BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

REQUEST FOR PROPOSALS

Item Description: ELMWOOD COMMUNITY CENTER BUILDING RENOVATIONS

Date to be opened: April 12, 2021

Issuing Department: **Department of Public Property**

QUESTIONS

- Please direct questions relative to the bidding process, how to fill out forms, and how to submit a bid (Pages 1-8) to Purchasing Agent Patti Jordan.
  - Phone: (401) 680-5264
  - Email: pjordan@providenceri.gov
    - Please use the subject line "**RFP Question**"
- Please direct questions relative to the Minority and Women's Business Enterprise Program and the corresponding forms (Pages 9-13) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
  - Phone: (401) 680-5766
  - Email: gdiaz@providenceri.gov
    - Please use subject line "**MBE WBE Forms**"
- Please direct questions **relative to the specifications** outlined to the issuing department's subject matter expert:
  - **Mr. Demo Roberts**
  - **401 573 9584 (Cell Phone)**
  - **Droberts@providenceri.gov**

Pre-bid Conference
PRE-BID CONFERENCE IS MANDATORY:
DATE: MARCH 8, 2021 at 12:00PM
LOCATION: 85 ATLANTIC AVENUE PROVIDENCE, RI 02907

******A Scope Review Meeting may be conducted in order to ensure your bid is a qualified and meets all the requirements laid out in this RFP. Also, a retainage of 5% shall be kept from payments to contractor until successful completion of the project.******

INSTRUCTIONS FOR SUBMISSION

Bids may be submitted up to **2:15 P.M.** on the above meeting date at the **Department of the City Clerk. Room 311, City Hall. 25 Dorrance Street, Providence.** At 2:15 P.M. all bids will be publicly opened and read at the

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Board of Contract Meeting in the City Council Chambers, on the 3rd floor of City Hall.

- Bidders must submit **3 copies** of their bid in sealed envelopes or packages labeled with the captioned **Item Description** and the **City Department to which the RFP and bid are related and must include the company name and address on the envelope as well**. (On page 1).
- If required by the Department, please keep the original bid bond and check in only one of the envelopes.
- Communications to the Board of Contract and Supply that are not competitive sealed bids (i.e. product information/samples) should have "**NOT A BID**" written on the envelope or wrapper.
- Only use form versions and templates included in this RFP. If you have an old version of a form do not recycle it for use in this bid.
- The bid envelope and information relative to the bid must be addressed to:

Board of Contract and Supply
Department of the City Clerk – City Hall, Room 311
25 Dorrance Street
Providence, RI 02903

****PLEASE NOTE: This bid may include details regarding information that you will need to provide (such as proof of licenses) to the issuing department before the formalization of an award.**

This information is NOT requested to be provided in your initial bid by design.

All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record. The City has made a conscious effort to avoid the posting of sensitive information on the City's Open Meetings Portal, by requesting that such sensitive information be submitted to the issuing department only at their request.

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BID PACKAGE CHECKLIST

Digital forms are available in the City of Providence Purchasing Department Office or online at **http://www.providenceri.gov/purchasing/how-to-submit-a-bid/**

The bid package **MUST** include the following, in this order:

- Bid Form 1: Bidder's Blank as the cover page/ 1st page (s*ee page **6** of this document*)
- Bid Form 2: Certification of Bidder as 2nd page (s*ee page **7** of this document*)
- Bid Form 3: Certificate Regarding Public Records (s*ee page **8** of this document)*
- Forms from the Minority and Women Business Enterprise Program: Based on Bidder Category. S*ee forms and instructions enclosed (pages **9-13**) or on: https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/*

***Please note: MBE/WBE forms must be completed for EVERY bid submitted and must be inclusive of ALL required signatures. Forms without all required signatures will be considered incomplete.**

- Bidder's Proposal/Packet: Formal response to the specifications outlined in this RFP, including pricing information and details related to the good(s) or service(s) being provided. Please be mindful of formatting responses as requested to ensure clarity.
- Financial Assurance, *if requested* (a*s indicated on page 5 of this document under "Bid Terms")*

All of the above listed documents are REQUIRED. (With the exception of financial assurances, which are only required if specified on page 5.)

******Failure to meet specified deadlines, follow specific submission instructions, or enclose all required documents with all applicable signatures will result in disqualification, or in an inability to appropriately evaluate bids.******

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NOTICE TO VENDORS

1. The Board of Contract and Supply will make the award to the lowest qualified and responsible bidder.
2. In determining the lowest responsible bidder, cash discounts based on preferable payment terms will not be considered.
3. Where prices are the same, the Board of Contract and Supply reserves the right to award to one bidder, or to split the award.
4. No proposal will be accepted if the bid is made in collusion with any other bidder.
5. Bids may be submitted on an "equal in quality" basis. The City reserves the right to decide equality. Bidders must indicate brand or the make being offered and submit detailed specifications if other than brand requested.
6. A bidder who is an out-of-state corporation shall qualify or register to transact business in this State, in accordance with the Rhode Island Business Corporation Act, RIGL Sec. 7-1.2-1401, et seq.
7. The Board of Contract and Supply reserves the right to reject any and all bids.
8. Competing bids may be viewed in person at the Department of the City Clerk, City Hall, Providence, immediately upon the conclusion of the formal Board of Contract and Supply meeting during which the bids were unsealed/opened. Bids may also be accessed electronically on the internet via the City's Open Meetings Portal.
9. As the City of Providence is exempt from the payment of Federal Excise Taxes and Rhode Island Sales Tax, prices quoted are not to include these taxes.
10. In case of error in the extension of prices quoted, the unit price will govern.
11. The contractor will **NOT** be permitted to: a) assign or underlet the contract, or b) assign either legally or equitably any monies or any claim thereto without the previous written consent of the City Purchasing Director.
12. Delivery dates must be shown in the bid. If no delivery date is specified, it will be assumed that an immediate delivery from stock will be made.
13. A certificate of insurance will normally be required of a successful vendor.
14. For many contracts involving construction, alteration and/or repair work, State law provisions concerning payment of prevailing wage rates apply (RIGL Sec. 37-13-1 et seq.)
15. No goods should be delivered or work started without a Purchase Order.
16. **Submit 3 copies of the bid to the City Clerk, unless the specification section of this document indicates otherwise.**
17. Bidder must certify that it does not unlawfully discriminate on the basis of race, color, national origin, gender, gender identity or expression, sexual orientation and/or religion in its business and hiring practices and that all of its employees are lawfully employed under all applicable federal, state and local laws, rules and regulations. (See Bid Form 2.)
18. The Contractor is required to provide all necessary sub-contractors to execute the scope of work as indicated on the drawings and specifications.
19. Payment terms are net 30, upon receipt and approval of an invoice by the Providence Public Building Authority
20. During the evaluation process, the City reserves the right where it may serve in the City's best interest to request additional information or clarifications for the proposers, contractors submitting proposals may be required to participate in an interview with the Owner's representatives.
21. Please be advised all submittals are subject to approval by the City. Missing submittals may result in disqualification of bid.

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BID TERMS

1. Financial assurances may be required in order to be a successful bidder for Commodity or Construction and Service contracts. If either of the first two checkboxes below is checked, the specified assurance **must accompany** a bid, or the bid will not be considered by the Board of Contract and Supply. The third checkbox indicates the lowest responsible bidder will be contacted and required to post a bond to be awarded the contract.

   a) ☐ A certified check for **$**must be deposited with the City Clerk as a guarantee that the Contract will be signed and delivered by the bidder.

   b) ☒ A bid bond in the amount of **5** per centum (%) of the proposed total price, must be deposited with the City Clerk as a guarantee that the contract will be signed and delivered by the bidder; and the amount of such bid bond shall be retained for the use of the City as liquidated damages in case of default.

   c) ☒ A performance and payment bond with a satisfactory surety company will be posted by the bidder in a sum equal to one hundred per centum (100%) of the awarded contract.

   d) ☐ No financial assurance is necessary for this item.

2. Awards will be made within **sixty (60) days of bid opening**. All bid prices will be considered firm, unless qualified otherwise. Requests for price increases will not be honored.
3. Failure to deliver within the time quoted or failure to meet specifications may result in default in accordance with the general specifications. It is agreed that deliveries and/or completion are subject to strikes, lockouts, accidents and Acts of God.

The following entry applies only for COMMODITY BID TERMS:

4. Payment for partial delivery will not be allowed except when provided for in blanket or term contracts.

The following entries apply only for CONSTRUCTION AND SERVICE BID TERMS:

5. Only one shipping charge will be applied in the event of partial deliveries for blanket or term contracts.
6. Prior to commencing performance under the contract, the successful bidder shall attest to compliance with the provisions of the Rhode Island Worker's Compensation Act, RIGL 28-29-1, et seq. If exempt from compliance, the successful bidder shall submit a sworn Affidavit by a corporate officer to that effect, which shall accompany the signed contract.
7. Prior to commencing performance under the contract, the successful bidder shall, submit a certificate of insurance, in a form and in an amount satisfactory to the City.

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BID FORM 1: Bidders Blank

1. Bids must meet the attached specifications. Any exceptions or modifications must be noted and fully explained.
2. Bidder's responses must be in ink or typewritten, and all blanks on the bid form should be completed.
3. The price or prices proposed should be stated both in **WRITING** and in **FIGURES**, and any proposal not so stated may be rejected. **Contracts exceeding twelve months must specify annual costs for each year.**
4. Bids **SHOULD BE TOTALED** so that the final cost is clearly stated (unless submitting a unit price bid), however **each item should be priced individually**. Do not group items. Awards may be made on the basis of ***total*** bid or by ***individual items***.
5. All bids **MUST BE SIGNED IN INK.**

Name of Bidder (Firm or Individual): _____

Contact Name: _____

Business Address: _____

Business Phone #: _____

Contact Email Address: _____

Agrees to bid on (Write the "Item Description" here): _____

If the bidder's company is based in a state *other than Rhode Island*, list name and contact information for a local agent for service of process that ***is located within Rhode Island*** _____

Completion Date (if applicable): _____

Name of Surety Company (if applicable): _____

Completion Date: _____

Name of Surety Company (if applicable): _____

Base Bid

Total Amount in Writing*: _____

Total Amount in Figures*: _____

Use additional pages if necessary for additional bidding details.

_____

Signature of Representation

_____

Title

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BID FORM 2: Certification of Bidder

(Non-Discrimination/Hiring)

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify that:

1. Bidder does not unlawfully discriminate on the basis of race, color, national origin, gender, sexual orientation and/or religion in its business and hiring practices.
2. All of Bidder's employees have been hired in compliance with all applicable federal, state and local laws, rules and regulations.

I affirm by signing below that I am duly authorized on behalf of Bidder, on this_____day of_____20____.

_____

Signature of Representation

_____

Printed Name

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BID FORM 3: Certificate Regarding Public Records

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify an

understanding that:

1. All bids submitted in response to Requests for Proposals (RFP's) and Requests for Qualification (RFQ's), documents contained within, and the details outlined on those documents become public record upon receipt by the City Clerk's office and opening at the corresponding Board of Contract and Supply (BOCS) meeting.
2. The Purchasing Department and the issuing department for this RFP/RFQ have made a conscious effort to request that sensitive/personal information be submitted directly to the issuing department and only at request if verification of specific details is critical the evaluation of a vendor's bid.
3. The requested supplemental information may be crucial to evaluating bids. Failure to provide such details may result in disqualification, or an inability to appropriately evaluate bids.
4. If sensitive information that has not been requested is enclosed or if a bidder opts to enclose the defined supplemental information prior to the issuing department's request in the bidding packet submitted to the City Clerk, the City of Providence has no obligation to redact those details and bears no liability associated with the information becoming public record.
5. The City of Providence observes a public and transparent bidding process. Information required in the bidding packet may not be submitted directly to the issuing department at the discretion of the bidder in order to protect other information, such as pricing terms, from becoming public. Bidders who make such an attempt will be disqualified.

I affirm by signing below that I am duly authorized on behalf of Bidder, on

this_____day of_____20____.

_____

Signature of Representation

_____

Printed Name

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WBE/MBE Form Instructions

The City of Providence actively seeks Minority and Women business enterprises to participate in bids to meet the City's procurement needs. Pursuant to the City of Providence Code of Ordinances, Chapter 21, Article II, Sec. 21-52 (Minority and Women's Business Enterprise) and Rhode Island General Laws (as amended), Chapter 31-14, et seq. (Minority Business Enterprise), Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is **10%** of the total bid value.
The goal for Women's Business Enterprise (WBE) participation is **10%** of the total bid value.
The goal for combined MBE/WBE participation is **20%** of the total bid value.

Only businesses certified with the State of Rhode Island as minority and/or women business enterprises are counted towards the City's goals. Eligible minority or women-owned businesses are encouraged to seek certification from the State of Rhode Island Minority Business Enterprise Compliance Office at: http://odeo.ri.gov/offices/mbeco/

Note: MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.

Bid Requirements:

All Bidders: All bidders must complete and submit the ***MBE/WBE Participation Affidavit*** indicating whether or not they are a state-certified MBE/WBE and acknowledging the City's participation goals. Submission of this form is required with **every bid**. Your bid will not be accepted without an affidavit.

Bidders who will be subcontracting: Bidders who will be subcontracting must submit the ***Subcontractor Disclosure Form*** as part of their bid submission. All subcontractors, regardless of MBE/WBE status, must be listed on this form. Business NAICS codes can be found at https://www.naics.com/search/. Awarded bidders are required to submit ***Subcontractor Utilization and Payment Reports*** with each invoice.

Waiver Requests:

If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F on the Subcontractor Disclosure Form) and the prime contractor is not a Rhode Island State-certified MBE or WBE, the Bidder must complete the *MBE/WBE Waiver Request Form* for review. Waivers will be considered on a case by case basis.

No waiver will be granted unless the waiver request includes documentation that demonstrates that the Bidder has made good faith efforts to achieve the City's stated participation goals. Waivers must be reviewed and signed by the City of Providence's MBE/WBE Outreach Director, Grace Diaz, or her designee. Department Directors cannot recommend a bidder for award if this form is applicable and absent. If the bid does not meet the participation goals of the City of Providence and a waiver is not filed with the signature of the MBE/WBE Outreach Director or her designee, the bid will not be accepted.

Verifying MBE/WBE Certification

It is the responsibility of the bidder to confirm that every MBE/WBE named in a proposal and included in a contract is certified by the Rhode Island Minority Business Enterprise Compliance office. The current MBE/WBE directory is available at the State of RI MBE Office, One Capitol Hill, 2nd Floor, Providence, RI, or online at http://odeo.ri.gov/offices/mbeco/mbe-wbe.php. You can also call (401) 574-8670 to verify certification, expiration dates, and services that the MBE/WBE is certified to provide. Note: MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.

Form Instructions:

Access all bid forms from http://www.providenceri.gov/oeo/ or http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/. **Download** the forms as blank PDFs. Once saved on your computer, fill them out using the Adobe program. The fillable PDFs must be completed in Adobe in order to be saved property. Google Chrome and similar

platforms do not allow for the forms to be saved as filled PDFs. Therefore, please download the blank forms to your computer, then fill them out and save.

Assistance with Form Requirements

Examples of completed forms can be found on the City of Providence website at http://www.providenceri.gov/oeo/ or http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/.

Contract Requirements:

Prime contractors engaging subcontractors must submit the ***Subcontractor Utilization and Payment Report*** to the City Department's Fiscal Agent with every invoice and with request for final payment. This form is not submitted as a part of the initial bid package.

For contracts with duration of less than 3 months, this form must be submitted along with the contractor's request for final payment. The form must include all subcontractors utilized on the contract, both MBE/WBE and non- MBE/WBE, the total amount paid to each subcontractor for the given period and to date. During the term of the contract, any unjustified failure to comply with the MBE/WBE participation requirements is a material breach of contract.

Questions?

For more information or for assistance with MBE/WBE Forms, contact the City of Providence MBE/WBE Outreach Director, Grace Diaz, at mbe-wbe@providenceri.com or (401) 680-5766.

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MBE/WBE PARTICIPATION AFFIDAVIT
Item Discussion (as seen on RFP):

_____
_____
_____

Prime Bidder: _____
Prime Bidder (Company) Phone Number:_____

Which one of the following describes your business' status in terms of Minority and/or Woman-Owned Business Enterprise certification with the State of Rhode Island? _____MBE _____WBE _____Neither MBE nor WBE

By initialing the following sections and signing the bottom of this document in my capacity as the contractor or an authorized representative of contractor, I make this Affidavit:
It is the policy of the City of Providence that minority business enterprises (MBEs) and women business enterprises (WBEs) should have the maximum opportunity to participate in procurements and projects as prime contractors and vendors. Pursuant to Sec. 21-52 of the Providence Code of Ordinances and Chapter 31-14 *et seq*. of the Rhode Island General Laws (as amended), MBE and WBE participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is 10% of the total bid value.
The goal for Women's Business Enterprise (WBE) participation is 10% of the total bid value.
The goal for combined MBE/WBE participation is 20% of the total bid value.

