At all joints and corners, fill gap solidly with dry-set or latex-modified, portland cement mortar and imbed 2 inch mesh fiberglass table and smooth material over joint and corner.

3.5 INSTALLATION – METAL EDGE TRIM

A. General: Apply materials in strict accordance with the written instructions and recommendations of edge material and setting materials manufacturers.

1. Ensure that top surface of metal edge and transition strips align with surface plane of tile.
2. Locations: Provide metal edge at every flooring transition between tile and other flooring materials.

B. Press perforated anchoring leg of trim into troweled dry set mortar bedding. Trowel additional mortar over perforated anchoring leg of trim to ensure full coverage and support of tile edges.

C. Solidly embed tiles in manner that tiled surface is flush with top of trim profile. Tile may exceed trim height by 1/32 inch [1 mm] to 1/16 inch [1.5 mm], but tile may not be installed lower than height of trim. Maintain a 1/8 inch [3 mm] minimum uniform joint width between edge of tile and metal trim to be filled by grout.

3.6 INSTALLATION - COMPOSITE SHEET WATERPROOFING SYSTEM

A. General, Install in strictly in accordance with manufacturer’s written instructions.

1. Extend waterproofing to full area of tile (compliance with TCNA F125-Full), and up walls to height of wall base, not less than 4 inches.

B. Apply Un-coupling fabric waterproofing over cement backer board substrate (walls), and flooring substrates embedded into specified unmodified Portland cement mortar.

C. Seam and join sheets use manufacturer’s seam sealant.

1. Overlap 2 inches (50mm) minimum.
2. Apply 1/8 inch bead, 1/4 inch from edge of sheet being overlapped. Apply additional bead of sealant parallel and 1/2 inch from first bead.

3. Overlap sheets and flatten with roller or by pressing with flat edge of trowel. Ensure beads are continuous without skips or voids.

D. End seams, bare membrane to bare membrane, use manufacturer's chemical weld. Apply chemical weld system in strict compliance with manufacturer's written instructions.

E. Lap corners, bond overlap and seal inside corner with manufacturer's sealant. Use preformed corners, and set with manufacturer's sealant.

3.7 FLOORING INSTALLATION – TCNA NUMBER F147 MODIFIED

A. Description: Thin-set tile installation with composite sheet waterproofing membrane applied overr wood subfloor and wood framing.

1. Service Rating: Residential.

B. General: Install in accordance with ANSI A108.5, and TCNA installation method number F147, and as additionally specified herein below. Apply materials in strict accordance with the written instructions and recommendations of setting materials manufacturer.

1. Setting materials:

a. Wood underlayment, maximum 1/8 inch gap between sheets.

b. Composite sheet waterproofing membrane (ANSI A118.10).

c. Bonding coat: Latex modified portland cement (ANSI A118.4).

d. Grout materials: Acrylic modified Portland cement sanded grout (ANSI A118.6).

e. Grout Sealer

C. Install composite sheet waterproofing membrane over backer board for entire tile substrate area (100 percent coverage) in strict compliance with manufacturer's written instructions, as additionally specified herein above, and in compliance with TCNA F125-Full, with installation on walls up to height of tile base.

D. Install latex/portland cement mortar bed over cured waterproofing membrane to a nominal thickness of 3/32 inch.

E. Grouting:

1. Allow tile to fully set prior to grouting; do not grout in less than 48 hours after installation of tile.

2. Grout tile joints in accordance with ANSI A108.10 and as additionally specified.

3. Apply grout joint sealer in accordance with manufacturer's instructions.

3.8 WALL TILE INSTALLATION - TCNA NUMBER W244C WITH THIN-SET

A. General: Install in accordance with ANSI A108.5, TCNA installation method number W244C, and as additionally specified herein below. Apply materials in strict accordance with the written instructions and recommendations of setting materials manufacturer.

1. Setting materials: Latex modified Portland cement (ANSI A118.4).

2. Grout materials: Acrylic modified Portland cement (unsanded) grout (ANSI A118.6).

B. Install latex modified Portland cement mortar bed to a thickness recommended by manufacturer.

C. Grouting:

1. Allow tile to fully set prior to grouting; do not grout in less than 24 hours after installation of tile.
2. Grout tile joints in accordance with ANSI A108.10 and as additionally specified.

3.9 INSTALLATION - TCNA NUMBER TR611 WITH STONE THRESHOLDS

A. General: Install in accordance with ANSI A108.5, TCNA installation method number TR611, and as additionally specified herein below. Apply materials in strict accordance with the written instructions and recommendations of setting materials manufacturer.

B. Grouting: Install in accordance with installation requirements of abutting tile.

3.10 INSTALLATION - GROUT

A. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.

B. Force the maximum amount of the approved grout into joints in accordance with pertinent recommendations contained in ANSI A108.10 and for epoxy grouts, ANSI A108.6.

C. Fill in joints of cushion-edge tile to depth of the cushion; fill joints of square-edge tile flush with the surface.

D. Fill all gaps and skips. Do not permit mortar or mounting mesh to show through grouted joints.

E. Provide hard finished grout which is uniform in color, smooth and without voids, pin holes, or low spots.

F. Remove all excess grout immediately after installation thereof, wash and rinse tile free from grout film, and tool grout to a uniform density throughout.

3.11 REPAIR

A. Replace cracked chipped, broken, and otherwise defective tiles.

B. Remove work not complying with requirements of the Contract Documents or the referenced standards, and promptly replace with work which does comply.

3.12 CLEANING

A. After completion of the work of this Section, remove equipment, and clean all wall, partition, and floor areas free from deposits of mortar, grout, and other materials installed under this Section, and wash completed tilework.

1. Do not use acid or acid cleaners to clean tile.

2. When tile is thoroughly clean and dry, polish glazed tile with clean dry cloths.

3.13 PROTECTION

A. Do not permit traffic over finished floor surface until grout and tile materials are fully set, and not less than 72 hours. Protect floor surfaces with heavy red-rosin paper or kraft paper.

End of Section

Section 09 51 00
ACOUSTICAL CEILINGS

PART 1 – GENERAL

1.1 SUMMARY

A. Furnish and install the following:
   1. Suspended acoustical tile ceiling including suspension system and associated edge moldings.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Demolition of work abutting existing ceilings and demolition of existing ceilings for new construction.

B. Section 07 92 00 – JOINT SEALANTS: Sealant at gaps between new acoustical ceiling edge angles and all irregular walls.

C. Section 09 29 00 - GYPSUM BOARD: Suspended drywall construction ceilings and soffits.

D. Division 21 – FIRE PROTECTION: Sprinkler heads in ceiling system.

E. Division 23 - MECHANICAL: Air diffusion devices in ceiling.

F. Division 26 - ELECTRICAL:
   1. Fire alarm and smoke detection equipment mounted in ceiling system.
   2. Light fixtures and independent hangers for suspended fixtures.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
   1. ASTM A641 - Zinc- Coated (Galvanized) Carbon Steel Wire
   2. ASTM C423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method "UL Classified".
   3. ASTM C523 - Light reflectance of Acoustical Material by the Integrating Sphere Reflectometer.
   4. ASTM C635 - Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
   5. ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
   6. ASTM E84 - Surface Burning Characteristics of Building Material "UL Classified"

7. ASTM E119 - Fire Tests of Building Construction and Materials "UL Classified".
8. ASTM E413 - Classification for Rating Sound Insulation.
9. ASTM E580 - Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
10. ASTM E1264 - Classification of Acoustical Ceiling Products.
11. ASTM E1414 - Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum. "UL Classified".
12. UL Fire Resistance Directory and Building Material Directory.
13. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

B. General References The following reference materials are hereby made a part of this Section by reference thereto:
1. CISCA (Ceilings and Interior Systems Contractors Association) - Acoustical Ceilings: Use and Practice.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Sequencing:
1. Field Measurements
a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.
2. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, to allow work which will be concealed by the ceilings to be completed prior to commencing installing the ceilings in such locations.

C. Scheduling:
1. Install acoustical units after interior wet work is dry.
2. Schedule work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated and overhead work is completed, tested and approved.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Shop Drawings:

a. 1/4 inch scale plans of each room or space; indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to the system.

b. All drawings bearing dimensions of actual measurements taken at the project.

c. Large scale installation details of special conditions.

3. Shop drawings: Mark-up a set of blackline reflected ceiling plans indicate corrections to grid layout and provide dimensioning, show interrelation of mechanical and electrical items related to the ceiling systems.

4. Verification Samples:

a. 12 by 12 inch samples of acoustical units, illustrating material and finish.

b. 12 inch long samples of suspension system components including main runners, cross runner and edge trim.

c. 12 inch long samples of existing exposed spline suspension system components including runners and edge trim for comparison with supplied materials.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Bonds and Warranty Documentation:

a. Manufacturer's Warranties and guarantees as specified elsewhere herein this Section.

C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage. Deliver to the Owner extra ceiling tiles and suspension framing for future repairs and maintenance, from the same manufacturer as those installed, in the following amounts.

1. Provide to the Owner, extra ceiling panel and suspension components, 3 percent of each type installed.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of acoustical ceiling panels.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.

2. Deliver acoustical ceiling panels in original, unopened packages and store protected in a fully enclosed space.

B. Storage and Handling Requirements:

1. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

C. Damaged material: Remove any damaged or contaminated materials from job site immediately, including materials in broken packages, packages containing water marks, or show other evidence of damage, unless Architect specifically authorizes correction thereof and usage on project.

1.8 SITE CONDITIONS

A. Maintain uniform temperature of minimum of 60 degrees Fahrenheit and humidity of 20 to 40 percent prior to, during, and after installation.

1.9 WARRANTY

A. General: Submit warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

B. Manufacturer Warranty:

1. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Acoustical ceiling panels:
   a. Armstrong World Industries, Inc., Lancaster PA.
   b. USG Interiors Inc., Chicago IL.
   c. Certainteed Corporation, Valley Forge, PA.
   d. Rockfon North America., Chicago IL.
2. Suspension systems:
   a. Armstrong World Industries, Inc., Lancaster PA.
   b. USG Interiors Inc., (Donn® Brand) Chicago IL.
   c. Rockfon North America (Chicago Metalllic Brand), Chicago IL.

2.2 ACOUSTICAL CEILING PANEL

A. Ceiling panel:

1. Panel size: 24 by 24 inch by 3/4 inch thick.

2. Panel edge: Square edge.
3. Description: ASTM E1264 Type XII Form 2, Pattern E, Class A flame spread, wet formed mineral fiber, non-directional fissured, medium textured panel, non-combustible, vinyl latex paint finish.
4. Color: White.
5. Minimum light reflectance range: LR 0.88 to 0.90.
6. Acoustical characteristics:
   a. NRC range: 0.85 to 0.90.
   b. CAC range: N/A.
7. Acceptable products:
   a. Armstrong product "Optima Square Lay-In" product number 3150.
   b. Certainteed product "Symphony F" product number 1322-OVT-1.
   c. USG product "Halcyon Climaplus" with SQ edge, product number 97221.

2.3 CEILING GRIDS

A. Ceiling grid: 15/16 inch exposed tee grid in white color matching ceiling panel; acceptable products are:
   1. Armstrong; 15/16" Prelude Exposed Tee System.
   2. Chicago Metallic; 200 Snap-Grid System.
   3. USG; DX Series.

2.4 ACCESSORIES

A. Edge moldings: Standard edge trim: Grid system manufacturer’s standard L-shape edge trim compatible with exposed grid system and color matched.
   1. Armstrong: Model 7800.
   2. Chicago Metallic: Model 1430.
   3. USG: Model M7.

B. Hanger attachments: Of the most appropriate types for the specific receiving surfaces.

C. Hangers: ASTM A641 Soft temper, pre-stretched galvanized carbon steel wire, with a yield stress of at least 3 times design load, but not less than 12 gage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
   1. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

A. Protection of In-situ Conditions: During the operation of work of this Section, protect existing finishes against undue soilage and damage by the exercise of reasonable care and precautions. Clean, or repair all existing materials which are soiled or otherwise damaged by Work of this Section, to match original profiles and finishes. Existing materials and finishes which cannot be cleaned, or repaired shall be removed and replaced with new work to match existing.

B. Surface Preparation:

1. Carefully examine all receiving surfaces, to which attachments will be made hereunder, and determine the most practical way of making such attachments. Request Architect's approval of any attachment method which differs from that indicated on the approved shop drawings before proceeding with installation.
2. Permit acoustical ceiling tile to reach room temperature and a stabilized moisture content prior to installation.

3.3 INSTALLATION

A. Locate system on room axis, leaving equal sized border units of not less than one-half tile width.

B. Install all components of the suspended grid systems in accordance with the manufacturer's instructions, the approved shop drawings, conforming to ASTM C636 requirements. Ensure a deflection not to exceed 1/360 span of 48-inch simple span.

C. Install specified edge moldings wherever ceilings intersect a wall or partition surface, and around all items having any dimension of 4 inches or more which penetrate the ceilings, including circular penetrations. Set moldings absolutely level, using as long lengths as practicable, and secure with fasteners recommended by manufacturer for the type of substrate.

1. Screw-attach moldings to substrate at intervals not over 16 inches on center. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0". Miter corners accurately and connect securely.

D. Install hanger attachments to overhead construction in accordance with the approved shop drawings, spacing the attachments not more than 48 inches on centers over location of each main tee member.

1. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers to span the extra distance.
2. Install hanger wire to attachments with triple twists.

E. Install main tees parallel to the long dimension of each area, spacing the tees 48 inches on centers. Secure the bottom of hanger wires through slots in the main tee members and tie with triple twists. Level the main tees as the work progresses.

F. Uniformly space the cross tees at 24 inches on centers, and secure the cross tees into the main tees as recommended by the system manufacturer.

G. Fit acoustical ceiling tile units in place, free from damaged edges or other defects detrimental to appearance and function. Install acoustical ceiling tile level, in uniform plane, and free from twist, warp or dents.

1. Field cut tegular type tile with a tegular reveal at all edge conditions.
2. Where required by governmental agencies having jurisdiction, install retention clips, provide two clips per ceiling panel installed on opposite sides of panel.

3.4 INSTALLATION - ADHERED TILE

A. Install acoustical tile by cementing to substrate, using amount of adhesive and procedure recommended by tile manufacturer including removal of loose dust from backs of tiles by brushing and then priming them with thin coat of adhesive. Install splines in joints between tiles and level to 1/8” in 12’-0” tolerance. Maintain tight butt joints, aligned both directions, and coordinated with ceiling fixtures, Scribe and cut tile to fit accurately at ceiling edges and penetrations.

3.5 TOLERANCES

A. Maximum variation from flat and level surface: 1/8 inch in 10 feet.

B. Maximum variation from plumb of grid members caused by eccentric loads: 2 degrees.

3.6 CLEANING

A. Properly clean surfaces of panels and open grids free from dirt and handling marks. Wherever surfaces cannot be cleaned by normal methods or have defects, remove and replace with new components.

B. Clean work under provisions of Section 01 73 00 – EXECUTION.

3.7 PROTECTION

A. Protect finished work under provisions of Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.

End of Section

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Section 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Prepare substrate to receive resilient base.

B. Furnish and install the following:

1. Coved resilient base.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Removal of existing finishes.

B. Section 09 29 00 - GYPSUM BOARD: Gypsum board substrate to receive resilient base.

C. Section 09 65 19 – RESILIENT TILE FLOORING: Vinyl composition tile (VCT) flooring.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - References. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM E84 - Surface Burning Characteristics of Building Materials.
2. ASTM F1861 - Standard Specification for Resilient Wall Base
3. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-installation Meetings: Installer of the Work of this Section is required to attend pre-installation conference specified under Section 09 05 60 - COMMON WORK RESULTS FOR FLOORING

C. Sequencing:

1. Sequence work to ensure resilient base is not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, wet work is dry and cured, and work overhead is completed.

2. Sequence resilient base installation after flooring is installed and when base cabinets or other built-in casework is present on the substrate.
3. Ensure that installation of flooring and accessories occurs after other finishing operations, including painting.
4. Field Measurements
    a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
    b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
    1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
        a. Include certification of data indicating Volatile Organic Compound (VOC) content of all adhesives. Submit MSDS highlighting VOC limits.
    2. Selection Samples: Manufacturers' sample chain of colors available for selection by Architect.
    3. Verification Samples: Each type resilient base and color selected, 24 inches long.
    4. Qualification Submittals.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
    1. Bonds and Warranty Documentation:
        a. Manufacturer’s Warranties and Guarantees as specified elsewhere herein this Section.

C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage.
    1. Extra Stock Materials: Upon completion of the Work of this Section, deliver to the Owner extra materials for future repairs and maintenance, an amount equal 24 linear feet for each color and type of resilient base installed.

1.6 QUALITY ASSURANCE

A. General: Avoid color and pattern differential; provide base from one production run in any single room or contiguous areas.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:
    1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
    2. Do not deliver resilient base materials to the project until all concrete, masonry, plaster and other wet work has been completed and dry.

3. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.8 SITE CONDITIONS

A. Maintain uniform temperature of minimum of 65 degrees Fahrenheit and humidity of 20 to 40 percent 48 hours prior to, during, and 48 hours after installation. Store resilient flooring materials and accessories in the spaces where they will be installed for at least 48 hours before beginning installation. Thereafter, maintain a minimum temperature of 55 degrees Fahrenheit in the areas where the work is completed.

1.9 WARRANTY

A. General: Submit the following warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS, and in compliance with Section 01 78 36 – WARRANTIES.

B. Manufacturer Warranty:

1. Resilient Base: Provide manufacturer’s standard one year limited product warranty for resilient base materials.
2. Adhesives: Provide manufacturer’s one year limited product warranty for adhesion reliability.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Roppe Corporation, Fostoria OH.

1. Refer to Drawing A-103 – FINISH PLAN for Basis of Design manufacturer’s products including specified colors, finishes, and textures.
   a. Note: The use of the term “vinyl wall base” as used on the Drawings is a generic industry term, and does not preclude compliance with the specified rubber base products.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Armstrong World Industries, Lancaster PA.
2. Johnsonite, Middlefield OH.
3. Burke-Mercer Products Company, San Jose CA.

4. Flexco Corporation, Tuscmbia, AL.
5. Roppe Corporation, Fostoria OH.
6. VPI Corporation, Sheboygan WI.
7. Tarkett, Inc., Parsippany NH.

2.2 DESCRIPTION

A. Regulatory Requirements:
   1. Provide materials and assemblies conforming to applicable building codes and regulatory agencies for flame/fuel/smoke rating requirements of base trim in accordance with ASTM E84.

2.3 RESILIENT BASE

A. Rubber Base: 4 inches high, ribbed back, 1/8 inch thick, rounded top complying with ASTM F1861, Type TP, Thermoplastic Rubber (TBR). Colors shall be as selected. Rubber base shall be furnished in continuous lengths, approximately 100 feet long.
   1. Provide coved base at resilient flooring.
   2. Coved base at sealed concrete floors, and back-of-house spaces not having a finished floor.

B. Base accessories: Premolded end stops of same material, size and color as base. Job-form all external and internal corners from base material, pre-molded corner pieces will not be acceptable

2.4 ACCESSORIES

A. Adhesives
   1. General: Water resistant, low VOC, acceptable to the resilient flooring manufacturer, for substrate conditions.
      a. Cove Base Adhesives: Maximum VOC 50 [gIL less water]
   2. Acceptable manufacturers:
      a. Advanced Adhesive Technology, Inc, Dalton GA, product: “No. 432 Modified Acrylic Cove Base Adhesive”.
      b. DAP Incorporated, Dayton OH, product: ”Cove Base Construction Adhesive”.
      c. W.W. Henry Company, Aliquippa PA., product: “Henry 440 Cove Base Adhesive”.
      d. Roberts Consolidated Industries, Inc., City of Industry, CA, product: ”Premium Solvent-Free Cove Base Adhesive”.

B. Joint Sealer for between the top of wall base and irregular wall surfaces: Plastic filler as recommended by manufacturer.

C. Cleaning material: Domestic neutral floor detergent having a pH 7 or pH 8, as recommended by the flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 INSTALLATION

A. Install all products in strict accordance with each manufacturer's written installation procedures and other provisions specified herein.

B. Spread only enough adhesive to permit installation of materials before initial set.

C. Install Resilient base: Install base on solid backing, bond to vertical substrate with continuous contact at horizontal and vertical surfaces. Apply wall base to walls, columns, casework and other permanent fixtures in areas where base is required.

1. Install in lengths as long as practical.
2. Scribe to fit to door frames and other interruptions.
3. Form all external and internal corners in accordance with manufacturer's written instructions. Cope inside corners and fit neatly.
4. Fill voids with plastic filler along the top edge of the resilient wall base on masonry surfaces or other similar irregular substrates.

3.3 CLEANING

A. Post-installation Cleaning: As installation progresses, continually remove excess adhesive from floor, base and wall surfaces without damage.

End of Section

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Section 09 65 19
RESILIENT TILE FLOORING

PART 1 – GENERAL

1.1 SUMMARY

A. Prepare substrates to receive resilient tile flooring as required to ensure specified tolerance level for finish surface of floor tile. Preparation work includes patching, smoothing and leveling substrate, including:

1. Grinding down high spots of substrate.
2. Providing Portland cement-based latex underlayment (filler).

B. Furnish and install the following:

1. Vinyl composition tile (VCT) flooring.
2. Transition strips wherever edges of resilient tile flooring materials abut dissimilar flooring, where no thresholds occur.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION: Removal of existing finishes.

B. Section 06 10 00 - ROUGH CARPENTRY: Plywood underlayment.

C. Section 09 30 00 - TILING: Ceramic tile flooring and marble thresholds.

D. Section 09 65 13 - RESILIENT BASE AND ACCESSORIES: Resilient base.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1. ASTM E84 - Surface Burning Characteristics of Building Materials.
2. ASTM F970 – Standard Test Method for Static Load Limit.
3. ASTM F1066 – Vinyl Composition Floor Tile.
4. ASTM F1482 – Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring.
5. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.
6. NFPA 99 – Standard for Health Care Facilities
7. NFPA 253 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
8. NSF/ANSI 332 – Sustainability Assured for Resilient Floor Coverings.
9. SCSglobal Services – SCS-EC10.3 – Indoor Air Quality Product Performance Standard for Building Interiors (FloorScore).

10. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Sequence work to ensure resilient flooring is not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, wet work is dry and cured, and work overhead is completed.
2. Sequence flooring installation when base cabinets or other built-in casework is present on the substrate.
3. Ensure that installation of flooring and accessories occurs after other finishing operations, including painting.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
   a. Furnish manufacturer’s product literature on flooring adhesive, highlight adhesive properties, including VOC’s and maximum moisture pressure limits for substrates.
2. Shop drawings: 1/4 inch scale plans of each flooring area scheduled for Work of this Section. Drawings shall bear dimensions of actual measurements taken at the project.
   a. Identify each flooring type, colors and patterns, indicate layout of tile units and direction of tile patterns.
   b. Where more than one adhesive type is specified or otherwise required by flooring manufacturer, identify on shop drawings areas for each adhesive type.
3. Selection samples: Manufacturers' sample chain of colors and patterns available for selection by Architect.
4. Verification samples:
   a. Full sized flooring tile, illustrating color, and pattern for each color and type of tile selected.
   b. Edging: 12 inches long demonstrating profile, thickness, size and color.
5. Certificates:
   a. Submit the manufacturer’s certification that the resilient flooring has been tested by an independent laboratory and complies with the required fire tests.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Operation and Maintenance Data: Furnish cleaning and maintenance data.
2. Bonds and Warranty Documentation:

a. Manufacturer's Warranties and Guarantees as specified elsewhere herein this Section.

C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage.

1. Extra Stock Materials: Upon completion of the Work of this Section, deliver to the Owner extra flooring materials for future repairs and maintenance, from the same manufacturing runs as those installed, in the following amounts.

a. Vinyl composition tile: 3 percent of each material in each color, and pattern installed.

b. Furnish a quantity of adhesive of each type used in sealed cans or containers sufficient to apply the above materials.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1. Provide types of resilient tile and accessories supplied by one manufacturer, including leveling and patching compounds, and adhesives.

2. Avoid color and pattern differential; provide flooring from one production run in any single room or contiguous areas.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.

2. Deliver resilient flooring materials in original, unopened packages and store protected for three days prior to installation in area of installation to achieve temperature stability.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets. Store materials in a clean dry, enclosed space off the ground and protected from the weather

2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

3. Protect adhesives from freezing.

1.8 SITE CONDITIONS

A. Temperature and Humidity: Maintain uniform temperature of minimum of 65 degrees Fahrenheit and humidity of 20 to 40 percent 48 hours prior to, during, and 48 hours after installation. Store resilient flooring materials and accessories in the spaces where they will be installed for at least 48 hours before beginning installation. Thereafter, maintain a minimum temperature of 55 degrees Fahrenheit in the areas where the work is completed.

1.9 WARRANTY

A. General: Submit warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

1. Manufacturer Warranty: provide manufacturer's standard wear warranties for all flooring materials installed under this Section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Vinyl composition tile:

a. American Billrite Inc., Amtico Flooring Division (Amitco), Lawrenceville NJ.

b. Armstrong World Industries, Inc., Flooring Division, Lancaster PA

c. Azrock Industries, Inc., Florence AL.

d. Tarkett, Inc., Parsippany NH.

2.2 DESCRIPTION

A. Regulatory Requirements:

1. Provide materials and assemblies conforming to applicable building codes and regulatory agencies for flame/fuel/smoke rating requirements of flooring in accordance with ASTM E84.

2. Provide flooring material to meet the following fire test performance criteria as tested by a recognized independent testing laboratory:

a. ASTM E648 (Critical Radiant Flux) of 0.45 watts per sq. cm. or greater, Class 1.

b. ASTM E662 (Smoke Generation) Maximum Specified Optical Density of 450 or less.

2.3 VINYL COMPOSITION TILE FLOORING

A. Vinyl Composition Tile (VCT): 12 x 12 inch by 1/8 inch thick with solid color extending through thickness of tile; composed of vinyl resins, non-asbestos inorganic mineral fillers, and colorfast pigments complying ASTM F1066 Composition 1, Class 2.

1. Acceptable products include the following, or approved equal:

a. Armstrong World Industries, Inc. product "Standard Excelon, Imperial Texture". (Basis of Design)

b. Azrock product "Cortina Colors" and "Cortina Complements".

c. Tarkett products "Expressions".

2. Colors: As scheduled on Drawing A-103 – FINISH PLAN.

a. Where more than one manufacturers color/pattern group is indicated, they are considered to be similar in price range and the Architect

reserves the right to make selections from any of the color/pattern groups listed herein without any additional costs to the Owner.

2.4 ACCESSORIES

A. Filler for patching, smoothing and leveling subfloors and underlayments: Portland cement-based latex underlayment acceptable to flooring manufacturer, equal to the following:
   1. Ardex Americas, Aliquippa, PA. products “Feather Flash” and “Ardex SD-P”.
   2. Quikrete Companies, product “Fast-Set Underlayment 1248”.
   3. Silpro Masonry Systems Inc., product “Profinish”.

B. General Flooring Adhesives: High moisture resistant and alkali resistant adhesive: Synthetic Polymer, non-flammable in wet state, with NFPA, Class A rated, VOC compliant, capable of withstanding the following in continuous service:
   1. Up to 90% relative humidity (RH) when measured in accordance with ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in-situ Probes.
   2. Up to 8 lbs./1000 sq. ft./ 24 hours MVER when measured in accordance with ASTM F1869 - Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
   3. VOC content: Less than 50 g/L.
   4. Acceptable adhesives, include the following, or approved equal, (subject to acceptance of flooring manufacturer for performance and compliance with warranty requirements, for each type of resilient floor system):
      a. Advanced Adhesive Technology Inc., Dalton GA.
         1) Adhesive: “AAT-270” (maximum 80% RH / 3 pounds MVER).
         2) Adhesive: “AAT-675” (maximum 85% RH / 5 pounds MVER).
      b. Armstrong World Industries, Inc., Flooring Division, Lancaster PA., adhesive: “S-515” (maximum 90% RH / 5 pounds MVER).
      c. DriTac Corp., Clifton NJ., adhesive: “5900 Mega Bond” (maximum 90% RH / 8 pounds MVER).
      d. W.W. Henry Company, Aliquippa PA.
         1) Adhesive: “640 Vinyllock” (maximum 90% RH / 3 pounds MVER).
         2) Adhesive: “430 ClearPro” (maximum 90% RH / 8 pounds MVER).
      e. Johnsonite, Middlefield OH., adhesive: “SpraySmart” (maximum 90% RH / 8 pounds MVER).
      f. Roberts Consolidated Industries, Inc., City of Industry, CA., adhesive: 7350 (maximum 90% RH / 10 pounds MVER).
      g. Mapei Corporation, Elk Grove IL:
         1) Adhesive: “Ultrabond ECO 360” (maximum 80% RH / 5 pounds MVER).
         2) Adhesive: “Ultrabond ECO 711” (maximum 95% RH / 8 pounds MVER).
      h. Titebond, Columbus, OH. adhesive “Titebond 670 Resilient Flooring Adhesive” (maximum 90% RH / 8 pounds MVER).

C. Transition and edge strips:
   1. General: Homogeneous vinyl, of profiles required for thickness of abutting materials.
   2. Edge strips: Tapered or bull nose edge.
   3. Colors: Match or contrast with the flooring, as selected by the Architect from standard colors available, of width shown on the drawings.

D. Cleaning material: Domestic neutral floor detergent having a pH 7 or pH 8, as recommended by the flooring manufacturer.

E. Temporary Floor Protection: Flame retardant treated in conformance with NFPA 701. Acceptable Products include the following, or approved equal:
   1. Holland Manufacturing, Succasunna NJ., product: “Blue Shield Flame StopR.”
   2. Pro Tect Associates, Northbrook, IL, product “Traffic Guard.”
   3. Protection from the Ground Up, Escondido, CA., product “Deck Cover FR.”
   4. Surface Shields, Orland Park, IL, product “Cover Shield.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

3.2 PREPARATION

A. Wood Substrates: Prepare substrate in accordance with manufacturer’s recommendations and ASTM F1482.

3.3 INSTALLATION - GENERAL

A. Install all products in strict accordance with each manufacturer's written installation procedures and other provisions specified herein.
   1. Apply primers as recommended by adhesive manufacturer's written instructions.

B. Spread only enough adhesive to permit installation of materials before initial set.

C. Mix tile to ensure that concentration of surface patterns is uniform throughout. Use tile from cartons in same sequence as manufactured and packaged, if so numbered.

D. Maintain reference markers, holes and openings that are in place or have been marked for future cutting; repeat markers on flooring as marked on substrate. Use non-permanent marking devices which may be cleanly washed off when no longer required.

3.4 INSTALLATION - FLOOR TILE

A. Lay flooring in a square grid pattern, with joints and seams parallel to building lines. Lay tile flooring in pattern as indicated on the drawings or if not indicated as such, lay with alternating pattern-grain to form a basket weave pattern. Lay tile with joints

straight and continuous in both directions and with border tile not less than 1/2 the width of the tile.

B. Neatly fit resilient materials to all intersecting surfaces, and make joints as inconspicuous as possible.

C. Terminate flooring at centerline of door in closed position where adjacent floor finish is of different material or color.

D. Apply resilient materials to have uniform contact with receiving surfaces throughout, with tight joints, and with all finish surfaces smooth, in true plane, free from buckles, waves, and other imperfections.

E. Extend resilient flooring to wall lines beneath all movable equipment and movable casework. Fit resilient flooring onto breaks and recesses, against non-resilient bases, around pipes and other protrusions, under saddles, and to and around other fixed surfaces, making neat cuts in the flooring and minimizing joints.

3.5 INSTALLATION OF ACCESSORIES

A. Resilient edge and transition strips:

1. Install edge strips at all edges of flooring which would otherwise be exposed.
    a. Secure metal edge strips to the substrate with countersunk stainless steel anchors, complying with the edge strip manufacturer's recommendations.
2. Place resilient edge strips tightly butted to flooring and secure with adhesive recommended by the edge strip manufacturer.

3.6 CLEANING

A. General: Comply with requirements of Section 01 73 00 – EXECUTION for periodic and final cleaning, and as additionally specified herein.

1. Control accumulation of waste materials and trash. Daily clean work areas by sweeping and disposing of debris, and scraps.

B. Post-installation Cleaning:

1. As installation progresses, continually remove excess adhesive from floor, and wall surfaces without damage.
    a. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.
2. Sweep floors to remove all loose dirt and debris.
3. After flooring manufacturer’s recommended waiting period, clean all materials installed hereunder with a non-abrasive commercial detergent approved by the material manufacturers, and thoroughly rinse with clear water.
    a. Vinyl composition tile floors: Wait at least 5 full days following completion of tile installation before commencing with cleaning.

C. Final Cleaning:

1. General: Perform final cleaning not before 4 days prior to Owner's intended occupancy date.

a. Wash floors with non-abrasive commercial detergent with floor machine equipped with green or blue pad. Apply manufacturer's recommended stripping solution when floors are badly soiled.

b. Apply a minimum of two coats of acrylic floor polish to protect flooring until regular maintenance procedures can be started.

c. After application and curing of floor polish, ensure that polished floors are protected with heavy kraft paper.

3.7 PROTECTION

A. Prohibit traffic on finished floor areas until flooring adhesive has fully set.

B. Prohibit washing, scrubbing or other similar ‘wet’ operations to occur on finished floor areas for a minimum period of 5 calendar days after installation.

C. Provide protection of completed flooring areas from construction traffic until Substantial Completion of the General Contract. After cleaning and polishing, cover all resilient floor surfaces with fire-resistant temporary floor protection, taping the edges to maintain position of the protection paper. Reapply papers as required to maintain floor protection.

End of Section

Section 09 77 33
SANITARY WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following:
   1. USDA approved glass fiber reinforced plastic panels.
   2. Installation adhesive, non-corroding fasteners, vinyl moldings, and all other components.
   3. Silicone sealant for all joints between panels and moldings, and between panel system and abutting materials.

B. Install access panels occurring in plastic panels furnished by Section 08 31 00 - ACCESS DOORS AND PANELS, and by trades requiring the same.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY: Plywood substrate, and blocking.

B. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Hollow metal door frames to receive ends of panel system.

C. Section 09 29 00 - GYPSUM BOARD: Gypsum board substrate:

D. Section 09 30 00- TILING.

E. Division 21 - FIRE SUPPRESSION: Fire suppression system.

F. Division 26 - ELECTRICAL: Recessed electrical receptacles.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
   1. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
   2. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
   3. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
   4. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
   5. ASTM D2583 - Barcol Hardness.
   6. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.

7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
8. All applicable federal, state and municipal codes, laws and regulations regarding wall finishes and smoke generation.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
   1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
   2. Certification: Manufacturer's written certification stating that panel system and all related components to be furnished hereunder, meet or exceed the requirements specified under this Section that all fire-resistive requirements for the indicated requirements have been met.
   3. Shop drawings: 1/4 inch scale elevations showing panel joint locations.
   4. Selection samples: Sample card indicating Manufacturer's full range of colors available for selection by Architect.
   5. Verification samples: 12 x 12 inch samples of panel illustrating material and finish.

1.5 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Qualifications:
   1. Installer specializing in applying the work of this Section with a minimum of 3 years experience and approved by product manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver panels to the project until all concrete, masonry, plaster, and other wet work has been completed and dry.

B. Remove panels from shipping cartons/skids. Stack panels on a solid flat, dry surface. Do not stack panels direct on concrete flooring or any other surface that emits moisture. Lay Panels flat; do not stand panels on edge, do not store products near a heat source.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Marlite Inc., Dover OH (Marlite FRP products), product “Standard, Class A.”

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Marlite Inc., Dover OH (Marlite FRP products).
2. Crane Composites, Joliet IL., (Glasbord and Kemlite Products).
3. Nudo Products, Inc., Springfield, IL. (Fiber-Lite Products).

2.2 PERFORMANCE REQUIREMENTS

A. Fire and Smoke criteria: Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:

1. ASTM E84 (Method of test for surface burning characteristics of building Materials).
2. Required Rating - Class A (I).

B. Sanitary Standards: System components and finishes to comply with:

1. United States Department of Agriculture (USDA) / Food Safety & Inspection Services (FSIS) requirements for food preparation facilities, incidental contact.
2. Food and Drug Administration (FDA) 2013 Food Code 6-101.11.
3. Canadian Food Inspection Agency (CFIA) requirements.

C. Performance Requirements:

1. Flexural Strength - 1.0 x 104 psi per ASTM D790. (7.0 kilogram-force/square millimeter)
2. Flexural Modulus - 3.1 x 105 psi per ASTM D790. (217.9 kilogram-force/square millimeter)
3. Tensile Strength - 7.0 x 103 psi per ASTM D638. (4.9 kilogram-force/square millimeter)
4. Tensile Modulus - 1.6 x 105 psi per ASTM D638. (112.5 kilogram-force/square millimeter)
5. Water Absorption - 0.72% per ASTM D570.
6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D2583.
7. Izod Impact Strength of 72 ft. lbs./in ASTM D256

2.3 MATERIALS

A. Panels: Fiberglass reinforced plastic panels, ASTM E84 Class A Fire Retardant Rated, having embossed / pebble finish.

1. Panel Thickness: 0.09 inch (2.3mm) thickness.
2. Panel Color: as selected by Architect from Manufacturer’s standard colors.

3. Panel finish texture: Pebble
4. Acceptable products include the following, or approved equal:
   a. Marlite product: “Marlite Standard FRP” panels (Class 1/A).
   b. Crane Composites, Kemlite product: “Glassbord Embossed Texture | FX”.
   c. Nudo products: Inc., “Fiber-Lite LP-F9-FR wall panels.” (Class A).

2.4 ACCESSORIES

A. Aluminum trim: Heavy weight extruded aluminum 6063-T5 alloy prefinished at the factory.
   1. Finish: Factory thermo-set enamel or powder coat finish.

B. Fasteners: stainless steel or nylon fasteners as recommended by the panel manufacturer for the application indicated in the Drawings.

C. Adhesive: Multi-purpose non-flammable, non-staining, construction adhesive: Kemlite No. 260, Henry No. 444, or equal.

D. Sealant: One part acetoxy silicone rubber sealant, USDA approved as recommended by panel manufacturer.

E. Moldings: One piece extruded vinyl moldings, color matched with panels, for application between abutting panels, inside and outside corners , and panel edges as recommended by the panel manufacturer and where indicated in the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify adequacy of blocking, backing and support framing for work of this Section. Inspect all gypsum wall and plywood substrates and verify that they are in proper condition to receive the work of this Section.

B. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 PREPARATION

A. Surfaces receiving work of this Section must be absolutely dry, free from dirt, dust, grease and other foreign materials that will prevent proper adhesion of the wall panels.

B. Verify gypsum board substrate surfaces are flat, conforming to Gypsum Association specifications for a Level 3 finish.

C. Plywood substrate surfaces should be flat to within 1/8” in 10 feet, Sand smooth high spots, and fill low spots with wood filler approved by panel manufacturer.

3.3 INSTALLATION, GENERAL

A. Install work in strict accordance with the manufacturer’s written instructions.

B. Set and secure materials in place, plumb and level. Maintain 1/4” gap at ceiling and junction with flooring base. Maintain 1/8 inch gap between panels and division bar molding to allow for normal expansion and contraction. Allow 3/16 inch around pipes, electrical fitting and other projections.

3.4 APPLICATION OF PANELS WITH MECHANICAL FASTENERS

A. Install with non-corroding fasteners with as recommended by the panel manufacturer for the substrate. Predrill panels for fasteners with holes over-sized by 1/8 inch.