I acknowledge the City of Providence's goals of supporting MBE/WBE certified businesses. Initial _____
If awarded the contract, I understand that my company must submit to the Minority and Women's Business Coordinator at the City of Providence (MBE/WBE Office), copies of all executed agreements with the subcontractor(s) being utilized to achieve the participation goals and other requirements of the RI General Laws. **I understand that these documents must be submitted prior to the issuance of a notice to proceed**. Initial _____

I understand that, if awarded the contract, my firm must submit to the MBE/WBE Office canceled checks and reports required by the MBE/WBE Office on a quarterly basis verifying payments to the subcontractors(s) utilized on the contract. Initial _____

If I am awarded this contract and find that I am unable to utilize the subcontractor(s) identified in my Statement of Intent, I understand that I must substitute another certified MBE and WBE firm(s) to meet the participation goals. **I understand that I may not make a substitution until I have obtained the written approval of the MBE/WBE Office**.
Initial _____
If awarded this contract, I understand that authorized representatives of the City of Providence may examine the books, records and files of my firm from time to time, to the extent that such material is relevant to a determination of whether my firm is complying with the City's MBE/WBE participation requirements.
Initial _____
I do solemnly declare and affirm under the penalty of perjury that the contents of the foregoing Affidavit are true and correct to the best of my knowledge, information and belief.

_____ _____
Signature of Bidder Printed Name

_____ _____
Company Name Date

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SUBCONTRACTOR DISCLOSURE FORM

Fill out this form only if you WILL SUBCONTRACT with other parties. If you will not subcontract any portion of the proposed bid, do not fill out this form.

Prime Bidder: _____ Primary NAICS_____
Code:_____

Item Description (as seen on RFP):_____

_____

Please list all Subcontractors below. Include the total dollar value that you propose to share with each subcontractor and the dollar amount to be subcontracted. Please check off MBE and WBE where applicable. The directory of all state-certified MBE/WBE firms is located at www.mbe.ri.gov. Business NAICS codes can be found at https://www.naics.com/search/

Proposed Subcontractor	**MBE**	**WBE**	**Primary NAICS Code**	**Date of Mobilization**	**$ Value of Subcontract**
					$
					$
					$
					$
					$
					$
A. MBE SUBCONTRACTED AMOUNT:					**$**
B. WBE SUBCONTRACTED AMOUNT:					**$**
C. NON MBE WBE SUBCONTRACTED AMOUNT:					**$**
D. DOLLAR AMOUNT OF WORK DONE BY THE PRIME CONTRACTOR:					**$**
E. TOTAL AMOUNT OF BID (SUM OF A, B, C, & D):					**$**
F. PERCENTAGE OF BID SUBCONTRACTED TO MBEs AND WBEs. (Divide the sum of A and B by E and multiply result by 100).					**%**

Please read and initial the following statement acknowledging you understand. If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F) and the prime contractor is NOT a Rhode Island State-certified MBE or WBE, **you must fill out the MBE/WBE WAIVER REQUEST FORM for consideration by City of Providence MBE/WBE Outreach Director**. Initial _____

_____ _____
Signature of Bidder Printed Name

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MBE/WBE Waiver Request Form
Fill out this form only if you are subcontracting and did not meet the 20% MBE/WBE participation goal.
State-certified MBE or WBE Prime Bidders are NOT REQUIRED to fill out this form.

Submit this form to the City of Providence MBE/WBE Outreach Director, Grace Diaz, at mbe-wbe@providenceri.gov, for review **prior to bid submission.** This waiver applies only to the current bid which you are submitting to the City of Providence and does not apply to other bids your company may submit in the future.

Prime Bidder: _____
Company Trade: _____
Item Discussion (as seen on RFP):
_____
_____

To receive a waiver, you must list the certified MBE and/or WBE companies you contacted, the name of the primary individual with whom you interacted, and the reason the MBE/WBE company could not participate on this project.

MBE/WBE Company Name	Individual's Name	Company Trade	Why did you choose not to work with this company?

I acknowledge the City of Providence's goal of a combined MBE/WBE participation is 20% of the total bid value. I am requesting a waiver of _____ % MBE/WBE (20% minus the value of **Box F** on the Subcontractor Disclosure Form). If an opportunity is identified to subcontract any task associated with the fulfillment of this contract, a good faith effort will be made to select MBE/WBE certified businesses as partners.

_____	_____	_____
Signature of Prime Contractor	Printed Name	Date Signed
_____	_____	_____
Signature of City of Providence MBE/WBE Outreach Director	Printed Name of City of Providence MBE/WBE Outreach Director	Date Signed

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SUPPLEMENTAL INFORMATION

If the issuing department for this RFP determines that your firm's bid is best suited to accommodate their need, you will be asked to provide proof of the following prior to formalizing an award.

An inability to provide the outlined items at the request of the department may lead to the disqualification of your bid.

This information is NOT requested to be provided in your initial bid that you will submit to the City Clerk's office by the "date to be opened" noted on page 1. This list only serves as a list of items that your firm should be ready to provide on request.

All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record.

You must be able to provide:

- Business Tax ID will be requested after an award is approved by the Board of Contract and Supply.
- Proof of Insurance
- Payment and Performance Bond
- 3-5 Professional References
- 3-5 Examples of Similar Projects Your Firm Has Successfully Completed

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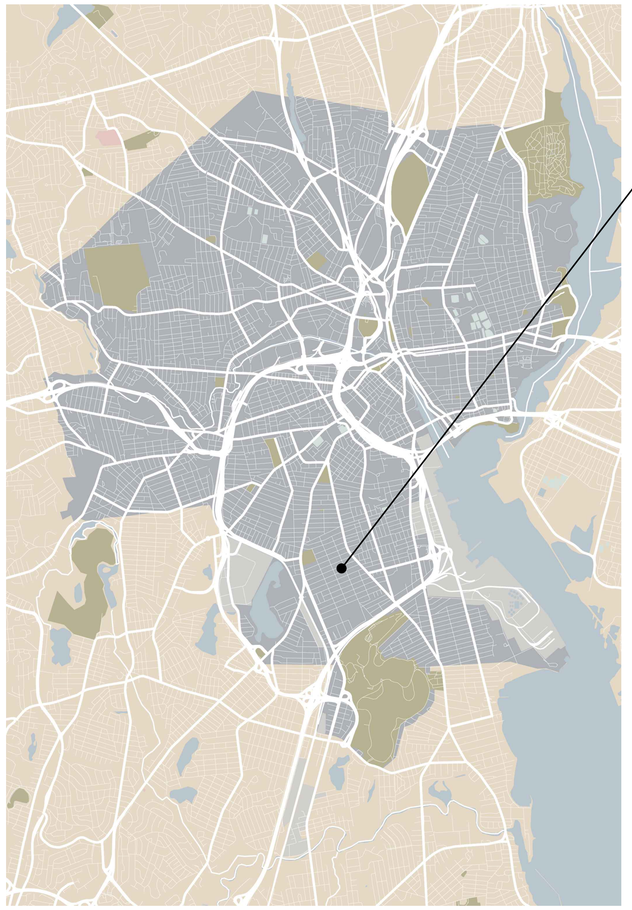
BID PACKAGE SPECIFICATIONS

SEE ATTACHMENT:

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

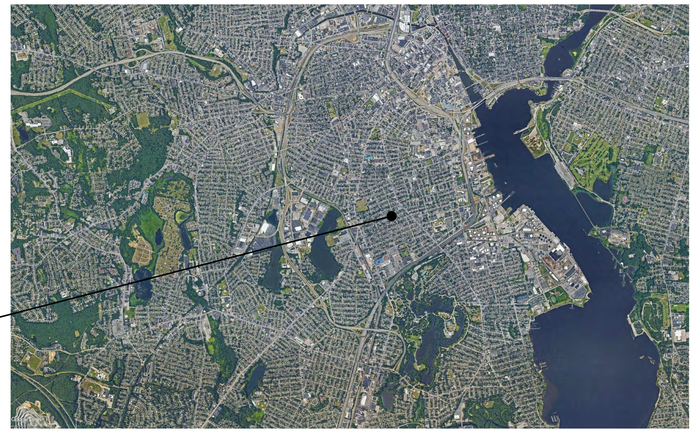
PROJECT LOCATION MAPS



LOCATION MAP

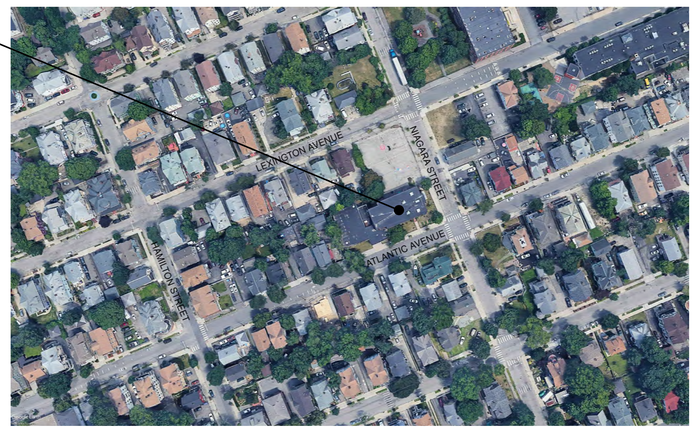
PROJECT LOCATION
ELMWOOD RECREATIONAL CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

ELMWOOD RECREATIONAL CENTER



AREA MAP

SITE



SITE MAP

SHEET INDEX

GENERAL INFORMATION
G-000 - COVER SHEET

CIVIL
COVER SHEET
ECS-1 - EXISTING CONDITIONS SURVEY
C-1 - SITE LAYOUT PLAN & NOTES
C-2 - CONSTRUCTION DETAILS-1
C-3 - CONSTRUCTION DETAILS-2

ARCHITECTURAL
A-000 - PROJECT & ARCHITECTURAL NOTES AND ABBREVIATIONS
A-001 - ARCH. SITE PLAN DEMO. AND NEW
AD100 - FIRST & SECOND FLOOR DEMOLITION PLANS
AD101 - FIRST & SECOND FLOOR CEILING DEMOLITION PLANS
AD102 - FIRST & SECOND FLOOR FINISH DEMOLITION PLANS
AC100 - FIRST & SECOND FLOOR PLANS
AC101 - FIRST & SECOND FLOOR REFLECTED CEILING CEILING PLANS
AC102 - FIRST & SECOND FLOOR FINISH PLANS
A-100 - ROOF PLAN & DETAILS
A-200 - EXTERIOR DEMOLITION ELEVATIONS
A-201 - EXTERIOR DEMOLITION ELEVATIONS
A-202 - EXTERIOR ELEVATIONS
A-203 - EXTERIOR ELEVATIONS
A-400 - ENLARGED GYMNASIUM PLAN
A-500 - ENLARGED GYMNASIUM INTERIOR ELEVATIONS
A-501 - ENLARGED LOBBY INTERIOR ELEVATIONS
A-502 - ENLARGED BATHROOM PLANS & INTERIOR ELEVATIONS
A-650 - HANDRAIL DETAILS
A-651 - WINDOW TYPES
A-652 - DOOR SCHEDULE, WALL TYPES AND DETAILS
A-653 - WINDOW DETAILS
A-654 - LIFT DETAILS

MECHANICAL
M-000 - MECHANICAL COVER SHEET
MD101 - MECHANICAL DEMOLITION FLOOR PLAN
M-101 - MECHANICAL FIRST FLOOR PLAN
M-102 - MECHANICAL SECOND FLOOR PLAN
M-600 - MECHANICAL DETAILS

ELECTRICAL
E-000 - ELECTRICAL COVER SHEET
ED101A - ELECTRICAL FIRST FLOOR DEMOLITION PLAN - WEST
ED101B - ELECTRICAL FIRST FLOOR DEMOLITION PLAN - EAST
ED102 - ELECTRICAL SECOND FLOOR DEMOLITION PLAN
E-101A - ELECTRICAL FIRST FLOOR PLAN - WEST
E-101B - ELECTRICAL FIRST FLOOR PLAN - EAST
E-102 - ELECTRICAL SECOND FLOOR PLAN
E-103 - ELECTRICAL ROOF PLAN
E-500 - ELECTRICAL DETAILS AND PANEL SCHEDULES

PLUMBING
P-000 - PLUMBING COVER SHEET
P-101 - PLUMBING SANITARY PLANS
P-102 - PLUMBING DOMESTIC WATER PLANS

CODE INFORMATION

1. APPLICABLE CODES AND STANDARDS

IBC 2012 IMC 2012 IPC 2012 IECC 2012
NFPA 13 - 2013 NFPA 101 - 2015 ASHRAE 90.1-2010
ADA STANDARDS FOR ACCESSIBLE DESIGN - 2010
RHODE ISLAND FIRE PREVENTION REGULATIONS 2015
ICC A117.1-2009

2. PROJECT DATA

OWNER: CITY OF PROVIDENCE

LOCATION: ELMWOOD COMMUNITY CENTER

ADDRESS: 155 NIAGARA STREET, PROVIDENCE, RI 02907

STUDIO JAED
ARCHITECTS ◘ ENGINEERS ◘ FACILITIES SOLUTIONS
Website: www.StudioJAED.com Email: info@StudioJAED.com

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42 WEYBOSSET STREET, STE. 403
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MARYLAND OFFICE
213 FRONT STREET, P.O. BOX 754
CRUMPTON, MARYLAND 21628

DELAWARE OFFICE
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BEAR, DELAWARE 19701
P: (302) 832-1652

CONSULTANT

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ARCHITECT / ENGINEER SEAL

PROJECT
CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

COVER SHEET

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

G-000

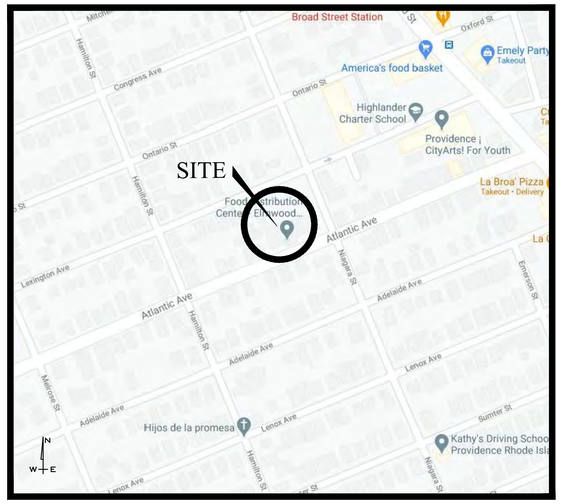
THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: - THE ELECTRONIC DATA TRANSMITTED TO/HOW MAY BE ALTERED DURING TRANSIT AND TRANSLATION. - J-AED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. - THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. - J-AED CORPORATION DO NOT ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PROVIDED. - THE RECEIVER SHALL HOLD J-AED CORPORATION AND ITS OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY AND ALL CLAIMS, LOSSES AND COSTS (INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

2/3/2021 7:23 PM

FIRE SERVICE CONNECTION PLANS

FOR

ELMWOOD COMMUNITY CENTER



LOCUS MAP
NOT TO SCALE

A.P.52, LOT 563
155 NIAGARA STREET
PROVIDENCE, RHODE ISLAND

OWNER / APPLICANT:

STUDIO JAED
42 WEYBOSSET STREET
PROVIDENCE, RI 02903

PREPARED BY:

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GAROFALO & ASSOCIATES, INC.
CIVIL & STRUCTURAL ENGINEERS\SURVEYORS
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P.O. BOX 6145 PROVIDENCE, R.I. 02940
1-401-273-6000

JOB NO. 7286-00

SHEET INDEX

SHEET	PLAN TITLE	LATEST REVISION
	COVER SHEET	
ECS-1	EXISTING CONDITIONS SURVEY	
C-1	SITE LAYOUT PLAN & NOTES	
C-2	CONSTRUCTION DETAILS-1	
C-3	CONSTRUCTION DETAILS-2	

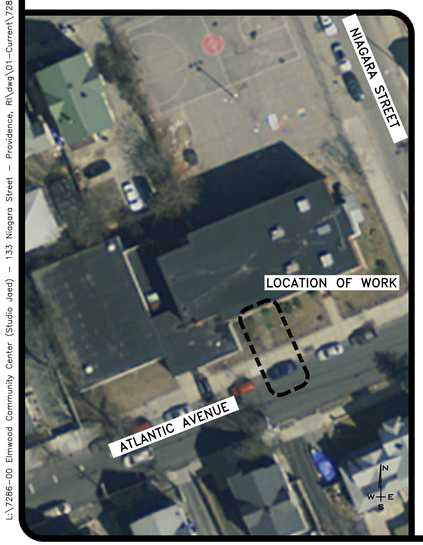
SITE LEGEND

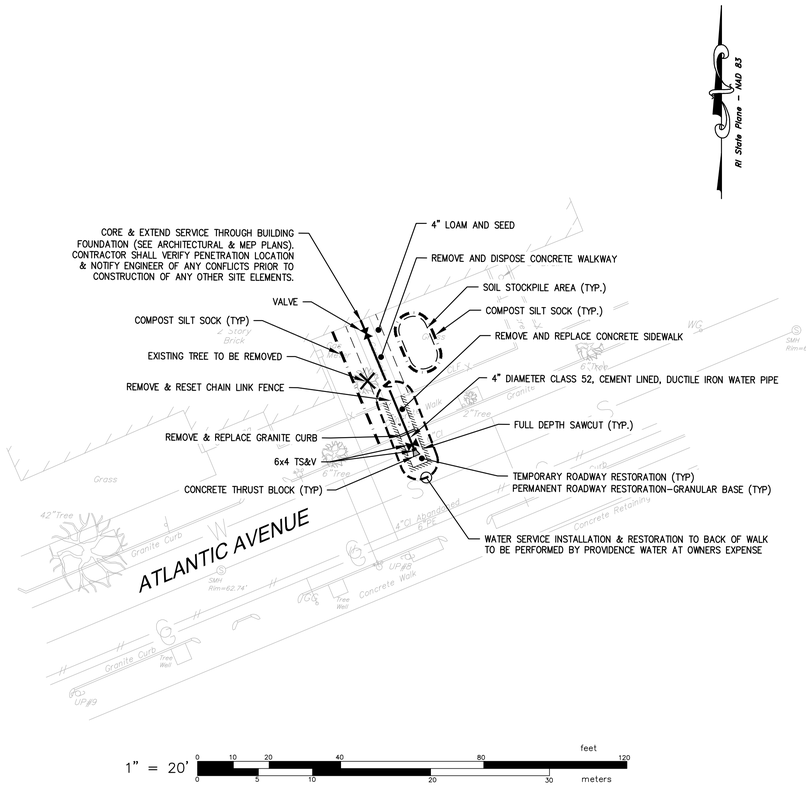
EXISTING	NEW	DESCRIPTION
℄	℄	CENTERLINE (LAYOUT)
D	D	STORM DRAIN
E	E	ELECTRIC (UNDERGROUND)
F	F	FIRE SERVICE
FD	FD	FOOTING DRAIN
G	G	GAS
OHW	OHW	OVERHEAD WIRE
		PROPERTY LINE
S	S	SANITARY SEWER
SL	SL	SITE LIGHTING SERVICE
T	T	TELEPHONE
W	W	WATER
64	64	CONTOUR
x 64.0	x 64.00	SPOT GRADE
x 64.0(BC)	x 64.00(BC)	SPOT GRADE (BOT. OF CURB)
x 64.5(TC)	x 64.50(TC)	SPOT GRADE (TOP OF CURB)
64.5(BW)	64.50(BW)	SPOT GRADE (BOT. OF WALL)
64.5(TW)	64.50(TW)	SPOT GRADE (TOP OF WALL)
PCC	PCC	PRECAST CONC. CURB
VGC	VGC	VERTICAL GRANITE CURB
CB	CB#1	CATCH BASIN
CB(DG)	CBDG#1	DOUBLE GRATE CATCH BASIN
CTB	CTB	CONCRETE THRUST BLOCK
DMH	DMH	DRAIN MANHOLE
FES	FES	FLARED END STRUCTURE
SMH	SMH	SEWER MANHOLE
		WATER SERVICE
		UTILITY POLE
HYD		FIRE HYDRANT
GV	GV	GATE VALVE AND CURB BOX
		HANDICAP SYMBOL (PRKG. SPACE)
		SIGN
E	E	ELECTRIC MANHOLE (EMH)
T	T	TELEPHONE MANHOLE (TMH)
LP		SIGHT LIGHT POLE
		PAVEMENT SAWCUT & MATCH TO EXISTING

ABBREVIATIONS

CI	CAST IRON PIPE
CLDI	CEMENT LINED DUCTILE IRON PIPE
CLF	CHAINLINK FENCE
D.I.	DUCTILE IRON PIPE
EX.	EXISTING
F&I	FURNISH AND INSTALL
INV.	INVERT ELEVATION
MTE	MATCH TO EXISTING
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE

AERIAL IMAGE
N.T.S.





SURVEY NOTES

1. THE PROJECT SITE IS LOCATED WITHIN ZONE "X" (AREAS OUTSIDE THE 0.2% ANNUAL FLOODPLAIN) AS SHOWN ON F.E.M.A. FLOOD INSURANCE RATE MAP FOR THE TOWN OF PROVIDENCE, RHODE ISLAND, PROVIDENCE COUNTY, COMMUNITY PANEL NO. 44007C0316G, HAVING AN EFFECTIVE DATE OF MARCH 2nd, 2009.

2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. (PLEASE CONTACT DIGSAFE PRIOR TO CONSTRUCTION @ 1-888-344-7233)

3 HORIZONTAL DATUM: RHODE ISLAND STATE PLANE - NAD 83
VERTICAL DATUM: NAVD 88*
* DATUM WAS DERIVED BY OBSERVED GPS ORTHOMETRIC HEIGHTS VARIATIONS BETWEEN LOCAL BENCHMARKS MAY APPLY.

GENERAL CONSTRUCTION NOTES

1. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE TRAILER AT ALL TIMES. DEVIATIONS OR CHANGES WILL NOT BE ALLOWED UNLESS BY WRITTEN APPROVAL FROM THE ENGINEER.
2. SITEWORK CONSTRUCTION SHALL NOT COMMENCE UNTIL ALL APPROVALS FROM THE PROVIDENCE WATER SUPPLY BOARD AND THE CITY OF PROVIDENCE HAVE BEEN SECURED. CONTRACTOR SHALL BE RESPONSIBLE FOR PERMITS OBTAINED FOR ALL SITE WORK.
3. THE CONTRACTOR SHALL VERIFY THE PROPOSED LAYOUT WITH ITS RELATIONSHIP TO THE EXISTING SITE SURVEY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, SITE CONDITIONS AND MATERIAL SPECIFICATIONS AND SHALL NOTIFY THE OWNER AND ENGINEER OF ANY ERRORS, OMISSIONS OR DISCREPANCIES BEFORE COMMENCING, INSTALLING OR PROCEEDING WITH WORK.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES AND TO TAKE WHATEVER NECESSARY MEASURES NEEDED TO PROVIDE FOR THEIR PROTECTION. THE ENGINEER HAS DILIGENTLY ATTEMPTED TO LOCATE AND INDICATE ALL EXISTING UNDERGROUND UTILITIES AND FACILITIES ON THE DRAWINGS; HOWEVER, THE INFORMATION SHOWN IS FOR THE CONTRACTORS CONVENIENCE ONLY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS OF UTILITIES SHOWN OR NOT SHOWN. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE ANY EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION, VERIFY ALL DIMENSIONS, SITE CONDITIONS AND MATERIALS. THE CONTRACTOR MUST CONTACT THE LOCAL UTILITY COMPANIES FOR EXACT LOCATION OF UTILITIES PRIOR TO THE START OF ANY CONSTRUCTION AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE START OF ANY WORK. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND REPLACE ANY AND ALL DAMAGE MADE TO UTILITIES BY THE CONTRACTOR.
5. THE CONTRACTOR MUST NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED CONSTRUCTION, EXCAVATION OR BLASTING AT LEAST THREE WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION, EXCAVATION OR BLASTING. ALL WATER, SEWER, GAS AND ALL OTHER UTILITIES MUST BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
6. METHODS AND MATERIALS USED IN THE CONSTRUCTION OF IMPROVEMENTS MUST CONFORM TO THE CITY OF PROVIDENCE CURRENT CONSTRUCTION STANDARDS AND SPECIFICATIONS AND THE STATE OF RHODE ISLAND DEPARTMENT OF TRANSPORTATION. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AS AMENDED, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF, AS IF ATTACHED HERETO.
7. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PAVEMENT, DRIVEWAYS, SIDEWALKS, WALL, CURBS, ETC. DAMAGED DURING CONSTRUCTION WITH MATCHING MATERIALS.
8. THE CONTRACTOR AGREES THAT HE WILL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE PROJECT SITE CONDITIONS THROUGHOUT CONSTRUCTION. INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONJUNCTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
9. ALL MATERIALS USED FOR CONSTRUCTION MUST BE NEW AND FREE OF DEFECTS. USED OR SALVAGED MATERIAL WILL NOT BE ALLOWED UNLESS WRITTEN APPROVAL FROM THE OWNER IS OBTAINED BY THE CONTRACTOR.
10. AT ALL TIMES THE CONTRACTOR MUST MAINTAIN ACCESS FOR EMERGENCY VEHICLES AROUND AND TO ALL BUILDINGS. (I.E. IN TIMES OF RAIN OR SNOW, ROADS MUST ABLE TO CARRY A FIRE TRUCK BY BEING PAVED OR HAVING A CRUSHED STONE BASE, ETC.). WIDTH OF EMERGENCY VEHICLE ACCESS MUST BE A MINIMUM OF 20 FEET WIDE. ACCESS TO BUILDINGS THAT HAVE A FIRE SPRINKLER SYSTEM OR STANDPIPE MUST BE WITHIN 40 FEET OF THE FIRE DEPARTMENT CONNECTION (FDC). NFPA 1141 3-1.
11. NECESSARY BARRICADES, LIGHTS, SIGNS AND OTHER TRAFFIC CONTROL METHODS AS MAY BE NECESSARY FOR THE PROTECTION AND SAFETY OF THE PUBLIC MUST BE PROVIDED AND MAINTAINED THROUGHOUT CONSTRUCTION BY THE CONTRACTOR.
12. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR IS REQUIRED TO DEVELOP AND IMPLEMENT A PLAN FOR THE TEMPORARY CONTROL OF VEHICULAR AND PEDESTRIAN TRAFFIC FOR WORK WITHIN PUBLIC STREET RIGHT-OF-WAY AT THE SITE EGRESS. CONTRACTOR SHALL OBTAIN APPROVAL OF SAID PLAN FROM APPROPRIATE STATE AND COMMUNITY PUBLIC SAFETY OFFICIALS. ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009 INCLUDING ALL REVISIONS.
13. REFER TO ARCHITECTURAL, STRUCTURAL AND MECHANICAL PLANS FOR ALL BUILDING INFORMATION.
14. ALL DISTURBED AREAS NOT SPECIFIED TO BE PAVED OR HARDSCAPED SHALL RECEIVE 4 INCHES OF LOAM AND RESIDENTIAL SEED (TYPE 2).

UTILITY NOTES

1. THE CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND ALL LOCAL AUTHORITIES & UTILITY COMPANIES TO VERIFY LOCATIONS OF UTILITIES WITHIN THE AREA 72 HOURS PRIOR TO BEGINNING ANY EXCAVATION OR DEMOLITION FOR THE PURPOSE OF COORDINATING THE MARKING OF UNDERGROUND UTILITIES. LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY, LOCATE AND PROTECT EXISTING UTILITIES IN THE FIELD WHETHER OR NOT SHOWN ON THE DRAWINGS.
2. ALL WORK SHALL BE IN COMPLETE ACCORDANCE WITH ALL APPLICABLE STATE, FEDERAL AND LOCAL CODES, AND ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE UNLESS PREVIOUSLY OBTAINED BY THE OWNER/DEVELOPER. THE CONTRACTOR SHALL REFER TO THE PROVIDENCE WATER SUPPLY BOARD RULES & REGULATIONS FOR INSTALLATION REQUIREMENTS OF WATER LINES AND APPURTENANCES.
3. THE CONTRACTOR SHALL COORDINATE LOCATION AND INSTALLATION OF ALL UNDERGROUND UTILITIES AND APPURTENANCES TO MINIMIZE DISTURBANCE OF CURBING, PAVING AND COMPACTED SUBGRADE, THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER & ALL LOCAL UTILITY COMPANIES 48 HOURS BEFORE EACH PHASE OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER OF ANY DISCREPANCIES OR ERRORS DISCOVERED IN THE PLANS.
4. BEDDING REQUIREMENTS SPECIFIED HEREIN ARE TO BE CONSIDERED AS MINIMUMS FOR RELATIVELY DRY, STABLE EARTH CONDITIONS. ADDITIONAL BEDDING SHALL BE REQUIRED FOR ROCK TRENCHES AND WET AREA. CONTRACTOR SHALL HAVE THE RESPONSIBILITY TO PROVIDE SUCH ADDITIONAL BEDDING AS MAY BE REQUIRED TO PROPERLY CONSTRUCT THE WORK.
5. THE CONTRACTOR SHALL REMOVE ANY ABANDONED FOUNDATIONS, UTILITY STRUCTURES, BURIED DEBRIS ETC. WHICH INTERFERE WITH THE INSTALLATION OF THE UTILITY WORK. ALL SUCH STRUCTURES SHALL BE COMPLETELY REMOVED AND THE EXCAVATED AREA SHALL BE BACKFILLED WITH COMPACTED GRAVEL IN 6" LIFTS TO 95% COMPACTION TO 6" BELOW THE BOTTOM OF THE UTILITY AND PIPE.
6. COMPACTION OF THE BACKFILL OF ALL TRENCHES SHALL BE COMPACTED TO THE DENSITY OF 95% OF THE THEORETICAL MAXIMUM DRY DENSITY (ASTM D698). BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED IN LIFTS NOT TO EXCEED ONE FOOT IN COMPACTED FILL THICKNESS. CORRECTION OF ANY TRENCH SETTLEMENT WITHIN A YEAR FROM THE DATE OF PROJECT APPROVAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. ALL PIPING LAYOUT INDICATED ON THESE PLANS IS DIAGRAMMATIC ONLY AND DOES NOT SHOW ALL THE REQUIRED FITTINGS FOR PROPER ALIGNMENT. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED FITTINGS TO OBTAIN PROPER ALIGNMENT AND FOR EXISTING UTILITY CONNECTIONS BASED UPON FIELD CONDITIONS.
8. IF DURING EXCAVATION THE TRENCH WIDTH EXCEEDS THE SUM OF THE PIPE O.D. PLUS 2'-0", PLACE AND COMPACT THE FILL TO 12" ABOVE THE PIPE AND RE-EXCAVATE TO REQUIRED GRADE.
9. PROPOSED WATER PIPING SHALL BE CLASS 52 DOUBLE CEMENT LINED DUCTILE IRON PIPE WITH TYTON JOINTS. ALL BENDS, TEES ETC. SHALL BE JOINT RESTRAINED BY THE USE OF CONCRETE THRUST BLOCKS AND "MEG-A-LUG". ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO PROVIDENCE WATER SUPPLY BOARD REGULATIONS, STANDARDS AND SPECIFICATIONS. NOTIFICATION SHALL BE PROVIDED TO SAID AUTHORITIES AT LEAST 72 HOURS PRIOR TO INITIATING CONSTRUCTION.
10. CONTRACTOR SHALL COORDINATE ALL WATER LINE CONSTRUCTION WITH PROVIDENCE WATER SUPPLY BOARD PRIOR TO INSTALLATION.
11. ALL FIRE AND PLUMBING FIXTURES MUST CONFORM TO LOCAL SPECIFICATIONS AND AS STIPULATED BY THE LOCAL FIRE MARSHALL AND/OR THE BUILDING OFFICIAL.