B. Locate fasteners in patterns as indicted on the Drawings.

C. Install fasteners no further than 8 inches apart along top and bottom edges and 16 inches apart on intermediate fasteners. Stagger fasteners on opposing panel edges and corners next to division bar for tight flat seam.

D. Drive fasteners to snug fit, do not overtighten

3.5 APPLICATION OF PANELS WITH ADHESIVE

A. Ensure that both panels and substrate are free of moisture, dirt, dust and other contaminants which may affect the bond of adhesive.

B. Apply adhesive when temperature is between 50 and 90 degrees F.

C. Trowel adhesive evenly on back of sheets, 1/4 deep with square notch trowel, or apply with cartridge gun spacing beads not more than 8 inches in center of panel and run a single bead along all edges of panel.

D. Set panels in position and press against wall. Pull panel away from wall to flash off solvents. Press panel against wall again, apply adequate pressure to make full contact between panel and wall. Brace panel along vertical edges until adhesive is cured.

E. Apply mechanical fasteners along top and bottom edges as specified in Article 3.04 above.

3.6 APPLICATION OF SEALANT AND MOLDINGS

A. Install sealant and moldings, in sequence as recommended by the panel manufacturer to achieve a moisture resistant application of the panel system.

B. After installation of panels and moldings has been completed, apply a continuous bead of specified sealant to all joints between the work of this Section and abutting surfaces. Tool the sealant to a uniformly dense surface, level with the edges of moldings. Immediately remove all excess sealant from finished surfaces.

1. Install joint bead back-up in joints with abutting materials where joints are in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.

a. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.

2. Apply sealant into joints in accordance with sealant manufacturer's instructions, using mechanical or power caulking gun equipped with nozzle of appropriate size, with sufficient pressure to completely fill the joints.
   a. The depth of sealant shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
   b. Maintain the outer edge of the sealant, where side faces of joints are in the same plane, back 1/8-inch from the faces.
   c. After placement of the sealant in joints with abutting materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
   d. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

3.7 CLEANING

A. Daily clean work areas by sweeping and disposing of debris and scraps.

B. Completely clean all panel surfaces, clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealants and adhesives with solvents which will not damage the surfaces in any way.

C. Upon completion of the work of this Section, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

3.8 PROTECTION

A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

End of Section

Section 09 91 00

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: This Section consists of painting work where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Painting work includes, but is not limited to the surface preparation and application of coated finishes, and subsequent touch-up, of interior and exterior items and surfaces as indicated on the Contract Drawings and as scheduled herein.

1. No attempt is made in this Section to list all surfaces, fixtures and equipment requiring painting on this project. It is the responsibility of the Subcontractor to determine for itself the scope and nature of the Work required for a complete installation from the information provided herein and in the Drawings.

B. Surfaces and Materials: In general, without limiting the generality thereof, the following surfaces, fixtures and equipment require a painted finish:

1. New, existing and repaired gypsum board partition and wall surfaces, ceilings and soffits, including all surfaces disrupted and repaired in the process of installing new building systems and components.
2. New and existing metal doors and frames.
3. Handrails.
4. Exposed to view sprinkler piping.
5. Exposed to view electrical conduit and raceways.
6. Elevator ladder, exposed to view lintels and other miscellaneous metal items furnished under Section 05 50 00 - METAL FABRICATIONS which are not factory finished.
7. Access panels and frames.

C. DO NOT PAINT the following surfaces and materials.

1. Concealed from view surfaces, except as indicated otherwise in the Contract Documents or as specified herein.
2. Chrome or nickel plating, stainless steel, bronze, brass.
3. Aluminum other than mill finished or factory primed.
4. Factory finished mechanical and electrical equipment, pumps, machinery and similar items which occur in mechanical, storage or equipment rooms or areas.
5. Factory finished materials, specialties, and accessories unless otherwise specified.
6. Ceramic tile, acoustical tile, resilient flooring, and other integrally finished floor, wall and ceiling finishes.
7. Prefinished millwork items.

8. Fire resistant testing and certification labels, code required labels, safety warning labels, performance rating plates, nomenclature plates, identification plates, and similar other labels.

1.2 RELATED REQUIREMENTS

A. Section 02 41 19 - SELECTIVE DEMOLITION.

B. Section 05 50 00 - METAL FABRICATIONS: Shop priming of designated miscellaneous metals.

C. Section 07 92 00 - JOINT SEALANTS: Requirements for sealant and backing materials.

D. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Shop priming of metal frames and steel doors.

E. Section 08 14 16 - FLUSH WOOD DOORS: Wood doors, both prefinished and unfinished.

F. Section 09 29 00 - GYPSUM BOARD: Drywall partitions, ceilings and soffits, including joint treatment and sanding.

G. Document 09 91 23 - INTERIOR PAINTING SCHEDULE:
   1. Painting schedule for interior surfaces and materials.
   2. Painting schedule for Mechanical and Electrical Equipment.
   3. Electrostatically applied painting of existing HVAC induction units.

H. Section 10 40 00 - SAFETY SPECIALTIES: Shop priming of cabinet doors and frames; shop finishing of cabinet.

I. Division 22 - PLUMBING: Prefinished items such as plumbing fixtures, sprinkler heads, convectors, anemostates and similar surfaces and materials.

J. Division 26 - ELECTRICAL: Prefinished items such as light fixtures, switch gear, electrical distribution cabinets and similar surfaces and materials.

K. Respective sections: Factory-finishing of food service, mechanical, plumbing, fire protection and electrical equipment.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
   1. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
   2. ASTM D2016 - Test Method for Moisture Content of Wood.

3. SSPC-Vis1 - Pictorial Surface Preparation Standards for Painting Steel Structures.
4. SSPC-SP2 - Steel Structures Painting Manual, Volume 2, Systems and Specifications.
5. All applicable federal, state and municipal codes, laws and regulations for flammability and smoke generation of interior finishes.

B. Definitions:

1. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials specified herein, whether used as prime, intermediate or finish coats.
2. Sheen: Specular gloss readings in accordance with ASTM D52.
   a. Flat: less than 5 (measured at 85 degrees).
   b. Eggshell: 5 – 20 (measured at 60 degrees).
   c. Satin: 15-35 (measured at 60 degrees).
   d. Low Luster: 25 – 35 (measured at 60 degrees).
   e. Semi-Gloss: 30 -65 (measured at 60 degrees).
   f. Gloss: 65 or more (measured at 60 degrees).

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: The applicator of work specified herein is responsible to ensure that all paints, enamels, and coatings, proposed to be applied hereunder, are compatible with coatings used for shop-primed items and items which have been prime-coated under the work of other trades.
2. Immediately notify the Architect in writing of conditions which may require a change in the specifications of this Section before proceeding with the work. Failure to do so, in a timely fashion, so as not to interfere with the schedule of work of this Contract, shall be construed as acceptance of the coatings specified. Perform all corrective measures, at no cost to the Owner, for any defects in the work, resulting from the use of such materials.

B. Scheduling:

1. Sequence painting work to ensure primers and painting is not applied until building is enclosed, sufficient heat is provided, all dust-generating activities have terminated, wet work is dry and cured, and work overhead is completed.
   a. Painting work should be scheduled so as to minimize touch-ups. Interior painting is to be without flashmarks. Should flashmarks occur due to touch-ups, the Contractor shall be required to redo the entire surrounding wall surface.
   b. Concrete, masonry, plaster, tile and marble setting and polishing and other wet work shall be completed and dry before commencement of painting work.
   c. Finish flooring and ceiling work may be scheduled by Contractor to be completed after painting. In such cases, paint subcontractor is required to perform touch-ups as necessary following floor and ceiling installations, without additional cost to Owner.

C. Do not order materials until all required schedules have been properly submitted, reviewed by the Contractor and Approved by Architect.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
   a. Include certification of data indicating Volatile Organic Compound (VOC) content of all paint materials.
2. Samples:
   a. Manufacturer's color selector for custom mixed colors for Architect's color scheduling.
   b. Opaque coatings: Two 9 x 12 inch finished samples on hardboard of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.
   c. Transparent finishes and stains: Two 9 x 12 inch finished samples on same species of solid wood and plywood to be furnished under Section 06 20 00 - FINISH CARPENTRY, of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.

B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:

1. Color chips: After final approval of all colors and tints by the Architect, submit to the Owner, color chips of all coatings used, with manufacturer's name and mix designation of the coating for the purpose of future re-ordering of coatings. Color chips shall be at least six (6) square inches in size, for each color and tint.

1.6 QUALITY ASSURANCE

A. Applicator: Company specializing in commercial painting and finishing with 3 years minimum documented experience.

B. Single source responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

C. Environmental Requirements for Volatile Chemicals:

1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:
   a. Flat Paints and Coatings: VOC not more than 50 g/L.
   b. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
   c. Anti-Corrosive Coatings: VOC not more than 250 g/L.
   d. Clear wood finishes:

1) Varnishes: VOC not more than 350 g/L.
2) Lacquer: VOC not more than 550 g/L

e. Floor coatings: VOC not more than 100 g/L

f. Sealers:
1) Waterproofing sealers: VOC not more than 250 g/L.
2) Sanding sealers: VOC not more than 275 g/L.
3) All other sealers: VOC not more than 200 g/L.

g. Stains: VOC not more than 250 g/L.

2. Do not use water based paints formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure), formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides. Water based paints shall be low VOC and shall have a flash point of 61 degrees C or greater.

3. Where it is necessary to use solvent-based paints, with less than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

4. The following shall be low VOC and not be formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure).
a. High performance water based acrylic coatings.
b. Pigmented acrylic sealers.
c. Catalyzed epoxy coatings.
d. High performance silicone grafted epoxy coatings.

5. Restricted Components: Paints and coatings used on this Project shall not contain any of the following compounds. (Excluded from this restriction are residual quantities of naturally occurring elements and chlorinated organics which are found in chlorinated water supplies; contaminate levels shall be below that of the National Primary Drinking Water Standard):
a. 1,2-dichlorobenzene
b. Alkylphenol ethoxylates (APEs)
c. Formaldehyde-donors
d. Heavy metals, including lead, mercury, cadmium, hexavalent chromium and antimony in the elemental form or compounds
e. Phthalates
f. Triphenyl tins (TPT) and tributyl tins (TBT).

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site in sealed and labeled containers; container labeling shall include manufacturer's name, type of paint, color mix designation, expected coverage, surface preparation instructions, instructions for mixing and reducing, drying time, and clean-up recommendations.

B. Store materials, conforming with applicable codes and fire regulations, in designated spaces. Keep storage area secure when direct access is not required or when not performing work under this Section. Take precautionary measures to prevent fire hazards and spontaneous combustion, maintain a dry-chemical type

fire extinguisher in all areas where materials of this Section are being stored or used.

C. Store paint materials in a well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.

D. Do not use the sanitary system for mixing or disposal of refuse material. Carry water to mixing rooms and dump waste material in a suitable refuse receptacle. Remove oily rags and waste each day.

1.8 PROJECT CONDITIONS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Apply paints and finishes above minimum temperature conditions in strict accordance with manufacturer's instructions.

1. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless required otherwise by manufacturer's instructions.

C. Provide sufficient lighting to maintain 80 foot-candles measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Paints and general finishes:

a. Benjamin Moore & Company, Montvale, NJ.

b. California Paints, Andover MA.

c. Glidden Professional (division of PPG Industries, Inc.), Strongsville, OH.

d. Devoe High Performance Coatings (division of PPG Industries, Inc.), Strongsville, OH.

e. Pittsburgh Paints / PPG Industries, Inc., Pittsburgh PA.

f. Pratt & Lambert Inc., (division of Sherwin Williams), Buffalo, NY.

g. Sherwin Williams, Cleveland OH.

2.2 MATERIALS

A. Coatings: Ready mixed, except for field catalyzed coatings with good flow and brushing properties; capable of drying or curing free of streaks or sags. Color pigments shall be processed to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating. Provide best quality grade, where manufacturer makes more than one grade of any material specified.

2.3 ACCESSORIES

A. Accessory materials: other materials not specifically indicated, but are required to achieve the finishes specified of commercial quality.

B. Cleaning Materials: Tri-Sodium Phosphate (TSP) substitute. Acceptable products include the following, or approved equal:

1. Savogran, Norwood MA, products “TSP-PF”, or “Liquid TSP Substitute”.
2. Custom Building Products, Seal Beach, CA., product “Custom T.S.P. Substitute”.
3. DAP Inc., Baltimore MD., product “T.S.P. Substitute Heavy Duty Cleaner”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify Contractor of any condition that may potentially affect proper application of coatings.

B. Measure moisture content of surfaces, do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Gypsum board and joint treatment: 12 percent.
2. Portland Cement plaster: 15 percent.
3. Masonry or concrete: 12 percent.
4. Interior wood: 15 percent.

C. Beginning Work of this Section means acceptance of existing substrate surfaces and site conditions.

3.2 PREPARATION

A. Furnish and lay suitable drop cloths in all areas where coating work is being done to protect floors and all other surfaces from damage during the work. Protect adjoining surfaces with painters mask tape.

B. Prior to preparing surfaces or finishing, remove all finish hardware for painting doors and frames, except hinges and locks on exterior door; remove electrical plates, light fixture trim and fittings. Re-install hardware and other removed items after painted surfaces are thoroughly dry.

C. Mix coatings thoroughly, unless otherwise directed by the manufacturer of the specific coating used, to ensure uniformity of color and mass. Strain previously opened coatings to remove skins, lumps, and other foreign matter prior to painting.

D. Thin or reduce materials only as recommended by the specific material manufacturer, and only with the approval of the Architect.

E. Impervious surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to thoroughly dry.

F. Shop primed steel surfaces:

1. Remove rust, blistered and defective shop prime paint, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or commercial paint remover. Feather edges to make touch-up patches inconspicuous.
2. Remove all grease or dirt with mineral spirits.
3. Spot prime bare metal with metal primer product of the finish coating manufacturer. Seal top and bottom edges of metals doors with primer.

G. Previously painted steel surfaces:

1. Remove rust, blistered and defective paint, down to bright metal by wire brushing, scraping, or sanding. Feather edges to make touch-up patches inconspicuous as possible
2. Remove grease, dirt and all foreign materials.
3. Spot prime bare metal with metal primer product of the finish coating manufacturer.

H. Existing interior wood items scheduled to receive paint finish.

1. Smooth minor defects by sanding. Remove all foreign matter with mineral spirits and fine sandpaper or steel wool.
2. Touch up knots and pitch streaks with commercial stain sealer.
3. Fill up nail wood defects, chips in layers of paint, and cracks with spackle. Ease edges of existing paint by application of spackle and sanding smooth.

I. Gypsum board surfaces, new and existing: Fill minor defects with latex based spackle. Spot-seal all compound surfaces and repair areas in gypsum board, with specified first coat material before application of the first coat.

3.3 APPLICATION

A. Apply all materials in strict accordance with the approved manufacturer's printed instruction, and in accordance with the best trade practices. Each coat shall be reviewed and approved by the Architect before succeeding coats are applied.

B. Do not apply successive coating until the preceding coat is thoroughly dry, and in no case in less than 24 hours after the preceding coat.

C. Number of coats is indicated under Painting Schedules. Number of coats is indicated as a minimum number to be applied over scheduled substrates. An additional coat or coats may be required for proper color coverage of substrate as determined by the Architect, at no additional cost to the Owner. Examples of these conditions include, but are not limited to:

1. Dark colored substrates may require an additional primer or intermediate coat to stabilize color, if final applied top-coat color is light.
2. Pre-finished or pre-primed products may require an additional field applied coat to stabilize the shop/factory applied base color prior to application of top-coat finishes.
3. Dark color top coat finishes may require additional finish coat over white or light colored substrates to obtain correct color density.

D. Apply each coat to a uniform finish; Apply primer and first coat of slightly lighter in color tint than the scheduled color of the final coat.

E. Sand lightly between coats to achieve required finish and remove sanding dust prior to applying succeeding coat.

F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

G. Prime back surfaces of all interior and exterior woodwork scheduled for painted finish with primer.

H. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.4 CLEANING

A. Upon completion of the work in each area, remove all coating splatters from glass, prefinished surfaces, bright metals, and from other surfaces that have not been painted or finished hereunder. Do not use abrasive paper or abrasive cleaner on any prefinished surface or bright metal. Remove all materials and debris; leave work area in a clean condition.

3.5 PROTECTION AND TOUCH-UP

A. During painting work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Properly clean, repair or replace any work so damaged and soiled.

B. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Architect will conduct a final review of all work performed hereunder. Re-coat or touch-up, all scratches and other blemishes on surfaces, and as directed by the Architect, any areas found which do not comply with the requirements of this Section, and bear all costs therefore.

C. Any re-coating or touch-up work, required after the work of this Section has been reviewed and accepted by the Architect, will be paid for by the Contractor.

3.6 PAINTING SCHEDULE

A. Colors: The Architect will furnish a schedule of colors for each area and surface. Tinting and matching shall be to the satisfaction of the Architect. No limit is placed on the number of colors that may be required, or the number of colors in any one room, area, or surface. Premium paints of deep-hued, bright, pigment intensive, accent and primary colors may be scheduled for up to 25 percent of all interior and exterior surfaces without additional cost to the Owner.

1. Colors of priming coats (and body coats where specified) shall be lighter in tint than those of finish coat.
2. Colorants: Pure, non-fading pigments, mildew-proof, ultra-violet resistant, finely ground in approved medium; and be limeproof, when used in coatings to be applied on masonry, concrete, plaster, and gypsum board surfaces.

B. Paint schedule for interior surfaces and materials: Refer to Document 09 91 23.

C. Paint schedule for labeling and identifying fire resistive and rated designations : Refer to Document 09 91 23.

D. Painting schedule for mechanical and electrical equipment: Refer to Document 09 91 23.

End of Section

Document 09 91 23

INTERIOR PAINTING SCHEDULE

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled “APPLICATION” in specification Section 09 91 00 - PAINTING, regarding coverage.

1.2 MANUFACTURER’S DESIGNATIONS

A. Manufacturer’s designations used in Schedule are defined as follows:
1. “Moore”: Benjamin Moore & Company, Montvale, NJ.
2. “California”: California Paints, Andover MA.
3. “Devoe”: Devoe High Performance Coatings (division of PPG Industries, Inc.), Strongsville, OH.
4. “PPG”: Pittsburgh Paints / PPG Industries, Inc., Pittsburgh PA.
5. “Sherwin Williams”: Sherwin Williams, Cleveland OH.

1.3 PAINTING SCHEDULE FOR INTERIOR SURFACES AND MATERIALS

A. Interior GYPSUM BOARD (drywall) partitions, previously painted:
1. Two coats latex eggshell (satin) paint:
a. California: “Pacific Eggshell”, Nº. 561.
b. Glidden Professional: Ultra-Hide 150 Eggshell Nº. 1412.
c. Moore: “Ultra Spec 500 Low Sheen Eggshell N537.
d. Pittsburgh: “Speedhide Interior Latex Eggshell”, 6-411 Series.
e. Sherwin-Williams: "Eggshell Enamel No. 274 ".

B. Interior GYPSUM BOARD (drywall) partitions:
1. One coat latex primer.
a. California: “Prime Touch Primer Sealer” Nºs. 545.
b. Glidden Professional: PVA Wall Primer Sealer Nº. 1030.
c. Moore: “Ultra Spec 500 Primer N534.
d. Pittsburgh: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series.
e. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.
2. Two coats latex eggshell (satin) paint:
a. California: “Pacific Eggshell”, Nº. 561.
b. Glidden Professional: Ultra-Hide 150 Eggshell Nº. 1412.
c. Moore: “Ultra Spec 500 Low Sheen Eggshell N537.
d. Pittsburgh: “Speedhide Interior Latex Eggshell”, 6-411 Series.
e. Sherwin-Williams: "Eggshell Enamel No. 274 ".

C. Interior GYPSUM BOARD (drywall) ceilings, and underside of soffits, previously painted:
   1. Two coats latex flat paint:
      a. California: “Pacific Acrylic Latex Ceiling White”, Nº. 54000.
      b. Glidden Professional: Ultra-Hide 150 Flat Nº. 1210
      c. Moore: “Ultra Spec 500 Flat Nº. N536.
      d. Pittsburgh: “Speedhide Latex Interior Flat Wall Paint”, Nº. 6-70 Series.
      e. Sherwin-Williams: "ProMar 200 Interior Latex Flat Wall Paint”.

D. Interior GYPSUM BOARD (drywall) ceilings, and underside of soffits:
   1. One coat latex primer.
      a. California: “Prime Touch Primer Sealer”, Nºs. 545.
      b. Glidden Professional: PVA Wall Primer Sealer Nº. 1030.
      c. Moore: “Ultra Spec 500 Primer N534.
      d. Pittsburgh: “Speedhide Interior Quick Drying Latex Sealer”, 6-2 Series.
      e. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.
   2. Two coats latex flat paint:
      a. California: “Pacific Acrylic Latex Ceiling White”, Nº. 54000.
      b. Glidden Professional: Ultra-Hide 150 Flat Nº. 1210
      c. Moore: “Ultra Spec 500 Flat Nº. N536.
      d. Pittsburgh: “Speedhide Latex Interior Flat Wall Paint”, Nº. 6-70 Series.
      e. Sherwin-Williams: "ProMar 200 Interior Latex Flat Wall Paint”.

E. Interior METAL, ALUMINUM, shop primed and previously painted (includes counter supports):
   1. Touch up bare metal with latex metal primer.
      a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.
      b. Devoe Coatings: Devflex 4020PF DTM Primer and Flat Finish.
      c. Moore: “Metal Primer”, Nº. P04.
      d. Pittsburgh: “Pitt-Tech DTM Primer/Finish 100% Acrylic”, 90-709/712 Series.
      e. Sherwin-Williams: "DTM Acrylic Primer Finish", B66 W11 Series.
   2. Two coats acrylic semi-gloss enamel:
      a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.
      b. Devoe Coatings: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel.
      c. Moore: “Ultra Spec 500 DTM Acrylic Semi-Gloss”, Nº. HP29.
      d. Pittsburgh: “Pitt-Tech Plus High Performance, Semi -Gloss DTM Industrial Enamel”, 90-1210 Series.
      e. Sherwin-Williams: “Sher-Cryl HPA Semi-Gloss”, B66 Series.

F. Interior METAL, FERROUS, excluding railings, to receive semi-gloss finish: (includes galvanized metal doors and frames):

1. One coat of rust prohibitive primer for unfinished metal surfaces, and touch up bare metal at shop primed, existing and previously coated surfaces:
   a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.
   b. Devoe Coatings: Devflex 4020PF DTM Primer and Flat Finish.
   c. Moore: “Acrylic Metal Primer”, Nº. P04.
   d. Pittsburgh: “Pitt-Tech DTM Primer/Finish 100% Acrylic”, 90-709/712 Series
   e. Sherwin-Williams: "DTM Acrylic Primer Finish", B66 W1 Series.
2. Two coats acrylic semi-gloss enamel:
   a. California: “Rust-Stop DTM Primer/Finish”, Nº. 1061.
   b. Devoe Coatings: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel.
   c. Moore: “Ultra Spec 500 DTM Acrylic Semi-Gloss”, Nº. HP29.
   d. Pittsburgh: “Pitt-Tech Plus High Performance, Semi -Gloss DTM Industrial Enamel”, 90-1210 Series.
   e. Sherwin-Williams: “Sher-Cryl HPA Semi-Gloss”, B66 Series.

G. Interior exposed METAL, PIPING: Same as specified for ferrous metal.

H. Interior METAL, RAILINGS (handrails and guardrails):

1. One coat of epoxy primer (dry film coat 3.0 to 4.0 mils)
   a. Devoe Coatings: Tru-Glaze-WB” 4030 Waterborne Epoxy Primer
   b. Moore: “Coronado Rust Scat Acrylic Primer 36.
   c. Pittsburgh: “Aquapon WB Epoxy Primer”, 98 Series
   d. Sherwin-Williams: “Pro Industrial Pro-Cryl Universal Primer”, B66-310 Series.
2. Two coats of gloss finish epoxy coating (dry film coat 2.5 to 3.0 mils).
   a. Devoe Coatings: Tru-Glaze-WB 4408 Waterborne Gloss Epoxy Coating.
   b. Moore: “Corotech Water-Based Epoxy”, V450 Series.
   c. Pittsburgh: “Aquapon WB Epoxy Coatings”, 98 Series.
   d. Sherwin-Williams: “Pro Industrial Waterbased Epoxy, B70W211/B60V15 Series”.

1.4 PAINTING SCHEDULE FOR FIRE RESISTIVE AND RATED DESIGNATIONS

A. In compliance with Massachusetts State Building Code, Ninth Edition (referencing 2015 International Building Code) and as additionally specified herein, provide identification for all fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions and any other wall or partition which is required to have protected openings or penetrations.

B. In compliance with the 2015 International Building Code and as additionally specified herein, provide identification for all fire walls, fire barriers, fire partitions,

smoke barriers and smoke partitions and any other wall or partition which is required to have protected openings or penetrations.

1. Application:
    a. Apply to outside of fire rated shafts, and to both sides of partitions to be located withing 15 feet of the end of each wall and at intervals not to exceed 30’-0” horizontally for entire length of partition or wall, or once on any partition 30’-0 feet or less in length.
    b. Locate identification in all accessible concealed floor, floor-ceiling and attic spaces. Locate identification within 12 to 18 inches above finished ceilings.
    c. Apply stenciled lettering by spray or brush, or provide permanent signage. Identification shall be waterproof, fade-proof and non-combustible. Signage shall be mechanically fastened or permanently adhered to partition.
    d. Stencil character height: 3 inch (76mm) minimum, sans-serif block lettering font, having minimum 3/8 inch width (9.5mm) strokes, with wording in all capital lettering.
    e. Color: Easily identifiable color, contrasting with background, acceptable to authorities having jurisdiction.
2. Apply stenciled lettering to the following types of partitions using wording specified:
    a. Applied identification for 2 hour fire rated partitions shall read: “2 HOUR FIRE WALL - PROTECT ALL OPENINGS”.
    b. Applied identification for 1 hour fire rated partitions shall read: “1 HOUR FIRE WALL - PROTECT ALL OPENINGS”.
    c. Applied identification for Smoke barriers shall read: “1 HOUR SMOKE BARRIER - PROTECT ALL OPENINGS”.
    d. Applied identification for Smoke partitions shall read: “SMOKE BARRIER PARTITION - PROTECT ALL OPENINGS”.

1.5 PAINTING SCHEDULE FOR MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black enamel.

B. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

C. Remove unfinished louvers, grilles, covers and access panels on and paint as scheduled above.

D. Plywood backboards for electrical panels and other equipment. Paint both front and back surfaces and all edges of plywood backboards before backboards are installed.
    1. One coat latex primer-sealer (undercoater):
        a. Glidden Professional: Lifemaster No VOC Primer Nº. 9116.
        b. Moore: “Ultra Spec 500 Latex Primer N534.
        c. Pittsburgh: “Pure Performance Interior Latex Primer”.

d. Sherwin-Williams: "Harmony Interior Latex Primer” B11W900.

2. Two coats latex semi-gloss paint:
   a. Glidden Professional: Lifemaster No VOC Semi-Gloss” Nº. 9200.
   b. Moore: “Ultra Spec 500 Semi Gloss N539.
   c. Pittsburgh: “Pure Performance Interior Semi-gloss”, 9-500 Series.
   d. Sherwin-Williams: "Harmony Interior Latex Semi-gloss" B10 Series.

E. Prime and paint insulated and exposed cold pipes, conduit, electrical boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are located in storage, mechanical or equipment spaces or those items which are factory prefinished.

F. Exposed to view un-insulated hot pipes within finished painted areas: Two coats heat-resistant enamel conforming to Federal Specification TT-E-496, Type I, applied when surfaces are less than 140 degrees Fahrenheit.

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Section 10 14 00
SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following informational and directional signage:
   1. Interior acrylic plate signage.
      a. Room identification signage.

1.2 REFERENCES

A. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
   1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
   2. ADAAG: Americans with Disabilities Act Accessibility Guidelines.

1.3 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
   1. Literature: Manufacturer's product data sheets, specifications, physical properties for each item furnished hereunder.
      a. Proofs: All text must be reviewed and approved by Architect prior to production of signage. Signage fabricator is responsible for providing corrected copies of text, and to recommend proper letter and word spacing. Text will be reset until approved by the Architect, and the approved proofs shall serve as the standard for all further typesetting and approvals.
         1) Each proof shall clearly identify the individual number assigned to each plate, panel, mural, or sign.
   2. Shop drawings:
      a. Plan drawing showing location of each sign. Coordinate plan with schedule.
      b. Elevation drawings showing full size elevations of each sign. Indicate for each sign: sign styles, lettering and locations, and overall dimensions.
   3. Selection samples:
      a. Sample plastic chips indicating Manufacturer's full range of colors available for initial selection by Architect.

1.4 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Drawings and Signage Design: The Contract Drawings are for purpose to show design intent only. The Contractor is responsible for the proper engineering of all

signage and support. Signage, lettering, graphics, fasteners and support items for all signs required for the Project shall be indicated in the approved shop drawings.

C. Sole Source: Obtain products required for the Work of this Section from a single signage fabricator, or from manufacturers recommended by the prime signage fabricator of plastic plate signage.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals and proofs have been submitted to, and approved by, the Architect.
2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
    a. Delivered packaged sign, clearly labeled in name groups organized for installation.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

C. Damaged material: Remove all damaged signage materials from job site and replace with new.

1.6 ENVIRONMENTAL CONDITIONS

A. Do not install adhesive applied signs when ambient temperature is below 70 degrees Fahrenheit. Maintain this minimum during and after installation of signs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Interior acrylic signs:
    a. Apco New England, East Providence, RI.
    b. Design Communications, LTD., Boston, MA.
    c. Sunshine Sign, North Grafton, MA.
    d. Back Bay Sign Company, Medford, MA.
    e. Instant Sign Center, Norwood MA.
    f. Back Bay Sign Company, Medford, MA.

2.2 SIGNAGE - GENERAL

A. General: Provide sign copy to comply with the requirements indicated in the Drawings, for sizes, styles, spacing, content, positions, materials, finishes and colors of letters.

1. All Signs shall conform to United States "*Americans with Disabilities Act*" and Commonwealth of Massachusetts Regulation 521 CMR: *Architectural Access Board*.
2. Final placing and sizing of lettering shall be done as part of the shop drawing approval process, at which time the manufacturer shall make recommendations for Architect's review. Lettering shall have stroke width to height ratio and width to height ratio in accordance with the Americans with Disabilities Act.
3. Tactile Signage:
    a. Raised Lettering: raised minimum 0.793 mm (1/32 in). and be in compliance with Americans with Disabilities Act.
    b. Braille: Accurate Grade 2 translations, and conforming to the provisions of ADAAG and ICC/ANSI A117.1 with regard to size, position, spacing, and profile characteristics.

B. Installation of all signs shall be done by vandal-proof method, fully described on the approved shop drawings.

C. Regulatory Requirements

1. Provide all signage as required by accessibility regulations and requirements of authorities having jurisdiction.
    a. Comply with all applicable federal, state and municipal codes, laws and regulations regarding signage for exits and handicapped barriers.
2. Products requiring electrical connections: Listed and classified by UL, as suitable for the purpose specified and indicated.

2.3 INTERIOR PLAQUE SIGNAGE

A. Photopolymer plaque signage (general requirements): Identification signs with raised tactile graphics, text, and Grade 2 Braille. Signs shall consist of 1/32 inch thick synthetic light sensitive photo emulsion permanently bonded to a rigid phenolic substrate, aluminum or acrylic plaque.

1. Raised lettering: Bond photopolymer permanently to sign plaque, with appropriate laminating film, as recommend by the photopolymer manufacturer.
2. Lettering height: As indicated on Drawings.
3. Lettering font: As shown on Drawings.
4. Screen-printing: All screen-printing graphics, including raised areas of tactile plaques except Braille, shall be screen printed in a contrasting color so as to meet the color contrast requirements of Americans with Disabilities Act.
    a. All non-tactile text shall be screen printed with catalyzed epoxy ink. Applied vinyl lettering and graphics is not acceptable.
    b. Apply screen printing inks evenly without pinholes, scratches or orange-peeling.

5. Graphics: All text, symbols and graphics shall be reproduced utilizing computer-generated digital art. All screen-printed graphics shall utilize photographically prepared screens and shall be printed in accordance with industry standards. Hand-cut screens are not acceptable.
    a. All edges and corners and letter forms shall be true and clean. Letterforms, color areas, or lines with rounded positive or negative corners, built-up edges, bleeding, spattering, shall not be accepted.
    b. Prepare artwork from typesetters' reproduction of the test specified, minimum 1200 dpi resolution, camera ready artwork. All camera-ready artwork and typesetting shall be no less than 75 percent of actual finished size.
6. Mounting: Surface applied by means of silastic adhesive mounting.
7. Sign colors: As selected by Architect from manufacturer's standard and standard special colors.
    a. All signs shall be two color signs.
8. Allow one room identification sign for every room entry door on the plans.

2.4 ACCESSORIES

A. Fasteners and Installation Hardware:
    1. General: Except as otherwise indicated, use concealed fasteners fabricated from metals not corrosive to sign material and mounting surface.
    2. Adhesive tape (Interior conditioned spaces only): Double sided tape, permanent adhesive.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Locate sign units and accessories where indicated, locations in accordance with the approved shop drawings. Use mounting methods of the type described and in compliance with manufacturer's instructions.

B. Install signs plumb, level and true to height indicated, with sign surfaces free from distortion or other defects in appearance.
    1. Installation of signs shall conform to requirements of Americans with Disabilities Act (ADA) and/or state or local accessibility standards.

C. Interior wall and door mounted signs: Attach to surfaces as follows:
    1. Vinyl Tape Mounting: Use very high bond, double sided foam tape, of thickness indicated, to mount signs to smooth nonporous surface. Use construction adhesive in conjunction with foam tape.
    2. Silicone Adhesive Mounting: Use appropriate liquid silicone adhesive to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape to hold the sign in place until the adhesive has fully cured.

3.2 CLEANING

A. Clean and polish installed signs.

3.3 SCHEDULES

A. General: Provide interior code-related signage as required by accessibility regulations and additional requirements of authorities having jurisdiction. Signage includes, but is not limited to, the following sign types.

1. Signs for accessible spaces.
2. Toilet room / shower room signage.

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Section 10 28 13
TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install toilet, bath and custodial accessories.

B. Furnish and install protection padding for exposed piping.

C. Furnish concealed anchorage devices for handicap handrails for installation under Section 06 10 00 - ROUGH CARPENTRY.

D. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY:
   1. Wood blocking.
   2. Installation of concealed anchorage devices for grab bars in toilet rooms: Section 10 28 13 - TOILET ACCESSORIES.

B. Section 09 29 00 - GYPSUM BOARD: Gypsum board partitions and metal framing.

C. Section 09 30 00 - TILING: tiled walls as substrate for toilet accessories.

D. Section 09 77 33 - SANITARY WALL PANELS: Glass fiber wall panels.

E. Section 10 28 19 – TUB AND SHOWER ENCLOSURES: Shower enclosure with integral shower rod and grab bars.

F. Division 22 – PLUMBING (*not bound herewith, refer to Drawings*).

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
   1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.
   2. ASTM A123 - Zinc Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel, Shapes, Plates, Bars and Strips.
   3. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel, Plate, Sheet and Strip.
   4. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
   5. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
   6. ASTM A386 - Zinc Coating on Assembled Steel Products.

7. ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
8. ASTM A167 - Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and strip.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
   1. Literature: Manufacturer's product data sheets, for each item furnished hereunder.
   2. Schedule: Complete schedule, indicating types, quantity, and model numbers of accessories for each location in which the accessories will be installed.
   3. Selection samples: Sample color chips indicating each manufacturer's full range of colors available for selection by Architect.
   4. Verification samples: Complete units, as requested by Architect.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name, identification of manufacturer or supplier and item identification number corresponding with approved schedule.

B. Store materials inside, under cover, and in manner to keep them dry, protected from weather, surface contamination, corrosion and damage from construction traffic and other causes.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

B. Coordinate the work of this Section with placement of internal wall reinforcement.

1.7 WARRANTY

A. Deliver to the Owner upon completion of the work of this Section, applicable manufacturer’s standard warranties.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Bobrick Washroom Equipment, Inc., North Hollywood CA., referred to as “Bobrick.
   1. Similar toilet accessories manufactured by others will be considered for acceptance as an equal by the Architect, upon receipt of adequate supporting data, and samples, if requested

B. Acceptable Manufactures and models: To establish a standard of quality, design, function desired, and appearance, Drawings and specifications have been based

on manufacturers and model numbers specified herein below. Manufacturers offering products which may be considered as equal include the following:

1. A&J Washroom Accessories, Inc., (A&J) New Windsor NY.
2. American Specialties, Inc. (ASI), Yonkers NY.
3. Bobrick Washroom Equipment, Inc. (Bobrick), Clifton Park NY.
4. Bradley Corporation / Washroom Accessories Division, (Bradley) Menomonee Falls, WI.

2.2 MATERIALS

A. Sheet steel: Cold rolled, commercial quality, ANSI/ASTM A366.

B. Stainless steel sheet: ASTM A167, Type 302/304.

C. Tubing: ASTM A269 stainless steel.

D. Plastic laminate: NEMA LD-3, general purpose type; 0.125-inch thick, matte finish in color as selected by the Architect.

2.3 TOILET ACCESSORIES

A. Coat/robe Hook with Bumper: Surface mounted cast aluminum robe hook with satin finish, or chrome plated with satin finish.
   1. Bobrick model Nº. B-212 (Basis of Design).
   2. A&J, model Nº. UB14.
   3. ASI model Nº. 0714.
   4. Bradley model Nº. 915.

B. Grab bars (of lengths and configurations as indicated on Drawings): Stainless steel, minimum wall thickness 18 gage (Stub's gage), with non-slip knurled, peened or striated surface.
   1. Grab Bar Loading Criteria as defined in Commonwealth of Massachusetts Regulation 521 CMR: *Architectural Access Board*.
      a. Bending stress in a grab bar induced by the maximum bending moment from the application of 250 lbs. shall be less than the allowable stress for the material of the grab bar.
      b. Shear stress induced in a grab bar by the application of 250 lbs. shall be less than the allowable shear stress for the material of the grab bar. If the connection between the grab bar and its mounting bracket or other supports is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.
      c. Shear force induced in a fastener or mounting device from the application of 250 lbs. shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.
      d. Tensile force induced in a fastener by direct tension force of 250 lbs. plus the maximum moment from the application of 250 lbs. shall be less than

the allowable withdrawal load between the fastener and the supporting structure

e. Grab bars shall not rotate within their fittings.

2. Grab bars: 1-1/4 inch diameter with satin finished ends, concealed 1/8 inch thick mounting flange with snap-on cover, equal to:
   a. A&J model Nº. UG2.
   b. ASI series 3700.
   c. Bobrick series B-5806.99
   d. Bradley series 832.