SITE LAYOUT PLAN & NOTES

FOR
ELMWOOD COMMUNITY CENTER
SITUATED AT
155 NIAGARA STREET
PROVIDENCE, RI
PREPARED FOR
STUDIO JAED

NO.	REVISION	BY	DATE

STUDIO JAED

GAROFALO
GAROFALO & ASSOCIATES, INC.
CIVIL & STRUCTURAL ENGINEERS\SURVEYORS
LAND PLANNERS\ENVIRONMENTAL SCIENTISTS
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TEL. 401-273-6000

Garofalo & Associates (C)
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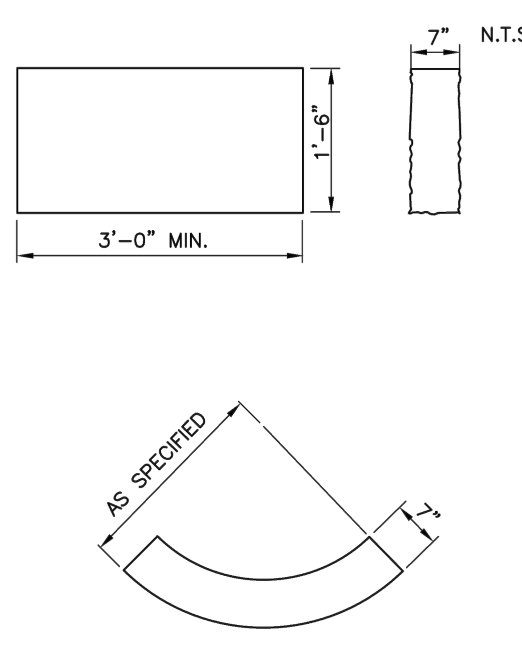
JOB NO. 7286-00	DRAWN BY R.A.S.
DWG. NO. 7286.00-Base.dwg	CHECK BY S.S.H.
SCALE: AS SHOWN	APPROVED S.B.G.
	DATE: FEBRUARY 4, 2021

SHEET
C-1
2 OF 4 SHEETS

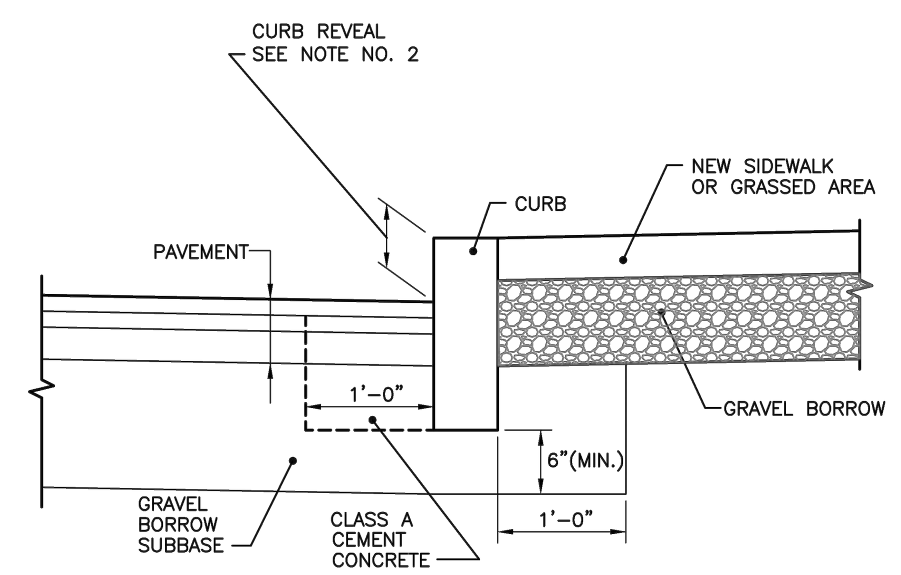
L:\7286-00 Elmwood Community Center (Studio Jaed) - 133 Niagara Street - Providence, RI\dwg\01-Current\7286-00-BASE.dwg 11/24/2020 rstevens 14:37



NOTE:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE RI STANDARD SPECIFICATIONS.
2. TOP SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE SAWCUT OR QUARRY SPLIT.
3. MINIMUM LENGTH OR CIRCULAR PIECES TO BE 3'-0".
4. CIRCULAR CURB IS REQUIRED ON CURVES AS INDICATED. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
5. CURB TO BE SET PER PROVIDENCE CURB SETTING DETAIL.

GRANITE CURB - STRAIGHT AND CIRCULAR
N.T.S.
7.3.0 P PROVIDENCE STANDARD

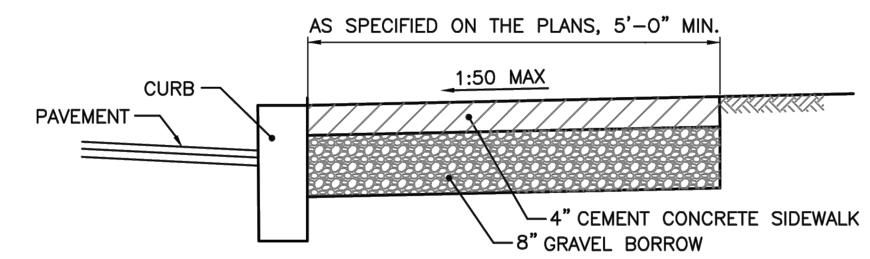
ISSUE DATE: 1/6/17



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. NEW CURBING CONSTRUCTION SHALL BE SET AT A 6 INCH REVEAL OR AS INDICATED ON PLANS OR DIRECTED BY PROVIDENCE DPW. NEW CURBING INSTALLED ADJACENT TO EXISTING CURBING SHALL MATCH THE EXISTING REVEAL OR A MINIMUM OF 4 INCHES, WHICHEVER IS GREATER. IF ADJACENT EXISTING REVEAL IS LESS THAN 4 INCHES, THE FIRST SECTION OF NEW CURB SHALL TRANSITION TO 4" REVEAL,

CURB SETTING DETAIL
N.T.S.
7.6.0 P PROVIDENCE STANDARD

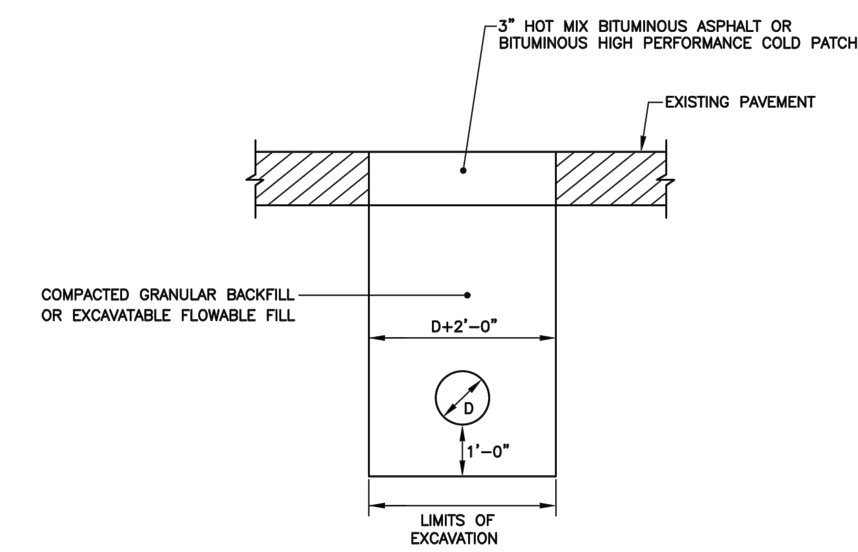
ISSUE DATE: 1/6/17



NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. SEE CURB SETTING DETAIL WHERE APPLICABLE.
3. RUNNING SLOPE OF SIDEWALK SHALL NOT EXCEED 8.3% (1:12). TYPICALLY, RUNNING SLOPE SHALL MATCH ROAD SLOPE.
4. CROSS SLOPE OF SIDEWALK SHALL NOT EXCEED 2% (1:50).
5. SIDEWALK MAY BE SUBJECT TO GRASS STRIP INSTALLATION. CONSULT WITH DPW ENGINEERING
6. GRAVEL BORROW BASE SHALL COMPACT TO ACHEIVE SOIL DENSITY VALUES OF 95% MODIFIED PROCTOR DENSITY (AASHTO T180).
7. SIDEWALK REPAIRS TWENTY FEET OR LONGER ARE SUBJECT TO REQUIREMENTS HEREIN. SIDEWALK REPAIRS SHORTER THAN TWENTY FEET SHALL MAKE EVERY EFFORT TO MEET REQUIRED SLOPES.
8. CONTROLL JOINTS SHALL BE INSTALLED EVERY 5 FEET IN EACH DIRECTION.
9. EXPANSION JOINTS SHALL BE INSTALLED EVERY 20 FEET IN EACH DIRECTION AT FOUNDATIONS AND WALLS AND IN A SQUARE PATTERN AROUND MANHOLE COVERS, HYDRANTS, SIGN POSTS AND UTILITY POLES. THE EXPANSION JOINT SHALL BE THE FULL DEPTH OF THE SIDEWALK AND FILLED WITH AN APPROVED TYPE OF PREMOLDED EXPANSION JOINT FILLER.

CEMENT CONCRETE SIDEWALK
N.T.S.
43.1.0 P PROVIDENCE STANDARD

ISSUE DATE: 1/6/17

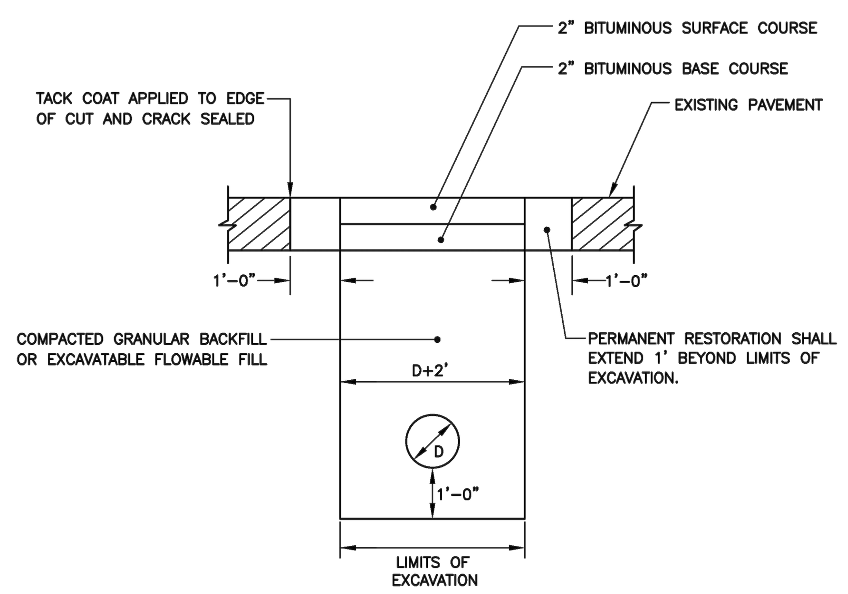


NOTES:
1. BITUMINOUS CONCRETE SHALL ADHERE TO RIDOT STANDARD SPECIFICATIONS, SECTION 401.
2. GRANUAL BASE MATERIAL SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR DENSITY (AASHTO T180), AND SHALL ADHERE TO RIDOT STANDARD SPECIFICATIONS, SECTION 301.
3. EXCAVATABLE FLOWABLE FILL (CONTROLLED DENSITY FILL, CDF) SHALL ADHERE TO RIDOT STANDARD SPECIFICATIONS, SECTION 603.
4. ANY TEMPORARY PATCH INSTALLED PRIOR TO SEPTEMBER 1 IN ANY YEAR SHALL BE REPLACED WITH PERMANENT PATCH NO LATER THAN DECEMBER 1 OF THAT YEAR.

   TEMPORARY PATCHES MADE BETWEEN SEPTEMBER 1 AND MARCH 30 SHALL BE MAINTAINED BY THE PERMITTEE UNTIL A PERMANENT PATCH CAN BE INSTALLED, NO LATER THAN JUNE 15.
5. IF TEMPORARY PATCH IS INSTALLED, PERMITTEE MAY ALLOW NO MORE THAN 45 DAYS FOR SETTLING BEFORE PERMANENT RESTORATION. THE PERMITTEE SHALL BE RESPONSIBLE TO MAINTAIN TEMPORARY ROADWAY RESTORATIONS IN A SAFE CONDITION FOR ALL TYPES OF TRAVEL UNTIL A PERMANENT PAVEMENT REPAIR HAS BEEN MADE. TO ENSURE PROPER MAINTENANCE, THE PERMITTEE SHALL PERFORM PERIODIC INSPECTION OF EACH TEMPORARY PATCH UNTIL IT IS REPLACED WITH A PERMANENT PATCH.

TEMPORARY ROADWAY RESTORATION
N.T.S.
60.1.0 P PROVIDENCE STANDARD

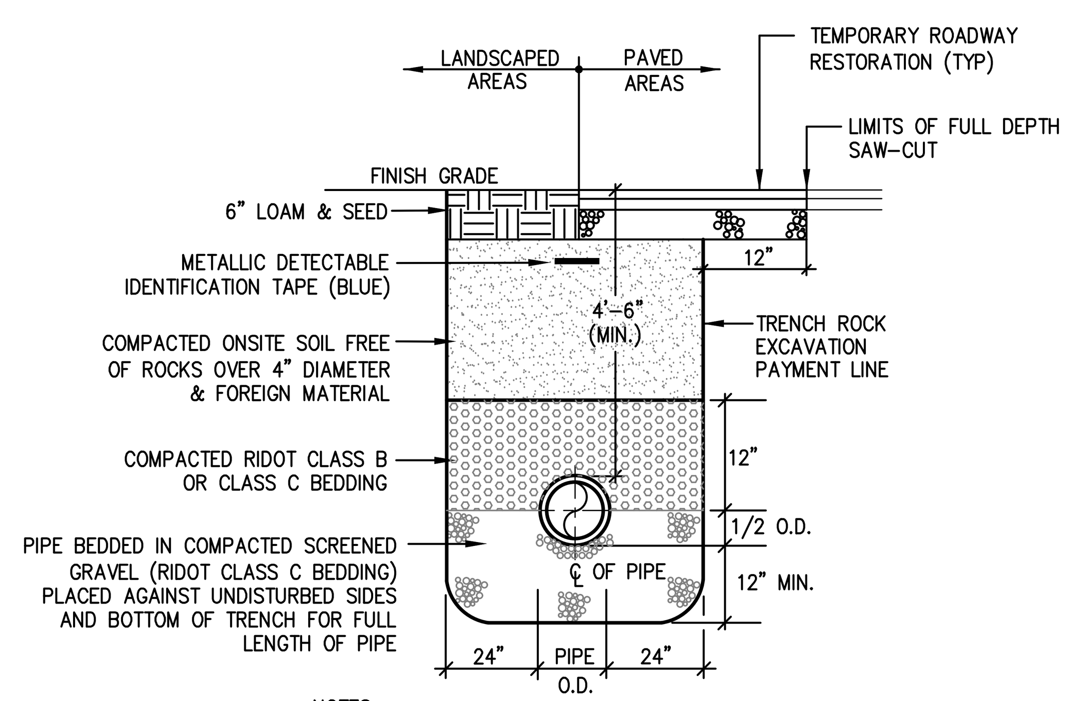
ISSUE DATE: 1/6/17



NOTES:
1. BITUMINOUS CONCRETE SHALL ADHERE TO RIDOT SPECIFICATIONS, SECTION 401.
2. GRANUAL BASE MATERIAL SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR DENSITY (AASHTO T180). GRAVEL BASE COURSE SHALL ADHERE TO RIDOT SPECIFICATIONS, SECTION 301.
3. EXCAVATABLE FLOWABLE FILL (CONTROLLED DENSITY FILL, CDF) SHALL ADHERE TO 95% OF THE MODIFIED PROCTOR DENSITY (AASHTO T180), ADHERING TO RIDOT SPECIFICATIONS, SECTION 603.
4. PRIOR TO PERMANENT RESTORATION, ALL EDGES OF THE EXCAVATED AREA AND ONE FOOT BEYOND SHALL BE SAWCUT TO A CLEAN, SQUARE EDGE.
5. IF EXCAVATION IS ON A PROTECTED STREET, THE REMAINING ROADWAY OUTSIDE THE TRENCH TO THE NEAREST CURB SHALL BE MILLED 1.5 INCHES WITH 1.5 INCH BITUMINOUS CONCRETE SURFACE OVERLAY. THE JOINTS SHALL BE SEALED USING INFRARED TECHNOLOGY.
   THE LENGTH OF THE NEW PAVED AREA MUST BE A MINIMUM OF 10 FEET TO ALLOW FOR PROPER ROLLING.
6. IF EXCAVATION IS ON A NON-PROTECTED STREET, AND THE DISTANCE FROM EDGE OF EXCAVATION TO EDGE OF ROADWAY IS TWO FEET OR LESS, THE REMAINING AREA TO EDGE OF ROADWAY SHALL BE REMOVED AND REPLACED IN CONJUNCTION WITH THE PERMANENT PAVEMENT RESTORATION.

PERMANENT ROADWAY RESTORATION - GRANULAR BASE
N.T.S.
60.2.0 P PROVIDENCE STANDARD

ISSUE DATE: 1/6/17



NOTES:
1. METALIZED 2" WIDE DETECTABLE IDENTIFICATION TAPE SHALL BE INSTALLED OVER WATER LINES 12" BELOW FINISH GRADE.
2. CONTRACTOR SHALL SUBMIT SIEVE ANALYSIS OF ONSITE MATERIAL TO ENGINEER FOR REVIEW IF ONSITE MATERIAL IS TO BE REUSED AS BEDDING.

TRENCH SECTION WATER

N.T.S.

SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES:

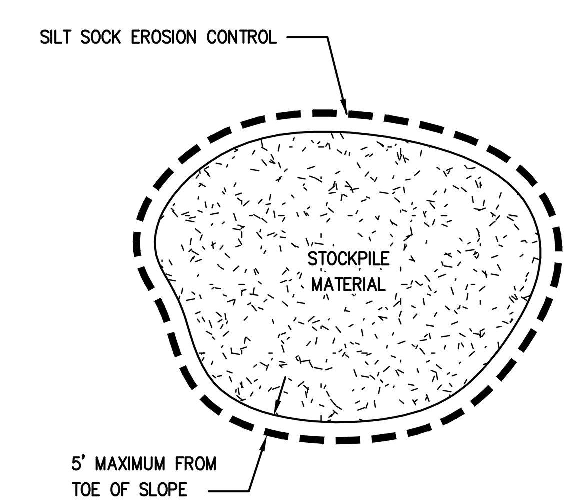
1. SURVEY AND STAKE THE SEDIMENTATION BARRIERS.
2. PLACE SEDIMENTATION BARRIERS (SILT SOCK) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS.
3. PERFORM TRENCHING AND UTILITY INSTALLATION OPERATIONS. TOP SOIL TO BE STRIPPED AND STOCKPILED IN APPROVED AREAS. THE STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIER AND COVERED OR TEMPORARILY SEEDED.
4. COMPLETE PERMANENT STABILIZATION. SWEEP THE ROADWAY/PAVED AREAS TO REMOVE ALL SEDIMENTS.
5. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.

EROSION CONTROL & SOIL STABILIZATION PROGRAM:

1. DENUDED SLOPES SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME.
2. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR EXPOSED PRIOR TO OCTOBER 15, SHALL BE SEEDED OR PROTECTED BY THAT DATE FOR ANY WORK COMPLETED DURING EACH CONSTRUCTION YEAR.
3. TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
4. HAY OR STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 2000 LBS/ACRE.
5. ALL TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
6. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS.
7. THE SEED MIX SHALL BE INOCULATED WITHIN TWENTY FOUR (24) HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
8. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE (1) YEAR, AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE.
9. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
10. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
11. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS OR FLOOD PLAINS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%) AND STOCKPILES SHALL ALSO BE SEEDED AND/OR STABILIZED AND COMPLETELY ENCIRCLED WITH A CONTINUOUS LINE OF SILT SOCK. (SEE DETAIL)

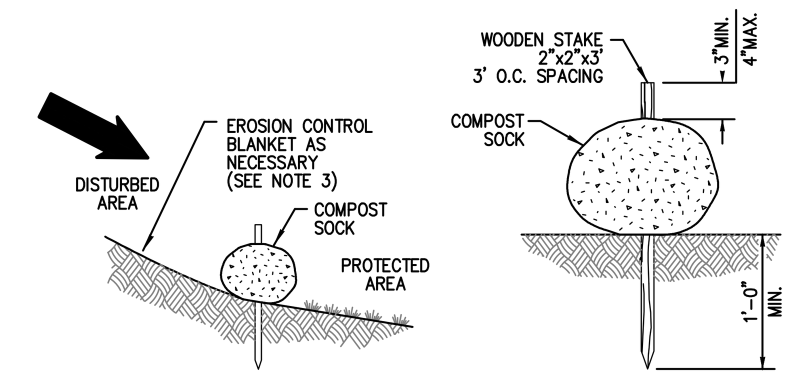
SEDIMENTATION CONTROL PROGRAM:

1. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY SEDIMENTS FROM ENTERING THE CITY HIGHWAY OR ADJOINING PROPERTIES.
2. BANKS OR SLOPES OVER 5% SHALL BE SEEDED AS SOON AS POSSIBLE AND SHALL BE PROTECTED WITH A HAY, STRAW OR FIBER MULCH.
3. DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING STORMS AND PERIODS OF RAINFALL.
4. SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL.
5. CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECTED TO STORM WATER FLOW.
6. ADDITIONAL SILT SOCKS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.



STOCKPILE DETAIL

N.T.S.



NOTES:
1. COMPOST SOCK SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS. COMPOST SOCK SHALL BE A MINIMUM OF 8" IN DIAMETER.
2. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
3. WHEN PLACING COMPOST SOCK ON SLOPES, USE EROSION CONTROL BLANKET IF SPECIFIED ON PLANS.
4. ALWAYS INSTALL COMPOST SOCK PERPENDICULAR TO SLOPE AND ALONG CONTOUR LINES.
5. REMOVE SEDIMENT FROM THE UP SLOPE SIDE OF THE COMPOST SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE COMPOST SOCK.

COMPOST SILT SOCK DETAIL

N.T.S.

CONSTRUCTION DETAILS-1

FOR
ELMWOOD COMMUNITY CENTER
SITUATED AT
155 NIAGARA STREET
PROVIDENCE, RI
PREPARED FOR
STUDIO JAED

NO.	REVISION	BY	DATE

STUDIO JAED

GAROFALO
GAROFALO & ASSOCIATES, INC.
CIVIL & STRUCTURAL ENGINEERS\SURVEYORS
LAND PLANNERS\ENVIRONMENTAL SCIENTISTS

85 CORLISS STREET
P.O. BOX 6145
PROVIDENCE, R.I. 02940
TEL. 401-273-6000

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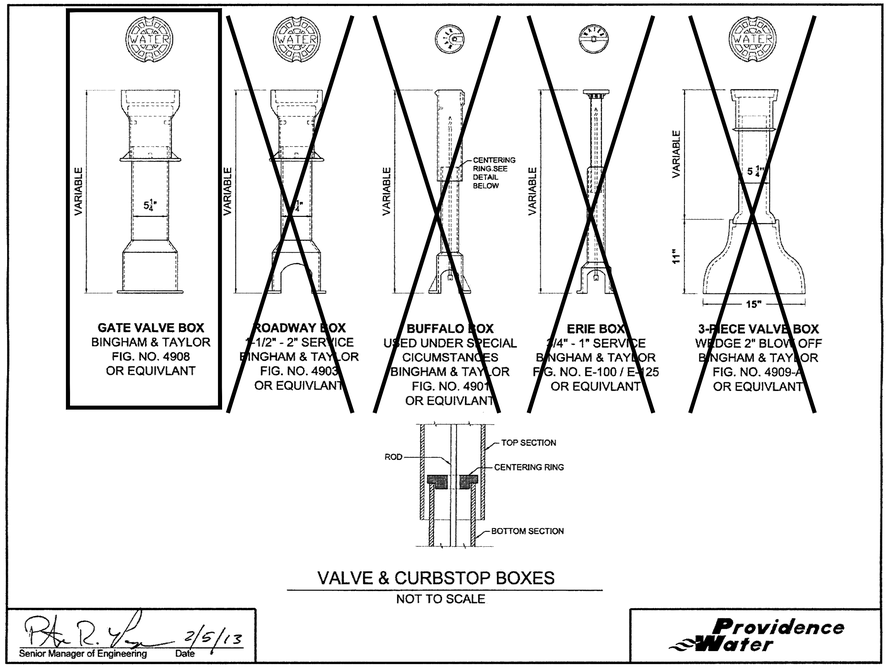
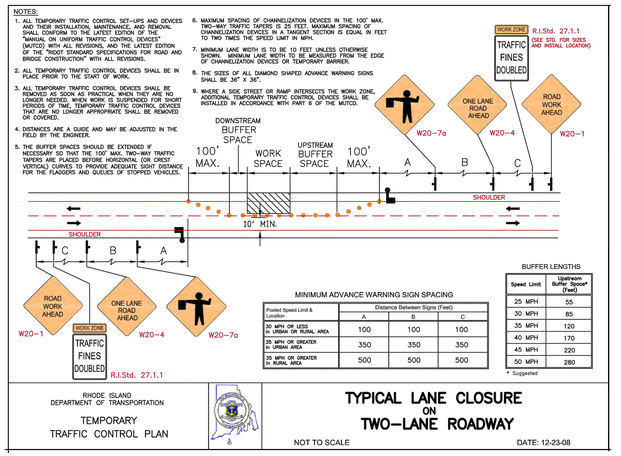
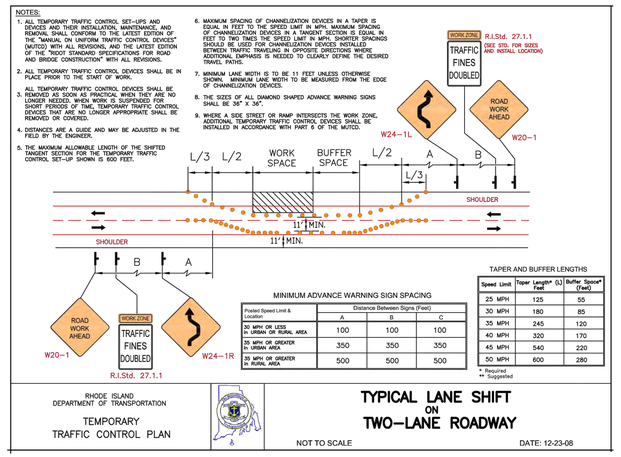
JOB NO. 7286-00	DRAWN BY R.A.S.
DWG. NO. 7286.00-Base.dwg	CHECK BY S.S.H.
SCALE: AS SHOWN	APPROVED S.B.G.
	DATE: FEBRUARY 4, 2021

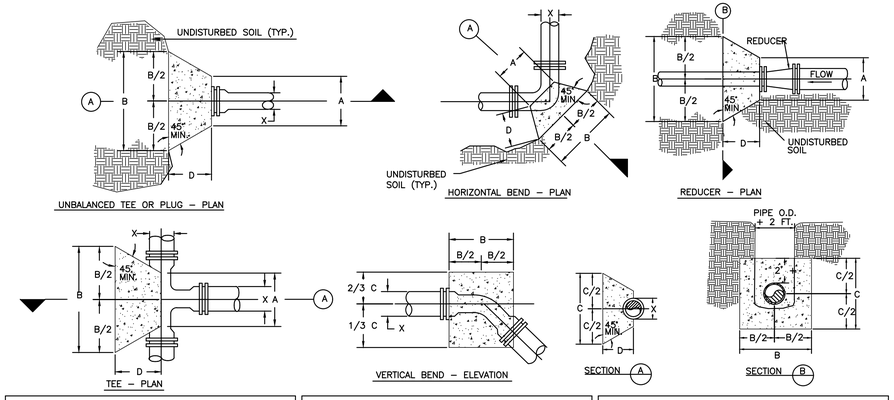
SHEET
C-2
3 OF 4 SHEETS

L:\7286-00 Elmwood Community Center (Studio Jaed) - 133 Niagara Street - Providence, RI\dwg\01-Current\7286-00-BASE.dwg 11/17/2020 rstevens 11:37









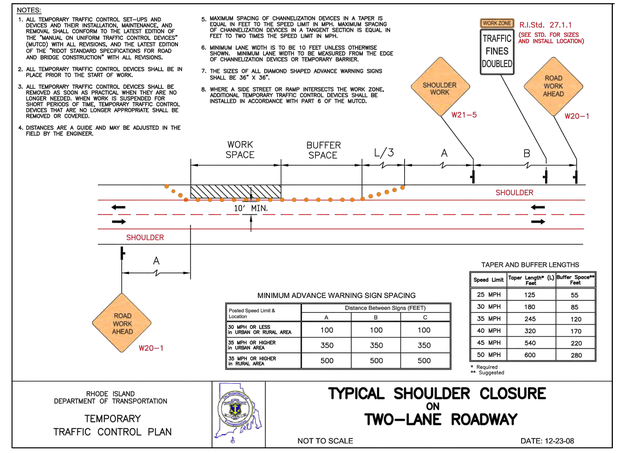
Line Pressure = 150 PSI Soil Pressure = 2000 PSF 90 DEGREE BEND					
Pipe Size	A	B	C	D	VOL. CONC.
6"	0'-10"	1'-11"	1'-11"	1'-6"	4± CF
45 DEGREE BEND					
6"	0'-10"	1'-6"	1'-6"	1'-0"	2± CF

Line Pressure = 150 PSI Soil Pressure = 2000 PSF 22-1/2 DEGREE BEND					
Pipe Size	A	B	C	D	VOL. CONC.
6"	0'-10"	1'-0"	1'-0"	1'-0"	1± CF
11-1/4 DEGREE BEND					
6"	0'-10"	0'-10"	0'-10"	1'-0"	0.7± CF

Line Pressure = 150 PSI Soil Pressure = 2000 PSF TEE & PLUG					
Pipe Size	A	B	C	D	VOL. CONC.
6"	0'-10"	1'-8"	1'-8"	1'-3"	3± CF

NOTES :
1. BLOCKING SHALL BE RIDOT CLASS "B" CONCRETE. "SACRETE" WILL NOT BE ALLOWED.
2. 50lb FELT PAPER TO BE PLACED BETWEEN CONCRETE AND ALL PIPE SURFACES.
3. THE WATER LINE MUST BE LOWERED IN ORDER TO HAVE 4.5 FEET OF COVER AT THE BEND, TEE, REDUCER OR PLUG AT ALL LOCATIONS WHERE THESE FITTINGS ARE UTILIZED.

THRUST BLOCK DETAIL & DIMENSIONS
N.T.S.



CONSTRUCTION DETAILS-2

FOR

ELMWOOD COMMUNITY CENTER

SITUATED AT

155 NIAGARA STREET
PROVIDENCE, RI

PREPARED FOR

STUDIO JAED

NO.	REVISION	BY	DATE

STUDIO JAED

GAROFALO & ASSOCIATES, INC.
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85 CORLISS STREET
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JOB NO. 7286-00
DWG. NO. 7286.00-Base.dwg
SCALE: AS SHOWN

DRAWN BY R.A.S.
CHECK BY S.S.H.
APPROVED S.B.G.
DATE: FEBRUARY 4, 2021

SHEET

C-3

4 OF 4 SHEETS

L:\7286-00 Elmwood Community Center (Studio Jaed) - 133 Niagara Street - Providence, RI\dwg\01-Current\7286-00-BASE.dwg 11/17/2020 rstevens 11:36

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: "THE ELECTRONIC DATA TRANSMITTED ("DATA") MAY BE ALTERED DURING TRANSIT AND TRANSLATION. * JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. * THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. * JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. * THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PRODUCED. * THE RECEIVER SHALL MAKE NO CLAIM NOR INITIATE ANY ACTION IN LAW OR EQUITY AGAINST JAED CORPORATION WITH RESPECT TO ANY DEFECT ERROR OR OMISSION IN THE DATA * THE RECEIVER AGREES TO THE FULLEST EXTENT PERMITTED BY LAW TO DEFEND, INDEMNIFY AND HOLD HARMLESS JAED CORPORATION FROM AND AGAINST ALL CLAIMS, DAMAGES, LIABILITIES AND COSTS (INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