C. Mirrors with wedge-shape tilt frame: 24 inches wide by 36 inches high, having the following:
   1. Frame: 3/4/ inch exposed face stainless steel roll formed frame, beveled, with top extending from wall 4 inches and bottom extending 1 inch. Corners shall be heliarc welded, ground and polished smooth. corners
   2. Back: 20 gage galvanized steel back attached to frame with concealed screws.
   3. Mirror glass: 1/4 inch thick glass, ASTM C1048 complying with Class 1 clear, quality q3 glazing select, conforming to ANSI Z97.1, with Class 1, standard commercial quality, electro-copper back-plating protected by a corrosion-resistant zinc-coating.
   4. Acceptable models:
      a. Bobrick model Nº. B-293x2436 (Basis of Design).
      b. A&J model Nº. U704-VC.
      c. ASI model Nº. 0535.
      d. Bradley model Nº. 7405.
      e. Meek model Nº. M4410.

D. Shower seat: Folding seat having a frame constructed of type-304, satin finish stainless steel, 16-gauge (1.6 mm), 1-1/4" (32-mm) square tubing, and 18-gauge (1.2-mm), 1" (102-mm) diameter tubing. Seat 18 inches wide and project nominally 16 inches from wall and have a 2 inch thick foam padded, white vinyl seat with enclosed 1/2 inch thick plywood base. Seat supports shall not come into contact with floor. Seat shall fold against wall when not in use.
   1. Acceptable models, or approved equal:
      a. Grabbar Specialist model Nº.62-PA3001 (Basis of Design).
      b. A&J model Nº. U934-1A
      c. ASI model Nº. 8204.
      d. Bobrick model Nº. B-519.
      e. Bradley model Nº. (n/a).
   2. Shower Seat Loading Criteria as defined in Commonwealth of Massachusetts Regulation 521 CMR: *Architectural Access Board*.
      a. Bending stress in seat induced by the maximum bending moment from the application of 250 lbs. shall be less than the allowable stress for the material of the seat.

b. Shear stress induced in a seat by the application of 250 lbs. shall be less than the allowable shear stress for the material of the seat. If the connection between the seat and its mounting bracket or other supports is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.

c. Shear force induced in a fastener or mounting device from the application of 250 lbs. shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.

d. Tensile force induced in a fastener by direct tension force of 250 lbs. plus the maximum moment from the application of 250 lbs. shall be less than the allowable withdrawal load between the fastener and the supporting structure

E. Soap dispenser: surface mounted for liquid soaps, with 40 fluid ounce black ABS container or translucent container.:

1. Bobrick model Nº. B-42 (Basis of Design)
2. A&J model Nº. U144.
3. ASI model Nº. 0340.
4. Bradley model Nº. (n/a).

F. Sanitary napkin disposal: Surface mounted feminine napkin disposal unit, fabricated of type 304 stainless steel.

1. Bobrick Trim Line Series B-35139.
2. A&J, model Nº. U582.
3. ASI model Nº. 0473-1A.
4. Bradley model Nº. 4737-11.

G. Toilet tissue dispenser: Single roll type: Surface-mounted dispenser with Type-304, 22-gauge (0.8mm) stainless steel flanges and support arms with concealed, 18 gauge (1.2 mm) stainless steel mounting brackets, secured to wall plates with stainless steel set screws.

1. Bobrick model Nº. B-685 (Basis of Design).
2. A&J model Nº. (n/a).
3. ASI model Nº. 7305-B.
4. Bradley model Nº. 5085.

2.4 ADA PIPING PROTECTION

A. Specified Product (Basis of Design): IPS Corporation, Collierville, TN., ‘Truebro’ brand, product “LavGuard2”.

B. Description: Pliable polyvinyl chloride protective cladding on all drainage piping including hot and cold water valve and supplies under lavatories to comply with ADA and UPC standards. Covers shall be secured by custom fit, tamper-resistant snap-to-lock fasteners.

1. Complies with ICC/ANSI A117.1 (sec 606.6).

2. PVC Base Insulation Material, Class A rated complying with 25 Flame Spread/450 Smoke Index (tested under ASTM E84).

2.5 LOCKS

A. General: All locks shall be keyed alike. Provide four (4) keys, for lockable accessories, to the Owner.

2.6 INSTALLATION ACCESSORIES

A. Fasteners, screws, and bolts: Hot dip galvanized, tamperproof.

B. Expansion shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.7 FABRICATION

A. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion, scratches or dents. Weld and grind smooth joints of fabricated components.

B. Back paint components where contact is made with building finishes to prevent electrolysis.

C. Shop assemble components and package complete with anchors and fittings. Hot dip galvanize exposed and painted ferrous metal and fastening devices. Provide steel anchor plates, adapters, and anchor components for installation.

2.8 FACTORY FINISHING

A. Ferrous metals: Clean and treat, spray apply one coat of baked-on rust and moisture-resistant primer, followed by two coats of baked-on synthetic enamel, in selected colors. Ensure that finish coating is uniform in color intensity and degree of gloss, throughout.

B. Chrome/Nickel Plating: ASTM B456, Type SC2, satin finish.

C. Stainless steel: Number 4 satin finish, except as otherwise specified above under the Article entitled “Toilet Accessories”.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide templates and rough-in measurements as required. Deliver inserts and rough-in frames to site at appropriate times for building-in by other trades

B. Coordinate with trades responsible for providing receiving surfaces on which accessories will be installed.

C. Exact locations of accessories within each room or area shall be as directed by the Architect.

3.2 INSTALLATION

A. Perform installation work in accordance with the approved shop drawings and the manufacturer's installation instructions.

B. Install toilet accessories absolutely level and in true line, securely and rigidly anchored with theft proof fasteners of the size and type most appropriate for the specific receiving surface, concealing the fasteners as far as practicable.

3.3 ADJUSTING

A. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

3.4 CLEANING

A. Remove all protective films and coverings from accessories, and clean and polish each piece. Remove all rubbish, packing materials, and debris, caused by the work of this Section.

End of Section

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Section 10 28 19
TUB AND SHOWER ENCLOSURES

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install the following:
1. Acrylic 4 piece shower/tub wall enclosures with receptor and accessories.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY: Wood blocking and nailers.

B. Division 22 – PLUMBING (*Not bound herewith, refer to Drawings*): Plumbing fixtures and piping.

1.3 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Literature: Manufacturer's product data sheets, specifications, performance data. Identify available colors, shades, and gloss
2. Shop drawings: Large scale design details of minimum 1-1/2 inch-to-1 foot scale, showing abutting materials, installation conditions, clearances. Show profiles, jointing and fastening methods.
3. Selection samples:
a. Solid surfacing samples for initial color selection by Architect.
b. Sealant material: Manufacturer's standard strips of sealant, in all available colors, for selections by the Architect.
c. Provide additional samples as requested by Architect for initial selection of material colors and finishes.
4. Verification samples:
a. 12 by 12 inch samples of solid surfacing materials.

1.4 QUALITY ASSURANCE

A. Fabricator and Installer; with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.
1. Fabricator and Installer for solid surfacing products shall be trained and certified by solid surfacing manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

A. Concrete, masonry, plaster, tile and marble setting and polishing and other wet work shall be completed and dry before delivery, storage and installation of fabricated solid surface items.

B. Ship and handle all materials and fabricated items in a manner which will prevent damage thereto, and store all materials and fabricated items at a dry, elevated, ventilated, and protected interior location.

C. Sequence deliveries to avoid delays and to minimize on-site storage.

1.6 FIELD MEASUREMENTS

A. Field dimensions: The fabricator is responsible for details and dimensions not controlled by Project conditions and shall show on his shop drawings all required field measurements beyond his control.

1. The Contractor shall acknowledge the fabricator's need for accurate field dimensions prior to custom fabrication.
2. The Contractor and the fabricator shall cooperate to establish and maintain these field dimensions.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

PART 2 - PRODUCTS

2.1 TUB/SHOWER ENCLOSURES

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Freedom Showers (Accessibility Progessionals Inc.), Barrie Ontario, Canada, prodict "Freedom ADA Transfer Shower", model number: APF3838BF4P.5, with integral shower curtain rod, and grab-bars.

1. 4 piece acrylic unit, having barrier free threshold.

B. Trim kit: as required by field conditions, color to match tub/shower walls.

C. Colors and patterns shall be as selected by the Architect.

2.2 ACCESSORIES

A. Adhesive for installation of trim components, neoprene panel adhesive or structural silicone glazing sealant, as recommended by manufacturer.

B. Sealant, for joints between countertops and dissimilar materials: One component acetoxy silicone rubber, mildew resistant, FS TT-S-001543A, Type Non-Sag, Class A, and FS TT-S-00230C, Type II, Class A and ASTM C 920, Type S, Class 25, Grade NS, use NT,G and A with a minimum movement capability of ±25 percent, and a Shore A hardness of 20, in manufacturer's standard colors as selected by the Architect, equal to one of the following:

1. Dow Corning Corporation, Midland MI.; product, "786".
2. General Electric Company, Waterford NY.; product, "Sanitary 1700".
3. Sonneborn Building Products Inc., Minneapolis MN.; product, "Sonolastic - OmniPlus".

4. Tremco, Beachwood OH.; product, “Proglaze”.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. General: Install work in accordance with manufacturer’s instructions, install plumb, level, true and straight without distortions.
   1. Use concealed shims as required
   2. Work shall be installed to a tolerance of 1/8 inch in 8 feet for plumb and levelness, including tops.
   3. There shall be no variations in flushness of adjoining surfaces.

B. After installation and leveling of solid surfacing fabrications has been completed; apply a continuous bead of specified sealant to all joints which abut walls or partitions. Tool the sealant to a uniformly dense surface, level with the edges of the casework. Immediately remove all excess sealant from solid surfacing surfaces.

3.2 TOLERANCES

A. Maximum variation from true position 1/16 inch with a maximum of 1/32 inch offset from true alignment with adjoining surfaces intended to be flush.

3.3 CLEANING

A. Daily clean work areas by sweeping and disposing of scraps.

B. Clean excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and solid surfacing manufacturers.

C. Wash down exposed surfaces with a solution of mild detergent in warm water, applied with soft clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

End of Section

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Section 10 40 00
SAFETY SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish and install:
1. Fire extinguishers, mounted with wall bracket.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY: Wood framing and blocking.

B. Section 09 29 00 - GYPSUM BOARD: Gypsum wallboard finishes.

1.3 REFERENCES

A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
1. NFPA 10 – Standard for Portable Fire Extinguishers, 2018 Edition.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Literature: Manufacturer's product data sheets, indicating: fabrication specifications, finishes, dimensions of cabinet and rough opening, and installation instructions.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store extinguishers inside, under cover, and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following:
1. J.L. Industries, (Division of Activar Inc.). Bloomington MN.
2. Larsen Manufacturing Co., Minneapolis MN.
3. Potter-Roemer, Union NJ.
4. Strike First Corporation of America, Front Royal, VA

5. Amerex Corporation, Trussville, AL.

B. Extinguishers: Wet chemical type (potassium acetate based), 2-1/2 gallon capacity, rated '2A:K'; with metal valves and siphon tubes, replaceable molded valve stem seals, pressure gauges and hose discharge.

1. Provide with accompaning compatible wall bracket.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Beginning of installation means acceptance of project conditions.

3.2 INSTALLATION

A. Install fire extinguisher in accordance with manufacturer's instructions in location indicated, and as additionally directed by regulatory authority having jurisdiction.

3.3 CLEANING AND ADJUSTMENT

A. Upon completion of the work of this Section in any given area, remove tools, and all packaging and debris from the work area; leave area in broom-clean condition.

End of Section

Section 11 31 00
RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide residential appliances, including the following:
   1. Stacking Clothes washers and Dryers

1.2 RELATED REQUIREMENTS

A. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING:
   1. Exhaust ducts to clothes dryers, (including connections).

B. Division 26 - ELECTRICAL: Electrical supply to appliances.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Sequencing:
   1. Field Measurements
      a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
      b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

C. Scheduling:
   1. Coordinate schedule of construction, size of access and route to place of installation to prevent delay of installation due to physical impediments. Any work involving the demolition and reconstruction of partitions, walls, floors, roofing, windows, or doors to place and install the work of this Section shall be performed at no additional cost to the Owner.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
   1. Literature: Manufacturer's product data sheets and specifications, for each product installed and furnished hereunder clearly indicating configurations, sizes, materials, finishes, locations, utility connections and locations. Include information on accessories and options.
   2. Manufacturer’s installation instructions: Indicate special procedures, perimeter conditions and conditions requiring special attention.

3. Manufacturer’s certificates: Certify that Products provided under this Section meet or exceed UL and specified requirements.
4. Manufacturer's sample warranties.
5. Shop drawings for coordination: Provide dimensioned locations for utility connections.

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Manufacturer’s warranties: Include coverage of installed equipment.
2. Maintenance Data: Include lubrication and periodic maintenance requirement schedules.

1.5 QUALITY ASSURANCE

A. Certification labels: Provide residential equipment which complies with standards and bears certification labels as follows:
1. Energy ratings: Provide energy guide labels with energy cost analysis (annual operating costs) and energy information as required by Federal Trade Commission.
2. UL standards: Provide residential equipment with UL labels.

B. Regulatory Requirements
1. Products requiring electrical connections: Listed and classified by UL, as suitable for the purpose specified and indicated.
2. Provide and install the work of this Section in conformance with all applicable federal, state and municipal codes, laws and regulations regarding utilities, health, fire protection and safety.

1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:
1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.

B. Storage and Handling Requirements:
1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.7 WARRANTY

A. General: Submit the manufacturer’s standard warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS, and in compliance with Section 01 78 36 – WARRANTIES.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. General: Provide products of same manufacturer for each type of residential appliance required. To greatest extent possible, provide equipment by single manufacturer for entire project.

1. In kitchens, provide appliances with matching color and style. When equipment is by more than one manufacturer, provide units matching

B. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on companies listed under the Article “Equipment”.

C. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. LG Electronics Corporation, Englewood Cliffs, NJ. (Basis of Design)
2. General Electric Company, (GE) Appliances Division, Louisville KY.,
3. Maytag Company, Magic Chef Division, Cleveland TN.
4. Whirlpool Corporation, Benton Harbor MI.
5. XO Appliance. Roseland. NJ.

2.2 EQUIPMENT

A. Unitized Stacking Clothes Washer/Dryer: Stand alone “extra-large” capacity clothes washer/dryer, nominally 27 inches wide and 30-3/8 inches deep and 74*3/8 inches high. Washer/dryer shall be equal to LG product “Wash Tower”, with the following features.

1. Capacity:
   a. Washer: 4.5 cubic feet.
   b. Dryer: 7.4 cubic feet
2. Wash Cycles: Standard wash cycles (minimum 6) including the following specific wash options, and 5 soil levels:
   a. Permanent Press
   b. Delicates.
   c. Regular.
3. Dryer Cycles: Minimum 9 optional cycles.
4. Color: manufacturer’s standard White or Black, as selected by Architect.
5. Electrical requirements: Single phase, AC only. Voltage 120/208, 60Hz., 30 Ampere.

2.3 ACCESSORIES

A. Provide rough-in hardware, supports and connections, attachment devices, closure trim, and accessories.

2.4 FINISHES

A. Finish Colors: Provide manufacturer's standard colors as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify the Contractor, and copy to Architect, in writing of any conditions detrimental to the proper and timely completion of the work, and do not proceed with the work until said conditions are corrected.

B. Verify clearances required for equipment.

C. Verify ventilation outlets, service connections, and supports are correct and in required location.

D. Verify that electric power is available and of the correct characteristics.

E. Beginning of installation means acceptance of existing site conditions.

3.2 INSTALLATION

A. Install each product in accordance with manufacturers' instructions.

1. Maximum variation for installed equipment, from true position of 1/16 inch in 8 feet for plumb and level and a maximum of 1/32 inch offsets in adjoining surfaces intended to be flush.

B. Sequence installation and erection to ensure correct mechanical and electrical utility connections are achieved.

C. Anchor equipment using devices appropriate for equipment, substrate and expected usage.

3.3 ADJUSTING

A. Adjust work under provisions of Section 01 73 00 - EXECUTION.

B. Adjust equipment to ensure proper working order and conditions.

C. Remove and replace equipment creating excessive noise, or vibration.

D. After installation is completed, insure that operating parts work freely and fit neatly. Adjust hardware and catches as required. Repair or replace damaged parts dents, buckles, abrasions, scraps or other damage affecting the appearance or serviceability.

3.4 CLEANING

A. At completion of each work day, remove tools and all crating boxes, coverings, rubbish and debris from the work area; leave area in broom-clean condition.

B. Upon completion of the work of this Section, remove tools and all crating boxes, coverings, rubbish and debris from the work area; leave area in broom-clean condition.

C. Clean Work under provisions of Section 01 73 00 - EXECUTION:

1. Wash and clean appliances.
2. Clean and polish glass, plastic, hardware and accessories, fixtures and fittings.

D. Remove protective coverings from prefinished work just prior to Owner's acceptance of facility.

End of Section

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Section 14 42 16
VERTICAL WHEELCHAIR LIFT

PART 1 – GENERAL

1.1 SUMMARY

A. The work of this Section consists of wheelchair lift(s) where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following.

B. Furnish and install:
   1. Enclosed wheelchair lift.

C. Provide maintenance and call-back services for lift equipment furnished hereunder.

D. Furnish the following products to be installed under the designated Sections:
   1. Inserts required to be built into concrete.

1.2 RELATED REQUIREMENTS

A. Division 26 - ELECTRICAL: Electrical service for wheelchair lift operations.

1.3 REFERENCES

A. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
   1. ANSI/ASME A 17.1. - Safety Code for Elevators and Escalators.
   2. ASME A17.5 - Elevator and Escalator Electrical Equipment.
   3. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   4. ASME A18.1 - Safety Standard for Platform Lifts and Stairway Chairlifts.
   5. NFPA 70 - National Electric Code.

B. General References The following reference materials are hereby made a part of this Section by reference thereto:
   1. UL: Applicable requirements for motors, switches and other electrical components.
   2. All applicable federal, state and municipal codes, laws and regulations for wheelchair lifts, including barrier-free requirements.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Sequencing:

1. Field Measurements
    a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
    b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

C. Scheduling:
1. Coordinate schedule of construction, size of access and route to place of installation to prevent delay of installation due to physical impediments. Any work involving the demolition and reconstruction of partitions, walls, floors, roofing, windows, or doors to place and install the work of this Section shall be performed at no additional cost to the Owner.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, for lift components furnished hereunder.
2. Shop Drawings: General arrangement for all wheelchair lift, dimensioned installation details with, landing heights, gate dimensions, tolerances of landing dimensions, perimeter conditions of construction, and all electrical characteristics and requirements for the lift equipment.
3. Selection Samples: Sample chips of all finishes in elevator lift, and all available colors for, paints, and finishes, for selections by the Architect.
4. Verification Samples: For each finished material, furnish 6 inch (150 mm) square samples, representing actual product, color, and patterns.
5. Sustainable Design Submittals:

B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Maintenance Contracts: Provide Installers maintenance contract, for a period of not less than one year from date of Substantial Completion of the General Contract. Maintenance contract shall include the following:
    a. 24-hour emergency callback service for the equipment.
    b. Examinations of the installation during regular working hours by trained employees of the wheelchair lift installer.
    c. All necessary adjusting, greasing, and oiling.
    d. Providing cleaning supplies and parts necessary to keep the equipment in proper operation, except any parts needed due to misuse, accident, or neglect caused by others.
2. Operation and Maintenance Data:
    a. Parts list and as-built wiring diagrams for controller and lift system.
    b. Maintenance instruction manual.
3. Bonds and Warranty Documentation:
    a. Manufacturer’s Warranties and Guarantees as specified elsewhere herein this Section.

4. Sustainable Design Closeout Documentation:

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of wheelchair lift.

C. Qualifications:

1. Manufacturers: Minimum 10 years experience in manufacturing of vertical platform lifts, with evidence of experience with similar installations of type specified.
2. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.
3. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that Welder's are AWS D1.1 and D1.4 qualified within the previous 12 months.
4. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that Welder's are certified in accordance with requirements of CWB W47.1.

D. Certifications: All load ratings and safety factors shall meet or exceed those specified in the local applicable elevator safety code and shall be certified by a professional engineer.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

1.8 WARRANTY

A. General: Submit warranties under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.

B. Manufacturer Warranty: Provide manufacturer's standard 2 year warranty countersigned by the installer, which shall include all materials and workmanship for wheelchair lift and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Garaventa Lift, , Blaine, WA.

2.2 DESCRIPTION

A. General Description: Wheelchair (platform) lifts include driving machines, lift enclosures, entrance gates, guide rails, signal equipment, control systems, internal electrical wiring; and all devices for operation, dispatching, safety, security, leveling, and alarms Lifts shall in accordance with the requirements of ASME/ANSI A 17.1 Safety Code for Elevators and Escalators, and State Building Code, as revised and amended per the rules and regulations of local authorities and all other governing bodies which may have jurisdiction, including all regulations for the physically handicapped.

B. Regulatory Requirements

1. Provide wheelchair lifts in compliance with:
   a. ANSI/ASME A 17.1. - Safety Code for Elevators and Escalators.
   b. ASME A17.5 - Elevator and Escalator Electrical Equipment.
   c. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   d. ASME A18.1 - Safety Standard for Platform Lifts and Stairway Chairlifts.
   e. NFPA 70 - National Electric Code.

C. Permits, Tests and Inspections:

1. Obtain and pay for all necessary municipal and State elevator inspections and permits; make all tests as required by the regulations of such authorities. The capacity and operational performance tests shall be conducted in the presence of the Architect and the code enforcement officer, after completion of the installation.
2. Obtain certificate of compliance from authority having jurisdiction indicating approval of specified products.

2.3 PERFORMANCE/DESIGN CRITERIA

A. Rated Capacity: 600 lbs (272 kg) load capacity.

B. Travel Speed: 9 to 10 feet per minute.

C. Number of Stops: 2

D. Total Rise: Refer to Drawings.

2.4 ENCLOSED VERTICAL WHEELCHAIR LIFT

A. Nominal Clear Platform Dimensions:

1. Mid Size: 37-1/4 inches (947 mm) by 60 inches (1522 mm).

B. Platform Configuration:

1. Straight Through Entry/Exit: Front and rear openings.

C. Landing Openings:
   1. Lower Landing: Door.
   2. Upper Landing: Door.
   3. Upper Landing: Gate.

D. Doors and Gates: Doors and gates shall be self closing type.
   1. Door Height: Flush mount, 80 inches (2032 mm).
   2. Width: 42 inches (1067 mm).
   3. Door Construction: Aluminum frame with:
      a. Panels of 16 gauge (1.5 mm) painted galvanized steel.
      b. D-Handle Pull: 12 inch (305 mm) offset D-Handle.
   4. Power Door/Gate Operator: Automatically opens the door/gate when platform arrives at a landing. Will also open at landing by pressing call button or gently the pulling door.
      a. ADA Compliant and obstruction sensitive.
      b. Low voltage, 24 VDC with all wiring concealed.
      c. Location:
         1) Lower Landing: Door.
         2) Upper landing: Door.

E. Lift Components:
   1. Machine Tower: Custom aluminum extrusion.
   2. Base Frame: Structural steel.
   3. Platform Side Wall Panels: 42-1/8 (1070 mm) inches high. 16 gauge (1.5 mm) galvanized steel sheet. Custom aluminum extrusion tubing frame.
   4. Enclosure Panels:
      a. 16 gauge (1.5 mm) painted galvanized steel sheet.

F. Enclosure Height Above Upper landing:
   1. Enclosure shall extend 83-3/4 inches (2127 mm) above the upper landing level.

G. Infill Panel Kit: Provide 16 gauge (1.5 mm) galvanized panels and mounting hardware to cover void between side of enclosure, drive mast and adjacent wall at the following locations:
   1. Lower landing.
   2. Upper landing.

H. Base Mounting and Access to Lift at Lower Landing:
   1. Pit Mount: Lift to be mounted in pit with dimensions to meet manufacturers requirements for the platform size specified. Pit construction shall be in accordance to Section 03 30 00.

I. Hydraulic Drive:

1. Drive Type: Chain hydraulic.
2. Emergency Operation: Manual device to lower platform and use auxiliary battery power to raise or lower platform.
3. Safety Devices:
   a. Slack chain safety device.
   b. Shoring device.
4. Travel Speed: 17 fpm (5.2 m/minute).
5. Motor: 3.0 hp (2.2 kW); 24 volts DC.
6. Power Supply:
   a. 120 VAC single phase; 60 Hz on a dedicated 15 amp circuit.
   b. Powered by building continuous mains converted to 24 VDC and equipped with auxiliary battery backup power system capable of running lift up and down for a minimum of 5 trips with rated load. Required for high use lifts and lifts equipped with a fan and ventilation system.

J. Platform Controls: 24 VDC control circuit with the following features.
1. Direction Control: Illuminated tactile and constant pressure push buttons with dual platform courtesy lights and safety light.
2. Illuminated and audible emergency stop switch shuts off power to lift and activates audio alarm equipped with battery backup.
3. Keyless operation.
4. Emergency Telephone: Platform shall be equipped with ADA compliant autodialer telephone with a stainless steel faceplate. Telephone shall operate in the event of power failure. A telephone line shall be supplied to the lift site as specified under Division 16.
5. Arrival Gong and Digital Floor Display.

K. Call Station Controls: 24 VDC control circuit with the following features.
1. Direction Control: Illuminated tactile and constant pressure push buttons with illuminated "In Use" indicator.
2. Keyless operation.
3. Call Station Mounting:
   a. Lower:
      1) Wall mounted recessed.
   b. Upper:
      1) Wall mounted recessed.

L. Safety Devices and Features:
1. Grounded electrical system with upper, lower, and final limit switches.
2. Tamper resistant interlock to electrically monitor that the door is in the closed position and the lock is engaged before lift can move from landing.
3. Pit stop switch mounted on mast wall.
4. Electrical disconnect shall shut off power to the lift.

2.5 FINISHES

A. Shop Finishing:

1. Lift Finish: Baked powder coat finish, color as selected by the Architect from manufacturers optional RAL color chart.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Inspect all surfaces and verify required embedded anchorage devices, and verify that they are in proper condition and location to receive the work of this Section.
2. Verify that field measurements are as indicated on approved shop drawings
3. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

A. Protection of In-situ Conditions: During the operation of work of this Section, protect existing finishes against undue soilage and damage by the exercise of reasonable care and precautions. Clean, or repair all existing materials which are soiled or otherwise damaged by Work of this Section, to match original profiles and finishes. Existing materials and finishes which cannot be cleaned, or repaired shall be removed and replaced with new work to match existing.

3.3 INSTALLATION

A. Perform the installation in accordance with the approved shop drawings and the manufacturer's written instructions, with standards required by authority having jurisdiction, and with additional requirements as specified herein.

B. Set wheelchair lift square and level. Anchor unit securely to building structure.

C. Furnish and install all internal and operational wiring, conforming to the requirements of the National Electrical Code, as necessary to connect the operating buttons and switches, from the control board to the power unit. Except for short lengths of flexible conduit to moving apparatus, ensure that all wiring is contained in rigid conduit or electrical metal tubing.

3.4 TOLERANCES

A. Maximum variation from plumb or level: 1/4 inch.

B. Maximum offset from true dimensional alignment: 1/4 inch.

3.5 FIELD QUALITY CONTROL

A. Field inspection will be performed under the provisions of Section 01 45 00 - QUALITY CONTROL.

1. Perform tests in compliance with ASME A 17.1 or A18.1 and as required by authorities having jurisdiction.

2. Perform tests in compliance with CSA B355 and required by authorities having jurisdiction.

3.6 ADJUSTING

A. Adjust installed lift and gates for smooth and balanced operation.

3.7 CLEANING

A. After all work under this Section has been completed and satisfactorily tested, remove all applied packing labels from the various surfaces, thoroughly clean all prefinished surfaces. Touch up all scratches, abrasions, and other surface defects in the prefinished surfaces, using the same material, color, and gloss as used in the prefinishing system.

B. Clean work under provisions of Section 01 73 00 – EXECUTION.

3.8 PROTECTION

A. Protect finished work under provisions of Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.

3.9 MAINTENANCE

A. Provide Installers maintenance contract under provisions of Section 01 77 00 – CLOSEOUT PROCEDURES, for a period equal to extended warranty. Maintenance contract shall include the following:

1. Emergency callback service for the equipment.
2. Scheduled examinations of the installation, every 6 months during maintenance period, occurring during regular working hours by trained employees of the wheelchair lift manufacturer.
3. All necessary adjusting, greasing, and oiling.
4. Cleaning supplies and parts necessary to keep the equipment in proper operation, except any parts needed due to misuse, accident, or neglect caused by others.

B. Repair work shall be carried out only by the installer's personnel, using only standard parts furnished by the wheelchair manufacturer. Maintenance shall be carried out directly by the wheelchair installer and shall not be assigned or transferred to any agent.

End of Section

PROJECT CONTACTS:

AUTHORITY HAVING JURISDICTION

CITY OF WALTHAM
BUILDING DEPARTMENT
610 MAIN STREET
WALTHAM, MA 02452

OWNER:
COMMUNITY DAY CENTER OF WALTHAM

OWNER CONTACT:
MICHAEL COLOMBA, TREASURER
PHONE: (781) 489-1340

ARCHITECT:
BEACON ARCHITECTURAL ASSOCIATES
145 SOUTH STREET
BOSTON, MA 02111
PHONE: 617-357 7171
NICK MAKEMSON, PROJECT MANAGER
NMAKEMSON@BEACONARCH.COM

STRUCTURAL ENGINEER:
(PROVIDING STRUCTURAL REVIEW ARCH. DWGS.)
TODD BLAKE, P.E.
SOUZA TRUE STRUCTURAL ENGINEERS
265 WINTER STREET,
WALTHAM, MA 02451

ELECTRICAL ENGINEER:
JUDITH O'BRIEN, P.E.
OWL ENGINEERS
105 ABBOTT ST.
ANDOVER, MA 01810

HVAC & PLUMBING ENGINEER:
SEMOON OH, P.E.
V&V INTERNATIONAL, INC.
400 W. CUMMINGS PARK, SUITE 4700
WOBURN, MA 01801

BUILDING INFORMATION:

PROJECT ADDRESS:
1ST & 2ND FLOORS
20 FELTON STREET
WALTHAM, MA 02453

BUILDING ADDRESS OF RECORD:
20 FELTON ST
WALTHAM, MA
PARCEL ID: R060-025-0005

LAND USE:
COMMERCIAL

LOT SIZE:
0.058 ACRES

LIVING AREA:
BASEMENT: 1,760 SQUARE FEET
FIRST FLOOR: 1,760 SQUARE FEET
SECOND FLOOR: 1,760 SQUARE FEET
TOTAL AREA: 5,280 SQUARE FEET

BUILDING DESCRIPTION:
THE BUILDING IS AN EXISTING 2 STORY CONTAINING GROUP B (BUSINESS) OCCUPANCY WITH ACCESSORY OCCUPANCIES: GROUP S (STORAGE).

THE BUILDING HAS A FIRE ALARM SYSTEM.

BUILDING CONSTRUCTION TYPE:
THE EXISTING BUILDING CONSTRUCTION MOST CLOSELY RESEMBLES TYPE VB:

PRIMARY STRUCTURAL FRAME: COMBUSTIBLE (2X6 WOOD)
BEARING WALLS -
EXTERIOR: COMBUSTIBLE (WOOD)
INTERIOR: COMBUSTIBLE (WOOD)
NON-BEARING WALLS & PARTITIONS: (WOOD FRAMED GYPSUM)
FLOOR CONSTRUCTION: 1 HOUR (2X12 WOOD JOISTS W/ GYPSUM CEILING AND PLYWOOD SUBFLOOR)

PROJECT DESCRIPTION:

THE BUILDING OWNER WILL ALTER THE EXISTING STAIR TO TO THE SECOND FLOOR ON THE EAST SIDE OF THE BUILDING TO MAKE IT CODE COMPLIANT AND ADD AN ACCESSIBLE INCLINE LIFT. THE SECOND FLOOR WILL BE RENOVATED TO INCLUDE AND ACCESSIBLE TOILET ROOM AND ACCESSIBLE SHOWER.

THE PREVIOUS OWNER WAS AN ENGINEERING FIRM (PROFESSIONAL SERVICES).
THE NEW OWNER WILL BE A COMMUNITY SERVICE NON-PROFIT.

THE EXISTING USE OF THE SPACE IS (B) BUSINESS.

THE NEW USE OF SPACE IS MOST CLOSELY RESEMBLES (B) BUSINESS (TRAINING AND SKILL DEVELOPMENT NOT IN A SCHOOL).

THIS DOES NOT CONSTITUTE A CHANGE OF USE.

THE NEW USE IS ALLOWED BY RIGHT BY THE WALTHAM ZONING CODE.

GENERAL DEMOLITION SCOPE:

EXISTING INTERIOR TOILET ROOM PARTITIONS, CEILING FINISHES AND FLOOR FINISHES WILL BE REMOVED BACK TO THE SUBFLOOR, WALLS AND UNDERSIDE OF STRUCTURE. EXISTING INTERIOR FLOOR AND CEILING FINISH WILL BE REMOVED THROUGHOUT.

EXISTING FIRE ALARM WILL BE LEFT INTACT AND PROTECTED FROM DAMAGE.

EXISTING ELECTRICAL CIRCUITS BEING MODIFIED WILL BE REMOVED BACK TO THE ELECTRICAL PANEL POINT OF ORIGIN.

EXISTING PLUMBING AT THE TOILET ROOMS WILL BE REMOVED BACK TO BELOW THE 1ST FLOOR.

GENERAL CONSTRUCTION SCOPE:

NEW INTERIOR NON-LOAD BEARING PARTITIONS, FLOOR & CEILING FINISHES.

NEW FIRE ALARM DEVICES WILL BE ADDED TO SUIT THE NEW LAYOUT, TIED IN TO THE EXISTING BUILDING ALARM SYSTEM. NEW EMERGENCY LIGHTING & EXIT SIGNS WILL BE PROVIDED.

EXISTING 5 TON MECHANICAL SYSTEM WILL BE RE-USED

NEW ELECTRICAL POWER OUTLETS WILL BE PROVIDED FROM THE EXISTING PANEL. NEW LIGHT FIXTURES WILL BE INSTALLED ON EXISTING CIRCUITS IN EXISTING ROOM, NEW FIXTURES WILL BE INSTALLED IN NEW ROOMS. EXISTING FIXTURES WILL BE REPLACED WITH NIGHT LIGHT TYPE FIXTURES AS REQUIRED.

NEW ACCESSIBLE TOILET ROOM AND NEW ACCESSIBLE SHOWER WITH LAUNDRY HOOK UP.

NEW ACCESSIBLE ROUTE TO 2ND FLOOR SPACES WITH INCLINE LIFT AND AUTOMATIC EXTERIOR DOOR CONTROLS.

WORK TO BE PROVIDED ON A DESIGN BUILD BASIS UNDER SEPARATE PERMITS:
-PLUMBING
-MECHANICAL
-ELECTRICAL
-FIRE ALARM

APPLICABLE CODES & REVIEW:

BUILDING:
780 CMR - -COMMONWEALTH OF MASSACHUSETTS BUILDING CODE, 9TH EDITION

CHAPTER 34: (780 CMR 34.00)
INTERNATIONAL EXISTING BUILDING CODE, 2015 EDITION

ACCESSIBILITY:
521 CMR MASSACHUSETTS ARCHITECTURAL ACCESS BOARD RULES AND REGULATIONS, 2006 EDITION

ELECTRICAL:
527 CMR, MASSACHUSETTS ELECTRICAL CODE
NATIONAL ELECTRICAL CODE, NFPA 70, 2017 EDITION

ENERGY:
ASHRAE 90.1, 2013 EDITION W/ MASSACHUSETTS AMENDMENTS

FIRE:
MASSACHUSETTS COMPREHENSIVE FIRE SAFETY CODE, 527 CMR 1.00
NFPA 1, 2015 EDITION, by reference

BUILDING DATA:

THE EXISTING BUILDINGS OBSERVED CONSTRUCTION MOST RESEMBLES CONSTRUCTION TYPE: VB
PRIMARY STRUCTURAL FRAME: COMBUSTIBLE (WOOD FRAMED)
BEARING WALLS: COMBUSTIBLE (WOOD FRAMED)
NON-BEARING WALLS AND PARTITIONS: 0 HOURS
FLOOR CONSTRUCTION: 1 HOUR (2X12 WOOD FRAMING @ 16" CENTERS W/ 1/2" GYPSUM & 2 LAYERS 1/2" PLYWOOD)

SPRINKLER: NOT SPRINKLED
EXISTING USE GROUP: BUSINESS
PROPOSED USE GROUP: BUSINESS (OCCASIONALLY USED AS TEMPORARY OVERNIGHT SHELTER PER CHAPTER 31 SECTION 3111)
GROSS AREA OF WORK: (3200 SF + 1,760 SF) 2,060 SF
OCCUPANT LOAD CALCULATED BY TABLE 1004.1.2:
2ND FLOOR: 1,760 SF / 100 SF PER OCCUPANT = 18 OCCUPANTS

ZONING CODE REVIEW:

PARCEL ID = R060-025-0005
ADDRESS = 20 FELTON ST

ZONING DISTRICT = COMMERICAL
ZONING SUB-DISTRICT = RIVER FRONT OVERLAY
SUB-DISTRICT TYPE = GENERAL BUSINESS

EXISTING USE: 3,224 BUSINESS AND PROFESSIONAL OFFICE (ALLOWED)
PROPOSED USE: MOST CLOSELY RESEMBLES 3,220 (NON-PROFIT COMMUNITY CLUB & 340 COMMUNITY CENTER REQUIRES SPECIAL PERMIT
BUILDING PREVIOUSLY ALLOWED USES: OFFICES & COMMERCIAL

PER CITY OF WALTHAM ZONING MEMO (10/30/2020) - TEMPORARY OVERNIGHT SHELTER USE IS PERMITTED "AS OF RIGHT" UNDER THE "DOVER AMENDMENT" M.G.L. TITLE VII c.40A, SECTION 3.

EXISTING BUILDING CODE REVIEW:

COMMENT: THE WORK AREA COMPLIANCE METHOD WILL BE USED TO COMPLY WITH THE CODE.

THE WORK AREA WILL BE THE THE FIRST FLOOR STAIR AND THE ENTIRE SECOND FLOOR . THE WORK AREA EXCLUDES OTHER PORTIONS OF THE BUILDING WHERE INCIDENTAL WORK ENTAILED BY THE INTENDED WORK MUST BE PERFORMED.

CHAPTER 5 - CLASSIFICATION OF WORK
THE WORK IS CLASSIFIED AS ALTERATION LEVEL 2.
THE WORK MUST COMPLY WITH 780 CMR 34.00 CHAPTER 7 & 8 + CHAPTER 10.

CHAPTER 7 - ALTERATIONS LEVEL 1 COMPLIANCE SUMMARY:
(702.1): NEWLY INSTALLED INTERIOR WALL AND CEILING FINISHES SHALL COMPLY WITH IBC CHAPTER 8 (780CMR).
(702.2): NEWLY INSTALLED FLOOR FINISH SHALL COMPLY WITH IBC SECTION 804 (780 CMR).
(702.3): NEWLY INSTALLED TRIM SHALL COMPLY WITH IBC SECTION 806 (780 CMR).
(702.6): NEW WORK SHALL COMPLY WITH THE MATERIALS AND METHODS REQUIREMENTS OF 780 CMR, 780 CMR CHAPTER 13, 248 CMR 10.00, AS APPLICABLE.