2/3/2021 7:23 PM

PROJECT NOTES

1. ANY LOOSE FURNITURE, FIXTURES AND EQUIPMENT SHALL BE REMOVED BY THE OWNER.
2. CONTRACTOR IS RESPONSIBLE TO REMOVE ALL DISPOSABLE MATERIAL EACH NIGHT DURING CONSTRUCTION.
3. CONTRACTOR SHALL FURNISH AND INSTALL SECURED TEMPORARY PROTECTION DURING DEMOLITION AND CONSTRUCTION, INCLUDING HINGED AND OPERABLE PANELS AS NECESSARY TO PERMIT EGRESS.
4. ONE MAIN EGRESS PATH MUST REMAIN OPEN FOR USE INTO THE BUILDING DURING NORMAL HOURS OF OPERATION.
5. THE CONTRACTOR SHALL INVESTIGATE JOB SITE TO COMPARE CONTRACT DOCUMENTS, EXISTING CONDITIONS, AND VERIFY DIMENSIONS SHOWN ON THESE DWGS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS, AND/OR ANY RESTRICTIONS RELATED TO THE EXECUTION OF WORK, BEFORE COMMENCEMENT OF WORK. COMMENCEMENT OF WORK SHALL CONSTITUTE ACCEPTANCE OF ALL NEW OR EXIST. CONDITIONS.
6. THE CONTRACTOR SHALL COMPLY AND COORDINATE ALL WORK W/ BUILDING OWNER REGARDING HEAT, WATER, ELECTRICITY, DELIVERIES, ACCESS, ELEVATOR AVAILABILITY, NOISE CONTROL, TRASH AND DEBRIS REMOVAL, HOISTING, AND ANY OTHER UTILITIES OR OWNER'S RULES AND REGULATIONS CONCERNING THE PROJECT SITE.
7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND IS RESPONSIBLE FOR ALL PHASES, INCLUDING BIDDING, FABRICATION, COORDINATION, AND CONSTRUCTION. CONTRACTOR IS TO FIELD VERIFY ALL LAYOUTS AND DIMENSIONS PRIOR TO START OF WINDOW REMOVAL. ALL WINDOW STYLES AND PATTERNS ARE TO MATCH EXISTING. CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING ALL EXISTING PATTERNS PRIOR TO DEMOLITION.
8. THE DWGS INDICATE THE GENERAL EXTENT OF WORK. THE DWGS ARE NOT INTENDED TO INDICATE OR DESCRIBE ALL WORK REQUIRED FOR THE FULL PERFORMANCE AND COMPLETION OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. REPETITIVE FEATURES NOT NOTED ON THE DWGS SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
9. DO NOT SCALE DWGS TO OBTAIN DIMENSIONS. DIMENSIONS GOVERN. LARGE SCALE DWGS GOVERN OVER SMALL SCALE DETAILS.
10. PERFORM ALL WORK AND INSTALL MATERIALS IN STRICT ACCORDANCE TO APPLICABLE INDUSTRY AND MANUFACTURER'S PUBLISHED STANDARDS AND SPECIFICATIONS FOR QUALITY OF MATERIALS AND WORKMANSHIP, AS WELL AS REQUIREMENTS IN THESE DWGS AND SPECIFICATION. ANY CONFLICTING REQUIREMENTS OF THE SOURCES LISTED ABOVE SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION PRIOR TO PROCEEDING W/ THE WORK.
11. MANUFACTURERS ARE REFERENCED TO ESTABLISH STYLE, SIZE, COLOR, AND MATERIAL CHARACTERISTICS, AND ARE NOT INTENDED TO LIMIT SELECTIONS FROM OTHER MANUFACTURERS. WHEN AN ALTERNATE SELECTION IS SUBMITTED, SUBMITTALS SHALL HAVE INCLUDED THE MATERIAL LISTED FOR COMPARISON.
12. THE CONTRACTOR SHALL EXAMINE ALL SURFACES TO DETERMINE THAT THEY ARE SOUND, DRY, CLEAN AND READY TO RECEIVE FINISHES PRIOR TO INSTALLATION. START OF INSTALLATION SHALL IMPLY ACCEPTANCE OF SUBSTRATE AND SHALL NOT BE GROUNDS FOR CLAIMS AGAINST IMPROPER PERFORMANCE OF INSTALLED MATERIALS. ADVISE ARCHITECT OF ANY EXIST. CONSTRUCTION NOT LEVEL, SMOOTH, AND PLUMB WITHIN INDUSTRY STANDARDS PRIOR TO START OF CONSTRUCTION.
13. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL NECESSARY COVERINGS, PROTECTIVE ENCLOSURES, TEMPORARY DOORS, PARTITIONS, AND DUST BARRIERS TO PROTECT ALL OCCUPANTS AND EXIST. WORK AND FINISHES TO REMAIN. LOCATION OF SUCH PROTECTION SHALL BE VERIFIED W/ OWNER AND LOCAL CODE OFFICIAL FOR EGRESS CONFORMANCE, PRIOR TO COMMENCING WORK, AND IN COORDINATION W/ PROGRESSION OF WORK SCHEDULE. PERFORM WORK IN A MANNER THAT WILL AVOID HAZARDS TO PERSONS IN ADJACENT AREAS AND THAT WON'T INTERFERE W/ WORK OR PASSAGE TO ANY OF THESE REPAIR AND REPLACE ANY DAMAGES CAUSED BY IMPROPER PROTECTIONS AT NO ADDITIONAL CHARGE TO THE OWNER.
14. WORK DAMAGED DURING CONSTRUCTION OR NOT CONFORMING TO SPECIFIED STANDARDS, TOLERANCES, OR MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION SHALL BE REPLACED, BY THE CONTRACTOR, AT NO ADDITIONAL CHARGE TO THE OWNER.
15. ANY AREA OUTSIDE THE LIMITS OF CONSTRUCTION DISTURBED BY OPERATIONS OF THE CONTRACTOR SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE.
16. ALL CONCRETE WALKS, ASPHALT, CURBS, AND LANDSCAPING DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
17. ALL DISSIMILAR MATERIALS SHALL BE ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION. WHERE TWO DISSIMILAR METALS MEET, PAINT FACE OF ONE W/ BITUMINOUS PROVIDE SEALANT BETWEEN DISSIMILAR MATERIALS, SUCH AS GYPSUM BOARD AND MASONRY, MASONRY AND CONCRETE, COUNTERTOPS AND WALLS, ETC.
18. ALL PENETRATIONS THROUGH MASONRY SURFACES, INCLUDING BUT NOT LIMITED TO WINDOWS, DOORS, LOUVERS, VENTS, EXHAUST FANS, PIPE PENETRATIONS, CONDUIT, DUCTWORK, GRILLES, REGISTERS, DEVICE BOXES, HANGER RODS, ETC. SHALL HAVE THEIR COMMON JOINTS W/ MASONRY CAULKED. ALL PENETRATIONS SHALL BE SEALED AROUND THE ENTIRE PERIMETER W/ SEALANT (BOTH ON EXTERIOR AND INTERIOR SIDES).
19. IN ALL INSTANCES WHERE WORK IS BEING CORRECTED OR REPAIRED, CONTRACTOR IS TO REPAINT ENTIRE WALL TO NEAREST CORNER OR BREAKLINE WHERE WALL CHANGES DIRECTION.
20. UPON COMPLETION OF THE DEMOLITION WORK, ALL AREAS SHALL BE LEFT BROOM CLEAN TO THE SATISFACTION OF THE OWNER. CONTRACTOR SHALL REMOVE ANY STRAY PAINT, DIRT, OR STAINS INCURRED DURING THE CONSTRUCTION PROCESS. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TEMPORARY EQUIPMENT COVERINGS USED DURING CONSTRUCTION, AND SHALL ALSO BE RESPONSIBLE FOR REMOVING THEIR TRASH OFF OF THE JOB SITE DAILY.
21. CONTRACTOR TO VERIFY MOUNTING HEIGHTS OF ACCESSORIES, EQUIPMENT, DOOR HARDWARE, ETC. WHERE MOUNTING HEIGHTS ARE NOT INDICATED, MOUNT ITEMS IN ACCORDANCE W/ RECOGNIZED INDUSTRY STANDARDS, COORDINATE LOCATIONS W/ MANUFACTURER OR SUPPLIER, AND REFER MOUNTING HEIGHT QUESTIONS TO ARCHITECT FOR INTERPRETATION.
22. ALL AREAS AND PARTITIONS NOT DASHED OR NOTED TO BE REMOVED SHALL REMAIN INTACT. PATCH AND REPAIR EXISTING ADJACENT PARTITIONS AND FINISHES AS REQUIRED AFTER DEMOLITION TO MATCH EXISTING OR IN ACCORDANCE WITH PROPOSED RENOVATIONS.
23. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR OTHER SUPPORT TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF ELEMENTS TO BE DEMOLISHED AND ADJACENT ELEMENTS TO REMAIN.
24. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, NOTIFY OWNER IMMEDIATELY COMPLY W/ APPLICABLE REGULATIONS, LAWS, AND ORDINANCES CONCERNING REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION. BURNING OF REMOVED MATERIALS IS NOT PERMITTED ON THE PROJECT SITE.

ABBREVIATIONS

&	AND
L	ANGLE
@	AT
℄	CENTERLINE
Ø	DIAMETER OR ROUND
d	PENNEY
⊥	PERPENDICULAR
PL	PLATE
#	POUND OR NUMBER
A.B.	ANCHOR BOLT
A.C.	ASPHALTIC CONCRETE
A/C	AIR CONDITION
ACOUS.	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ACCESS.	ACCESSORIES
ADJ.	ADJACENT
AFF	ABOVE FINISHED FLOOR
AGGR.	AGGREGATE
ALT.	ALTERNATE
ALUM.	ALUMINUM
ANDD.	ANODIZED
APPROX.	APPROXIMATE
ARCH.	ARCHITECTURAL
AWS	AMERICAN WELDING SOCIETY
B.B	BOTTOM OF BEAM
BD	BOARD
BITUM.	BITUMINOUS
B.J.	BOTTOM OF JOIST
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BM.	BEAM
BTM.	BOTTOM
CAB.	CABINET
CATV	CABLE TELEVISION
CK-B	CHALK BOARD
C.B.	CATCH BASIN
CEM.	CEMENT
CER.	CERAMIC
CHAM.	CHAMFER
CFMF	COLD FORM METAL FRAMING
C.I.	CAST IRON
C.J.	CONTROL JOINT
C.L.	CENTER LINE
CLG.	CEILING
CLKG.	CAULKING
CLO.	CLOSET
CLR.	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR.	COUNTER
C.O.	CLEAN OUT
COL.	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONSTR.	CONSTRUCTION
CONT.	CONTINUOUS
CORR.	CORRIDOR/CORRUGATED
COORD.	COORDINATE
CPT.	CARPET
C.T.	CERAMIC TILE
CPU	CENTRAL PROCESSING UNIT
C.R.	CLASSROOM
CRT	CATHODE RAY TUBE
CTR.	CENTER
CTSK.	COUNTERSUNK
CU	CUBIC
C.W.	COLD WATER
D.	DEPTH
DBL.	DOUBLE
D.D.	DOOR DIMENSION
DEPT.	DEPARTMENT
DET.	DETAIL
D.F.	DOUGLAS FIR
DIA.	DIAMETER
DIAG.	DIAGONAL
DIM.	DIMENSION
DISP.	DISPENSER
DMT.	DEMOUNTABLE
DN.	DOWN
D.O.	DOOR OPENING
DR.	DOOR
DS.	DOWN SPOUT
D.S.P.	DRY STANDPIPE
D.W.	DISH WASHER
DWG.	DRAWING
DWR.	DRAWER
E.	EAST
ETR	EXISTING TO REMAIN
EA.	EACH
E.F.	EXHAUST FAN
E.J.	EXPANSION JOINT
ELEC.	ELECTRICAL
ELEV.	ELEVATION
ELVR.	ELEVATOR
EMER.	EMERGENCY
ENCL.	ENCLOSURE
EQ.	EQUAL
EQUIP.	EQUIPMENT
E.W.	EACH WAY
EXIST.	EXISTING
EXPO.	EXPOSED
EXP.	EXPANSION
EXT.	EXTERIOR
(F)	FUTURE
F.B.O	FURNISHED BY OTHERS
F.D.	FLOOR DRAIN
FDN.	FOUNDATION
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXISTING CAB.
FG	FIBERGLASS
F.H.	FIRE HYDRANT
F.H.C.	FIRE HOSE CAB.
FIN.	FINISH
F.L.	FLOW LINE
FLR.	FLOOR
FLASH.	FLASHING
FLUOR.	FLUORESCENT
F.O.C.	FACE OF CONCRETE
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUDS
FPL	FIREPLACE
FPRF.	FIREPROOF
F.S.	FAR SIDE
FRMG.	FRAMING
FT.	FOOT OR FEET
FTG.	FOOTING
FURR.	FURRING
F.W.S.	FINISHED WALL SURFACE
FRP	FIBERGLASS REINFORCED PLASTIC PANEL
GA.	GAUGE
GALV.	GALVANIZED
G.B.	GRAB BAR
G.D.	GARBAGE DISPOSAL
GL.	GLASS
GLB.	GLU-LAM BEAM
GND.	GROUND
GR.	GRADE
GYP.	GYPSUM
H.	HIGH
H.B.	HOSE BIBB
HDCP	HANDICAPPED
H.C.	HOLLOW CORE
H.D.	HOLD-DOWN
HDG	HOT DIPPED GALVANIZED
HDR.	HEADER
HDWD.	HARDWOOD
HDWR.	HARDWARE
H.I.D.	HIGH INTENSITY DISCHARGE
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
H.P.	HIGH POINT
HR	HOUR
H.R.	HANDRAIL
HT.	HEIGHT
H.W.	HOT WATER
I.D.	INSIDE DIAMETER
I.G.U.	INSULATED GLASS UNIT
INCAN.	INCANDESCENT
INCL.	INCLUDE
INSUL.	INSULATION
INT.	INTERIOR
JAN.	JANITOR
JST.	JOIST
JT.	JOINT
KIT.	KITCHEN
L.	LONG OR LENGTH
LAB.	LABORATORY
LAM	LAMINATE
LAV	LAVATORY
L.B.	LAG BOLT
LIN.	LINEAR
L.O.C.	LIMITS OF CONTRACT
LOC.	LOCATION
L.P.	LOW POINT
LT.	LIGHT
MAS.	MASONRY
MAX	MAXIMUM
M.B.	MACHINE BOLT
M.C.	MECHANICAL CONTRACTOR
MECH.	MECHANICAL
MEMB.	MEMBRANE
MFG.	MANUFACTURED
MFR.	MANUFACTURER
MH.	MANHOLE
MIN.	MINIMUM
MIR.	MIRROR
MISC.	MISCELLANEOUS
MK-B	MARKER BOARD
M.O.	MASONRY OPENING
MOD.	MODULAR
M.R.	MOISTURE RESISTANT
MTD.	MOUNTED
MTL	METAL
MULL.	MULLION
N.	NORTH
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
NO. OR #	NUMBER
NOM.	NOMINAL
N.R.C.	NOISE REDUCTION COEFFIC.
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
O/	OVER
O.A.	OVER-ALL
OBS.	OBSCURE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OFF.	OFFICE
O.H.	OVERHEAD
OPNG.	OPENING
OPP.	OPPOSITE
OPP. HND.	OPPOSITE HAND
O.T.S.	OPEN TO STRUCTURE
PART.	PARTITION
P.C.	PORTLAND CEMENT
PED.	PEDESTAL
PERP.	PERPENDICULAR
P.H.	PANIC HARDWARE
P.L.	PROPERTY LINE
PL.	PLATE
P/LAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PLMBG.	PLUMBING
P.P.	POWER POLE
PR.	PAIR
PROP.	PROPOSED
PRCST.	PRECAST
PRT. BRD.	PARTICLE BOARD
PT.	POINT
P.T.	PRESSURE TREATED
P.T.D.	PAPER TOWEL DISP.
P.T.D./R	COMBINATION PAPER TOWEL DISPENSER AND RECEPTACLE
P.T.R.	PAPER TOWEL RECEPTACLE
PVC	POLYVINYL CHLORIDE
P.W.	PLYWOOD
PWR.	POWER
Q.T.	QUARRY TILE
R.	RISER
R.A.	ROOF AREA
R.A.C.	RUN ABOVE CEILING
R.B.F.	RUN BELOW FLOOR
RAD.	RADIUS
R.D.	ROOF DRAIN
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCED
REQ'D	REQUIRED
RESIL.	RESILIENT
R.I.W.	RUN IN WALL
RM.	ROOM
R.O.	ROUGH OPENING
RO.S.	ROUGH SAWN
R.O.W.	RIGHT OF WAY
R.S.	RESAWN
R.W.	REDWOOD
S.	SOUTH
SACT.	SUSPENDED ACOUSTICAL CEILING TILE
S.C.	SOLID CORE
S.C.D.	SEAT COVER DISP.
SCHED.	SCHEDULE
SD.	STORM DRAIN
S.D.	SOAP DISPENSER
SECT.	SECTION
SGFT	STRUCTURALLY GLAZED FINISH TILE
SH.	SHELF
SHR.	SHOWER
SHT.	SHEET
SHTG.	SHEATHING
SIM.	SIMILAR
S.N.D.	SANITARY NAPKIN DISPENSER
S.N.R.	SANITARY NAPKIN RECEPTACLE
S & P	SHELF & POLE
SPEC.	SPECIFICATION
S.P.G.	SINGLE PANE GLASS
SQ.	SQUARE
SST.	STAINLESS STEEL
S.SK.	SERVICE SINK
STA.	STATION
STD.	STANDARD
STL.	STEEL
STOR.	STORAGE
STRL.	STRUCTURAL
SUSP.	SUSPENDED
SYM.	SYMMETRICAL
S.W.	SIDEWALK
T.B.	TOP OF BEAM
T/B	TOWEL BAR
T. & B.	TOP AND BOTTOM
T.C.	TOP OF CURB
TEL.	TELEPHONE
TEMP.	TEMPERED
TER.	TERRAZZO
T & G	TONGUE & GROOVE
THK.	THICK
T.J.	TOOL JOINT
TK-B	TACK BOARD
TK-S	TACK STRIP
T.L.	TOP OF LEDGER
T.O.F.	TOP OF FOOTING
T.O.S.	TOP OF STEEL
T.P.	TOP OF PAVEMENT
T.P.D.	TOILET PAPER DISP
TRD.	TREAD
T.S.	TOP OF SHEATHING
TSL	TOP OF SLAB
TST	TOP OF STEEL
T.V.	TELEVISION
T.W.	TOP OF WALL
TYP	TYPICAL
U.G.	UNDERGROUND
UNF.	UNFINISHED
U.N.O.	UNLESS NOTED OTHERWISE
UR.	URINAL
VCT	VINYL COMPOSITION TILE
VB	VAPOR BARRIER
VERT.	VERTICAL
VEST.	VESTIBULE
V.F.	VINYL FABRIC
V.G.	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VNR	VENEER
W.	WEST, WIDTH, WIDE
W/	WITH
W.C.	WATER CLOSET
WCV	WALL COVERING
WD	WOOD
WG.	WIRE GLASS
W.H.	WATER HEATER
W/O	WITHOUT
WP.	WATERPROOF
WSCT.	WAINSCOT
WT.	WEIGHT
WWF	WELDED WIRE FABRIC
Y.D.	YARD DRAIN
YD.	YARD