CHAPTER 7 - ALTERATIONS LEVEL 1 COMPLIANCE SUMMARY (CONTINUED):
(703.1): ALTERATIONS SHALL BE DONE IN A MANNER THAT MAINTAINS THE LEVEL OF FIRE PROTECTION PROVIDED.
(704.1): ALTERATIONS SHALL BE DONE IN A MANNER THAT MAINTAINS THE LEVEL OF PROTECTION PROVIDED FOR THE MEANS OF EGRESS.
MAXIMUM THRESHOLD HEIGHT SHALL BE 3/4" WITH BEVELED EDGES.
AN ACCESSIBLE ROUTE TO THE PRIMARY FUNCTION OF THE WORK AREA SHALL BE PROVIDED.

CHAPTER 8 - ALTERATIONS LEVEL 2 COMPLIANCE SUMMARY:
(803.2.1): EXISTING VERTICAL OPEN DOES NO REQUIRE RATED ENCLOSURE PER IBC 712.1.9 ; DOES NOT CONNECT MORE THAN 2 STORIES, IS SEPARATED FROM AIR TRANSFER OPENINGS SERVING OTHER STORIES.

(803.2.2): THE WORK AREA IS NOT REQUIRED TO BE PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM PER 780 CMR FOR NEW CONSTRUCTION AND THE WORK AREA IS LESS THAN 50% OF THE FLOOR AREA.

(803.4.1): THE WORK ARE IS NOT REQUIRED TO BE PROTECTED BY A FIRE ALARM SYSTEM PER THE OCCUPANCY REQUIREMENTS OF 803.4.1.1 THRU 803.4.16.
comment: the existing building is equipped throughout with an automatic fire detection & alarm system. The existing FA system will be modified to suit the reconfigured spaces.
(805.1): THE REQUIREMENTS OF SECTION 805 DO NOT APPLY WHERE THE WORK AREA DOES NOT INCLUDE AN EXIT OR CORRIDOR SHARED BY MORE THAN ONE TENANT.

(807.1): NEW ELECTRICAL EQUIPMENT AND WIRING SHALL COMPLY WITH NFPA 70 AS APPLICABLE.
(808.2.): EXISTING MECHANICALLY VENTILATED SPACES AND EXISTING MODIFIED OR EXTENDED VENTILATION SYSTEM SHALL PROVIDE MIN. 5 CFM OUTDOOR AIR PER PERSON & 15 CFM VENTILATED AIR PER PERSON.
(809.1): MINIMUM PLUMBING FIXTURES REQUIREMENT OF THE SECTION DO NOT APPLY WHERE THE OCCUPANT LOAD IS NOT INCREASING.

CHAPTER 10 - CHANGE OF OCCUPANCY:
OCCUPANCY WILL NOT CHANGE THE MEANS OF EGRESS HAZARD CATEGORY FROM 3 (A).

780 CMR CHAPTER 8 COMPLIANCE SUMMARY:
(803.11): FOR NON-SPRINKLERED BUSINESS OCCUPANCY INTERIOR WALL AND CEILING FINISHES IN ROOMS AND ENCLOSED SPACES SHALL BE CLASS 'C' WHEN TESTED IN ACCORDANCE WITH ASTM E84.
(804.2.): INTERIOR FLOOR FINISH SHALL NOT BE LESS THAN CLASS II WHEN TESTED IN ACCORDANCE WITH NFPA 253.
(804.3.): INTERIOR CARPET FLOOR FINISH AND UNDERLAYMENT BE CLASSIFIED NOT LESS THAN CLASS II WHEN TESTED IN ACCORDANCE WITH DOC FF-1 PILL TEST OR ASTMD2859.
(806.1.): INTERIOR TRIM SHALL NOT BE LESS THAN CLASS C WHEN TESTED IN ACCORDANCE WITH ASTM E84.
(806.2.): INTERIOR WALL BASE SHALL NOT BE LESS THAN CLASS II WHEN TESTED IN ACCORDANCE WITH NFPA 253.
(808.1.1.1): SUSPENDED CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C635 & ASTM C636.

780 CMR CHAPTER 10 COMPLIANCE SUMMARY:
(1009.5.): PLATFORM LIFTS COMPLYING WITH 1109 ARE ALLOWED AS AN ACCESSIBLE MEANS OF EGRESS WHERE IN COMPLIANCE WITH (1109.8 - REPLACED WITH MAAB)

521 CMR MAAB COMPLIANCE SUMMARY:
(28.1.): PLATFORM LIFTS COMPLYING WITH 28.12 ARE ALLOWED TO BE INSTALLED.
(28.12.1.): VERTICAL WHEEL CHAIR LIFT DEVICES MAY BE USED AS PART OF AN ACCESSIBLE ROUTE (D) IN EXISTING BUILDINGS OF LESS THAN 3 STORIES IN HEIGHT OR 3,000 SF.
(28.12.2.):

DRAWING LIST:

ARCHITECTURAL:

A-000	COVER SHEET & CODE REVIEW
~~A-001~~	~~FIRST FLOOR DEMOLITION PLAN~~ OMITTED FOR BID SET -NO SCOPE
A-100	1st & 2nd FLOOR DEMOLITION PLANS
A-101	BASEMENT CONSTRUCTION PLAN
A-102	1st & 2nd FLOOR CONSTRUCTION PLANS
A-103	FINISH PLANS & SCHEDULE
A-201	REFLECTED CEILING PLANS
A-301	STAIR SECTION
A-302	SECTION & INTERIOR ELEVATIONS
A-401	DOOR SCHED. PARTITION TYPES & DETAILS

ELECTRICAL:

E-00	ELECTRICAL LEGEND AND NOTES
E-100	ELECTRICAL DEMOLITION FLOOR PLAN
E-101	ELECTRICAL NEW WORK PLAN

MECHANICAL & PLUMBING:

M-001	HVAC SCHEDULES AND LEGEND
M-002	HVAC SCHEDULES AND OUTLINE SPECIFICATIONS
M-003	HVAC DETAILS
M-004	HVAC CONTROLS
M-101	1st & 2nd FLOR HVAC PLANS - NEW WORK
M-102	ATTIC LEVEL HVAC PLAN - NEW WORK
MD-101	2nd FLOOR HVAC PLAN - DEMOLITION
P-001	PLUMBING SCHEDULES & LEGEND
P-101	BASEMENT LEVEL PLUMBING PLAN - NEW WORK
P-102	1st & 2nd FLOOR PLUMBING PLANS - NEW WORK
PD-101	2nd FLOOR PLUMBING PLAN - DEMOLITION

VIEW OF 20 FELTON STREET LOOKING SOUTH WEST

VIEW OF 20 FELTON STREET FROM RAILROAD PARKING LOT LOOKING NORTH

STATEMENT OF SPECIAL INSPECTIONS

MATERIALS, SYSTEMS, COMPONENTS OR WORK REQUIRING SPECIAL INSPECTIONS	TYPE AND/OR EXTENT OF INSPECTION	TYPE AND/OR EXTENT OF EACH TEST	ADDITIONAL REQUIREMENTS FOR SEISMIC OR WIND RESISTANCE	TYPE OF INSPECTION: CONTI-NUOUS	PERI-ODIC

THIS PROJECT IS DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE COLD FORMED STEEL LIGHT-FRAMED CONSTRUCTION PROVISIONS OF 780 CMR 2211.7 OR CONVENTIONAL LIGHT FRAME CONSTRUCTION PROVISIONS OF 780 CMR 2308.

LOCUS

NOT TO SCALE

BEACON

ARCHITECTURAL ASSOCIATES

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ISSUE DATES

DATE	BY	DESCRIPTION
12/22/2020	NM	For Construction
1/6/2021	NM	Bid Set
6/23/2021	NM	Bid Set

OWNER
Community Day Center of Waltham

PROJECT
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

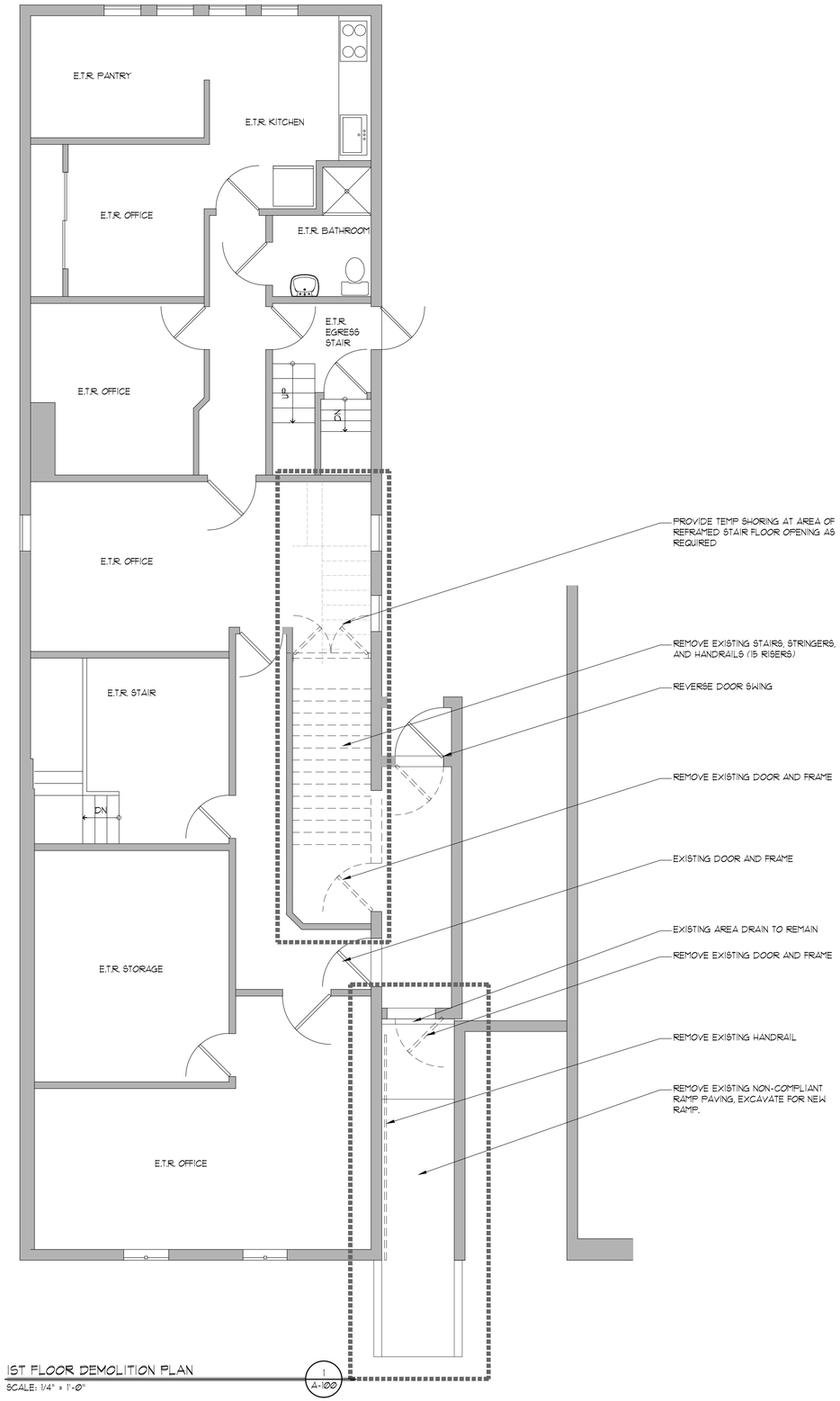
SCALE No scale

DRAWING NAME
Cover Sheet & Code Review

DRAWING NO.
A-000

GRAPHIC LEGEND

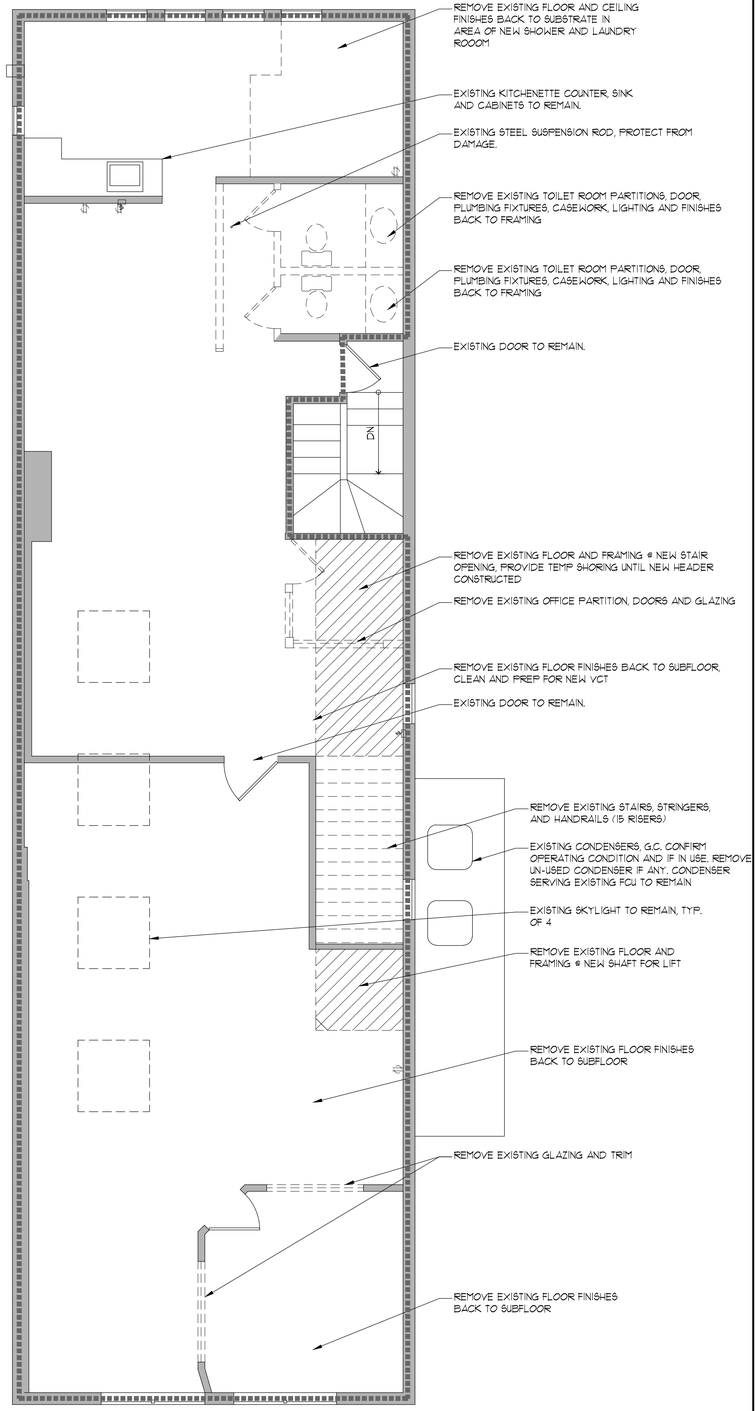
SCOPE OF WORK EXTENTS



1ST FLOOR DEMOLITION PLAN

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

1 A-100



2ND FLOOR DEMOLITION PLAN

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

2 A-100

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6/23/2021	NM	Bid Set

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

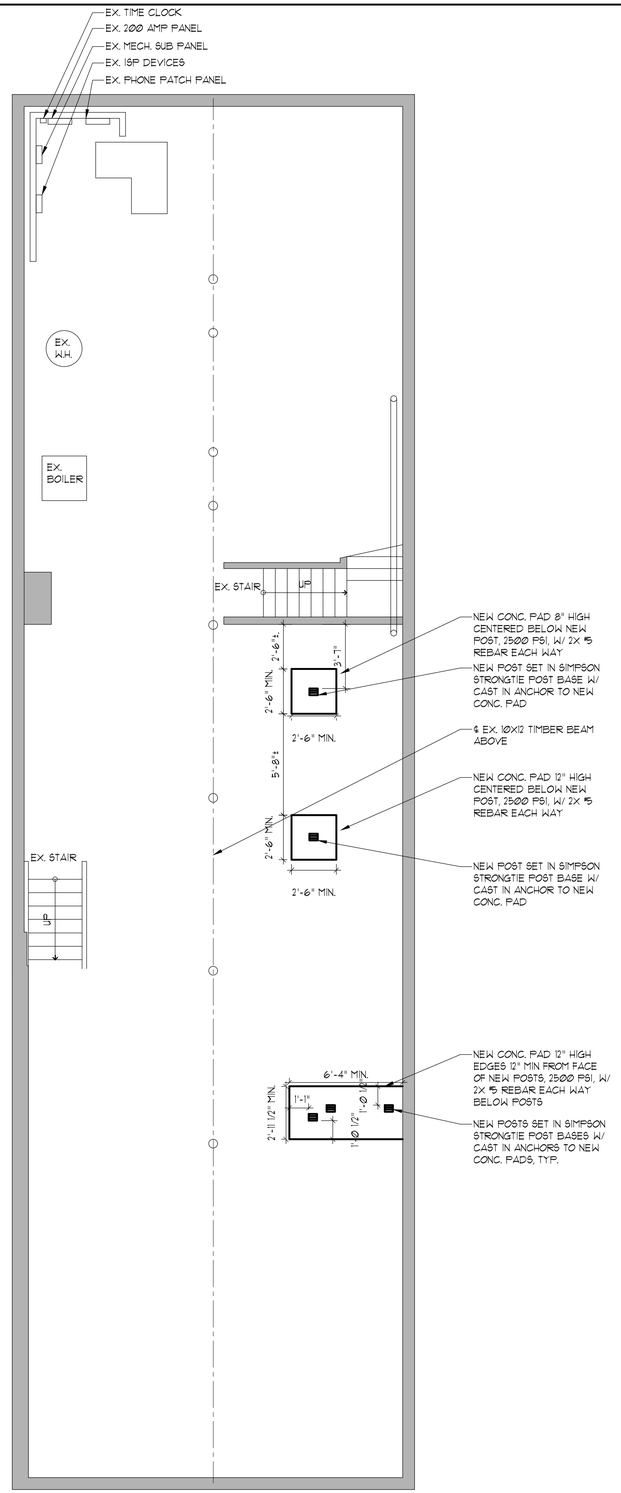
JOB NUMBER	20-815
SCALE	1/4" = 1'-0"

DRAWING NAME

Demolition Plan

DRAWING NO.

A-100



BASEMENT FRAMING PLAN
SCALE: 1/4" = 1'-0"

1
A-101

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ISSUE DATES

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OWNER

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PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER	20-815
SCALE	1/4" = 1'-0"

DRAWING NAME

Basement Construction Plan

DRAWING NO.

A-101

GENERAL PLAN NOTES

FURNITURE IN PLAN IS SHOWN FOR COORDINATION PURPOSES, NOT IN SCOPE, PROVIDED BY OWNER

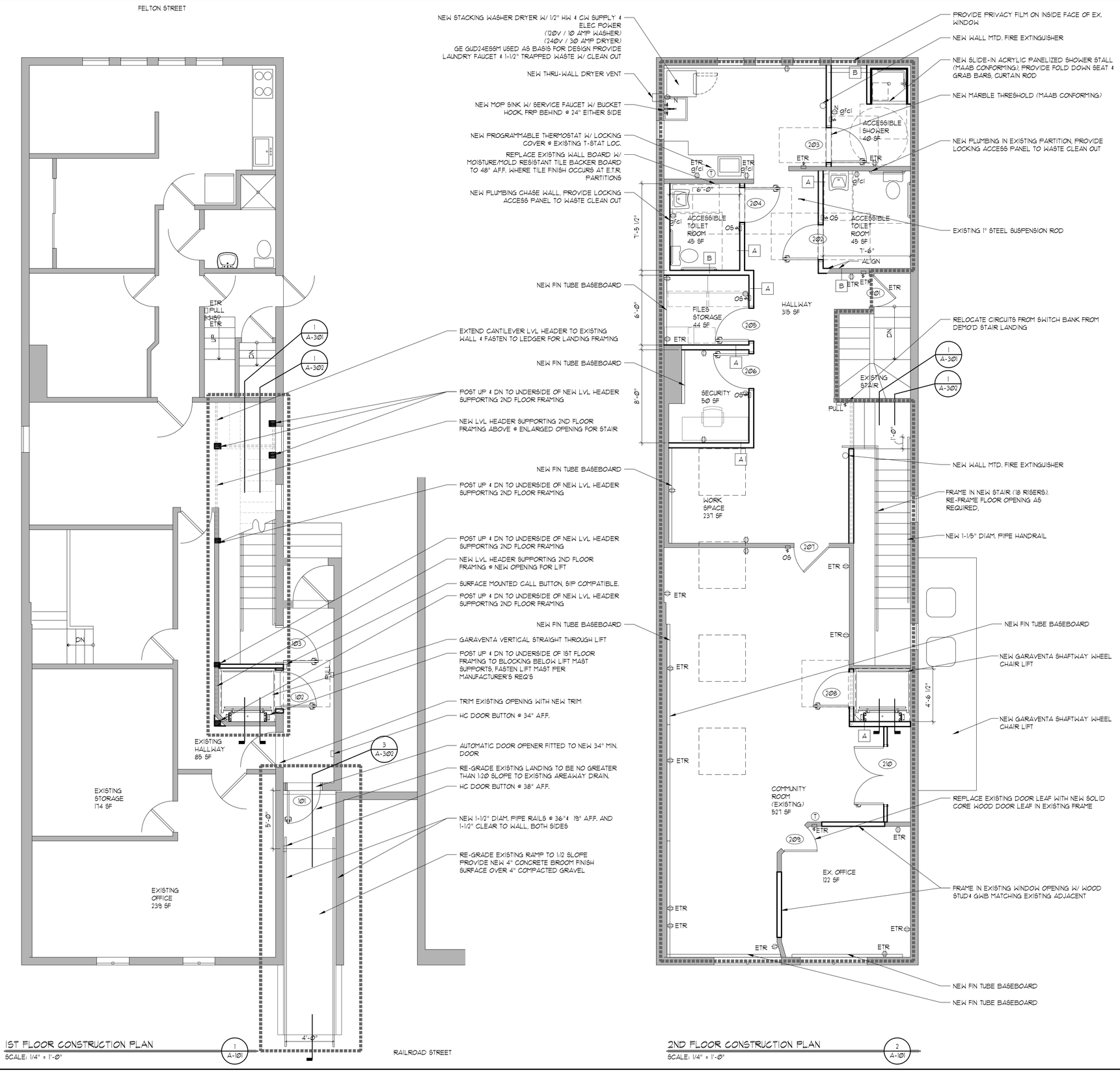
UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE TO FACE OF FINISHED PARTITION.

G.C. SHALL THOROUGHLY INSPECT BASEMENT WIRING AND FASTEN, CAP, CLOSE OFF OR OTHERWISE SUITABLY TERMINATE LOOSE CONDUIT/CONDUCTORS, WIRING BOXES AND DEVICES.

G.C. SHALL PROVIDE TEMPORARY DUST BARRIER ON THE 1ST FLOOR DURING DEMO/CONSTRUCTION/FINISHING OF STAIR AND LIFT.

GRAPHIC LEGEND

- INDICATES SCOPE OF WORK
- +12" / 24 — NEW WALL MOUNTED DUPLEXES, MOUNTING HEIGHT 12 AFF, AS INDICATED, COLOR: WHITE
- NETWORK DATA RECEPTACLE / DROP
- EXISTING WALL
- A — PARTITION TYPE KEY, SEE PARTITION TYPES A-104
- C-1 — DOOR TAG
- T — THERMOSTAT
- SWITCHBANK



1ST FLOOR CONSTRUCTION PLAN (1 / A-101)
SCALE: 1/4" = 1'-0"

2ND FLOOR CONSTRUCTION PLAN (2 / A-101)
SCALE: 1/4" = 1'-0"

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20 Felton Street
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JOB NUMBER	20-815
SCALE	1/4" = 1'-0"

DRAWING NAME
1st & 2nd Floor Construction Plans

DRAWING NO.
A-102

FINISH SCHEDULE

FLOORS:
VINYL COMPOSITE TILE :
ARMSTRONG EXCELON 12X12 - BLUE CLOUD 51933

PORCELAIN FLOOR TILE:
DAL TILE CATALINA CANYON NOCE 12X12 MIN WITH DCOF Ø.42

BASE:
ROPPE 700 4" RUBBER COVE BASE BROWN

TRANSITION STRIP:
MSI ENGINEERED MARBLE THRESHOLD

PAINT:
BEHR MARQUEE QUARRIED LIMESTONE PPL-67
ZERO VOC ENAMEL

FINISH @ WALLS : SATIN
FINISH AT CEILINGS : FLAT
FINISH @ WET AREAS: SEMI-GLOSS
FINISH AT WOOD TRIM: SEMI-GLOSS

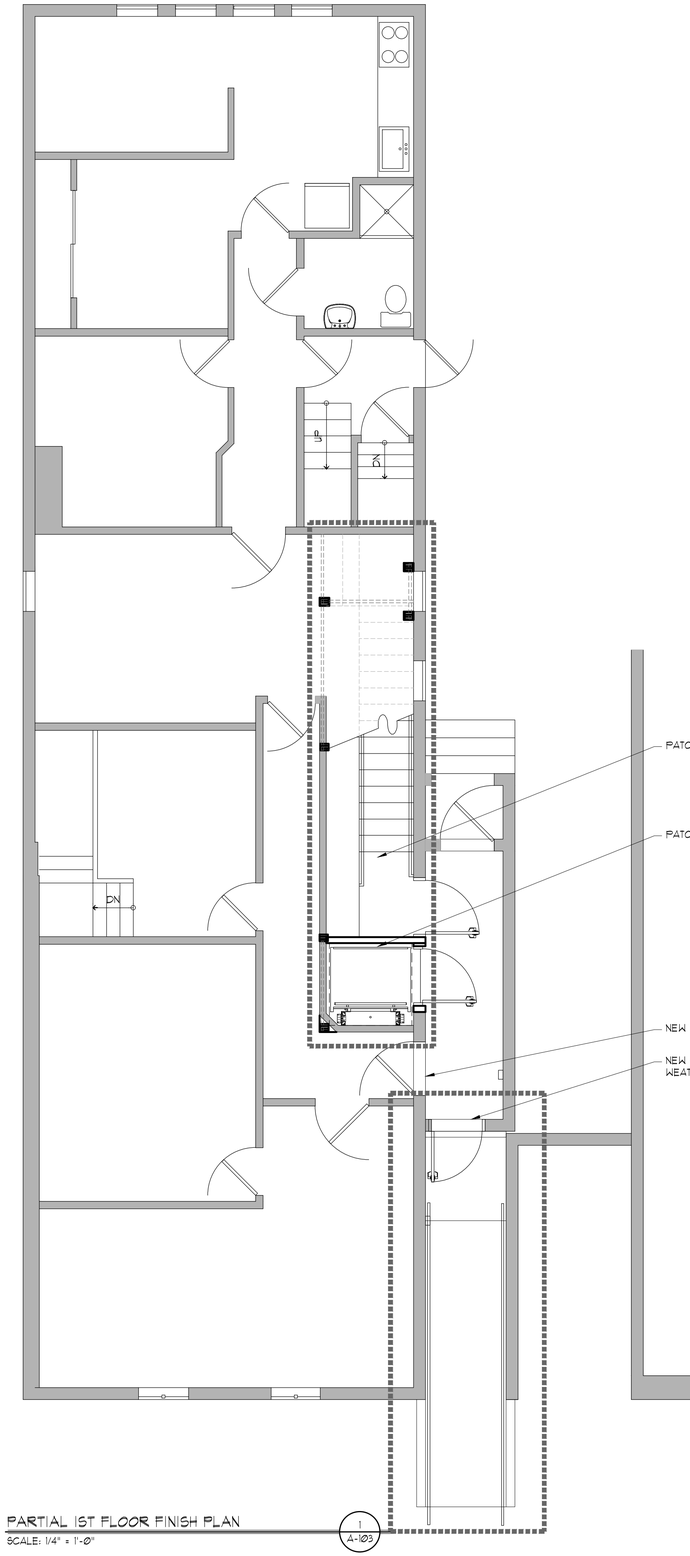
FIBER REINFORCED PLASTIC (FRP) PANELS:
PANOLAM WHITE EMBOSSED 4X8 PANELS WITH COORDINATING CAPS, BASE AND EDGE TRIMS.

WALL TILE:
DAL TILE CATALINA CANYON NOCE 12X12

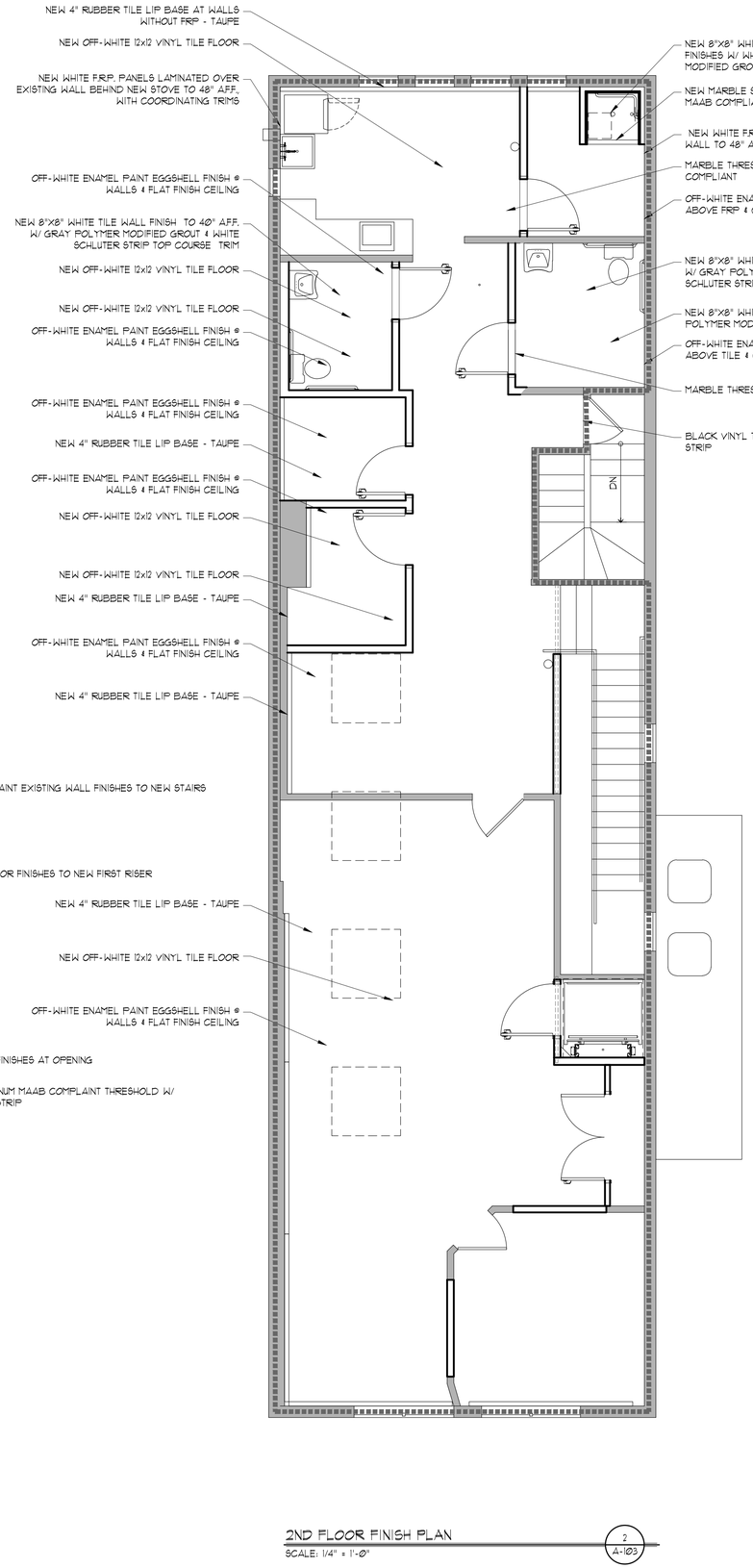
ACCESSORIES:
STAIR NOSINGS SHALL BE BLACK RUBBER WITH VISIBILITY STRIP IN CONTRASTING COLOR

STAIR TREADS SHALL BE BLACK DOT PATTERN RUBBER

RAILINGS AND HANDRAILS NOT SUPPLIED BY LIFT MANUFACTURER SHALL BE PAINTED BLACK



PARTIAL 1ST FLOOR FINISH PLAN
SCALE: 1/4" = 1'-0"
1 A-103



2ND FLOOR FINISH PLAN
SCALE: 1/4" = 1'-0"
2 A-103

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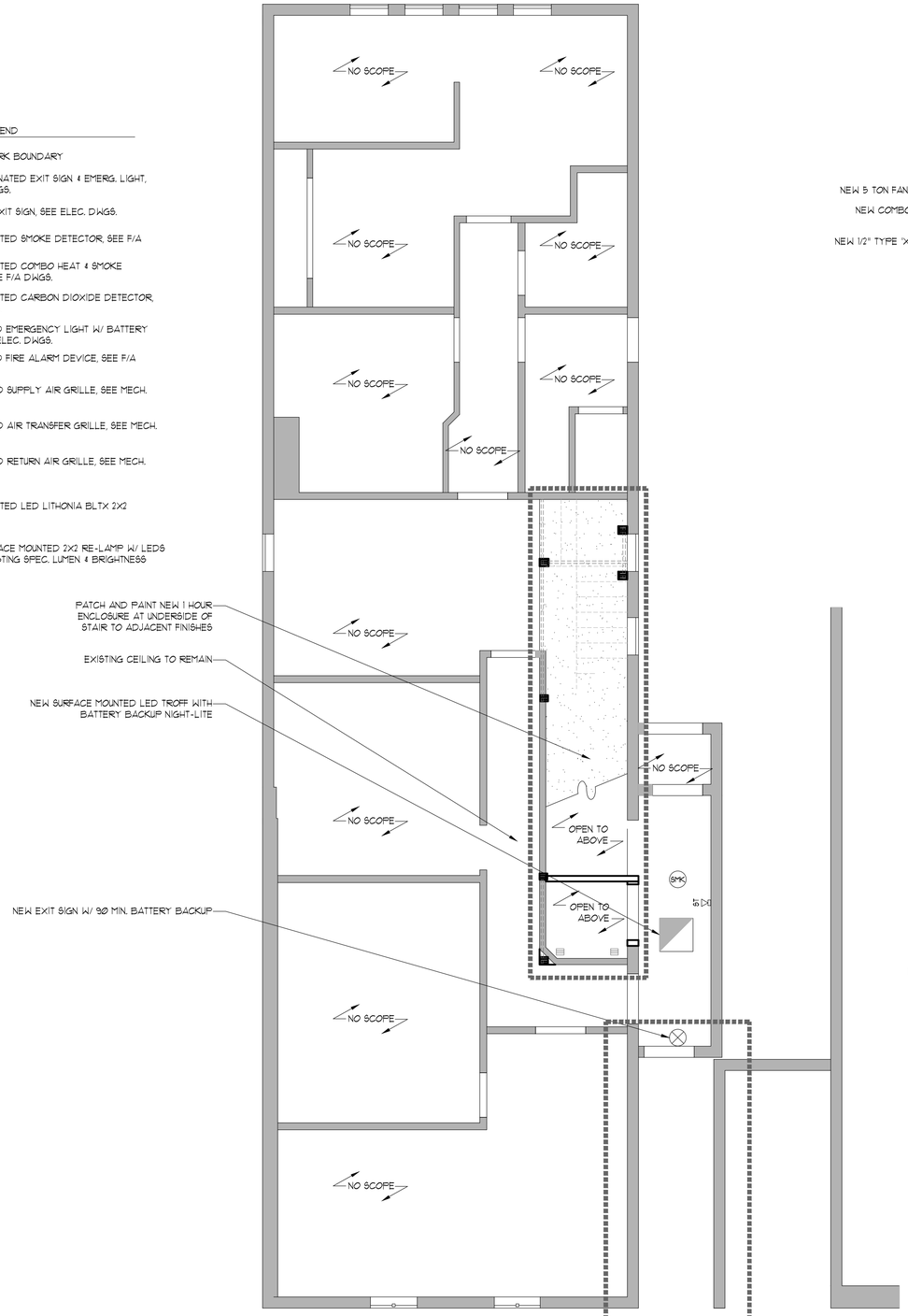
JOB NUMBER 20-815
SCALE 1/4" = 1'-0"

DRAWING NAME
Finish Plan

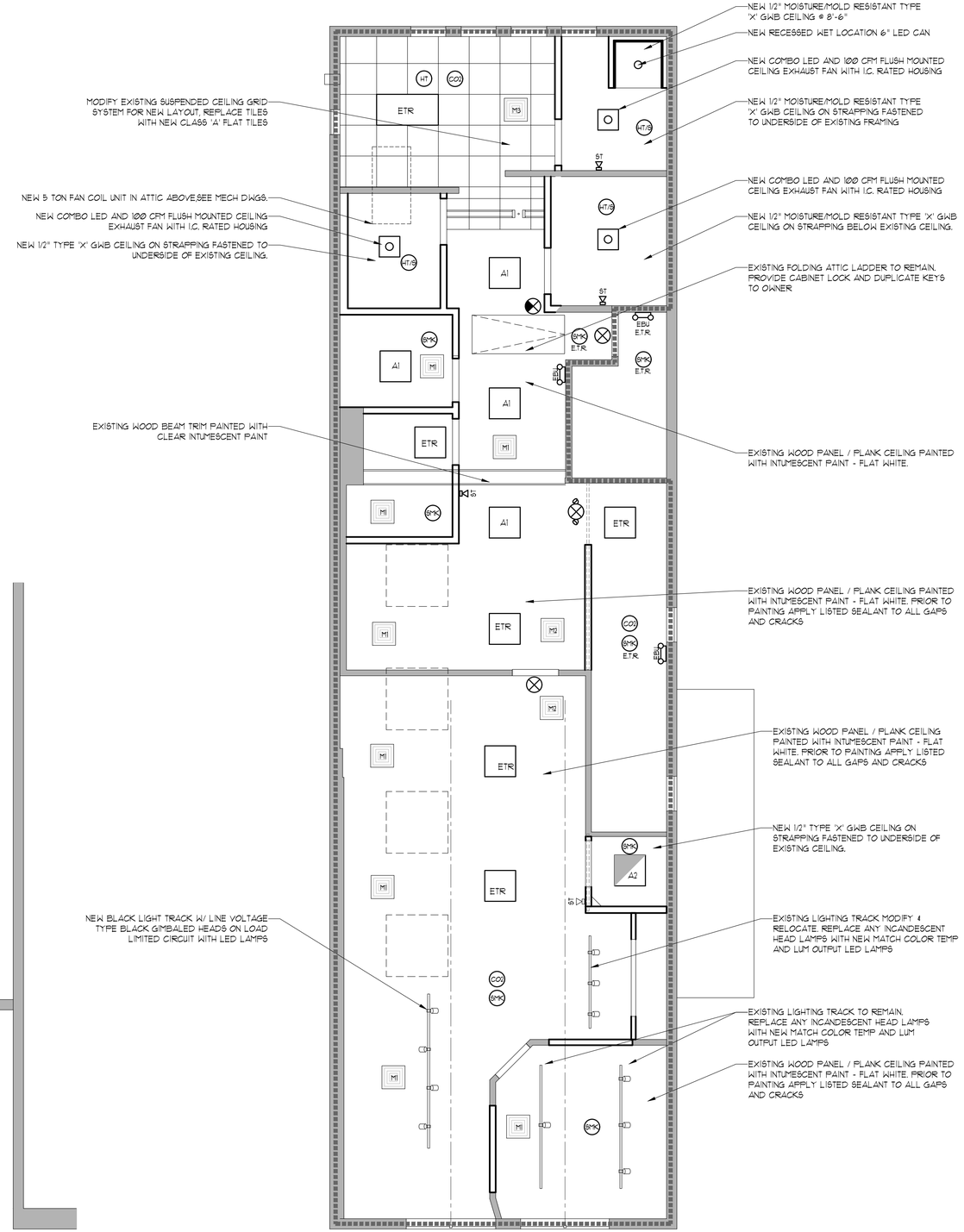
DRAWING NO.
A-103

REFLECTED CEILING PLAN LEGEND

- SCOPE OF WORK BOUNDARY
- COMBO ILLUMINATED EXIT SIGN & EMERG. LIGHT, SEE ELEC. DWGS.
- ILLUMINATED EXIT SIGN, SEE ELEC. DWGS.
- SMK — SURFACE MOUNTED SMOKE DETECTOR, SEE F/A DWGS.
- HT/S — SURFACE MOUNTED COMBO HEAT & SMOKE DETECTOR, SEE F/A DWGS.
- CO2 — SURFACE MOUNTED CARBON DIOXIDE DETECTOR, SEE F/A DWGS.
- EBU — WALL MOUNTED EMERGENCY LIGHT W/ BATTERY BACKUP, SEE ELEC. DWGS.
- ST — WALL MOUNTED FIRE ALARM DEVICE, SEE F/A DWGS.
- M1 — FLUSH MOUNTED SUPPLY AIR GRILLE, SEE MECH. DWGS.
- M2 — FLUSH MOUNTED AIR TRANSFER GRILLE, SEE MECH. DWGS.
- M3 — FLUSH MOUNTED RETURN AIR GRILLE, SEE MECH. DWGS.
- A1 — SURFACE MOUNTED LED LITHONIA BLTX 2X2
- ETR — EXISTING SURFACE MOUNTED 2X2 RE-LAMP W/ LED6 MATCHING EXISTING SPEC. LUMEN & BRIGHTNESS



1ST FLOOR REFLECTED CEILING PLAN — 1 / A-201
SCALE: 1/4" = 1'-0"



2ND FLOOR REFLECTED CEILING PLAN — 2 / A-201
SCALE: 1/4" = 1'-0"

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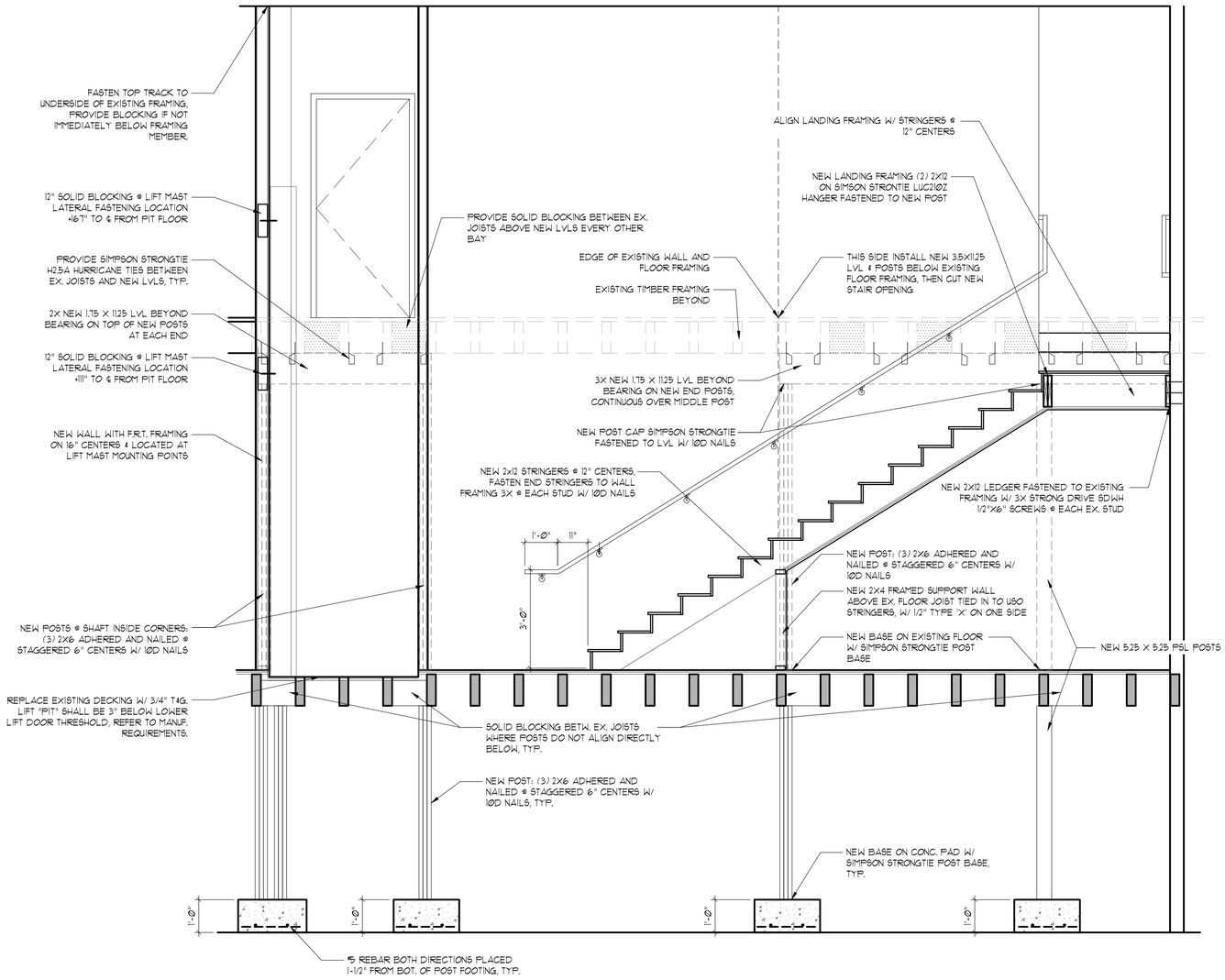
PROJECT
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER	20-815
SCALE	1/4" = 1'-0"

DRAWING NAME
Reflected Ceiling Plans

DRAWING NO.
A-201



GENERAL NOTES:

1. ALL NEW STRUCTURAL WOOD SHALL BE SPF. NO 1 OR BETTER

2. ALL SISTERED TOGETHER WOOD STUDS SHALL BE SISTERED WITH 2 ROWS OF 30D NAILS @ 16" CENTERS DRIVEN ON OPPOSITE SIDES OF THE MEMBER AND STAGGERED BY 8".

STAIR & LIFT SECTION

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

1 / A-301

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OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

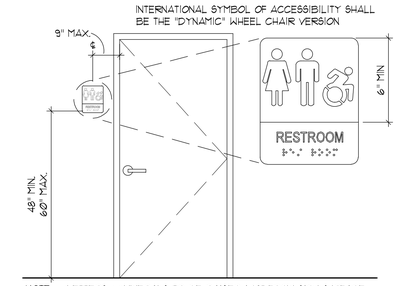
JOB NUMBER	20-815
SCALE	As Noted

DRAWING NAME

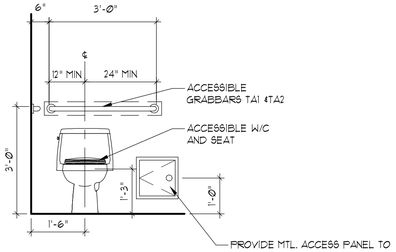
Stair Section

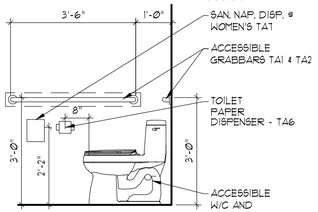
DRAWING NO.

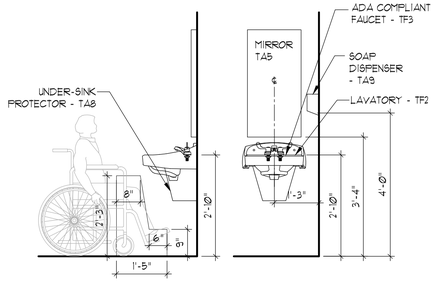
A-301

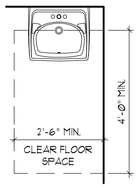


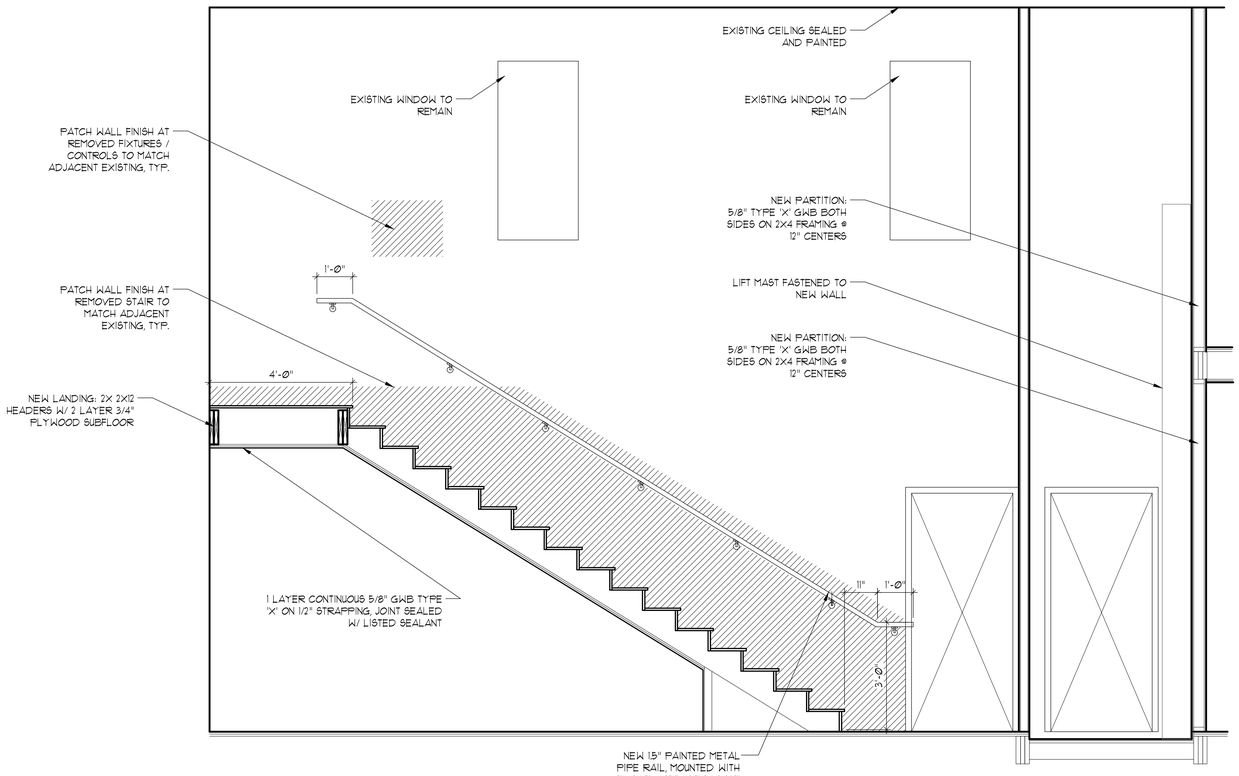
NOTE: LETTERS & NUMERALS TO BE RAISED 1/32" FROM SIGN SURFACE. UPPER CASE, SANS SERIF OR SIMPLE SERIF TYPE, SHALL BE ACCOMPANIED WITH GRADE 2 BRAILLE. RAISED CHARACTERS SHALL BE AT LEAST 5/8" HIGH BUT NO HIGHER THAN 2".



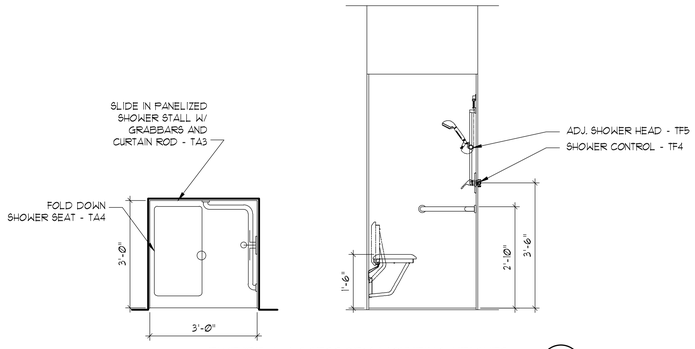








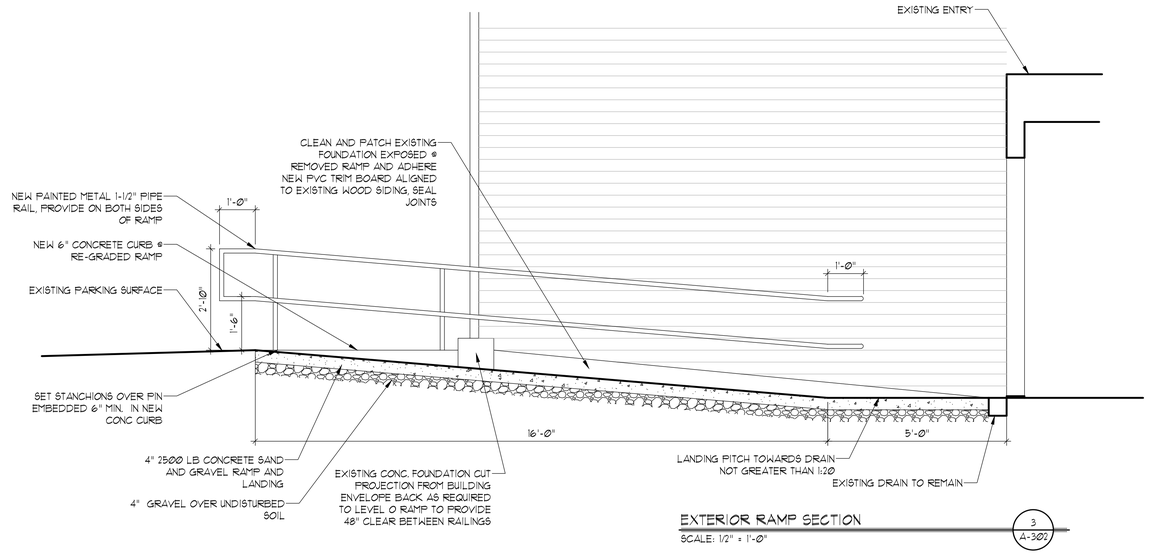
STAIR & LIFT SECTION
SCALE: 1/2" = 1'-Ø"
1 A-302



FIXTURE & ACCESSORY MOUNTING HEIGHTS
SCALE: 1" = 1'-Ø"
2 A-302

TOILET FIXTURE & ACCESSORY SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL	COMMENT / OPTIONS
TF1	WATER CLOSET	AMERICAN STANDARD	CADET ELONGATED	OPEN FRONT HEAVY DUTY SEAT
TF2	LAVATORY	AMERICAN STANDARD	LUCERNE	WALL MOUNTED / 4" CENTER FAUCET HOLES / PROVIDE IN-WALL BLOCKING
TF3	LAV FAUCET	KINGSTON BRASS	KB191	4" CENTER SET / WRIST BLADES / CHROME
TF4	SHOWER & CONTROL	KINGSTON BRASS	KB531-BLSO	1 HANDLE CHROME W/ VALVE
TF5	ADJ. SHOWER HEAD	KINGSTON BRASS	K5K1801W1-8WB	PROVIDE IN-WALL BLOCKING
TF6	SERVICE FAUCET	KINGSTON BRASS	FS910ØRC	PROVIDE IN-WALL BLOCKING
TF7	SERVICE SINK	MUSTEE	63M	2" PIPE
TA1	36" GRABBAR	BOBRICK	B-5806X36	PROVIDE IN-WALL BLOCKING
TA2	42" GRABBAR	BOBRICK	B-5806X42	PROVIDE IN-WALL BLOCKING
TA3	SHOWER STALL	FREEDOM SHOWERS	AFF3838BF4P	GRABBARS, CURTAIN ROD
TA4	FOLDING SEAT	GRABBAR SPECIALIST	62-PA3Ø01	WHITE NAUGAHYDE PADDED SEAT 16" x 30"
TA5	MIRROR	BOBRICK	B-2932436	PROVIDE IN-WALL BLOCKING
TA6	TP DISPENSER	BOBRICK	B-685	PROVIDE IN-WALL BLOCKING
TA7	SAN. NAP. DISPOSAL	BOBRICK	B-35139	PROVIDE IN-WALL BLOCKING
TA8	LAV PLUMB'G GUARD	TUBEPRO	82202	PVC WHITE
TA9	SOAP DISPENSER	BOBRICK	B-42	-
TA10	COAT HOOK	BOBRICK	B-2112	PROVIDE IN-WALL BLOCKING



EXTERIOR RAMP SECTION
SCALE: 1/2" = 1'-Ø"
3 A-302

BEACON
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ISSUE DATES

DATE	BY	DESCRIPTION
6/23/2021	NM	Bid Set

OWNER
Community Day Center of Waltham

PROJECT
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815
SCALE As Noted

DRAWING NAME
Section &
Interior Elevations

DRAWING NO.
A-302

DOOR SCHEDULE

TAG	FROM	TO	TYPE	SIZE	MATL	LABEL	HDWR.	FRAME
101	VESTIBULE	EXTERIOR	1	34X80	STL.	N/A	1	A
102	LIFT	VESTIBULE	2	34X80	STL.	60 MIN	2	B
103	STAIR	VESTIBULE	2	34X80	STL.	60 MIN	2	B
201	HALLWAY	STAIR	-	34X80	EX. WD.	60. MIN.	EX.	EX.
202	ACC. TOILET	HALLWAY	3	36X80	WD.	N/A	1	C
203	HALLWAY	ACC. SHOWER	3	36X80	WD.	N/A	1	C
204	ACC. TOILET	HALLWAY	3	36X80	WD.	N/A	1	C
205	HALLWAY	FILES/STOR.	3	36X80	WD.	N/A	3	C
206	HALLWAY	SECURITY	3	36X80	WD.	N/A	3	C
207	HALLWAY	COMMUNITY RM.	-	36X80	EX. WD.	N/A	2	EX.
208	LIFT	COMMUNITY RM.	2	34X80	STL.	60 MIN.	2	B
209	COMMUNITY RM.	OFFICE	-	34X80	EX. WD.	N/A	3	EX.
210	CLOSET	COMMUNITY RM.	4	72X80	WD.	N/A	5	EX.

HARDWARE SETS

HARDWARE SET 1

1.5 PAIR HINGES - 4" 5 KNUCKLE BALL BEARING
2X KICK PLATES 8"X35"
1X DOME DOOR STOP
3X GREY RUBBER SILENCERS
SCHLAGE AL SERIES SATURN LOCKSET W/ ENTRANCE FUNCTION STANDARD CYLINDER & STRIKE

HARDWARE SET 2

1.5 PAIR HINGES - 4" 5 KNUCKLE BALL BEARING
2X KICK PLATES 8"X35"
1X DOME DOOR STOP
3X GREY RUBBER SILENCERS
SCHLAGE AL SERIES SATURN LOCKSET W/ PASSAGE FUNCTION STANDARD CYLINDER & STRIKE

HARDWARE SET 3

1.5 PAIR HINGES - 4" 5 KNUCKLE BALL BEARING
2X KICK PLATES 8"X35"
1X DOME DOOR STOP
3X GREY RUBBER SILENCERS
1X COAT HOOK
SCHLAGE AL SERIES SATURN LOCKSET W/ BATH PRIVACY FUNCTION STANDARD CYLINDER & STRIKE

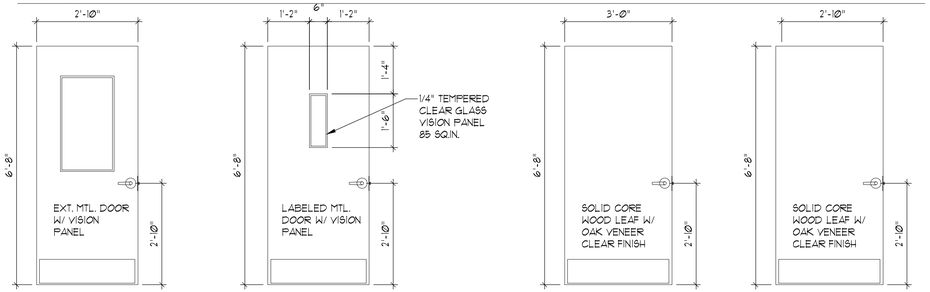
HARDWARE SET 4

1.5 PAIR HINGES - 4" 5 KNUCKLE BALL BEARING
1X KICK PLATES 8"X35"
1X DOME DOOR STOP
3X GREY RUBBER SILENCERS
SCHLAGE AL SERIES SATURN LOCKSET W/ STOCKROOM FUNCTION STANDARD CYLINDER & STRIKE

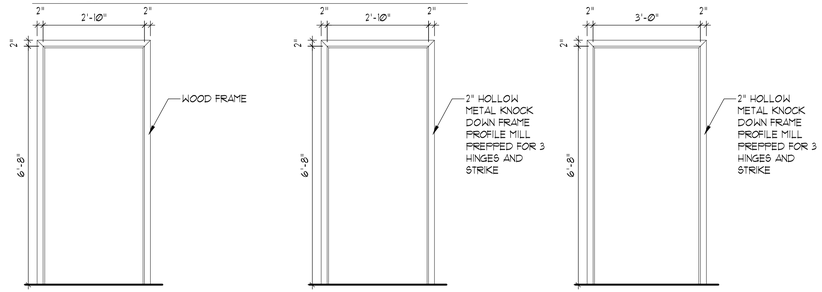
HARDWARE SET 5

3 PAIR HINGES - 4" 5 KNUCKLE BALL BEARING
2X KICK PLATES 8"X35"
2X DOME DOOR STOP
2X GREY RUBBER SILENCERS ON HEAD
SCHLAGE AL SERIES SATURN LOCKSET W/ STOCKROOM FUNCTION + DUMMY TRIM ON INCATIVE LEAF, STANDARD CYLINDER & STRIKE

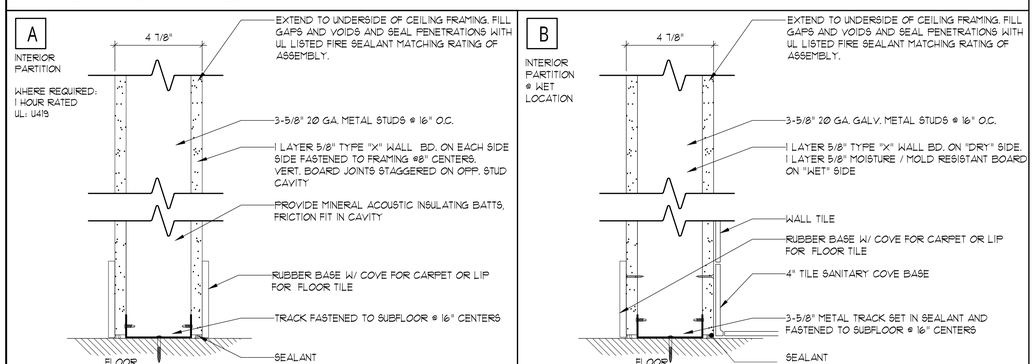
DOOR TYPES



FRAME TYPES



PARTITION TYPES



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ISSUE DATES

DATE	BY	DESCRIPTION
6/23/2021	NM	Bid Set

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

SCALE 1/4" = 1'-0"

DRAWING NAME

Door Sched. Partition Types & Details

DRAWING NO.

A-401

GENERAL SPECIFICATIONS

1. CONDITIONS OF THE CONTRACT AND DIVISION 1, GENERAL REQUIREMENTS APPLY TO WORK SHOWN ON THESE DRAWINGS. EXAMINE DRAWINGS AND OTHER SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK SHOWN ON THESE DRAWINGS.
2. PROVIDE ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS IN QUANTITIES NECESSARY TO COMPLETE WORK.
3. VISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED. REPORT ADVERSE CONDITIONS IN WRITING TO ARCHITECT. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS INCLUDING PREPARATORY WORK DONE BY OTHERS.
4. PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT AS SHOWN ON DRAWINGS. COORDINATE ELECTRICAL WORK WITH WORK SHOWN ON THESE DRAWINGS.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
6. PERFORM WORK AS REQUIRED BY CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION.
7. MATERIAL AND EQUIPMENT SHALL BE UL, NEMA, ANSI, IEEE, ADA & CBM APPROVED FOR INTENDED SERVICE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND STATE ELECTRICAL CODE.
8. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE, CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
9. GUARANTEE WORK IN WRITING FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER.
10. SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT.
11. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERPRETED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
12. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. PROVIDE INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS BUT NOT SHOWN ON PLANS, AND VICE VERSA, AS IF EXPRESSLY REQUIRED ON BOTH.
13. UTILIZE MOLDED CASE CIRCUIT BREAKERS. MINIMUM INTERRUPTING CAPACITY SHALL BE 10,000 AMPS SYMMETRICAL AT 240 VOLTS, AND 14,000 AMPS SYMMETRICAL AT 480 VOLTS.
14. TEMPORARY LIGHT AND POWER SHALL BE PROVIDED ON SITE BY THE ELECTRICAL CONTRACTOR.
15. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
16. SUBMIT SHOP DRAWINGS AND PRODUCT DATA WITHIN THIRTY (30) DAYS AFTER AWARD OF CONTRACT. CHECK, STAMP AND MARK WITH PROJECT NAMES SUBMITTALS BEFORE TRANSMITTING TO ARCHITECT. INDICATE DEVIATIONS FROM CONTRACT DOCUMENTS. SHOP DRAWINGS SHALL BE PROVIDED FOR ALL EQUIPMENT SHOWN ON THE DRAWINGS. PROVIDE SHOP DRAWINGS ON LIGHTING, PANELBOARDS, CIRCUIT BREAKERS, CONDUIT, WIRING DEVICES, LIGHTING CONTROL DEVICES, CABLE AND CONDUCTORS, FIRE ALARM INCLUDING BATTERY CALCS, RISER DIAGRAM, EQUIPMENT CUTS AND DISCONNECTS.
17. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE, OR OTHER CAUSE.
18. SUBSTITUTIONS FOR SCHEDULED LIGHTING EQUIPMENT WILL BE REJECTED UNLESS SUBSTITUTION SUBMITTAL IS RECEIVED WITHIN TEN (10) DAYS AFTER CONTRACT AWARD.
19. SCHEDULE AT LEAST TEN (10) WORKING DAYS, EXCLUSIVE ON TRANSMITTAL TIME FOR SUBMITTAL REVIEW.
20. ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE.
21. ALL COMPONENTS SHOWN ON THE RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
22. LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL DRAWINGS.
23. ALL RACEWAY RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
24. CONDUIT HOMERUNS SHOWN ON THE DRAWING WITH MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGRAMMATICALLY. THE CONTRACTOR SHALL NOT INSTALL MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS DONE SO STRICTLY BY THE NATIONAL ELECTRICAL CODE AS AMENDED BY THE STATE.
25. CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT.
26. BRANCH CIRCUIT WIRING MAY NOT BE SHOWN GRAPHICALLY ON DRAWINGS AND MAY BE INDICATED BY CIRCUIT NUMBERS BESIDE FIXTURES, DEVICES AND EQUIPMENT. PROVIDE COMPLETE WIRING SYSTEM WHETHER OR NOT INDICATED GRAPHICALLY. PHASE BALANCE ALL PANELBOARDS IN FIELD.
27. ALL NEW WIRING SHALL BE TYPE THHN/THWN RATED 75-90°C, 600V. WET-DRY LOCATIONS. MINIMUM BRANCH CIRCUIT WIRING SHALL BE NO. 12 AWG SOLID COPPER. BRANCH CIRCUITS LONGER THAN 75 FEET FOR 120 VOLTS OR 175 FEET FOR 277 VOLTS SHALL BE AT LEAST NO. 10 AWG FROM PANEL TO LAST OUTLET.
28. ALL NEW EXPOSED INTERIOR WIRING SHALL BE INSTALLED IN ELECTRIC METALLIC TUBING. ALL WIRING IN CONCRETE SLABS OR EXPOSED IN ROOM BELOW 8'-0" SHALL BE INSTALLED IN RIGID STEEL CONDUIT. EXTERIOR WIRING SHALL BE IN GALVANIZED RIGID METALLIC CONDUIT.
29. INTERRUPTIONS TO EXISTING ELECTRIC SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE ARCHITECT OR OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS, TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED.
30. ALL GROUNDING SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AS AMENDED BY THE STATE.
31. ALL FIREPROOFING FOR ELECTRICAL PENETRATIONS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
32. SYSTEM FEEDERS AND BRANCH CIRCUITS THAT PASS THROUGH ALTERED AREAS AND SERVE OTHER AREAS SHALL BE MAINTAINED.
33. PROVIDE NEW TYPED IDENTIFICATION DIRECTORY IN PANELBOARDS INDICATING CIRCUIT FUNCTION OR EQUIPMENT SERVED. LABEL ALL ELECTRICAL PANELS, DISCONNECT SWITCHES AND OTHER EQUIPMENT WITH ENGRAVED VINYL PLATES. NAMEPLATE LETTERING SHALL BE 1/4" MINIMUM.
34. PANELBOARDS SHALL BE DOOR-IN-DOOR CONSTRUCTION WITH COPPER BUS. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, BOLT-ON. PANELBOARDS AND BREAKERS SHALL BE CUTLER HAMMER, SQUARE 'D', G.E. OR SIEMENS. PROVIDE TYPE IDENTIFICATION DIRECTORY CARDS IN PANELBOARD INDICATING CIRCUIT FUNCTION OR EQUIPMENT SERVED.
35. DISCONNECT SWITCHES SHALL BE HEAVY DUTY (HD). SIDE OPERATED WITH INTERLOCKING COVER, G.E., SQUARE 'D', CUTLER HAMMER OR SIEMENS OR EQUAL.

LIGHTING NOTES

1. ALL CONDUIT, WIRING AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE, NATIONAL FIRE PROTECTION ASSOCIATION, AMERICAN'S WITH DISABILITIES ACT (ADA) AND ANY APPLICABLE LOCAL REGULATIONS.
2. ALL CONDUIT, FIXTURES AND OUTLETS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN.
3. ALL LIGHTING FIXTURE SPACING DIMENSIONS AND MOUNTING HEIGHTS ARE RECOMMENDED LOCATIONS. SLIGHT VARIATIONS WHERE NECESSARY TO AVOID INTERFERENCE SHALL BE DETERMINED IN THE FIELD.
4. THE ELECTRICAL CONTRACTOR SHALL CONSULT AND COOPERATE WITH CONTRACTORS OF OTHER TRADES TO AVOID ANY INTERFERENCE IN THE INSTALLATION OF THEIR RESPECTIVE EQUIPMENT.
5. ALL CONDUIT SHALL BE (EMT). NO CONDUIT SMALLER THAN 3/4 INCH ELECTRICAL. TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS, EXCEPT THAT 1/2 INCH CONDUIT MAY BE USED FOR LIGHTING FIXTURE STEMS WHERE APPLICABLE.
6. MINIMUM SIZE OF CONDUCTOR SHALL BE #12 AWG UNLESS OTHERWISE NOTED.
7. WHERE REQUIRED, ADDITIONAL SUPPORT STEEL FOR THE LIGHTING INSTALLATION SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. SEISMIC RESTRAINTS SHALL BE INCLUDED AS PER STATE BUILDING CODE.
8. PROVIDE SEPARATE UN-SWITCHED NEUTRAL TO ALL EMERGENCY LIGHT FIXTURES CONTAINING EMERGENCY BALLASTS.
9. ALL EXISTING FIXTURES SHALL BE CLEANED AND ALL NON-FUNCTIONING LAMPS REPLACED. EC SHALL ASSUME 10% OF ALL LAMPS TO BE REPLACED, UNUSED LAMPS SHALL BE RETURNED TO OWNER. EXISTING FIXTURES ARE T-8 FLUORESCENT, (3) LAMPS PER FIXTURE. EC SHALL VERIFY CRI AND TEMPERATURE AND MATCH EXISTING. VERIFY EXACT FIXTURE LAMPS IN FIELD.
10. EC SHALL PROVIDE A SEPARATE PRICE TO REPLACE ALL 2X4 FIXTURES WITH NEW LED FIXTURES. LITHONIA 2GTL4 2X4 LED 3500K, 36WATT OR EQUAL. INCLUDE CREDIT FOR STORING, CLEANING AND RELAMPING EXISTING FIXTURES.

GENERAL NOTES

1. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHTS AND EXACT LOCATIONS OF ALL DEVICES.
2. ALL FLOOR, MASONRY WALLS AND STRUCTURAL CEILING PENETRATIONS SHALL BE SLEEVED.
3. PROVIDED FIRE/MOISTURE SEAL FOR WALL, FLOOR OR CEILING PENETRATIONS.
4. PLACE ALL CABLE/WIRING IN CONDUIT OR RACEWAY. DO NOT LAY ON, OR SUPPORT CONDUIT FROM SUSPENDED CEILING OR PIPING AND DUCTWORK.
5. ALL WIRING WITHIN UTILITY CLOSETS MAY BE IN SURFACE MOUNTED CONDUIT. EMT MAY BE UTILIZED.
6. FLEXIBLE CONDUIT CONNECTIONS SHALL BE A MAXIMUM OF 6'-0".
7. MC TYPE CONDUCTOR WITH INTEGRAL GROUND WIRE MAY BE UTILIZED FOR POWER AND LIGHTING CIRCUITS. MC CABLE SHALL BE UTILIZED ONLY WHERE COMPLETELY CONCEALED.

POWER NOTES

1. ALL CONDUIT, WIRING AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST STANDARDS OF THE NATIONAL & STATE ELECTRICAL CODES AND ANY APPLICABLE LOCAL REGULATIONS.
2. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATION AND METHOD OF SUPPORT SHALL BE DETERMINED IN THE FIELD, EXCEPT WHERE SPECIFIC DIMENSIONS AND DETAILS ARE SHOWN. ALL CONDUIT RUNS SHALL BE RIGIDLY SUPPORTED.
3. THE ELECTRICAL CONTRACTOR SHALL CONSULT AND COOPERATE WITH CONTRACTORS OF OTHER TRADES TO AVOID ANY INTERFERENCE IN THE INSTALLATION OF THEIR RESPECTIVE EQUIPMENT.
4. ALL CONDUIT SHALL BE EMT. NO CONDUIT SMALLER THAN 3/4 INCH ELECTRICAL TRADE SIZE SHALL BE USED, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS.
5. VISIT SITE AND EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS INCLUDING PREPARATORY WORK DONE BY OTHERS.
6. PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT TO MAKE INSTALLATION COMPLETE IN EVERY DETAIL UNDER THIS CONTRACT WHETHER OR NOT SPECIFICALLY SHOWN ON DRAWINGS.
7. MATERIAL AND EQUIPMENT SHALL BE UNDERWRITER LABORATORIES LISTED FOR INTENDED SERVICE. MATERIALS AND INSTALLATION SHALL MEET REQUIREMENTS OF STATE ELECTRICAL CODE.
8. WIRING DEVICES SHALL BE SPECIFICATION GRADE, 20 AMP, WITH SMOOTH PLASTIC DEVICE PLATES AS MANUFACTURED BY HUBBELL, OR EQUAL. COLOR WHITE OR AS APPROVED BY ARCHITECT.
9. CONDUCTORS AND CABLE SHALL BE MINIMUM #12 AWG, 600 VOLT, COPPER WITH TYPE THHN/THWN INSULATION. PROVIDE SEPARATE GREEN GROUND IN ALL FEEDERS. WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED, #10 AWG AND SMALLER SHALL BE SOLID. COLOR CODE CONDUCTORS BLACK, RED, BLUE, WITH WHITE NEUTRAL AND GREEN GROUND EXCEPT AS NOTED FOR 120 VOLT
10. INTERIOR BRANCH CIRCUITRY SHALL BE RUN IN "EMT", "IMC" OR "RGS".
11. PROVIDE SEPARATE HOT, GROUND AND NEUTRAL CONDUCTOR FOR ALL CIRCUITS CONNECTED TO ARC-FAULT CIRCUIT BREAKERS.

FIRE ALARM NOTES

1. THE ELECTRICAL CONTRACTOR SHALL COMPLETE A CERTIFICATE CERTIFYING THAT THE SYSTEM HAS BEEN 100 PERCENT TESTED AND FUNCTIONS IN COMPLETE COMPLIANCE WITH THE SYSTEM SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS. THE CERTIFICATE SHALL BE SIGNED BY THE INSTALLER, ELECTRICAL CONTRACTOR AND THE OWNER. AFTER RECEIPT OF THE CERTIFICATION, THE FIRE PREVENTION OFFICER AND/OR THE FIRE ALARM SUPERVISOR WILL CONDUCT AN INSPECTION IN THE COMPANY OF THE INSTALLER AND A REPRESENTATIVE OF THE OWNER WITHIN SCOPE OF WORK PLUS 10% OF EXISTING.
2. ALL WIRING METHODS SHALL BE AS APPROVED BY THE WIRING INSPECTOR AND THE FIRE DEPARTMENT.
3. ALL SYSTEM COMPONENTS SHALL BE UL LISTED COMPATIBLE WITH EXISTING NOTIFIER FIRE ALARM CONTROL PANEL.
4. ALL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA 72 SERIES PAMPHLETS, AND ALL STATE AND LOCAL CODES.
5. THE ELECTRICAL CONTRACTOR MUST OBTAIN AN ELECTRICAL PERMIT FROM THE TOWN BUILDING DEPARTMENT AND A PERMIT FROM THE FIRE DEPARTMENT PRIOR TO COMMENCEMENT OF EQUIPMENT INSTALLATION. A FLOOR PLAN SHOWING ALL ALARM DEVICES, LOCATION OF MASTER BOX, PANELS, ANNUNCIATORS, A ONE-LINE WIRING DIAGRAM AND AN ANNUNCIATOR DETAIL SHOWING ZONE LABELING WILL BE REQUIRED TO BE SUBMITTED BEFORE THE FIRE DEPARTMENT ISSUES A PERMIT.
6. INSTALLATION OF EQUIPMENT SHALL BE IN ACCORDANCE WITH CURRENT STANDARDS AND SPECIFICATIONS APPROVED BY THE AUTHORITY HAVING JURISDICTION
7. ALL FIRE ALARM EQUIPMENT, INSTALLATION AND OPERATION SHALL BE IN CONFORMANCE WITH THE FIRE DEPARTMENT INSTALLATION REQUIREMENTS AND SYSTEM INSTALLATION GUIDELINES. COORDINATE WITH OWNER
8. ALL EQUIPMENT SHOWN ON DRAWINGS IS DIAGRAMMATIC.
9. PROVIDE AND INSTALL ALL NECESSARY WIRE, CONDUIT, RELAYS AND CONNECTIONS FROM ALL DUCT SMOKE DETECTORS TO THEIR ASSOCIATED EXHAUST FAN AND SUPPLY FAN CONTROLLERS. UPON ACTIVATION OF A DUCT SMOKE DETECTOR, IN ADDITION TO SOUNDING THE GENERAL ALARM, THE DUCT SMOKE DETECTOR SHALL IMMEDIATELY SHUT DOWN THE ASSOCIATED FAN.
10. THE FIRE ALARM SYSTEM SHOP DRAWINGS SHALL BE REVIEWED AND APPROVED BY BOTH THE ENGINEER AND THE OWNER. THE SHOP DRAWINGS MUST BE SIGNED OFF BY THE OWNER AND ENGINEER PRIOR TO ORDERING AND INSTALLATION OF EQUIPMENT.
11. ABSOLUTELY NO CONNECTIONS WILL BE MADE TO THE MUNICIPAL FIRE ALARM CIRCUITS, EXCEPT BY FIRE DEPARTMENT PERSONNEL.
12. ALL WORK BEYOND THE MASTER BOX AND INSIDE OF THE BUILDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13. ALL JOINTS AND CONNECTIONS SHALL BE IN JUNCTION BOXES. ALL CONNECTIONS NOT ON APPROVED TERMINAL STRIPS SHALL BE SOLDERED AND TAPED. ALL JUNCTION BOXES SHALL BE PAINTED RED.
14. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR THAT ALL CONNECTING WIRING MAINTAIN ELECTRICAL INTEGRITY, WITH NO OPEN CIRCUITS, GROUNDS, LEAKAGE OR OTHER FAULTS. CONNECTION TO THE MUNICIPAL SYSTEM WILL NOT BE PERMITTED IF ANY FAULTS EXIST, AND THE CONTRACTOR HAS THE PERMANENT RESPONSIBILITY FOR THE MAINTENANCE OF ALL SUCH WIRING FOR A ONE-YEAR PERIOD. IF FAULTS DEVELOP AFTER INSTALLATION, CORRECTION MUST BE MADE BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL COMPLETION. THE FIRE DEPARTMENT MAY REQUIRE DISCONNECTION OF THE FIRE ALARM BOX FROM THE MUNICIPAL SYSTEM UNTIL PROPER CONNECTIONS AND/OR REPAIRS ARE MADE. SUCH A DISCONNECTION MAY REQUIRED A FIRE WATCH DURING THAT TIME THE BUILDING IS WITHOUT A MASTER FIRE ALARM BOX AND ALARM SYSTEM. THIS FIRE WATCH WILL BE AT THE FIRE DEPARTMENT'S DIRECTION AND PAYMENT FOR SUCH A WATCH WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
15. ALL EQUIPMENT SHALL BE MADE AVAILABLE FOR TEST AND INSPECTION WHEN REQUIRED BY THE OWNER.
16. ALL EQUIPMENT USED SHALL BE OF A TYPE APPROVED BY THE FIRE CHIEF THROUGH THE ALARM SUPERINTENDENT AND THE FIRE PREVENTION OFFICER. COORDINATE WITH OWNER.
17. THE BATTERIES USED WITH THE FIRE ALARM CONTROL PANEL SHALL BE CAPABLE OF OPERATING THE PANEL FOR TWENTY-FOUR (24) HOURS WITH A FIVE (5) MINUTE RING-DOWN AT THE END OF THE TWENTY-FOUR (24) HOUR PERIOD. THE CALCULATION USED TO DETERMINE BATTERY CAPACITY SHALL BE PRESENTED TO THE FIRE DEPARTMENT AT THE TIME OF INSPECTION. PROVIDE BATTERY CALCULATIONS WITH SHOP DRAWINGS. PROVIDE ADDITIONAL BATTERIES AS REQUIRED.
18. THE EXISTING SEQUENCE OF OPERATION SHALL BE MAINTAINED. THIS PROJECT COMBINES (3) UNITS. EC SHALL VERIFY THAT ANY DEVICE WITHIN THE SCOPE OF WORK SHALL CAUSE ALL NEW AND EXISTING HORN STROBES TO ACTIVATE WITHIN THE NEW COMBINED UNIT.
19. THE EC SHALL COORDINATE ALL WORK WITH OWNERS FIRE ALARM CONTRACTOR. EC SHALL INCLUDE ALL COSTS ASSOCIATE WITH WORK REQUIRED BY OWNERS CONTRACTOR AND FIRE ALARM MANUFACTURER TO UPDATE THE SYSTEM. EC SHALL PROVIDE NEW AS-BUILT DRAWINGS FRAMED ON THE WALL WITHIN THE ELECTRICAL ROOM. THIS SHALL REQUIRE UPDATES WHICH ARE NOT PART OF THIS PROJECT. EC SHALL COORDINATE WITH OWNER AND ARCHITECT TO OBTAIN CORRECT DRAWINGS AND FIRE ALARM DEVICE LOCATIONS WITHIN EXISTING SPACES.
20. THE EC SHALL OBTAIN A PERMIT BEFORE ANY EQUIPMENT IS ORDERED OR ANY WORK BEGINS. ALL EQUIPMENT MUST MEET THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT. THE EC SHALL COMPLETELY TEST AND CERTIFY THE SYSTEM IS OPERATIONAL BEFORE THE FIRE DEPARTMENT IS CONTACTED FOR FINAL TESTING. THE EC SHALL MAKE ANY MODIFICATIONS REQUIRED BY THE FIRE DEPARTMENT AND REPROGRAM AND RE-TEST.

ABBREVIATIONS

A/AMP	AMPERE	IMC	INTERMEDIATE METALLIC CONDUIT
AC	ALTERNATING CURRENT	JB	JUNCTION BOX
AF	AMPERE FRAME	KVA	KILOVOLT-AMPERE
AFF	ABOVE FINISHED FLOOR	KW	KILOWATT
AFG	ABOVE FINISHED GRADE	LTG	LIGHTING
AIC	APRERE INTERRUPTING CAPACITY	PWR	POWER
AL	ALUMINUM	MCB	MAIN CIRCUIT BREAKER
AT	AMPERE TRIP	MEC	MASSACHUSETTS ELECTRICAL CODE
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUGS ONLY
AWG	AMERICAN WIRE GAUGE	MTG	MOUNTING
C	CONDUIT	MTD	MOUNTED
CKT	CIRCUIT	MCC	MOTOR CONTROL CENTER
CB	CIRCUIT BREAKER	NEC	NATIONAL ELECTRICAL CODE
CU	COPPER	NS	NON-SYSTEM
CL	CENTERLINE	NTS	NOT TO SCALE
DC	DIRECT CURRENT	No., #	NUMBER
DE	DUAL ELEMENT	PC	PLUMBING CONTRACTOR
DWG	DRAWING	RPM	REVOLUTIONS PER MINUTE
EC	ELECTRICAL CONTRACTOR	RMS	ROOT MEAN SQUARE VALUE
EMH	ELECTRICAL MANHOLE	RGS	RIGID STEEL CONDUIT
EWC	ELECTRIC WATER COOLER	SF	SQUARE FOOT
EMT	ELECTRIC METALLIC CONDUIT	SN	SOLID NEUTRAL
FLMT	FLEXIBLE LIQUID TIGHT METALLIC TUBING	SWBD	SWITCHBOARD
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GND	GROUND	V	VOLTS
GFI	GROUND FAULT INTERRUPTING	VA	VOLT-AMPERE
HVAC	HEATING, VENTILATION AND AIR CONDITIONING	VFD	VARIABLE FREQUENCY DRIVE
HP	HORSEPOWER	WP	WEATHERPROOF

RECEPTACLES AND OUTLETS

5	DUPLEX CONVENIENCE RECEPTACLE OUTLET, GROUNDING TYPE, RATED 20A, 125V TYPE. "5" DENOTES CIRCUIT NUMBER, MOUNTING HEIGHT 18" TO CENTERLINE AFF
	GROUND FAULT INTERRUPTING 20A, 125V RECEPTACLE, MOUNTING HEIGHT 18" TO CENTERLINE AFF
	DUPLEX CONVENIENCE OUTLET, MOUNTING HEIGHT 42" TO CENTERLINE AFF OR 6" ABOVE COUNTER TOP.
WP	GROUND FAULT DUPLEX RECEPTACLE, MOUNTING HEIGHT 42" TO CENTERLINE AFF OR MOUNTED 6" ABOVE COUNTER TOP. "WP" INDICATES PROVIDED WITH AN IN-USE WEATHER TIGHT COVERPLATE.
	DOUBLE DUPLEX CONVENIENCE OUTLET
J J	JUNCTION BOX, JUNCTION BOXES SHOWN ON THE DEMO DRAWINGS CONTAIN CIRCUITRY THAT MUST BE REMOVED IF NOT USE FOR NEW FURNITURE.
	2 PORT TELEPHONE/COMPUTER OR DATA OUTLET, FLUSH MOUNTING 18" TO CENTERLINE AFF WITH 1 GANG BACK BOX & COVER PLATE. 4"x4" BOX WITH 1" CONDUIT TO ABOVE HUNG CEILING WITH PULL WIRE, IF NO CEILING IS EXISTING CONDUIT SHALL BE RUN FROM DEVICE TO TELEPHONE CLOSET. PROVIDE SUPPORTS FOR WIRING BY OTHER TO SERVER ROOM.
	FLOOR MOUNTED DUPLEX RECEPTACLE, CONNECTED TO CONNECTRAC
	PHONE AND DATA DEVICE, CONNECTED TO CONNECTRAC. EC SHALL RUN 1 1/2 " CONDUIT FROM CONNECTRAC TO ABOVE HUNG CEILING WITH PULL WIRE AND BUSHING. EC SHALLPROVIDE SUPPORTS FOR WIRING BY OTHERS TO SERVER ROOM.
PC	FURNITURE CONNECTION POINT, EC SHALL VERIFY REQUIREMENTS WITH FURNITURE MANUFACTURER SELECTED. EC SHALL TERMINATE WHIPS PROVIDED BY MANUFACTURER. WALL MOUNTED JUNCTION BOXES UNLESS OTHERWISE NOTED. EC SHALL PROVIDE CIRCUITRY AS SHOWN, HAND TIE ALL BREAKERS CONNECTED TO THE SAME FURNITURE, ASSUME 4 HOTS, 4 NEUTRALS AND 2 GROUNDS PER CONNECTION POINT. PROVIDE 1 1/4"C FROM BOX TO ABOVE HUNG CEILING, PROVIDE PULL WIRE AND BUSHING FOR TELE/DATA

MISCELLANEOUS

ECH 1	MECHANICAL EQUIPMENT TAG, REFER TO MECHANICAL SCHEDULE
	LIGHTING OR POWER PANEL, SURFACE
1.5	MOTOR, NUMERAL INDICATES HORSEPOWER
3R	DISCONNECT SWITCH, NON-FUSIBLE TYPE, RATED 30A/3P, IN NEMA TYPE "1" ENCLOSURE, UNLESS OTHERWISE NOTED. "3R" DENOTES NEMA TYPE ENCLOSURE. "WP" SHALL DENOTE NEMA 3R
30AF/20AT	DISCONNECT SWITCH, FUSED TYPE, RATED 30A, 20A FUSE, 3 POLE IN NEMA TYPE "1" ENCLOSURE, UNLESS OTHERWISE NOTED
T	TRANSFORMER, DRY TYPE
C	CAMERA LOCATION, EC SHALL PROVIDE BACKBOX AND J HOOKS SUPPORTS FOR WIRING BY OTHERS FROM DEVICE TO SERVER ROOM LOCATION
CR	CARD READER

BRANCH CIRCUIT AND FEEDER SYMBOLS

	BRANCH CIRCUIT DIAGONAL LINES INDICATE NUMBER OR CONDUCTORS, NO DIAGONAL LINES INDICATES TWO (2) CONDUCTORS (1 PHASE AND 1 NEUTRAL). GROUND WIRE(S) NOT INDICATED. MINIMUM SIZE CONDUCTOR #12 AWG AND 3/4" CONDUIT, UNLESS OTHERWISE NOTED
4#1,1#6G-1½"C	INDICATES (3) #1 AWG(PHASE), (1)#1 AWG(NEUTRAL), (1) #6 GROUND IN A 1-1/2" CONDUIT
	FLEXIBLE CONNECTION TO MOTOR OR EQUIPMENT
PP1-1,3,5 (3)20A/1P	HOMERUN TO PANELBOARD 'P1' CIRCUIT NUMBER 1, 3 & 5. DIAGONAL LINES INDICATE (3) PHASE AND (1) NEUTRAL CONDUCTOR. (3) GROUNDING CONDUCTOR UNDERSTOOD. ARC FAULT PROTECTED CIRCUITS SHALL HAVE SEPARATE NEUTRAL CONDUCTORS FOR EACH PHASE.

DEMOLITION NOTES

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE HVAC, PLUMBING AND FIRE PROTECTION PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
2. THE ELECTRICAL DEMOLITION PLANS AND DETAILS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BIDS TO BECOME FAMILIAR WITH THE ACTUAL CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE BUT NOT BE LIMITED TO DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR TO BE SALVAGED.
4. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
5. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS, WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT MANNER.
6. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SCOPE SHALL BE DE-ENERGIZED AND LABELED SPARE.
7. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
8. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE IDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
9. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN FULLY FUNCTIONAL DURING THE ENTIRE DEMOLITION AND CONSTRUCTION PERIOD. REUSE OF EXISTING FIRE ALARM SYSTEM RACEWAYS SHALL NOT BE ALLOWED. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION. DEMOLITION OF THE EXISTING SYSTEM SHALL NOT COMMENCE UNTIL THE NEW SYSTEM HAS BEEN COMPLETELY INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
10. ALL DEMOLITION SCOPE ASSOCIATED WITH LOW VOLTAGE SYSTEMS INCLUDING BUT NOT LIMITED TO TELEPHONE, DATA, SECURITY, PAGING, CCTV, ETC. SHALL BE INCLUDED IN THIS CONTRACT.
11. REMOVED FLUORESCENT AND HID LAMPS AND BATTERIES SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT.
12. ALL BALLAST IN LIGHTING FIXTURES TO BE DISPOSED SHALL BE VERIFIED TO BE PCB FREE. ALL BALLAST MANUFACTURED PRIOR TO 1979 AND NOT LABELED AS PCB FREE SHALL BE CONSIDERED TO CONTAIN PCBs. PROVIDE WRITTEN VERIFICATION TO THE OWNER'S REPRESENTATIVE THAT CONFIRMS PCB FREE WASTE. WHERE PCB FREE WASTE CANNOT BE VERIFIED, BALLAST SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE, WITH PCB COMPONENTS ELIMINATED BY A HIGH TEMPERATURE INCINERATION. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN OFF'S PRIOR TO APPLICATION FOR FINAL PAYMENT. ALL HANDLING SHALL CONFORM TO EPA REQUIREMENTS. PROVIDE BREAKOUT COST FOR THIS SCOPE.

LIGHTING FIXTURE SYMBOLS

B a 2 C E	LED LIGHTING FIXTURE, CEILING/SURFACE/RECESSED/PENDANT OR WALL MOUNTED. "A" DENOTES LIGHTING FIXTURE TYPE (SEE FIXTURE SCHEDULE), "2" DENOTES CIRCUIT NUMBER, "a" DENOTES SWITCH CONTROL, "E" DENOTES ALSO CONNECTED TO AN EMERGENCY CIRCUIT
A 4 b	LED DOWN LIGHT FIXTURE, CEILING/SURFACE/RECESSED OR PENDANT MOUNTED. "B" DENOTES LIGHTING FIXTURE TYPE, "4" DENOTES CIRCUIT NUMBER, "b" DENOTES SWITCH CONTROL, "EM" DENOTES PROVIDED WITH AN INTEGRAL BATTERY BALLAST.
	EXIT SIGN WITH BATTERY AND INTEGRAL LIGHTING HEADS
	EXIT SIGN WITH BATTERY & TEST SWITCH, SHADED REGION INDICATES FACE

SWITCHING SYMBOLS

S_a	SINGLE POLE SWITCH, RATED 20A, 120/277V, MOUNTING HEIGHT 48" TO CENTERLINE OF TOGGLE SWITCH IN "ON" POSITION, "a" DENOTES FIXTURE SWITCH CONTROL
S_3	THREE WAY SWITCH, RATED 20A, 120/277V, MOUNTING HEIGHT 48" TO CENTERLINE OF TOGGLE SWITCH IN "ON" POSITION, "a" DENOTES FIXTURE SWITCH CONTROL
S_M	MANUAL MOTOR STARTER, RATED 20A, 250V, COORDINATE MOUNTING HEIGHT IN FIELD, MOUNTING HEIGHT SHALL NOT EXCEED 6'-7" AFF
S_D	LED COMPATIBLE SLIDE DIMMER 1500W MINIMUM

OCCUPANCY SENSORS

*	WALL MOUNTED OCCUPANCY SENSOR WITH SLIDE DIMMER AND OFF POSITION 180°, 300SF COVERAGE (20'W x 25'L)
*	CEILING MOUNTED OCCUPANCY SENSOR, 360° TWO-SIDED, 1950SF COVERAGE (50' DIAMETER), (FOR PARTIAL COVERAGE APPLICATIONS, A PROVIDED MASK SHALL BE TRIMMED TO ADJUST COVERAGE)
*	COVERAGE DIMENSIONS APPLY TO DEVICE BEING CENTERED. ACTUAL COVERAGE'S CAN VARY ON THE SHAPE AND USE OF APPLICABLE SPACE. COVERAGE MAY BE REDUCED IF DEVICE IS MOUNTED GREATER THAN 12 FEET HIGH. SENSORS SHALL BE PROVIDED WITH ALL REQUIRE POWER MODULES AND CONNECTORS.

FIRE ALARM SYSTEM

F 15	SPEAKER/VISUAL DEVICE, TOP OF DEVICE MOUNTED NOT LESS THAN 90" AFF AND NOT LESS THAN 6" BELOW FINISHED CEILING. SPEAKER TYPE DEVICES ARE REQUIRED IF THE ALLOWABLE OCCUPANCY IS 300 OR MORE PERSONS, OTHERWISE UTILIZE HORN STROBES.
L 15	VISUAL DEVICE, ENTIRE LENS MOUNTED NOT LESS THAN 80" AFF AND NOT MORE THAN 96" AFF
F	MANUAL PULL STATION, MOUNTING HEIGHT 48" TO CENTERLINE AFF
S D,R	SMOKE DETECTOR, "D" INDICATES DUCT MOUNTED SMOKE DETECTOR, "R" INDICATES ELEVATOR RECALL, "NS" INDICATES NON-SYSTEM
H F,C	HEAT DETECTOR, "F" INDICATES 190° FIXED TEMPERATURE, "C" INDICATES MOUNTED ABOVE HUNG CEILING
B	COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR WITH SOUNDER BASE. CO ALARM SHALL BE TEMPORAL 4.
B	ALARM BELL, 120 VOLT HARDWIRED, EXTERIOR MOUNTED, WEATHERPROOF
F	RED INDICATING BEACON, EXTERIOR MOUNTED, WEATHERPROOF
R	REMOTE LED INDICATOR
KB	FIRE DEPARTMENT KEY BOX
RTS	REMOTE TEST STATION
FACP	FIRE ALARM CONTROL PANEL

EXISTING EQUIPMENT DESIGNATIONS

X	EXISTING TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT AND CONDUCTORS.
XM	EXISTING TO REMAIN.
XR	EXISTING EQUIPMENT TO BE REPLACED WITH NEW. CONNECT NEW EQUIPMENT TO EXISTING CIRCUIT.
XN	EXISTING EQUIPMENT TO BE MOVED TO A NEW LOCATION. JUNCTION AND EXTEND EXISTING CONDUIT AND CONDUCTORS.
XL	NEW LOCATION FOR EXISTING EQUIPMENT. JUNCTION AND EXTEND CONDUIT AND CONDUCTORS AS REQUIRED.
XC	EXISTING DEVICE CONNECTED TO A NEW CIRCUIT OR CONTROL, JUNCTION AND EXTEND AS REQUIRED.

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ISSUE DATES

DATE	BY	DESCRIPTION
04.14.21	J.O'Brien	90% Progress Set
04.30.21	J.O'Brien	Final Coordination
05.03.21	J.O'Brien	Permit Set

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER

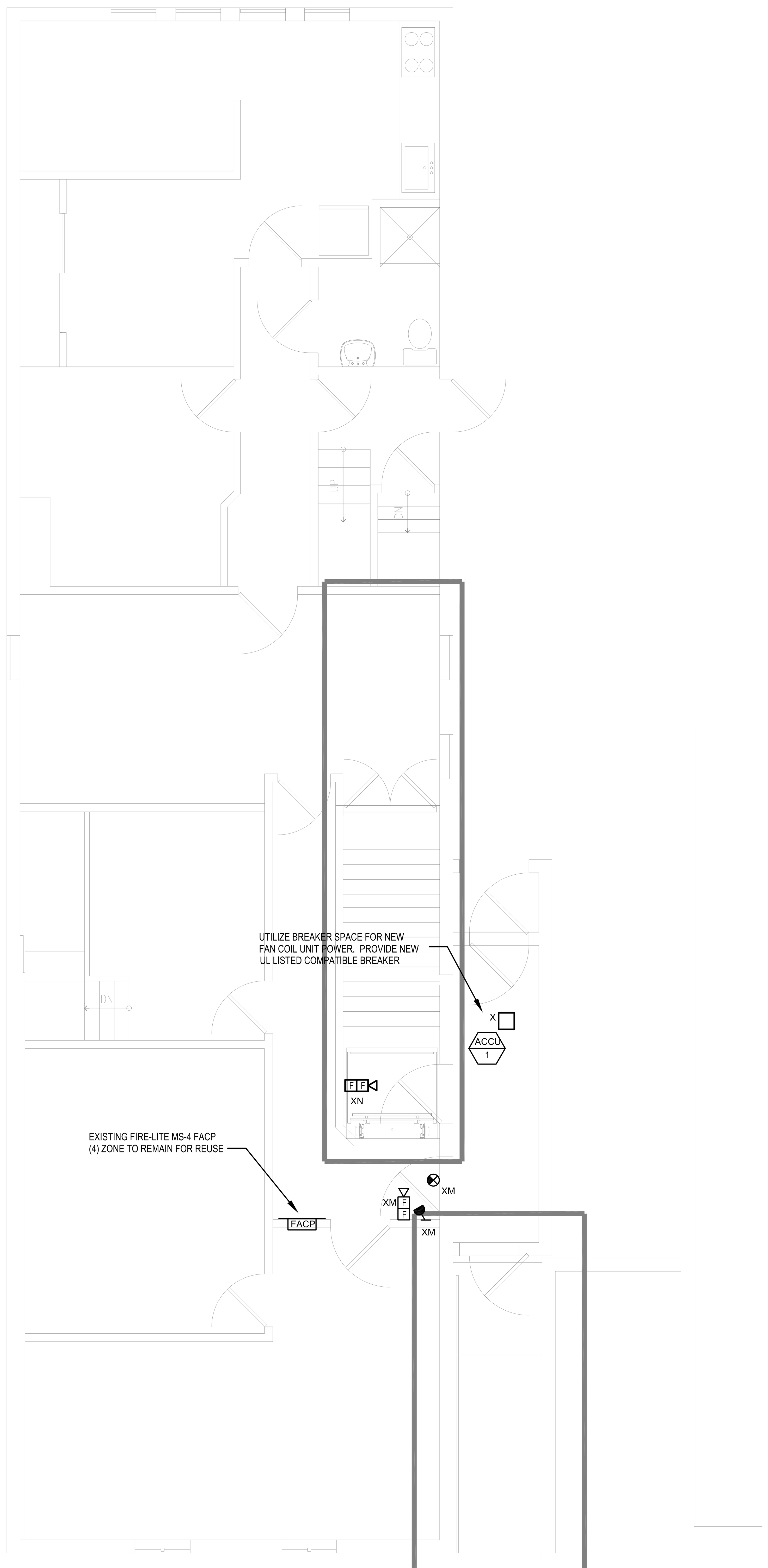
SCALE

DRAWING NAME

Electrical
Legend and Notes

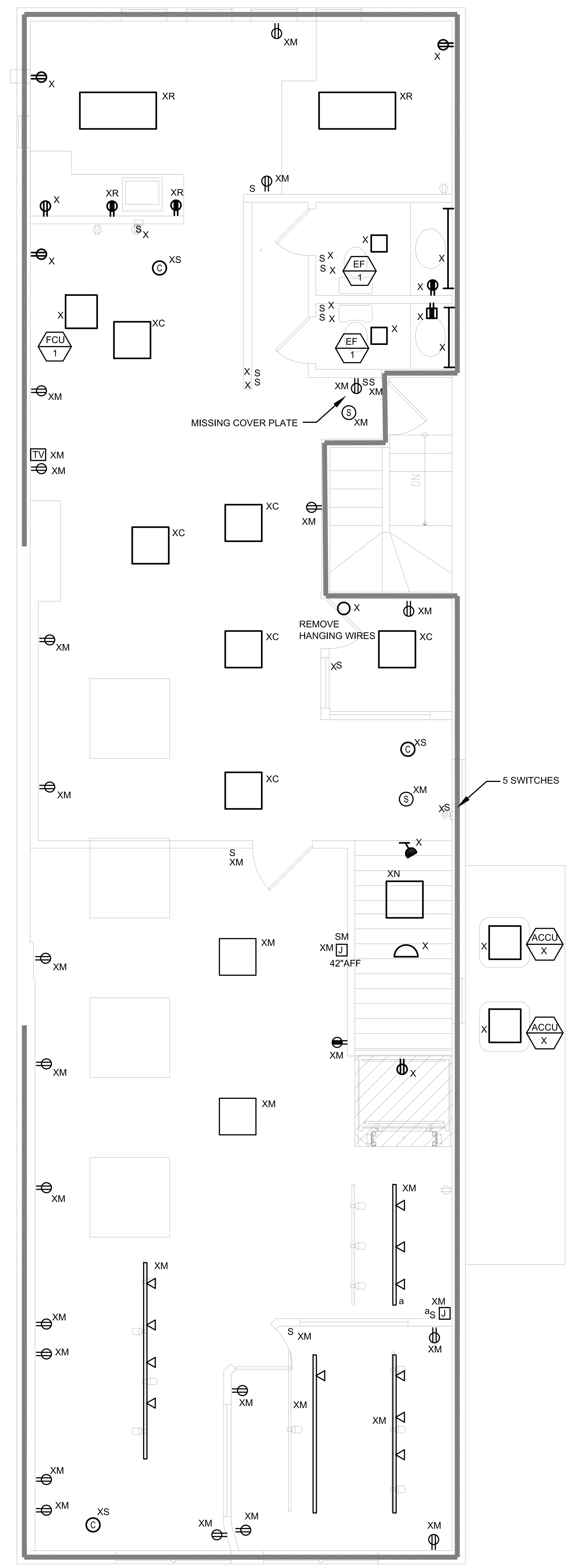
DRAWING NO.

E-000



1 ELECTRICAL - First Floor Demolition Plan

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



2 ELECTRICAL - Second Floor Demolition Plan

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

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DRAWING NAME

Electrical
Demolition Floor Plans

DRAWING NO.

E-100

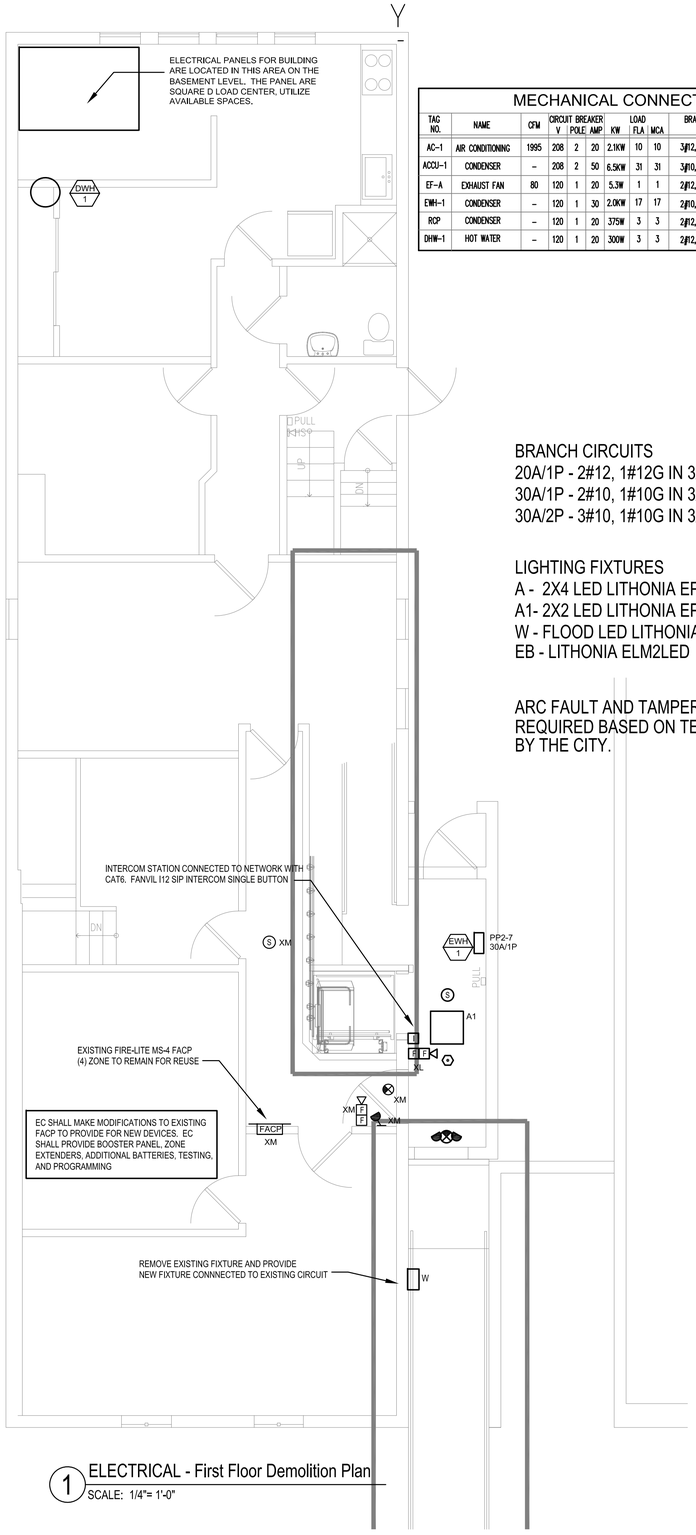
MECHANICAL CONNECTION SCHEDULE

TAG NO.	NAME	CFM	CIRCUIT BREAKER V	POLE	AMP	LOAD KW	FLA	MCA	BRANCH CIRCUIT	CIRCUIT	TERMINATION	REMARKS
AC-1	AIR CONDITIONING	1995	208	2	20	2.1KW	10	10	3#12,1#12 G 3/4"C	EXISTING		PROVIDE NEW BREAKER AND FEEDER
ACCU-1	CONDENSER	–	208	2	50	6.5KW	31	31	3#10,1#10 G 3/4"C	EXISTING	WP	PROVIDE NEW BREAKER AND FEEDER
EF-A	EXHAUST FAN	80	120	1	20	5.3W	1	1	2#12,1#12 G 3/4"C	LIGHT CIRCUIT	SM	
EWH-1	CONDENSER	–	120	1	30	2.0KW	17	17	2#10,1#10 G 3/4"C	BASEMENT	SM	
RCP	CONDENSER	–	120	1	20	375W	3	3	2#12,1#12 G 3/4"C	BASEMENT	SM	
DHW-1	HOT WATER	–	120	1	20	300W	3	3	2#12,1#12 G 3/4"C	BASEMENT	SM	

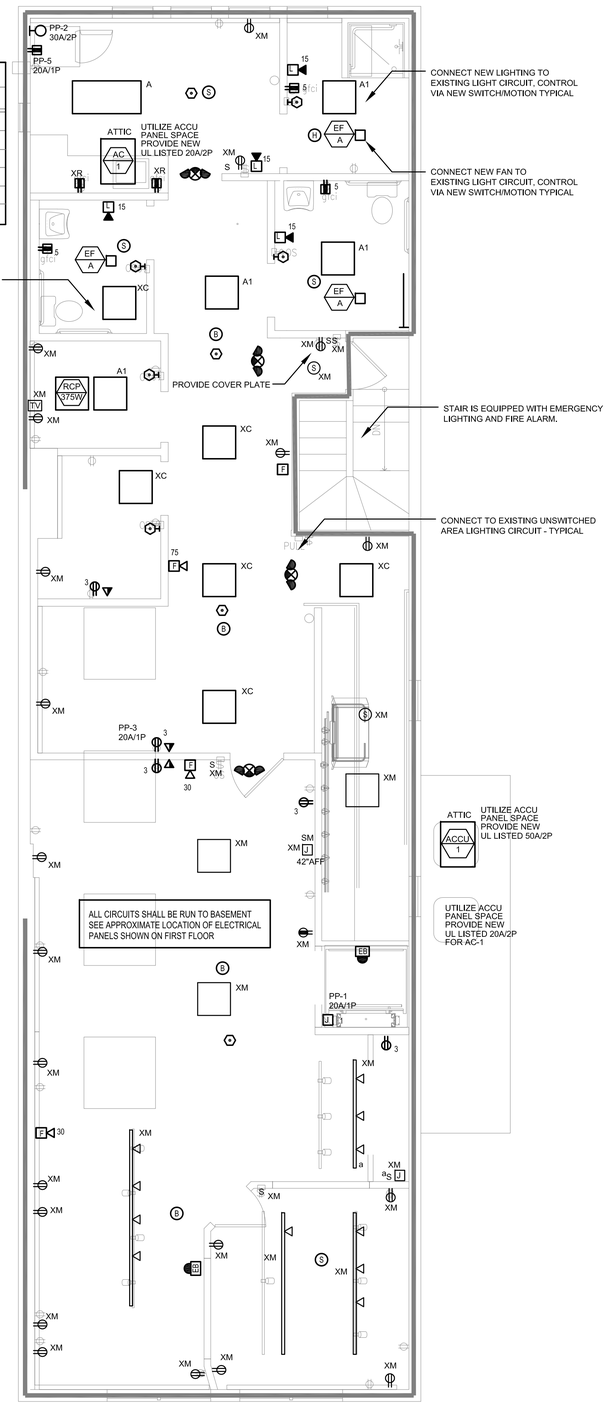
BRANCH CIRCUITS
20A/1P - 2#12, 1#12G IN 3/4"C
30A/1P - 2#10, 1#10G IN 3/4"C
30A/2P - 3#10, 1#10G IN 3/4"C

LIGHTING FIXTURES
A - 2X4 LED LITHONIA EPANL LED 4000LM35KMIN10120V
A1- 2X2 LED LITHONIA EPANL LED 2000LM35KMIN10120V
W - FLOOD LED LITHONIA QTELED P240K120VTHKDDB
EB - LITHONIA ELM2LED

ARC FAULT AND TAMPER RESISTANT OUTLETS ARE NOT REQUIRED BASED ON TEMPORARY USE PERMIT ISSUED BY THE CITY.



1 ELECTRICAL - First Floor Demolition Plan
SCALE: 1/4"= 1'-0"



2 ELECTRICAL - Second Floor Demolition Plan
SCALE: 1/4"= 1'-0"

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JOB NUMBER

SCALE

DRAWING NAME
Electrical
New Work Floor Plans

DRAWING NO.
E-200

AIR CONDITIONING UNIT SCHEDULE (INDOOR UNIT)

TAG NO.	BASIS OF SELECTION	SERVICE	TYPE	SUPPLY FAN DATA					MIN. OA	COOLING DATA							ELECTRICAL DATA				OPER. WT. (LBS.)	ACCESSORIES
				CFM	ESP (IN. W.C.)	BHP	HP	SPD		CFM	REF. TYPE	EDB/EWB (°F)	LDB/LWB (°F)	TC (MBH)	SC (MBH)	REF. SST (°F)	VOLT	PH	MCA	MOP		
AC-1	TRANE CAM5B0C60 (5-TON NOMINAL)	2ND FLOOR	MULTI-POSITION (HORIZONTAL)	1,995	0.50"	-	1	5	250	1,995	R-410a	77/64	55/54	54.0	43.0	45	208	1	10	15	~170	REMOTE 7-DAY PROGRAMMABLE T`STAT, SECONDARY DRAIN PAN, SPRING ISOLATION HANGERS, COLD SPACE KIT AS REQUIRED, CONDENSATE PUMP AS REQUIRED.

AIR-COOLED CONDENSING UNIT SCHEDULE (OUTDOOR UNIT)

TAG NO.	BASIS OF SELECTION	SERVICE	PERFORMANCE		COMPRESSOR & ELECTRICAL DATA										OPER. WT. (LBS.)	CONDENSER			ACCESSORIES
			REF. SST (°F)	TC (MBH)	QTY	RLA (EACH)	LRA (EACH)	VOLT	PH	MCA	MOP	HOT GAS BYPASS	REF. TYPE	REF. CHARGE (LBS.)		FAN	FLA (EACH)	AMB. (°F)	
ACCU-1	TRANE 4TTR4060 (5-TON NOMINAL)	AC-1	45	54.0	1	23.7	152.5	208	1	31	50	NO	R-410a	-	211	1	-	95	CRANKCASE HEATER, 5 YEAR COMPR. WARR., VIBRATION ISOLATION SQUARES/PAD, MOUNTED ON PT SLEEPERS.

FIN-TUBE RADIATION SCHEDULE

TAG NO.	BASIS OF SELECTION	ELEMENT DATA										ENCLOSURE DATA				MIN. WP (PSI)	REMARKS
		TIERS	FINS/FT	TUBE SIZE	TUBE MTL	FIN SIZE	FIN MTL.	MIN. BTUH/LF	GPM/LF	FLUID	AWT (°F)	ΔT (°F)	STYLE	MIN GA	HEIGHT (IN.)	DEPTH (IN.)		
FTR-A	STERLING KS JVK-S8	1	50	3/4	CU	3-3/4" x 2-3/4"	AL	540	0.108	H2O	160	10	"SLIMLINE" SLOPE TOP	18	10	3-9/16	125	FULL BACKING PLATE, COVERS, FITTING & TRIM, RETURN PIPING WITHIN ENCLOSURE WHERE SHOWN ON PLANS, COLOR BY ARCHITECT.

EXHAUST FAN SCHEDULE

TAG NO.	BASIS OF SELECTION	SERVICE	LOCATION	TYPE	FAN DATA						MOTOR DATA					REMARKS
					CFM	ESP (in. w.c.)	RPM	BHP	AMCA CLASS	DRIVE	TYPE	HP	RPM	VOLTS	PH	
EF-A	PANASONIC WHISPER GREEN SELECT FAN/LIGHT	TOILET/SHOWER EXHAUST	SEE PLANS	CEILING BLOWER W/ LIGHT	80	0.25"	-	-	I	DIRECT	ECM	5.3 W	-	120	1	BDD, ISOLATORS, INTERLOCKED W/ LIGHT SWITCH, VENT CAP.

ELECTRIC HEATER SCHEDULE

TAG NO.	SERVICE	MAKE & MODEL	TYPE	FAN DATA		ELECTRICAL DATA				ACCESSORIES
				CFM	ESP (IN. W.C.)	WATTS	BTUH	AMPS	VOLTS/PH	
EWH-1.5kW (TYP.)	SEE PLANS	INDEECO 933U	WALL HEATER	160	0"	1,500	5,118	12.9	120/1	INTEGRAL T`STAT, FIELD INSTALLED DISCONNECT SWITCH, 18 GA. CABINET, ALUMINUM TAMPER PROOF GRILLE, BAKED ENAMEL FINISH, MOUNTING KIT.
RCP-375W (TYP.)	SEE PLANS	MARKEL CP123	SURFACE MOUNTED CEILING 2'x2'	N/A		375	1,280	3,1	120/1	REMOTE T`STAT, FIELD INSTALLED DISCONNECT SWITCH, MOUNTING KIT/FRAME, RATED FOR BATHROOM USE.

HVAC DRAWING LIST

GENERAL HVAC LEGEND & ABBREVIATIONS

NOTE: ALL ITEMS SHOWN ARE NOT NECESSARILY USED ON THIS PROJECT

AC	AIR CONDITIONING UNIT	ELEC	ELECTRICAL	N/A	NOT APPLICABLE
ACCU	AIR COOLED CONDENSING UNIT	ER	EXHAUST REGISTER	NC	NORMALLY CLOSED
ACD	AUTOMATIC CONTROL DAMPER	ESP	EXTERNAL STATIC PRESSURE	NIC	NOT IN CONTRACT
ACV	AUTOMATIC CONTROL VALVE	EUH	ELECTRIC UNIT HEATER	NO	NORMALLY OPEN
AD	ACCESS DOOR	EWH	ELECTRIC WALL HEATER	NO.	NUMBER
AFF	ABOVE FINISHED FLOOR	EWT	ENTERING WATER TEMPERATURE	NTS	NOT TO SCALE
AHU	AIR HANDLING UNIT	EXH	EXHAUST	OA	OUTSIDE AIR
ATC	AUTOMATIC TEMPERATURE CONTROL	EXP	EXPANSION	OAI	OUTSIDE AIR INTAKE
BB	BASEBOARD	FAI	FRESH AIR INTAKE	PC	PUMPED CONDENSATE
BDD	BACKDRAFT DAMPER	FCU	FAN COIL UNIT	PD	PRESSURE DROP
BG	BLAST GATE	FD	FIRE DAMPER	PHC	PREHEAT COIL
BHP	BRAKE HORSEPOWER	FLA	FULL LOAD AMPS	PLBG	PLUMBING
BLDG	BUILDING	FLEX	FLEXIBLE	PRV	PRESSURE REGULATING VALVE
BOD	BOTTOM OF DUCT	°F	DEGREES FAHRENHEIT	PSIG	POUNDS PER SQUARE INCH GA.
BSMT	BASEMENT	F & TT	FLOAT & THERMOSTATIC TRAP	RA	RETURN AIR
BTU	BRITISH THERMAL UNITS	FPM	FEET PER MINUTE	RET	RETURN
CD	CEILING DIFFUSER	FSD	FIRE SMOKE DAMPER	REQ'D	REQUIRED
CFM	CUBIC FEET PER MINUTE	FTR	FINNED TUBE RADIATION	RG	RETURN GRILLE
CHWR	CHILLED WATER RETURN	GA	GAUGE	RH	RELATIVE HUMIDITY
CHWS	CHILLED WATER SUPPLY	GC	GENERAL CONTRACTOR	RHC	REHEAT COIL
CLG	CEILING	GPM	GALLONS PER MINUTE	RPM	REVOLUTIONS PER MINUTE
CO	CLEAN OUT	HC	HEATING COIL	RR	RETURN REGISTER
CONC	CONCRETE	HCR	DUAL TEMPERATURE WATER RETURN	SA	SUPPLY AIR
CONN	CONNECTION	HCS	DUAL TEMPERATURE WATER SUPPLY	SD	SMOKE DAMPER
CONTR	CONTRACTOR	HP	HORSEPOWER	SF	SUPPLY FAN
CWR	CONDENSER WATER RETURN	HVAC	HEATING, VENTILATION, & AIR CONDITIONING	SG	SUPPLY GRILLE
CWS	CONDENSER WATER SUPPLY			SR	SUPPLY REGISTER
D	DRAIN	HW	HOT WATER	T	THERMOSTAT
DDC	DIRECT DIGITAL CONTROL	HWR	HOT WATER RETURN	TD	TRANSFER DUCT
DB	DRY BULB	HWS	HOT WATER SUPPLY	TG	TRANSFER GRILLE
DIFF	DIFFUSER	HZ	HERTZ	TYP.	TYPICAL
DN	DOWN	IN	INCHES	UD	UNDERCUT DOOR
DX	DIRECT EXPANSION	KW	KILOWATT	UH	UNIT HEATER
EA	EACH	LAT	LEAVING AIR TEMPERATURE	V	VENT
EAT	ENTERING AIR TEMPERATURE	LF	LINEAR FEET	VAV	VARIABLE AIR VOLUME
EBH	ELECTRIC BASEBOARD HEATER	LRA	LOCKED ROTOR AMPS	VD	VOLUME DAMPER
EFF	EFFICIENCY	LWT	LEAVING WATER TEMPERATURE	VFD	VARIABLE FREQUENCY DRIVE
EF	EXHAUST FAN	MECH	MECHANICAL	W	WIDTH
EG	EXHAUST GRILLE	MEZZ	MEZZANINE	W/	WITH
EHC	ELECTRIC HEATING COIL	MIN	MINIMUM	WB	WET BULB TEMPERATURE
EL	ELEVATION	MTD	MOUNTED		

- CONNECT TO EXISTING
- LIMIT OF DEMOLITION
- REVISION NUMBER
- TEMPERATURE SENSOR OR THERMOSTAT
- HUMIDITY SENSOR OR HUMIDISTAT
- WALL SWITCH
- SMOKE DETECTOR
- CO2 DETECTOR
- CO DETECTOR
- HYDROCARBON DETECTOR
- NO2 DETECTOR
- AIR-CONDITIONING UNIT
- AIR-COOLED CONDENSING UNIT
- EXHAUST FAN
- RADIANT CEILING PANEL
- ELECTRIC WALL HEATER
- FINNED TUBE RADIATION

DUCTWORK LEGEND

- LINEAR SLOT DIFFUSER (ONE SLOT) 4'-0" L (UNLESS OTHERWISE NOTED)
- DOUBLE SLOT DIFFUSER (TWO SLOT) 4'-0" L (UNLESS OTHERWISE NOTED)
- NEW CEILING DIFFUSER (CD)
- EXISTING CEILING DIFFUSER (CD)
- NEW RETURN GRILLE (RG) (24"x24", UNLESS OTHERWISE NOTED)
- EXISTING RETURN GRILLE (RG)
- EXHAUST REGISTER (ER)
- EXISTING DUCTWORK
- EXISTING DUCTWORK TO BE REMOVED
- NEW DUCTWORK
- UNDERCUT DOOR
- RETURN OR EXHAUST AIR FLOW
- SUPPLY AIR FLOW
- TRANSFER GRILLE

SINGLE LINE	DOUBLE LINE
SUPPLY DUCT UP	
SUPPLY DUCT DOWN	
RETURN / EXHAUST DUCT UP	
RETURN / EXHAUST DUCT DOWN	
STANDARD RADIUS ELBOW (R = W)	
SPLIT TAKE-OFF W/ BRANCH DAMPERS SUPPLY	
BULLHEAD SPLIT SUPPLY	
CEILING DUCT MTD. DIFF / GRILLE	
ACOUSTICALLY LINED DUCT	

SINGLE LINE	DOUBLE LINE
RISE OR DROP	
BULLHEAD CONVERGE	
FLEXIBLE DUCT (MAX. 48"L)	
CEILING DUCT MTD. DIFF / GRILLE	
VOLUME DAMPER	
AUTOMATIC CONTROL DAMPER (ACD)	
BACKDRAFT DAMPER	
FIRE DAMPER	

PIPING LEGEND

- DRAIN
- PUMPED CONDENSATE DRAIN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER SUPPLY
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- HCS — DUAL TEMPERATURE WATER SUPPLY
- HCR — DUAL TEMPERATURE WATER RETURN
- HWS — HOT WATER SUPPLY
- HWR — HOT WATER RETURN
- LPS — LOW PRESSURE STEAM
- LPCR — LOW PRESSURE CONDENSATE RETURN
- FOS — FUEL OIL SUPPLY
- FOR — FUEL OIL RETURN
- PIPE BREAK (SINGLE LINE)
- RELIEF VALVE
- AUTO. AIR VENT
- DRIP LEG
- FLEXIBLE CONNECTION
- INCREASER OR DECREASER CONCENTRIC
- ELBOW UP OR RISE
- ELBOW DN OR DROP
- CONTROL VALVE (2-WAY)
- END CAP
- CLEAN-OUT FOR CONDENSATE DRAIN
- GATE VALVE
- BUTTERFLY VALVE
- GLOBE VALVE
- BALL VALVE
- CHECK VALVE
- STRAINER W/DRAIN VALVE & HOSE CONN.
- UNION
- CONTROL VALVE (3-WAY)
- LIQUID FILLED PRESSURE GAUGE w/ BALL VALVE PIGTAIL FOR STEAM, & SCRUBBERS FOR WATER.
- SWIVEL BASE WELL TYPE 10" THERMOMETER
- DIRECTION OF FLOW IN PIPE
- BLIND FLANGE
- CIRCUIT SETTER

CONTROLS LEGEND

2W	TWO WAY	FS	FLOW SWITCH
3W	THREE WAY	FSD	FIRE AND SMOKE DAMPER (COORD WITH ELECT)
ACD	AUTOMATIC CONTROL DAMPER (AO, DO)	FPP	FREEZE PROTECTION PUMP (S/S)
ACV	AUTOMATIC CONTROL VALVE (AO, DO)	FZ	FREEZESTAT
AI	ANALOG INPUT	GF	GAS FURNACE
AO	ANALOG OUTPUT	H	HUMIDITY SENSOR
ATC	AUTOMATIC TEMPERATURE CONTROLS	HC	HEATING COIL
BDD	BACK DRAFT DAMPER	HCLT	HEATING COIL LEAVING AIR TEMPERATURE SENSOR
BPD	BYPASS DAMPER (AO)	HGBP	HOT GAS BYPASS
BV	BYPASS VALVE	HL	HIGH LIMIT SAFETY
CC	COOLING COIL	HOA	HAND OFF AUTO STARTER
CCLT	COOLING COIL LEAVING AIR TEMPERATURE SENSOR		(DO)
CHW	CHILLED WATER	HW	HOT WATER
CHWR	CHW RETURN	HWC	HOT WATER COIL
CHWS	CHW SUPPLY	HWR	HOT WATER RETURN
CO	CARBON MONOXIDE SENSOR	HWS	HOT WATER SUPPLY
CO2	CO2 SENSOR	IFBD	INTEGRAL FACE & BYPASS DAMPER
CT	CURRENT TRANSFORMER	IGV	INLET GUIDE VANES
DAT	TYPE STATUS	LAT	LEAVING AIR TEMPERATURE
	DISCHARGE AIR TEMPERATURE SENSOR	LL	LOW LIMIT SAFETY
DDC	DIRECT DIGITAL CONTROLS	LSPS	LOW STATIC PRESSURE
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL	MAT	SWITCH MIXED AIR TEMPERATURE
DI	DIGITAL INPUT		SENSOR
DO	DIGITAL OUTPUT	NC	NORMALLY CLOSED (ON LOSS
DP	DIFFERENTIAL PRESSURE (AI)		OF POWER)
DPS	DIFFERENTIAL PRESSURE SENSOR (AI)	NO	NORMALLY OPEN (ON LOSS OF POWER)
DPT	DIFFERENTIAL PRESSURE TRANSMITTER (AI)	PHC	PREHEAT COIL
DPV	DIFFERENTIAL PRESSURE BYPASS VALVE (AO)	RA	RETURN AIR
DSD	DUCT SMOKE DETECTOR (COORD WITH ELECT)	RAD	RA DAMPER (AO, DO)
DX	DIRECT EXPANSION	RAH	RA RELATIVE HUMIDITY (AI)
EA	EXHAUST AIR	RAT	RA TEMPERATURE (AI)
EAD	EXHAUST AIR DAMPER (AO, DO)	RF	RETURN FAN
EAT	ENTERING AIR TEMPERATURE (AI)	RH	RELATIVE HUMIDITY (AI)
EF	EXHAUST FAN	RHC	REHEAT COIL
ES	END SWITCH	SA	SUPPLY AIR
EW	ENERGY (HEAT) WHEEL	SAD	SA DAMPER (AO, DO)
EWS	ENERGY WHEEL SPEED CONTROL (AO)	SAT	SUPPLY AIR TEMPERATURE (AI)
FA	FAULT ALARM	SD	SMOKE DAMPER (COORD WITH ELECT)
FI	FULL INTEGRATION	SF	SUPPLY FAN
FMS	FLOW MEASURING STATION (AI)	SP	STATIC PRESSURE (AI)
		SPD	SPEED
		S/S	START/STOP/STATUS (DO/DI)
		TP	TOTAL PRESSURE (AI)
		VFD	VARIABLE FRQUENCY DRIVE (S/S + AO)
		VP	VELOCITY PRESSURE (AI)

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER
Community Day Center of Waltham

PROJECT
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815
SCALE NONE

DRAWING NAME
HVAC Schedules & Legend

DRAWING NO.
M-001

DUCT INSULATION SCHEDULE

LOCATION	SUPPLY	RETURN	RAW OUTDOOR AIR	EXHAUST		REMARKS
				WITH ENERGY RECOVERY	WITHOUT ENERGY RECOVERY	
ATTIC TYPE SPACE	R-8	R-8	R-6	R-8	R-6 *	
OUTDOORS	R-12	R-12	NONE	R-12	R-12 *	
UNCONDITIONED SPACE (SHAFT OR CEILING WITH DUCTED RETURN AIR)	R-6	R-6	R-6	R-6	R-6	
EXPOSED IN MER	R-6	R-6	R-6	R-6	R-6	
EXPOSED IN SPACE SERVED	NONE	NONE	R-6	NONE	NONE	
KITCHEN EXHAUST	N/A	N/A	N/A	N/A	2-LAYERS OF FIRE WRAP	

NOTES:

1. R-VALUE SHOWN MAY BE OBTAINED BY ADDING THE R-VALUES OF BOTH THE LINING (WHERE SHOWN OR USED) AND EXTERNAL DUCT INSULATION.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND EXCEPTIONS.

DUCT LINING: ACOUSTIC DUCT LINING OF THE TYPE AND THICKNESS SPECIFIED SHALL BE INSTALLED ON ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK WITHIN 20 FEET OF AIR HANDLING UNITS AND FANS (INCLUDING BRANCHES), AND WHERE DETAILED OR SHOWN ON DRAWINGS. LINING SHALL NOT BE USED ON KITCHEN DUCTWORK AND WET/HUMID EXHAUST SUCH AS DISHWASHER AND CLOTHES DRYERS.

* R-VALUE SHOWN IS ONLY IF AREA OF BUILDING BEING EXHAUSTED IS HUMIDIFIED. IF NOT HUMIDIFIED, NO INSULATION UNLESS FIRE WRAP OR LINING IS NEEDED.

PIPE INSULATION SCHEDULE

FLUID OPERATING TEMPERATURE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (in.)					REMARKS
	CONDUCTIVITY (BTU/in/(h·ft²·°F))	MEAN RATING TEMPERATURE (°F)	<1"	1" to <1.5"	1.5" to <4"	4" to <8"	≥8"	
>350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0	
251-350	0.29-0.32	200	3.0	4.0	4.5	4.5	4.5	
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0	
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0	
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5	
61-104	---------- N/A ----------							
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0	
<40	0.20-0.26	75	0.5	1.0	1.0	1.0	1.5	

NOTES:

1. FOR PIPING SMALLER THAN 1-1/2" AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1" SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN NOTE (2) BUT NOT TO A THICKNESS LESS THAN 1".

2. FOR INSULATION OUTSIDE THE STATED CONDUCTIVITY RANGE, THE MINIMUM THICKNESS (T) SHALL BE DETERMINED AS FOLLOWS:
   T = r{(1+t/r)K/k-1)
   WHERE:
   T = MINIMUM INSULATION THICKNESS,
   r = ACTUAL OUTSIDE RADIUS OF PIPE,
   t = INSULATION THICKNESS LISTED IN THE TABLE FOR APPLICABLE FLUID TEMPERATURE AND PIPE SIZE,
   K = CONDUCTIVITY OF ALTERNATE MATERIAL AT MEAN RATING TEMPERATURE INDICATED FOR THE APPLICABLE FLUID (BTU * IN/H * FT^2 * °F) AND
   k = THE UPPER VALUE OF THE CONDUCTIVITY RANGE LISTED IN THE TABLE FOR THE APPLICABLE FLUID TEMPERATURE

3. FOR DIRECT-BURIED HEATING AND HOT WATER SYSTEM PIPING, REDUCTION OF THESE THICKNESSES BY 1-1/2" SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN NOTE (2) BUT NOT TO THICKNESSES LESS THAN 1".

REGISTERS, GRILLES & DIFFUSERS SCHEDULE

TAG	TYPE	SERVICE	GENERAL CFM RANGE	NECK SIZE	MOUNTING (SEE NOTE #4)	THROW	BASIS OF SELECTION	NC	REMARKS
S-1	CEILING DIFFUSER	SUPPLY	0-100	6x6 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
	CEILING DIFFUSER	SUPPLY	100-225	9x9 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
	CEILING DIFFUSER	SUPPLY	225-400	12x12 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
	CEILING DIFFUSER	SUPPLY	400-625	15x15 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
	CEILING DIFFUSER	SUPPLY	625-900	18x18 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
	CEILING DIFFUSER	SUPPLY	900-1225	21x21 CD	CEILING	1-4 WAY AS INDICATED	PRICE AMD	SEE NOTES	LOUVERED FACE, LINED PLENUM
R-1	RETURN REGISTER (CEILING)	RETURN	0-400	12x12	CEILING	N/A	PRICE 530	SEE NOTES	LOUVERED FACE W/ 3/4" BLADE SPACING, LINED PLENUM
	RETURN REGISTER (CEILING)	RETURN	400-1,600	24x24	CEILING	N/A	PRICE 530	SEE NOTES	LOUVERED FACE W/ 3/4" BLADE SPACING, LINED PLENUM
T-1	TRANSFER GRILLE (CEILING)	TRANSFER	0-300	12x12	CEILING	N/A	PRICE 530	SEE NOTES	LOUVERED FACE W/ 3/4" BLADE SPACING, LINED PLENUM
	TRANSFER GRILLE (CEILING)	TRANSFER	300-675	18x18	CEILING	N/A	PRICE 530	SEE NOTES	LOUVERED FACE W/ 3/4" BLADE SPACING, LINED PLENUM
	TRANSFER GRILLE (CEILING)	TRANSFER	675-1,200	24x24	CEILING	N/A	PRICE 530	SEE NOTES	LOUVERED FACE W/ 3/4" BLADE SPACING, LINED PLENUM

NOTES:

1. ALL ITEMS SHOWN ARE NOT NECESSARILY USED ON THIS PROJECT
2. COLOR SHALL BE CHOSEN BY ARCHITECT. PROVIDE CUSTOM COLOR AS REQUIRED BY ARCHITECT OR INDICATED ON DRAWINGS.
3. ALL AIR BALANCING SHALL BE PERFORMED BY THE BRANCH VOLUME DAMPER, NOT OPPOSED BLADE DAMPERS.
4. COORDINATE ALL MOUNTING TYPES AND RGD LOCATIONS WITH ARCHITECTURAL PLANS.
5. ALL VOLUME DAMPERS INSTALLED ABOVE HARD CEILINGS SHALL BE REMOTE ADJUSTABLE TYPE COMPLETE WITH CABLE, HANDLE, AND CEILING TRIM PLATE.
6. ANY DISCREPANCIES BETWEEN RGD SIZE AND CFM LISTED ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION FOR REVIEW PRIOR TO INSTALLATION.
7. ALL RETURN, EXHAUST, AND TRANSFER GRILLES SHALL UTILIZE 45° DEFLECTION BLADES
8. ALL RGD'S SHALL BE SELECTED FOR THE FOLLOWING MAX NC VALUES (WITH INDUSTRY STANDARD 10 dB ROOM ABSORPTION):
   - OFFICES: NC-25
   - CLASSROOMS: NC-20
   - CONFERENCE ROOMS: NC-20
   - GYMNASIUM: NC-35
   - CAFETERIA: NC-25

OUTLINE SPECIFICATIONS

1. PERMITS: OBTAIN AND PAY FOR ALL PERMITS.
2. DEMOLITION: DEMOLITION AND PROPER DISPOSAL OF ALL ITEMS REQUIRED TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
3. STANDARDS: ALL WORK SHALL BE IN ACCORDANCE WITH STATE AND LOCAL CODE REQUIREMENTS. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL GAS PRODUCTS ARE APPROVED BY THE STATE PLUMBING BOARD FOR INSTALLATION IN MASSACHUSETTS.
4. GUARANTEE: ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION.
5. HYDRONIC SYSTEM: ALL HYDRONIC SYSTEM COMPONENTS SHALL HAVE A MINIMUM ASME RATED WORKING PRESSURE OF 125# .
6. PIPING: HOT WATER PIPING SHALL BE SCHEDULE 40 STEEL WITH VICTAULIC OR BUTT WELDED FITTINGS FOR PIPING 2" AND LARGER. HARD DRAWN, TYPE-L COPPER W/ 95-5 SOLDERED JOINT AND WROUGHT COPPER FITTINGS FOR PIPING 1-1/2" AND SMALLER.

   CONDENSATE DRAIN PIPING SHALL BE HARD DRAWN, TYPE-L COPPER TUBING WITH 95-5 SOLDERED JOINTS. DIELECTRIC FITTINGS AT ALL DISSIMILAR METAL CONNECTIONS.

   REFRIGERANT PIPING SHALL BE TYPE-L ACR HARD DRAWN COPPER TUBING WITH WROUGHT COPPER FITTINGS, ASSEMBLED WITH 15% SILVER PHOSCO BRAZING ROD, OR EQUAL BRAZING SYSTEM. SIZED BY MANUFACTURER & INSTALLED W/ OIL TRAPS TO ASSURE PROPER OIL RETURN TO COMPRESSORS
7. VALVES: FOR 2" AND SMALLER, SHUT OFF VALVES SHOULD BE APOLLO-II, OR EQUAL, FULL-PORT BALL VALVES W/ STAINLESS STEEL BALL & STEM. FOR 2-1/2" AND LARGER, SHUT-OFF VALVES SHALL BE NIBCO LD 2000, OR EQUAL, LUG STYLE BUTTERFLY VALVES. BALANCING VALVES SHALL BE BELL & GOSSETT CIRCUIT SETTER. ALL VALVES SHALL HAVE STEM EXTENSIONS APPROPRIATE FOR INSULATION THICKNESS USED.
8. PIPE INSULATION: INSULATE ALL NEW HEATING HOT WATER PIPING WITH JOHNS-MANNVILLE MICRO-LOK FIBERGLASS PIPE INSULATION WITH ALL SERVICE COVERING.

   INSULATE REFRIGERANT PIPING WITH NORMAL CLOSED FOAM PIPE INSULATION, JOHNS-MANNVILLE AREOTUBE, OR EQUAL. FOR OUTDOOR SECTIONS, APPLY TWO LAYERS OF ANTI-UV PROTECTION COATING.

   INSULATE CONDENSATE DRAIN PIPING WITH 1/2" THICK CLOSED CELL FOAM PIPE INSULATION.

   INSULATE ALL FITTINGS, VALVE BODIES, AIR SEPARATORS AND HEAT EXCHANGERS.
9. DUCTWORK: ALL DUCTWORK SHALL BE INSTALLED AS PER SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS AND SEALED TO ASSURE MAXIMUM LEAKAGE RATE OF 3%. MAXIMUM OF 60" LENGTH OF INSULATED FLEXIBLE DUCTS MAY BE USED FOR CONNECTION OF LOW PRESSURE DUCTWORK TO TERMINALS. ALL NEW BRANCH TAKE-OFFS FROM THE MAIN SUPPLY DUCT SHALL BE VIA 45-DEGREE OR BELL MOUTH-TYPE FITTING, WITH VOLUME DAMPER.
10. DUCT INSULATION: INSULATE ALL INDOOR CONCEALED SUPPLY AND RETURN AIR DUCTWORK WITH FOIL-FACED FIBERGLASS INSULATION AND ALL SERVICE JACKET. EXPOSED INDOOR DUCTWORK DOES NOT NEED TO BE INSULATED.
11. AC AIR CONDITIONING UNIT AC-1 SHALL BE TRANE, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
12. ACCU AIR-COOLED CONDENSING UNITS ACCU-1 SHALL BE TRANE, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
13. EF: EXHAUST FAN EF-A SHALL BE PANASONIC, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
14. FTR: FTR-A SHALL BE STERLING, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
15. RCP: RCPS SHALL BE MARKEL, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
16. EWH: EWHS SHALL BE INDEECO, OR APPROVED EQUAL, OF THE CAPACITIES AND OPTIONS INDICATED.
17. RGD'S: RGD'S SHALL BE PRICE, OR APPROVED EQUAL.
18. ATC: REFER TO DRAWINGS
18. COORDINATION: COORDINATE WITH ALL TRADES.
19. START-UP: MAJOR EQUIPMENT START-UP SHALL BE PERFORMED BY FACTORY REPRESENTATIVE AS REQUIRED.
20. DRAWINGS: MAINTAIN ACCURATE RECORD DRAWINGS AT THE JOB SITE AT ALL TIMES. AT THE END OF THE PROJECT, CONTRACTOR SHALL SUBMIT A SET OF CLEAN ACCURATE AS BUILT DRAWINGS.
21. O&M MANUALS: SUBMIT OWNER'S MANUALS WHICH SHALL INCLUDE, SUPPLIER'S INFORMATION, MAINTENANCE & OPERATING MANUALS, AND WIRING DIAGRAM.
22. BALANCING: AIR BALANCE TO WITHIN 10% OF THE INDICATED AIR FLOWS. AIR BALANCING SHALL BE ACHIEVED BY THE DUCT BRANCH VOLUME DAMPER AND NOT BY THE OPPOSED BLADE DAMPERS AT THE TERMINALS.

    WATER BALANCE TO WITHIN 10% OF THE INDICATED WATER FLOWS.
23. CUT/PATCH: ALL CUTTING, CORING AND PATCHING REQUIRED IN CONJUNCTION WITH THE INSTALLATION WORK, UNLESS SPECIFICALLY INDICATED OTHERWISE BY THE GC.
24. SUBMITTALS: ELECTRONICALLY SUBMIT ALL PRODUCTS FOR APPROVAL PRIOR TO STARTING ANY WORK. UPON COMPLETION, ELECTRONICALLY SUBMIT EQUIPMENT START-UP REPORTS, AIR/WATER BALANCING REPORT, DUCT/PIPE/ATC AS-BUILT DRAWINGS CREATED BY CAD SOFTWARE, O&M MANUAL, AND WARRANTY LETTER FOR REVIEW.

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

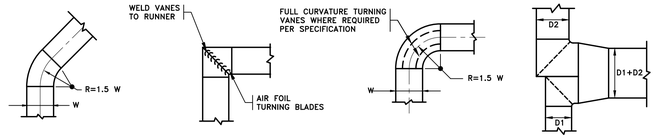
OWNER
Community Day Center of Waltham

PROJECT
Interior Alterations at
20 Felton Street
Waltham, MA 02453

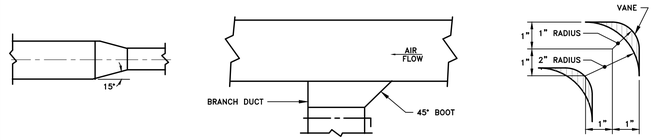
JOB NUMBER 20-815
SCALE NONE

DRAWING NAME
HVAC Schedules & Outline Specifications

DRAWING NO.
M-002



DETAIL OF 45° ELBOW | DETAIL OF 90° SQUARE ELBOW | DETAIL OF 90° RADIUS ELBOW | DETAIL OF TEE TRANSITION

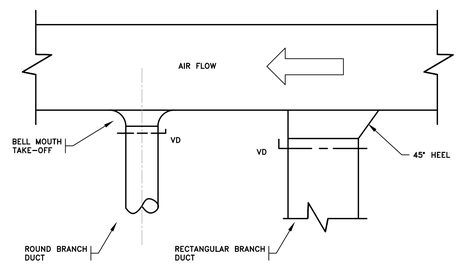


DETAIL OF TRANSITION | DETAIL OF SUPPLY BRANCH SPLITTER DAMPER | DETAIL OF TURNING VANES

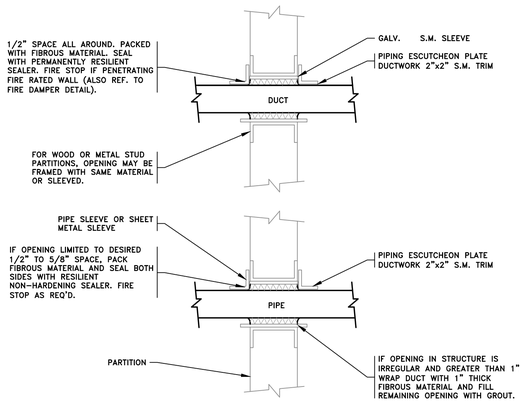
NOTE:

1. ALL DUCTWORK TO BE INSTALLED TIGHT TO UNDERSIDE OF OPEN WEB JOINT STRUCTURE UNLESS NOTED.
2. ALL VANES TO BE SECURE AND STABLE IN OPERATING CONDITIONS.

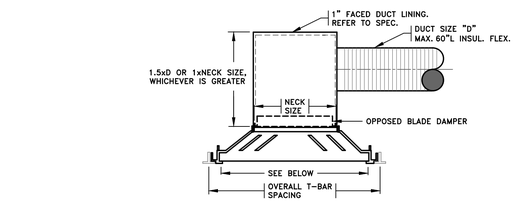
A SHEETMETAL DUCTWORK DETAILS
NOT TO SCALE



B BRANCH TAKE-OFF DETAILS
NOT TO SCALE

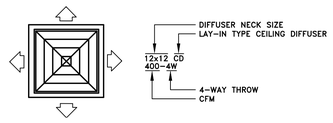


C WALL PENETRATION DETAILS
NOT TO SCALE

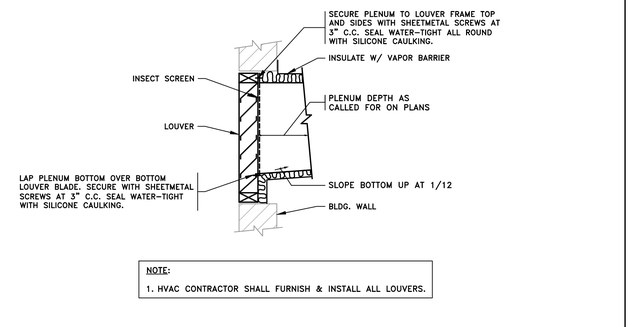


NOTES:

1. ALL ALUMINUM WITH WHITE FACTORY FINISH TO MATCH CEILING GRID.
2. PRICE, OBD, 24"x24" LAY-IN TYPE, OR EQUAL.
3. EACH DIFFUSER SHALL HAVE A CHAIN SUPPORTED FROM DECK, AS PER SEISMIC REQUIREMENT.
4. COORDINATE MOUNTING TYPE WITH ACTUAL CEILING TYPE.



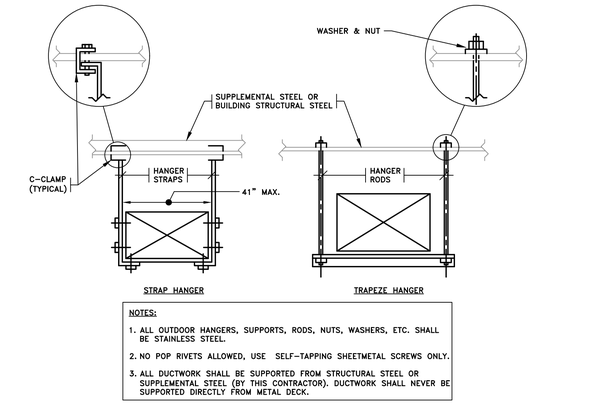
D CEILING DIFFUSER DETAIL
NOT TO SCALE



NOTE:

1. HVAC CONTRACTOR SHALL FURNISH & INSTALL ALL LOUVERS.

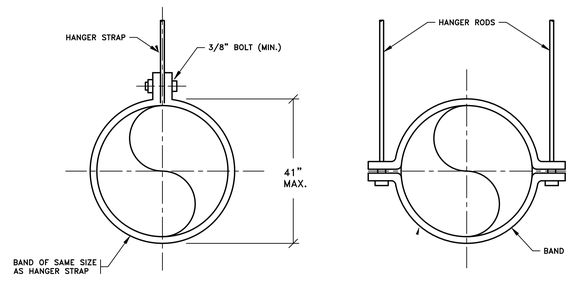
E TYPICAL LOUVER/PLENUM CONNECTION DETAIL
NOT TO SCALE



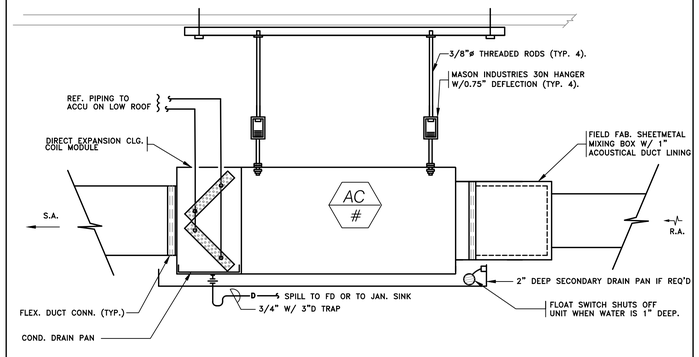
NOTES:

1. ALL OUTDOOR HANGERS, SUPPORTS, RODS, NUTS, WASHERS, ETC. SHALL BE STAINLESS STEEL.
2. NO POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.
3. ALL DUCTWORK SHALL BE SUPPORTED FROM STRUCTURAL STEEL OR SUPPLEMENTAL STEEL (BY THIS CONTRACTOR). DUCTWORK SHALL NEVER BE SUPPORTED DIRECTLY FROM METAL DECK.

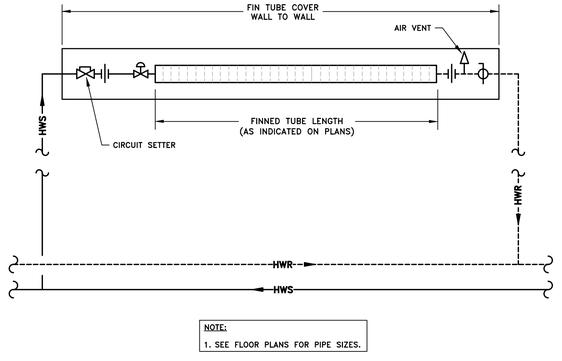
F DUCT HANGER DETAIL
NOT TO SCALE



G ROUND DUCT HANGER DETAIL
NOT TO SCALE



H AIR CONDITIONING UNIT HANGING DETAIL (HORIZONTAL)
NOT TO SCALE



NOTE:

1. SEE FLOOR PLANS FOR PIPE SIZES.

I BASEBOARD FINNED TUBE RADITION PIPING DETAIL
NOT TO SCALE

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

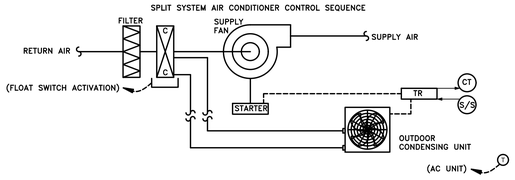
SCALE NONE

DRAWING NAME

HVAC Details

DRAWING NO.

M-003



A. GENERAL

1. AIR CONDITIONING UNIT SHALL BE STARTED AND STOPPED VIA 7 DAY PROGRAMMABLE THERMOSTAT. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER. ALL SETPOINTS SHALL BE ADJUSTABLE.
2. ALL ACTUATORS SHALL BE ELECTRONIC.
3. ALL TEMPERATURES LISTED ARE FAHRENHEIT.
4. PROVIDE APPROPRIATE ANTI-RECYCLE TIME DELAYS AND SAFETIES ON DX COOLING.
5. ALL SPACE HEATING IS DONE BY FTR, AC IS COOLING ONLY.

B. FAN CONTROL

1. WHILE IN UNOCCUPIED MODE (OR OFF ON SAFETY MANUAL DISCONNECT) AC & ACCU SHALL BE OFF.
2. WHEN STARTED IN OCCUPIED MODE, THE SUPPLY FAN SHALL START & ASSOCIATED OUTSIDE AIR DAMPER SHALL OPEN. THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND DX COOLING/ACCU SHALL OPERATE PER BELOW TO MAINTAIN OCCUPIED SPACE SETPOINT.

C. OCCUPIED COOLING CONTROL

1. UPON A CALL FOR COOLING (75°F ADJ.) FROM THE SPACE THERMOSTAT, DX COOLING SYSTEM SHALL BE STAGED/CYCLED AS REQUIRED TO MAINTAIN SPACE SETPOINT.

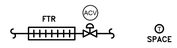
D. UNOCCUPIED COOLING CONTROL

1. THERE SHALL BE NO UNOCCUPIED COOLING UNLESS OTHERWISE DIRECTED BY OWNER.

E. SAFETIES

1. SECONDARY DRAIN PAN FLOAT SWITCH ACTIVATION SHALL DISABLE AC/ACCU SYSTEM.

A AC/ACCU (SPLIT SYSTEM)
NOT TO SCALE



A. GENERAL

1. FTR SHALL BE CONTROLLED BY REMOTE THERMOSTAT.
2. ALL ACTUATORS SHALL BE ELECTRONIC.
3. NEW ZONE VALES SHALL BE CAPABLE OF TYING INTO EXISTING HOT WATER SYSTEM INCLUDING ACTIVATION OF BOILER & PUMP.

B. OPERATION:

1. THE TWO WAY HEATING CONTROL VALVE (ACV) SHALL BE CLOSED. UPON A CALL FOR HEATING FROM THE SPACE THERMOSTAT, THE TWO WAY HEATING CONTROL VALVE (ACV) SHALL MODULATE OPEN AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT, 70°F (ADJ.).

B FINNED TUBE RADIATION
NOT TO SCALE

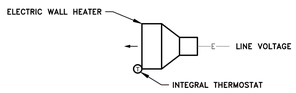
A. GENERAL

1. THE EXHAUST FANS SHALL BE INTERLOCK WITH THE LIGHT SWITCH.

B. OPERATION:

1. UPON ACTIVATION OF SWITCH THE EXHAUST FAN SHALL BE ENERGIZED AND RUN CONTINUOUSLY.
2. UPON DEACTIVATION OF SWITCH THE EXHAUST FAN SHALL BE DE-ENERGIZED.

C EXHAUST FAN (TOILET ROOMS)
NOT TO SCALE



A. GENERAL

1. THE ELECTRIC WALL HEATER SHALL BE CONTROLLED BY AN INTEGRAL THERMOSTAT.
2. THE ELECTRIC UNIT HEATER'S SUPPLY FAN SHALL BE DE-ENERGIZED. UPON A CALL FOR HEAT FROM THE THERMOSTAT, THE HEATER'S SUPPLY FAN AND THE STAGES OF ELECTRIC HEAT SHALL BE ENERGIZED AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT, 60°F (ADJUSTABLE).

D ELECTRIC WALL HEATER (INTEGRAL T'STAT)
NOT TO SCALE

A. GENERAL

1. THE ELECTRIC RADIANT CEILING PANEL SHALL BE CONTROLLED BY REMOTE THERMOSTAT.
2. THE ELECTRIC RADIANT CEILING PANEL SHALL BE DE-ENERGIZED. UPON A CALL FOR HEAT FROM THE SPACE THERMOSTAT, THE HEATER'S STAGES OF ELECTRIC HEAT SHALL BE ENERGIZED AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT, 70°F (ADJUSTABLE).

E ELECTRIC RADIANT CEILING PANEL
NOT TO SCALE

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Community Day Center of Waltham

PROJECT

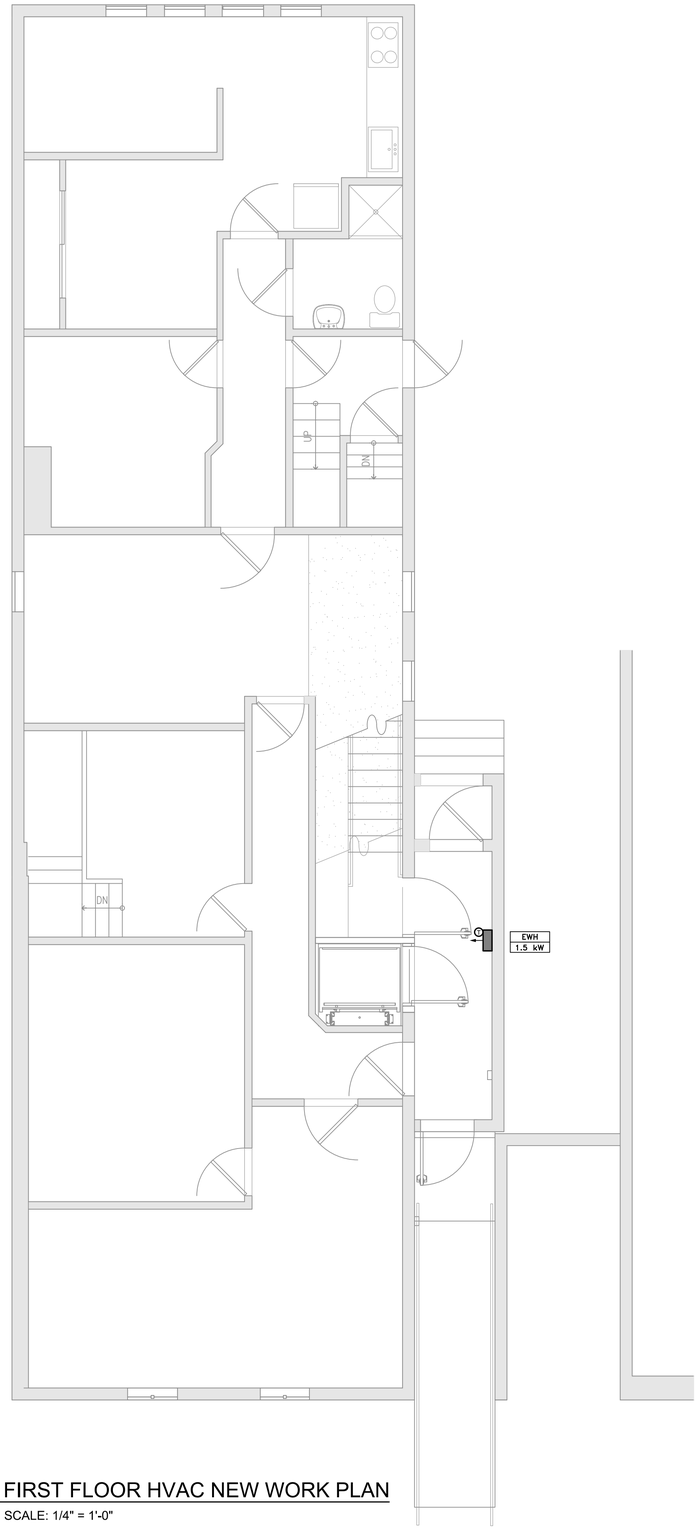
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

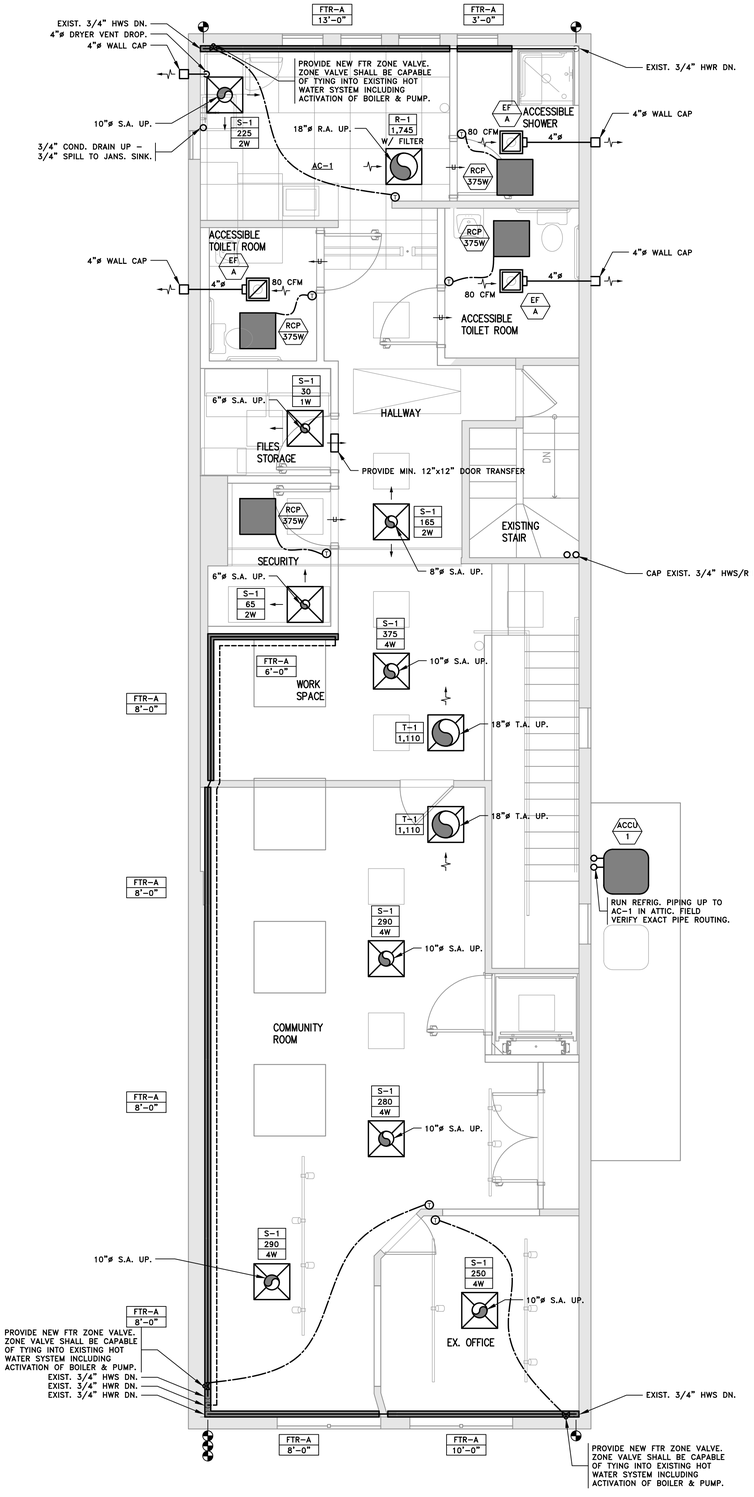
SCALE NONE

DRAWING NAME
HVAC Controls

DRAWING NO.
M-004



A FIRST FLOOR HVAC NEW WORK PLAN
SCALE: 1/4" = 1'-0"



B SECOND FLOOR HVAC NEW WORK PLAN
SCALE: 1/4" = 1'-0"

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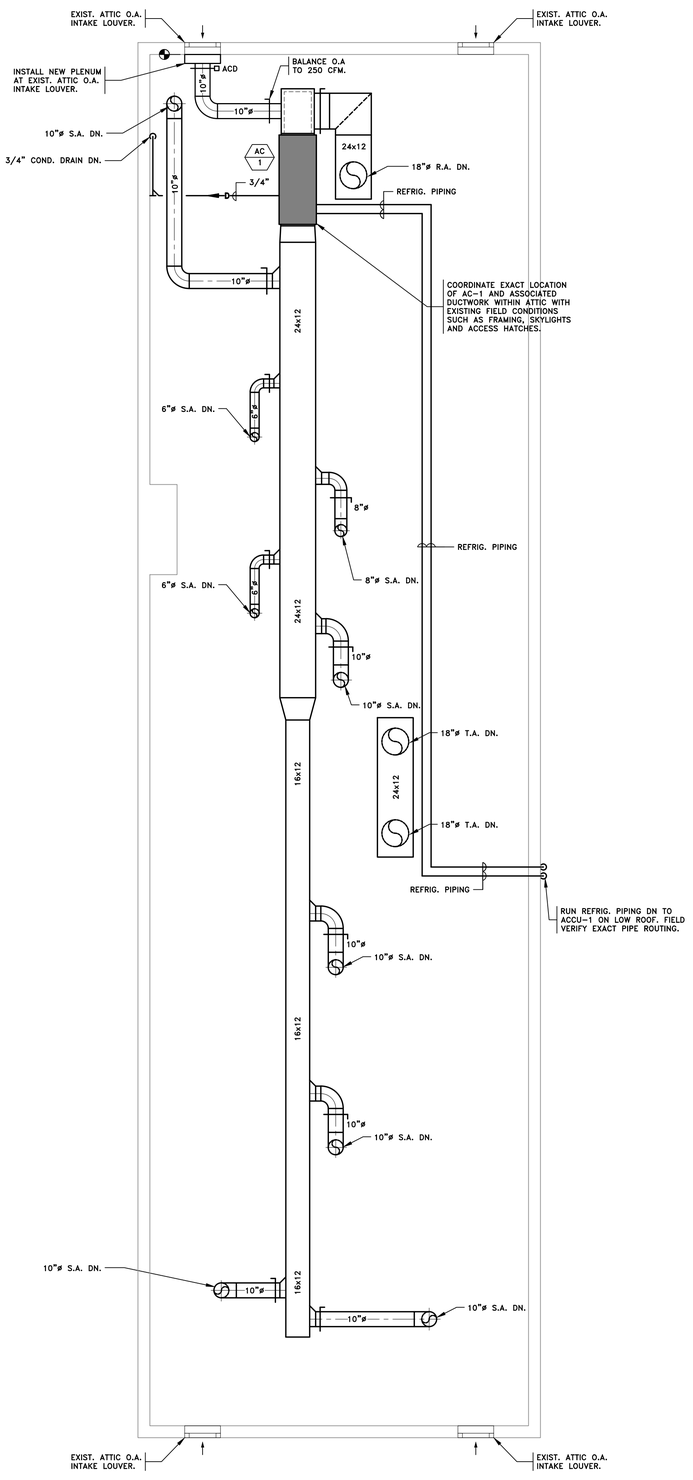
Waltham, MA 02453

JOB NUMBER 20-815
SCALE 1/4" = 1'-0"

DRAWING NAME
1st & 2nd Floor HVAC Plans - New Work

DRAWING NO.
M-101



A ATTIC LEVEL HVAC NEW WORK PLAN

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

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Waltham, MA 02453

JOB NUMBER 20-815

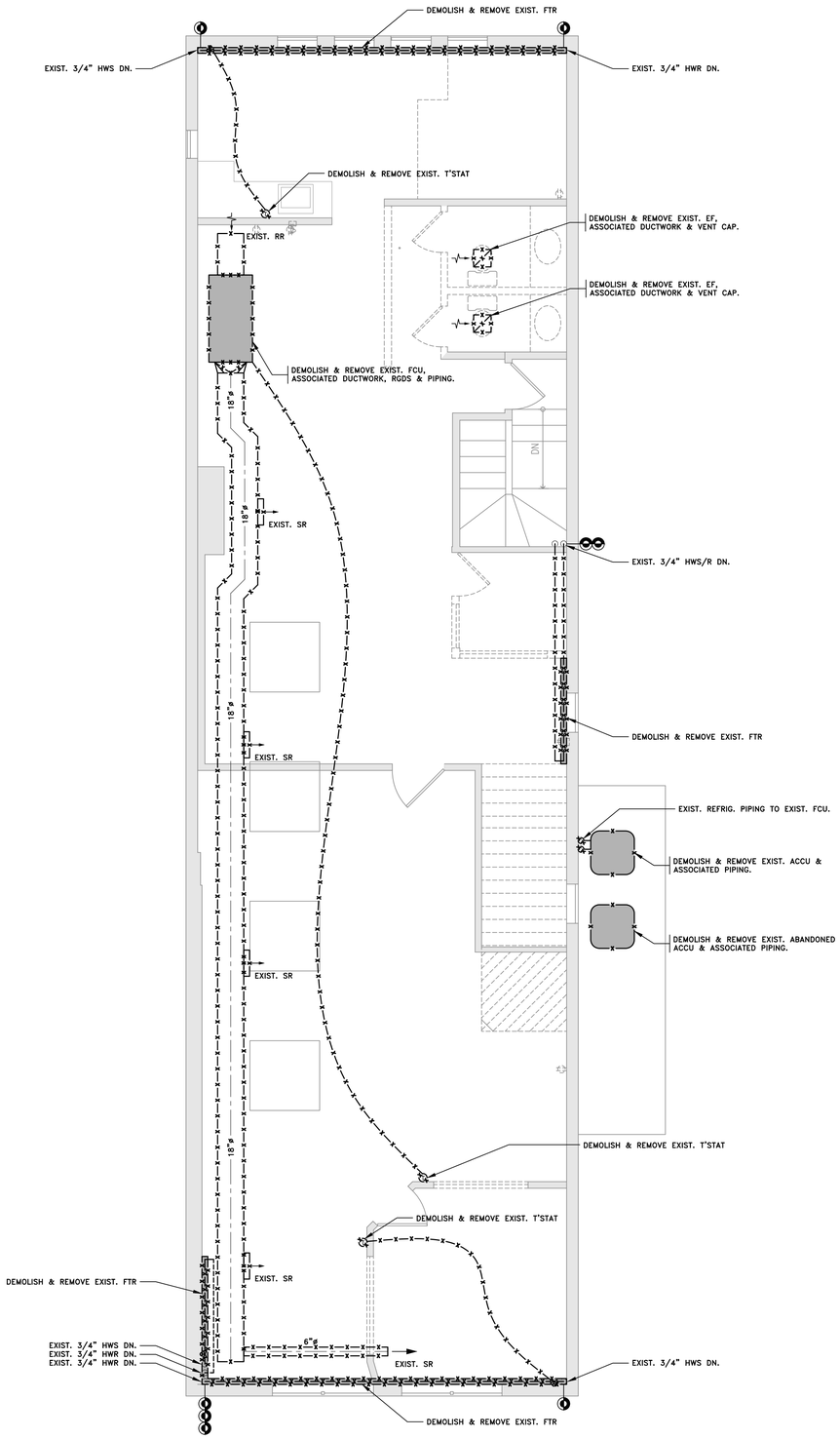
SCALE 1/4" = 1'-0"

DRAWING NAME

Attic Level HVAC Plan - New Work

DRAWING NO.

M-102



A SECOND FLOOR HVAC DEMOLITION PLAN

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

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JOB NUMBER 20-815

SCALE 1/4" = 1'-0"

DRAWING NAME

2nd Floor HVAC Plan - Demolition

DRAWING NO.

MD-101

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURES	SERVICE CONNECTIONS				REMARKS	MAKE & MODEL	WATER USAGE
		S/W	V	CW	HW			
P-1	WATER CLOSET	4"	2"	1/2"	--	TANK TYPE, HANDICAPPED	KOHLER K-3999	1.28 GPF
P-2	LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"	WALL HUNG, HANDICAPPED	KOHLER K-2005 W/ MOEN L4621 FAUCET	0.5 GPM
P-3	SHOWER	2"	2"	1/2"	1/2"	HANDICAPPED	AQUARIUS G3698 BF 0.75 W/ SYMMONS TEMPTROL MODEL S-96-300-B30-L-X-V SHOWER SYSTEM	1.5 GPM
P-4	KITCHENETTE SINK	2"	2"	1/2"	1/2"	EXIST. KITCHENETTE SINK & FAUCET TO REMAIN AT COUNTERTOP, NEW PIPING TO BE PROVIDED	-	-
P-5	WASHER	2"	2"	1/2"	1/2"	WASHER BY OTHERS	SYMMONS MODEL W-600 LANDRY BOX	-
P-6	MOP SINK	3"	2"	1/2"	1/2"	FLOOR MOUNTED	FIAT MODEL MSB2424 W/ 830-AA SERVICE FAUCET	2.0 GPM

GAS-FIRED HOT WATER HEATER SCHEDULE

TAG NO.	BASIS OF SELECTION	GAS DATA			CAPACITIES			ELECTRICAL DATA		REMARKS
		TYPE	INPUT (MBH)	THERMAL EFFICIENCY	RECOVERY (GPH)	TR (°F)	STORAGE (GALLONS)	VOLTS	PH	
DWH-1	A.O. SMITH BTH-120A	NAT. GAS	120	95%	138	100	60	120	1	PROVIDE MIXING VALVES, EXPANSION TANK, T&P RELIEF VALVE, VENT KIT, CONDENSATE NEUTRALIZATION KIT.

EXPANSION TANK SCHEDULE

TAG NO.	BASIS OF SELECTION	SERVICE	MAX. WATER TEMP. (°F)	TOTAL TANK VOLUME (GAL.)	MAX. WORKING PRESSURE (PSIG)	DIMENSIONS	WEIGHT	REMARKS
XT-1	FLEXCON PH 12	DOMESTIC HOT WATER	140	4.8	150	11" DIA x 1'-3"H	10	-

PIPE INSULATION SCHEDULE

FLUID OPERATING TEMPERATURE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (in.)					REMARKS
	CONDUCTIVITY (BTU/in/(h·ft²·°F))	MEAN RATING TEMPERATURE (°F)	<1"	1" to <1.5"	1.5" to <4"	4" to <8"	≥8"	
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5	HOT WATER
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0	COLD WATER

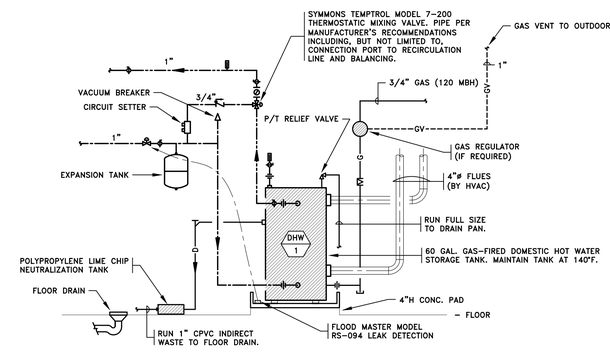
OUTLINE SPECIFICATIONS

1. PERMITS: OBTAIN AND PAY FOR ALL PERMITS.
2. DEMOLITION: DEMOLITION AND PROPER DISPOSAL OF ALL ITEMS REQUIRED TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
3. STANDARDS: ALL WORK SHALL BE IN ACCORDANCE WITH THE STATE BUILDING CODE, STATE PLUMBING CODE, NFPA, OWNER'S REQUIREMENTS AND LOCAL CODE REQUIREMENTS. COMPLY WITH ALL OF G.C.'S DIRECTIVES. ALL PLUMBING AND GAS PRODUCTS SHALL BE APPROVED BY THE STATE PLUMBING BOARD FOR INSTALLATION IN MASSACHUSETTS.
4. GUARANTEE: ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION, AS DETERMINED BY OWNER, AND IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
5. FIXTURES: FIXTURES SHALL BE AS LISTED OR EQUAL.
6. PIPING: COLD AND HOT WATER PIPING - ABOVE GROUND PIPING SHALL BE HARD DRAWN TYPE L COPPER WATER TUBING, 95-5 LEAD FREE SOLDER-JOINT WITH CAST BRASS OR WROUGHT COPPER FITTINGS. WATER VALVES SHALL BE ALL BRONZE FULL-PORT BALL VALVES WITH SS STEMS, EXTENDED HANDLES FOR INSULATION, APOLLO 82-100 FOR VALVES 2" AND SMALLER.

   SANITARY WASTE AND VENT PIPING - STANDARD WEIGHT CAST IRON DRAINAGE TYPE WITH CLAMP TYPE NO-HUB JOINTS. CLEAN-OUTS AS REQUIRED.

   LOW PRESSURE GAS PIPING - SHALL BE SCHEDULE 40 STEEL WITH THREADED FITTINGS. GAS VALVES 2" AND SMALLER SHALL BE ALL BRONZE TAPERED THREAD BOSTON PATTERN WITH PLUG COCK. VALVES 2-1/2" AND LARGER SHALL BE BRONZE BODY GATE SCREW END, JENKINS #370, OR EQUAL.

   PROVIDE GALVANIZED STEEL PIPE SLEEVES FOR ALL PIPES THROUGH WALLS OR FLOORS SUBJECT TO MOVEMENT. SLEEVES TO BE FLUSH WITH FINISH WALLS AND PROJECT 2" ABOVE FLOORS.
7. DHW HEATER: GAS-FIRED TANK TYPE HOT WATER HEATER TO BE A.O. SMITH BTH-120A, WITH 60 GALLON STORAGE CAPACITY, 120,000 BTU/HR GAS INPUT RATING, 138 GPH HEAT RECOVERY AT 100°F TR.
8. FLUES: GAS VENTS AND COMBUSTION AIR INTAKE FOR HWH'S SHALL BE NON-METALLIC HIGH TEMPERATURE CPVC PIPING INSTALLED WITH PROPER CLEARANCES TO COMBUSTIBLE MATERIALS. INSTALLED WITH PROPER THERMAL EXPANSION COMPENSATION FEATURES, AND IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. FLUE INSTALLATION WORK TO BE PERFORMED BY A LICENSED PLUMBER.
9. INSULATION: INSULATE ALL COLD WATER AND DOMESTIC HOT WATER PIPING WITH FIBERGLASS SECTIONAL PIPE INSULATION WITH SELF-SEALING FLAME-RETARDANT VAPOR BARRIER JACKET.
10. CUT/PATCH: ALL CUTTING, CORING AND PATCHING REQUIRED IN CONJUNCTION WITH THE INSTALLATION WORK, UNLESS SPECIFICALLY INDICATED OTHERWISE BY GC.
11. SUBMITTAL: ELECTRONICALLY SUBMIT ALL PRODUCTS FOR APPROVAL PRIOR TO STARTING ANY WORK.
12. COORDINATION: COORDINATE WITH OTHER TRADES.



A DOMESTIC HOT WATER TANK (GAS-FIRED) DIAGRAM

NOT TO SCALE

GENERAL PLUMBING LEGEND & ABBREVIATIONS

NOTE: ALL ITEMS SHOWN ARE NOT NECESSARILY USED ON THIS PROJECT

HC	HANDICAPPED/BARRIER FREE	NO	NORMALLY OPEN	LV	LAB VENT
VB	VACUUM BREAKER	NC	NORMALLY CLOSED	LVR	LAB VENT RISER
FD	FLOOR DRAIN	CONT	CONTINUATION	LWR	LAB WASTE RISER
RD	ROOF DRAIN	DWH	DOMESTIC WATER HEATER	VR	VENT RISER
FCO	FLOOR CLEANOUT	DCVA	DOUBLE CHECK VALVE BACKFLOW PREVENTER	WR	WASTE RISER
CO	LINE CLEANOUT	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	S	SANITARY
DCOF	DANDY CLEANOUT @ FLOOR	W&V	WASTE AND VENT	SR	SANITARY RISER
WCOF	WALL CLEANOUT @ FLOOR	ISOM	ISOMETRIC	TRO	THROUGH ROOF OVER
HB	HOSE BIB WITH V.B.	AC	AIR CHAMBER	FBO	FURNISHED BY OTHERS
WH	WALL HYDRANT WITH INTEGRAL V.B.	SA	SHOCK ABSORBER	AP	ACCESS PANEL
VTR	VENT THROUGH ROOF	IW	INDIRECT WASTE	FFE	FINISH FLOOR ELEVATION
INV	INVERT	TP	TRAP PRIMER	AFF	ABOVE FINISHED FLOOR
ELEV	ELEVATION	BV	BALL VALVE	HW	HOT WATER
GC	GENERAL CONTRACTOR	T.O.P.	TOP OF PIPE	CW	COLD WATER
PC	PLUMB CONTRACTOR	LW	LAB WASTE	V	VENT
		CS	CUP SINK	W	WASTE

PIPING LEGEND

- BURIED SOIL AND WASTE PIPING
- SOIL AND WASTE PIPING
- BURIED SANITARY VENT PIPING
- SANITARY VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RETURN PIPING
- TP — TRAP PRIMER PIPING
- TW — TEMPERED WATER PIPING
- RWL — RAIN WATER LEADER PIPING
- ST — STORM PIPING
- NP — NON-POTABLE WATER
- RO — PROCESS WATER
- PP — POLYPROPYLENE WASTE PIPING
- G — LOW PRESSURE GAS
- EPG — ELEVATED PRESSURE GAS
- HPG — HIGH PRESSURE GAS

- GAS COCK
- UNION
- BALL VALVE
- WALL HYDRANT (WH)
- AIR CHAMBER
- INDICATES SLOPE OF PIPE
- INDICATES DIRECTION OF PITCH (DOWN)(1/8"/FT UNLESS NOTED)
- GATE VALVE
- CHECK VALVE
- PRESSURE REDUCING VALVE (REGULATOR)
- PIPING TO BE DEMOLISHED & REMOVED
- CONNECT TO EXISTING
- LIMIT OF DEMOLITION
- FD — FLOOR DRAIN
- FS — FLOOR SINK

PLUMBING DRAWING LIST

BEACON
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MECHANICAL ENGINEER:
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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER

Community Day Center of Waltham

PROJECT

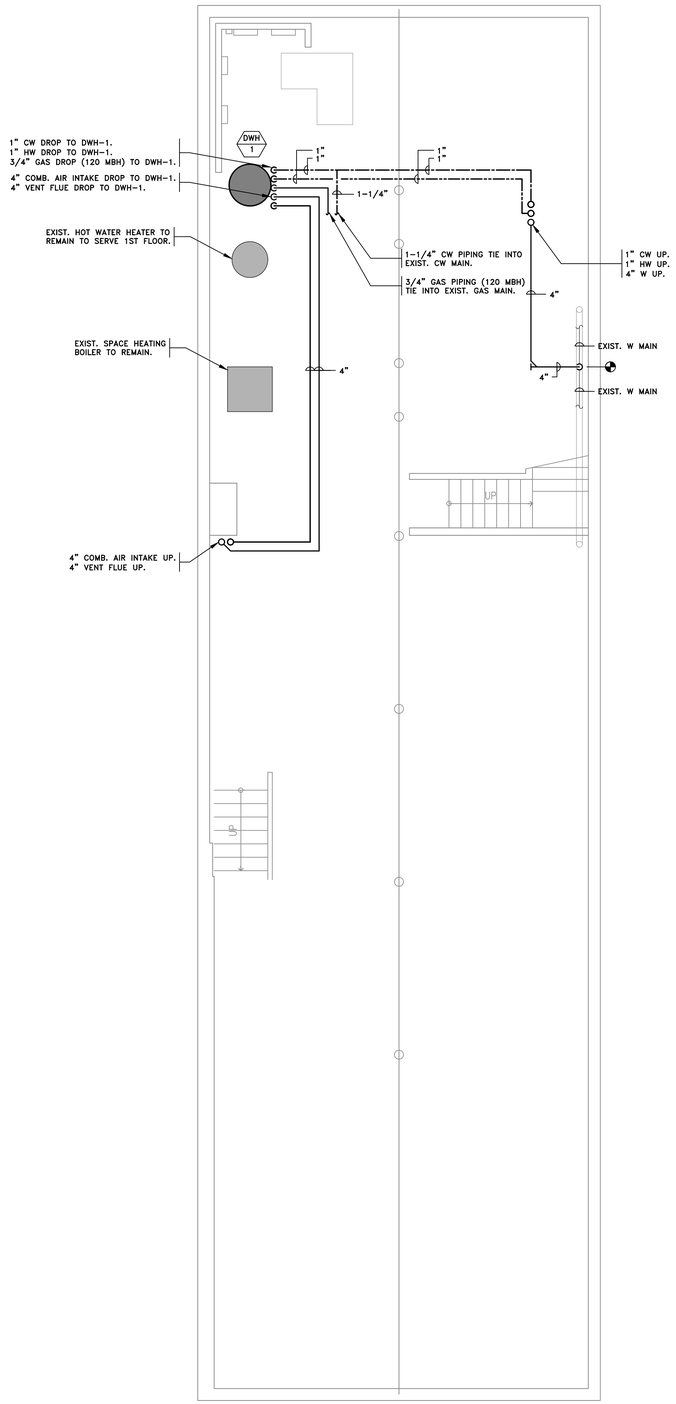
Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

SCALE NONE

DRAWING NAME
Plumbing Schedules & Legend

DRAWING NO.
P-001



A BASEMENT LEVEL PLUMBING NEW WORK PLAN

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

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

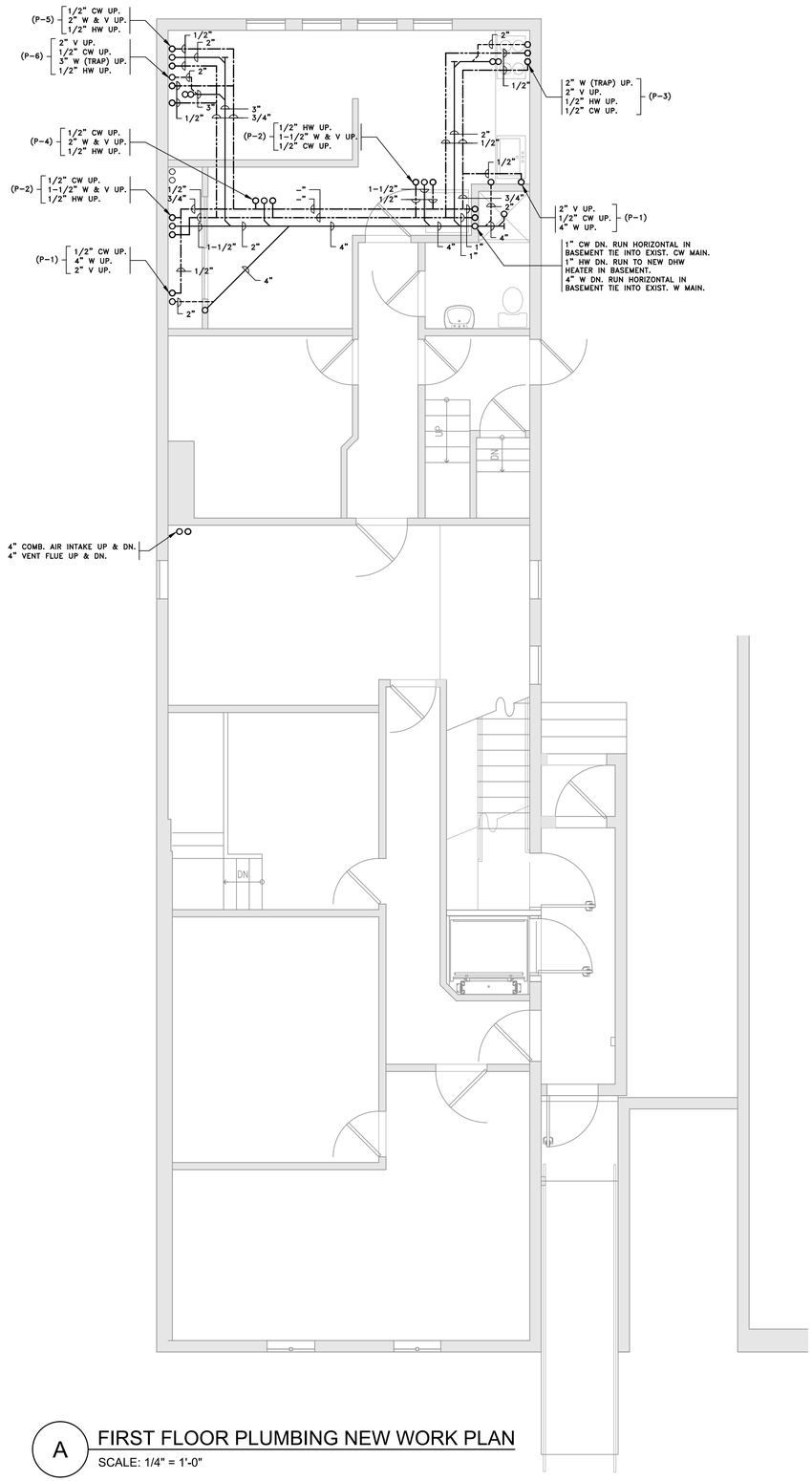
SCALE 1/4" = 1'-0"

DRAWING NAME

Basement Level Plumbing Plan - New Work

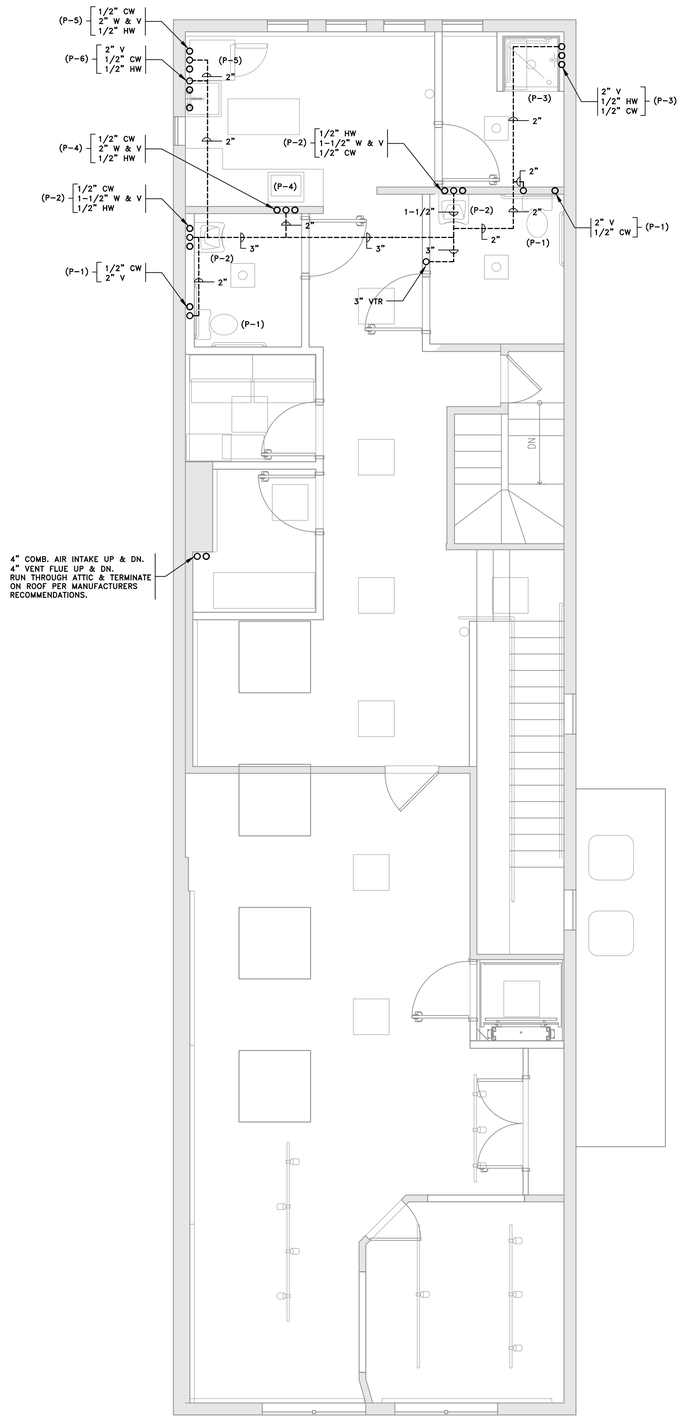
DRAWING NO.

P-101



A FIRST FLOOR PLUMBING NEW WORK PLAN

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



B SECOND FLOOR PLUMBING NEW WORK PLAN

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

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

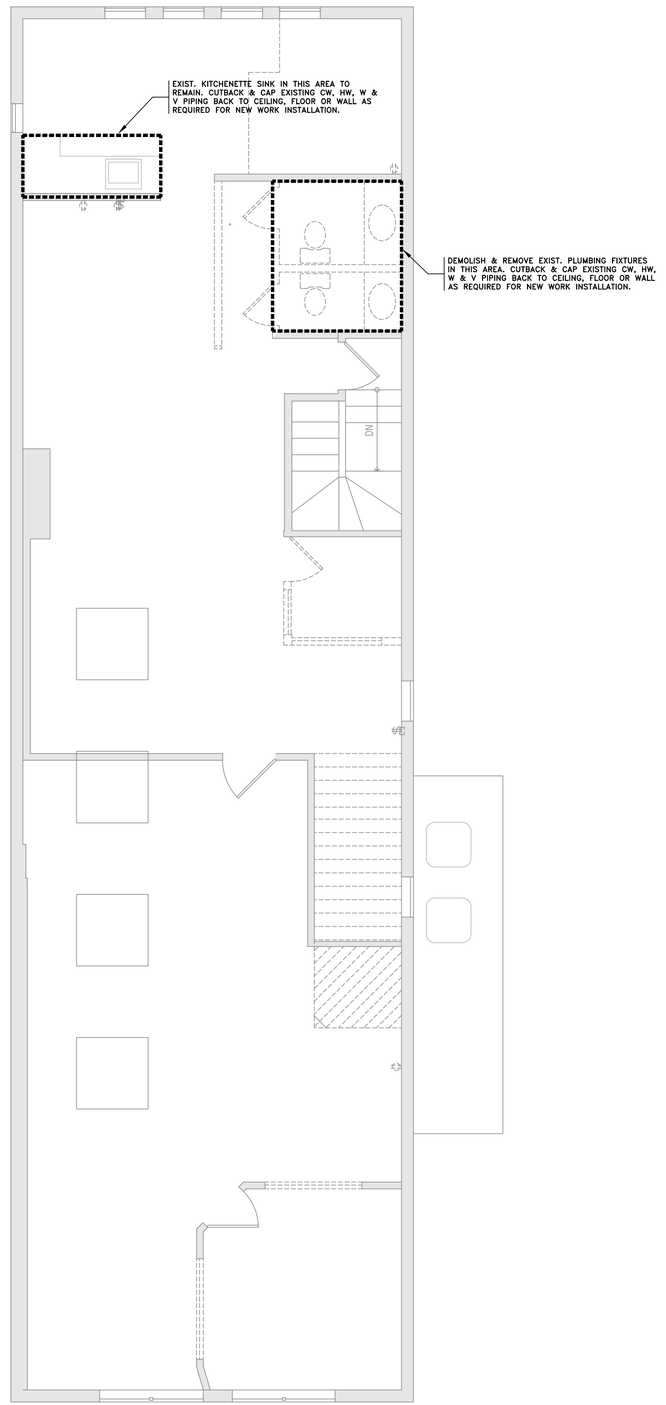
SCALE 1/4" = 1'-0"

DRAWING NAME

1st & 2nd Floor Plumbing Plans - New Work

DRAWING NO.

P-102



A SECOND FLOOR PLUMBING DEMOLITION PLAN

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

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ISSUE DATES

DATE	BY	DESCRIPTION
06/25/21	PM	BID SET

OWNER

Community Day Center of Waltham

PROJECT

Interior Alterations at
20 Felton Street
Waltham, MA 02453

JOB NUMBER 20-815

SCALE 1/4" = 1'-0"

DRAWING NAME

2nd Floor Plumbing Plan - Demolition

DRAWING NO.

PD-101