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DATE OF SIGNATURE: ______
DATE OF REGISTRATION EXPIRATION: ______

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

PROJECT & ARCHITECTURAL NOTES AND ABBREVIATIONS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-000

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DEMOLITION KEY NOTES

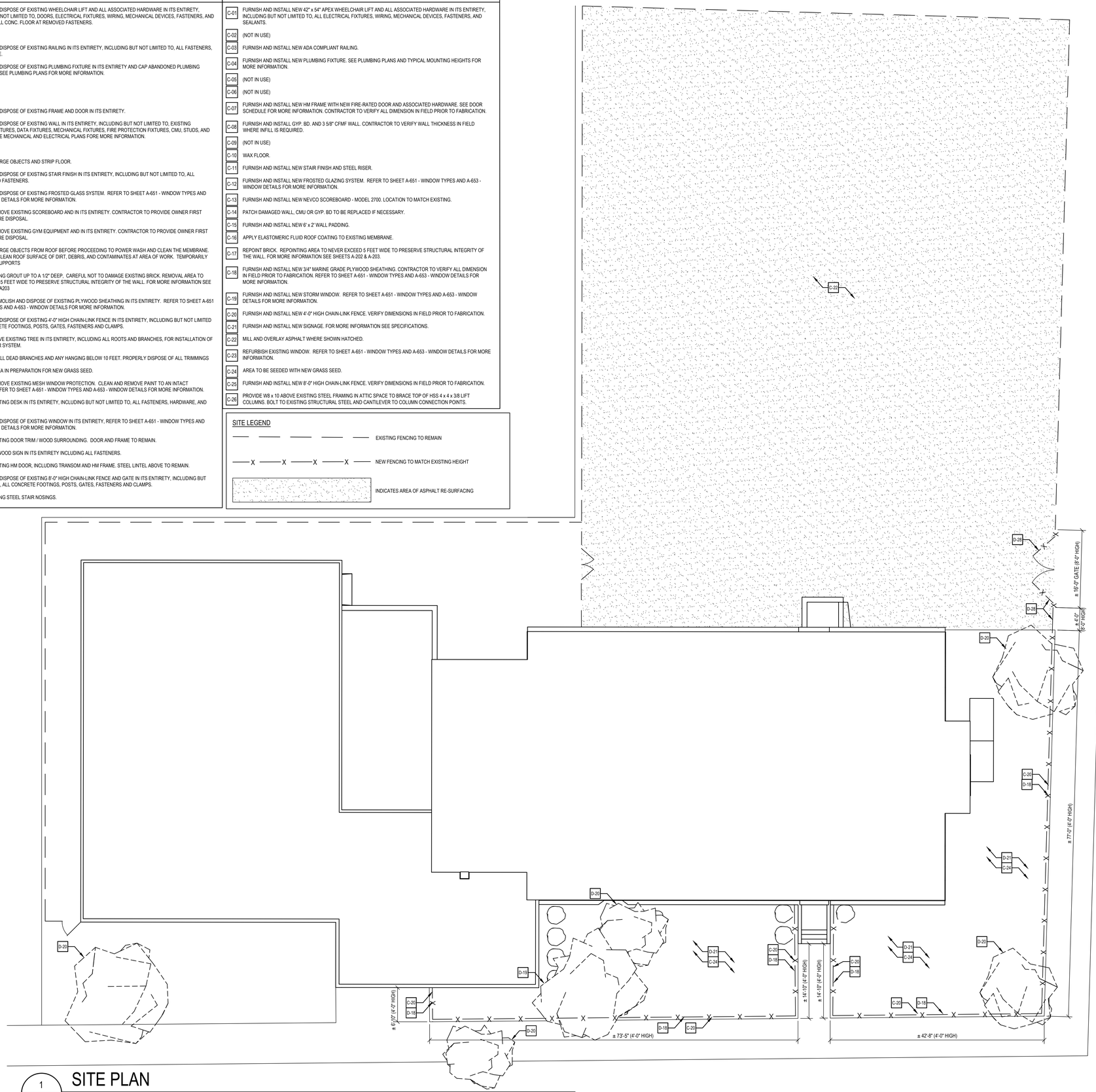
D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP. CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

SITE LEGEND

- EXISTING FENCING TO REMAIN
- NEW FENCING TO MATCH EXISTING HEIGHT
- INDICATES AREA OF ASPHALT RE-SURFACING



1 / A-001

SITE PLAN

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

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DATE OF SIGNATURE: _____
DATE OF REGISTRATION EXPIRATION: _____
ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

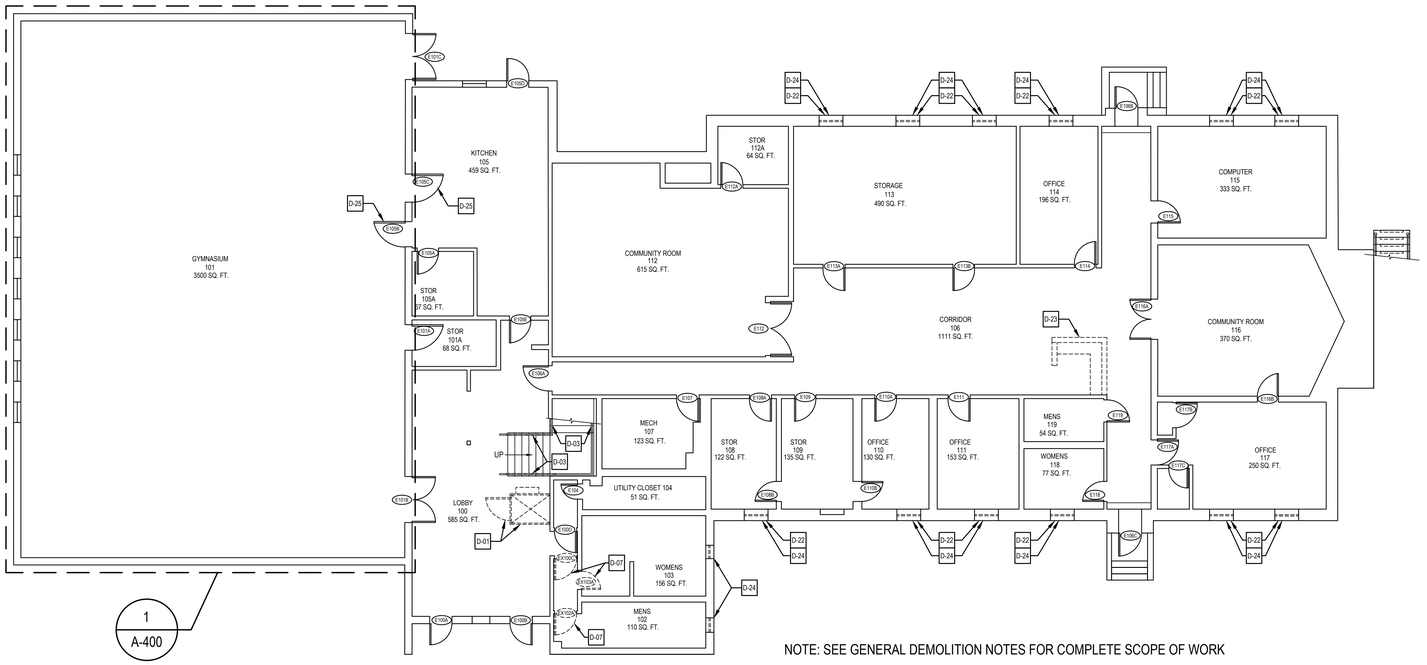
ARCH. SITE PLAN
DEMO. AND NEW

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-001



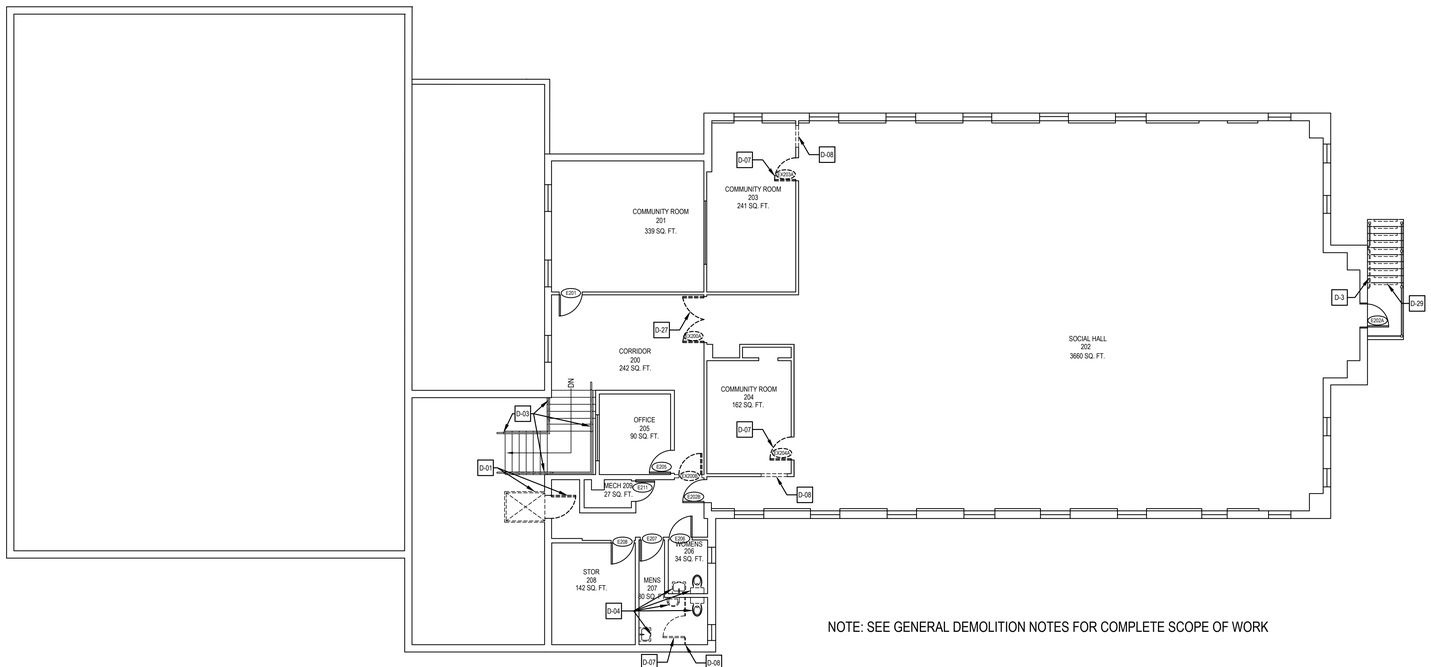
1 / A-400

NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

1 FIRST FLOOR DEMOLITION PLAN

1 / AD100

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



NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

2 SECOND FLOOR DEMOLITION PLAN

2 / AD100

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

DEMOLITION KEY NOTES

- D-01 DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
- D-02 (NOT IN USE)
- D-03 DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
- D-04 DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
- D-05 (NOT IN USE)
- D-06 (NOT IN USE)
- D-07 DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
- D-08 DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
- D-09 (NOT IN USE)
- D-10 REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
- D-11 DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
- D-12 DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- D-13 WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
- D-14 WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
- D-15 REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
- D-16 REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
- D-17 WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- D-18 DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
- D-19 CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
- D-20 TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
- D-21 DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
- D-22 WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- D-23 DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
- D-24 DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- D-25 DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
- D-26 DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
- D-27 DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
- D-28 DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
- D-29 REMOVE EXISTING STEEL STAIR NOSINGS.

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

SYMBOL LEGEND

- W01 GENERAL NOTE
- ETR EXISTING TO REMAIN
- C-02 KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
- DR01 INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
- A INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
- INDICATES EXISTING TO REMAIN
- INDICATES EXISTING TO BE DEMOLISHED
- INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION

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SIGNATURE: _____
DATE OF SIGNATURE: _____
DATE OF REGISTRATION EXPIRATION: _____

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

FIRST & SECOND FLOOR DEMOLITION PLANS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

AD100

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: - "THE ELECTRONIC DATA TRANSMITTED STARTS WITH 1 BE ALTERED DURING TRANSIT AND TRANSLATION. - JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. • THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. - JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS ORIGINALLY PREPARED BY JAED CORPORATION. • THE RECEIVER AGREES TO INDEMNIFY JAED CORPORATION AND ITS OFFICERS, DIRECTORS, AND EMPLOYEES FROM ANY AND ALL CLAIMS, DAMAGES, AND EXPENSES INCLUDING ATTORNEY'S FEES ARISING OUT OF ANY REUSE OF THE DATA OR PLANS BY THE RECEIVER OR PERSONS UNDER THE RECEIVER'S CONTROL. •

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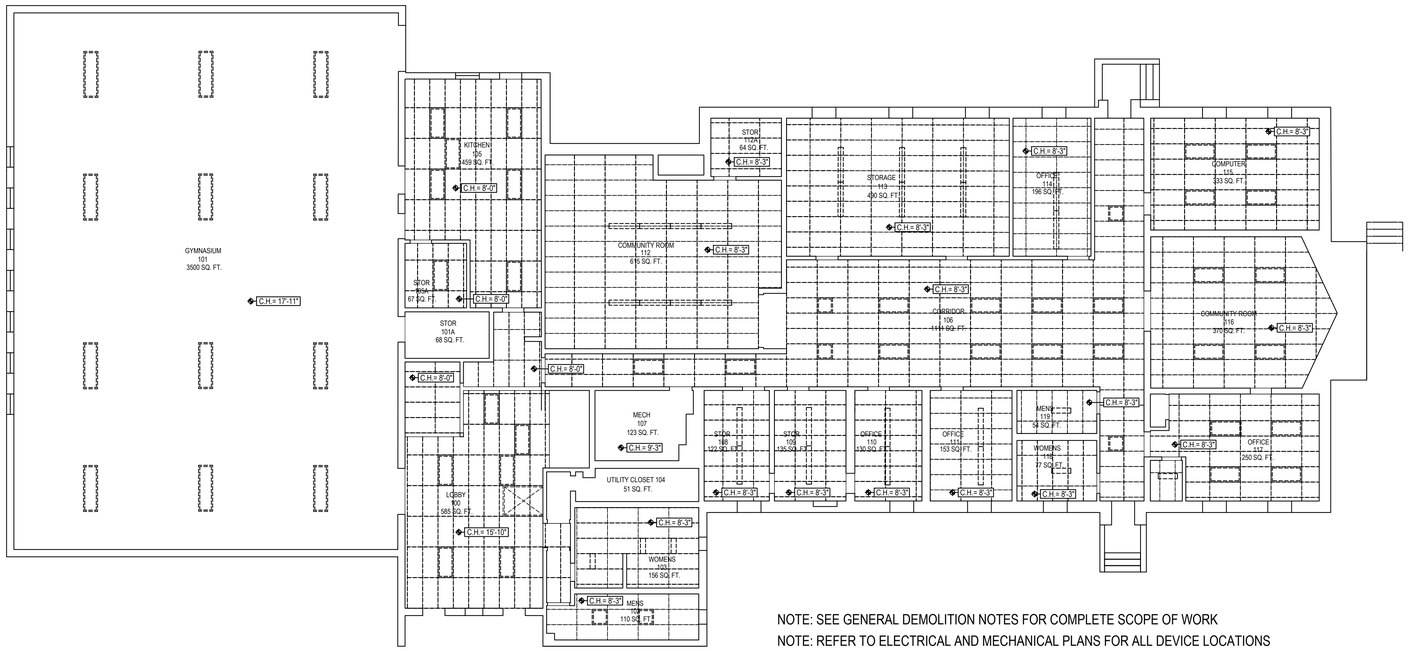


NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

NOTE: REFER TO ELECTRICAL AND MECHANICAL PLANS FOR ALL DEVICE LOCATIONS

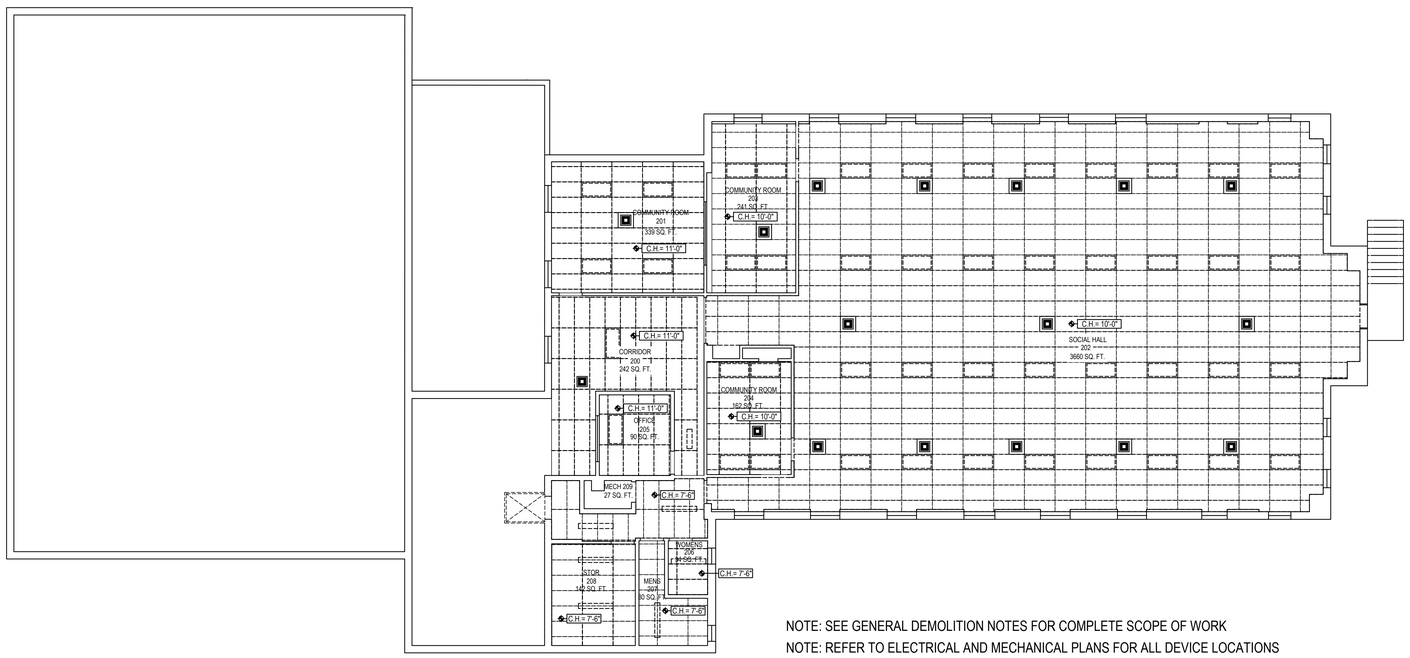
1 / AD101

FIRST FLOOR REFLECTED CEILING DEMOLITION PLAN

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

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP. CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.



NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

NOTE: REFER TO ELECTRICAL AND MECHANICAL PLANS FOR ALL DEVICE LOCATIONS

2 / AD101

SECOND FLOOR CEILING DEMOLITION PLAN

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

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

SYMBOL LEGEND

- (X01) — GENERAL NOTE
- ETR — EXISTING TO REMAIN
- C-02 — KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
- DR01 — INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
- A — INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
- INDICATES EXISTING TO REMAIN
- INDICATES EXISTING TO BE DEMOLISHED
- INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION

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CITY OF PROVIDENCE
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SHEET TITLE

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CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

AD101

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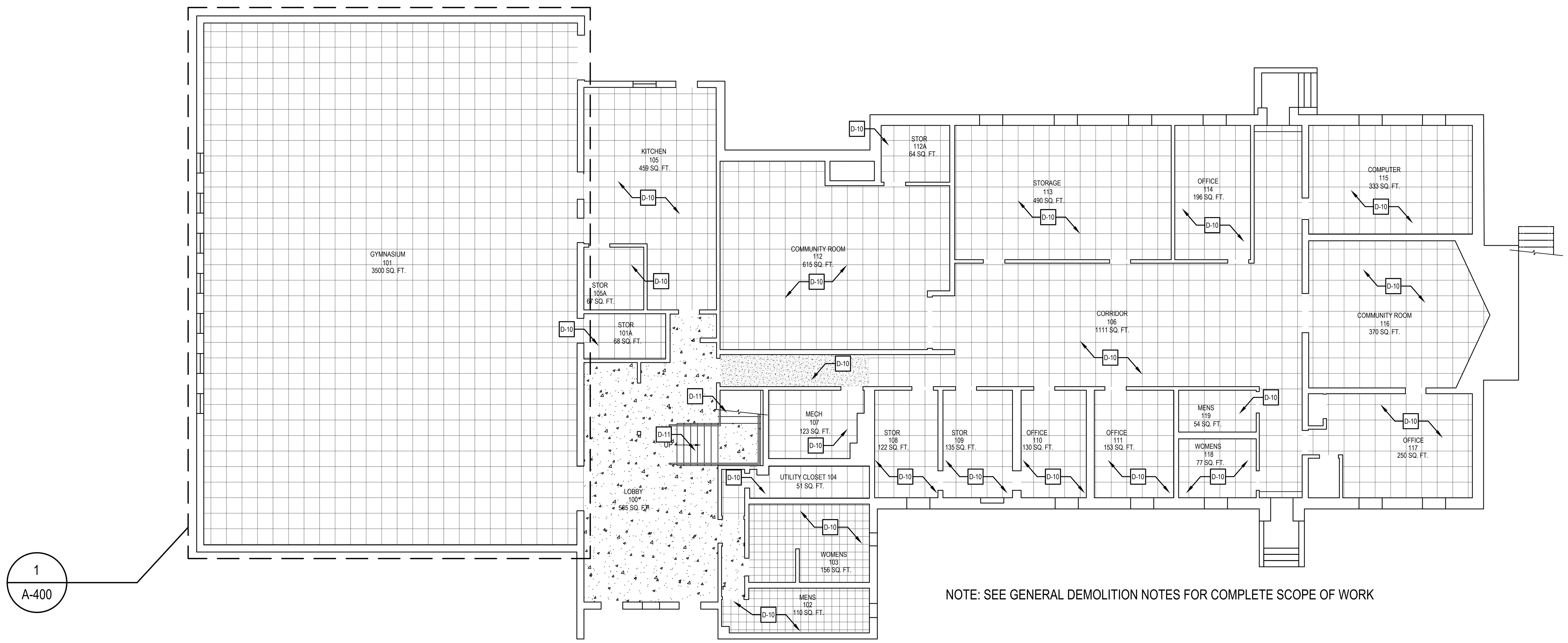
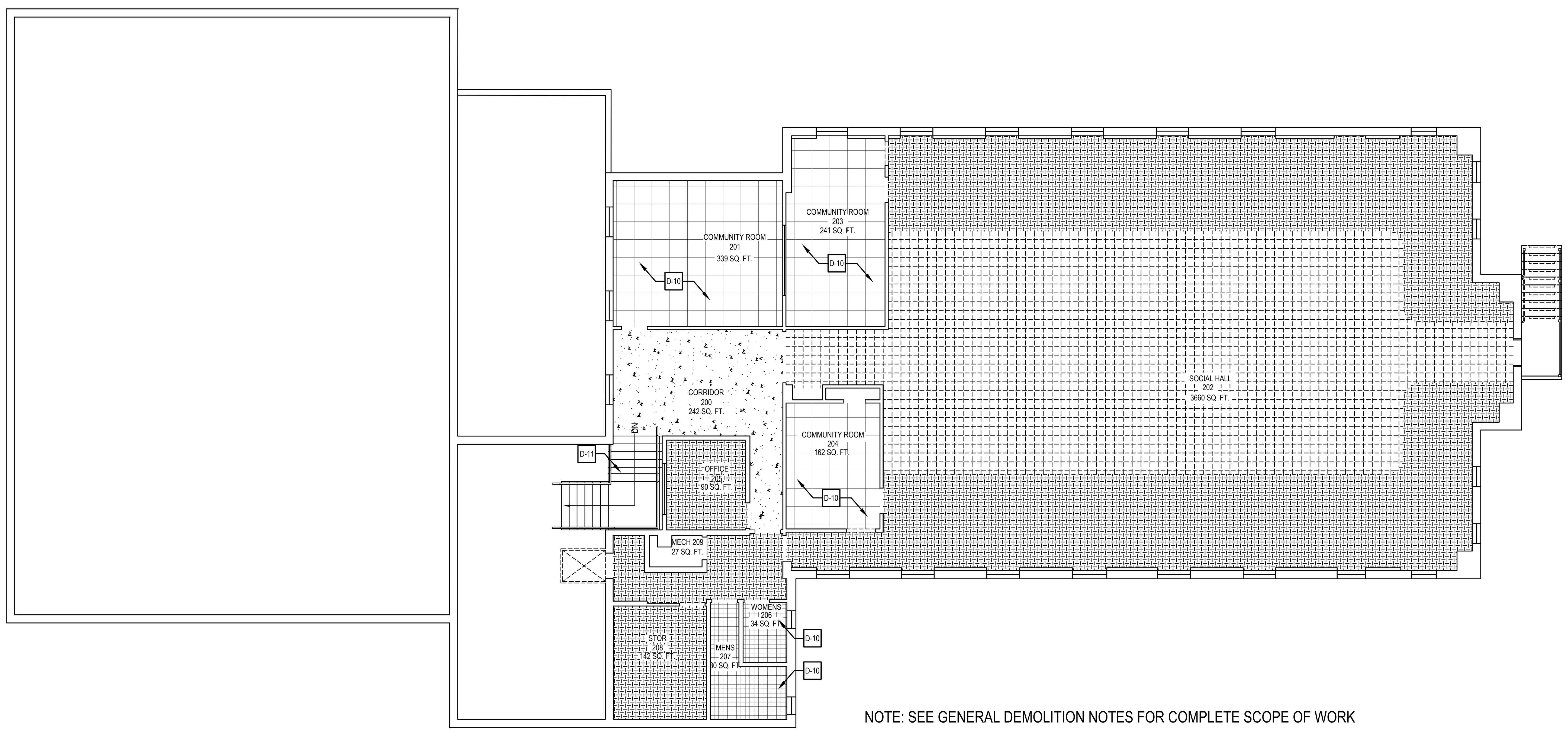


NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

1 / AD102 — FIRST FLOOR FINISH DEMOLITION PLAN

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



NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

2 / AD102 — SECOND FLOOR FINISH DEMOLITION PLAN

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

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

SYMBOL LEGEND

Symbol	Description
001	GENERAL NOTE
ETR	EXISTING TO REMAIN
C-02	KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
DR01	INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
A	INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
	INDICATES EXISTING TO REMAIN
	INDICATES EXISTING TO BE DEMOLISHED
	INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION

FINISH LEGEND

- EXISTING VCT FLOOR TO REMAIN
- DEMOLISH EXISTING VCT FLOOR
- EXISTING RUBBER FLOOR TO REMAIN
- DEMOLISH EXISTING RUBBER FLOOR
- EXISTING TILE FLOOR TO REMAIN
- DEMOLISH EXISTING CARPET FLOOR
- EXISTING CARPET FLOOR TO REMAIN

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REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

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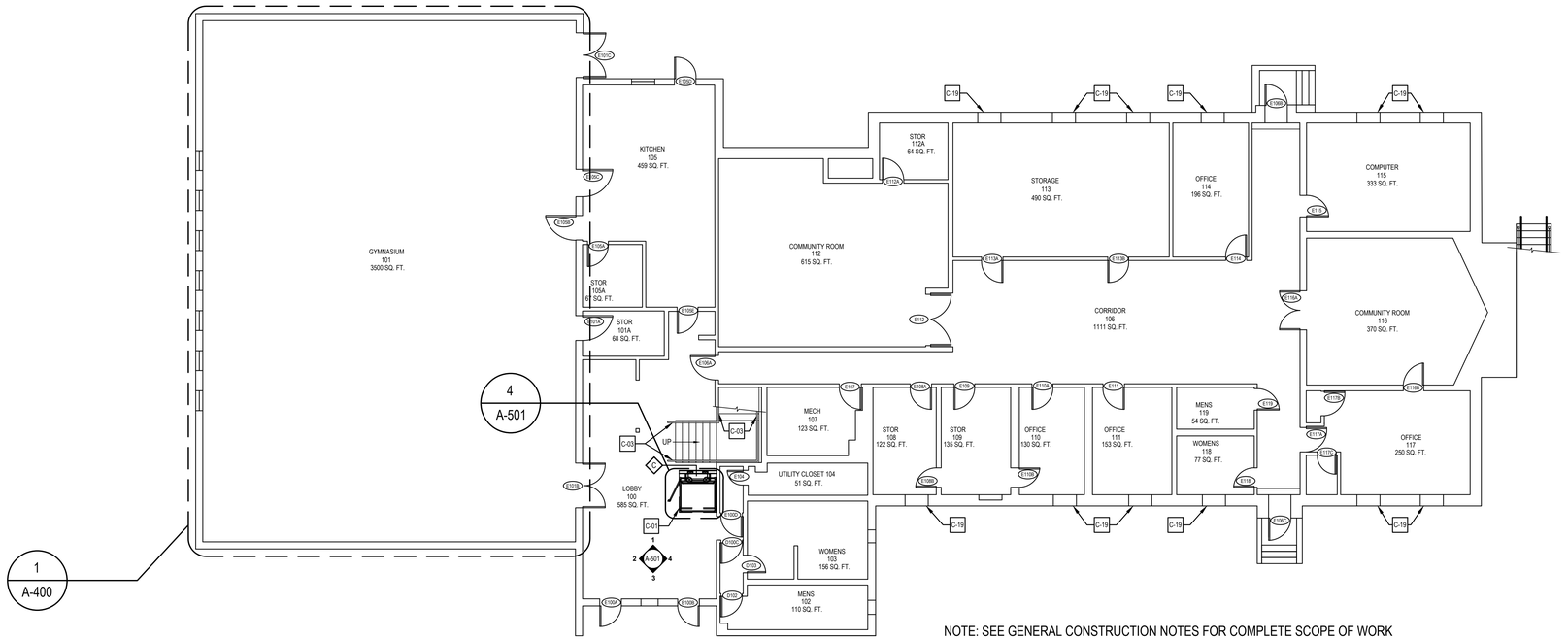
CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

AD102

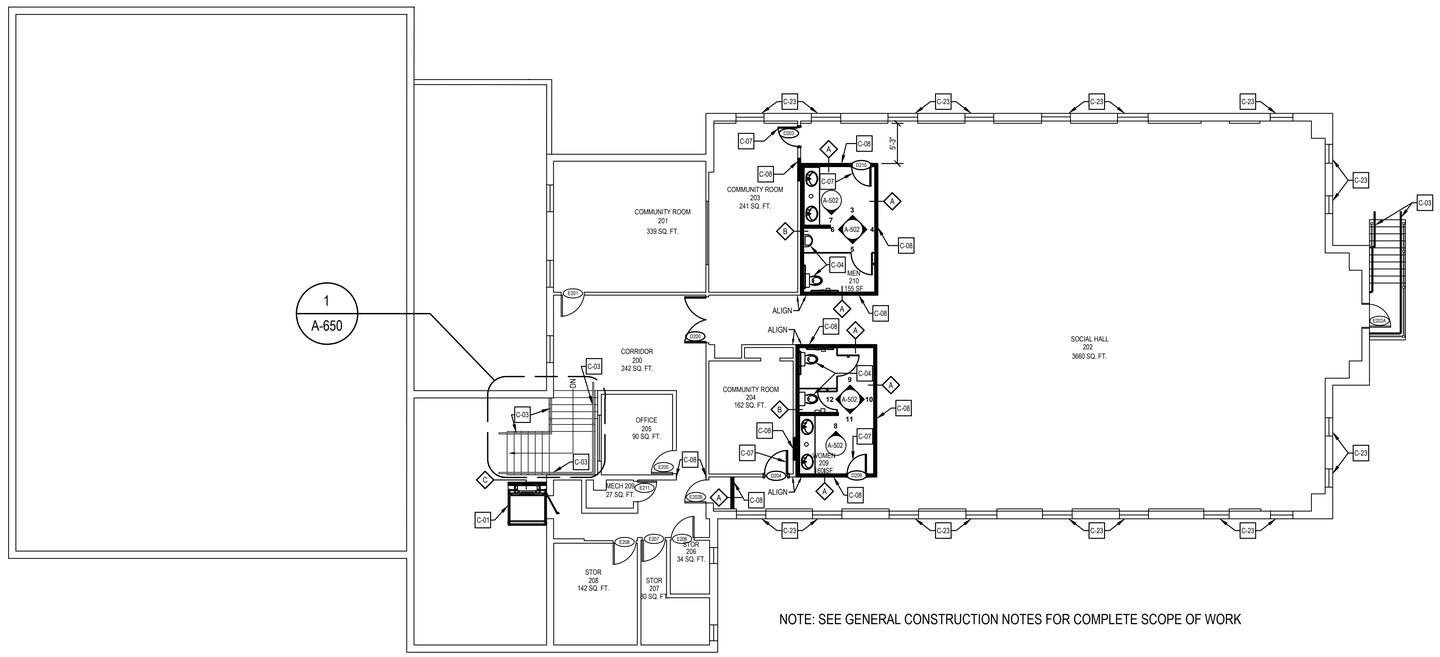


NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

1 AC100

FIRST FLOOR CONSTRUCTION PLAN

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



NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

2 AC100

NEW SECOND FLOOR PLAN

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

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

SYMBOL LEGEND

- 001 — GENERAL NOTE
- ETR — EXISTING TO REMAIN
- C-02 — KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
- DR01 — INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
- A — INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
- INDICATES EXISTING TO REMAIN
- INDICATES EXISTING TO BE DEMOLISHED
- INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION

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SIGNATURE: _____
DATE OF SIGNATURE: _____
DATE OF REGISTRATION EXPIRATION: _____

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

FIRST & SECOND FLOOR PLANS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

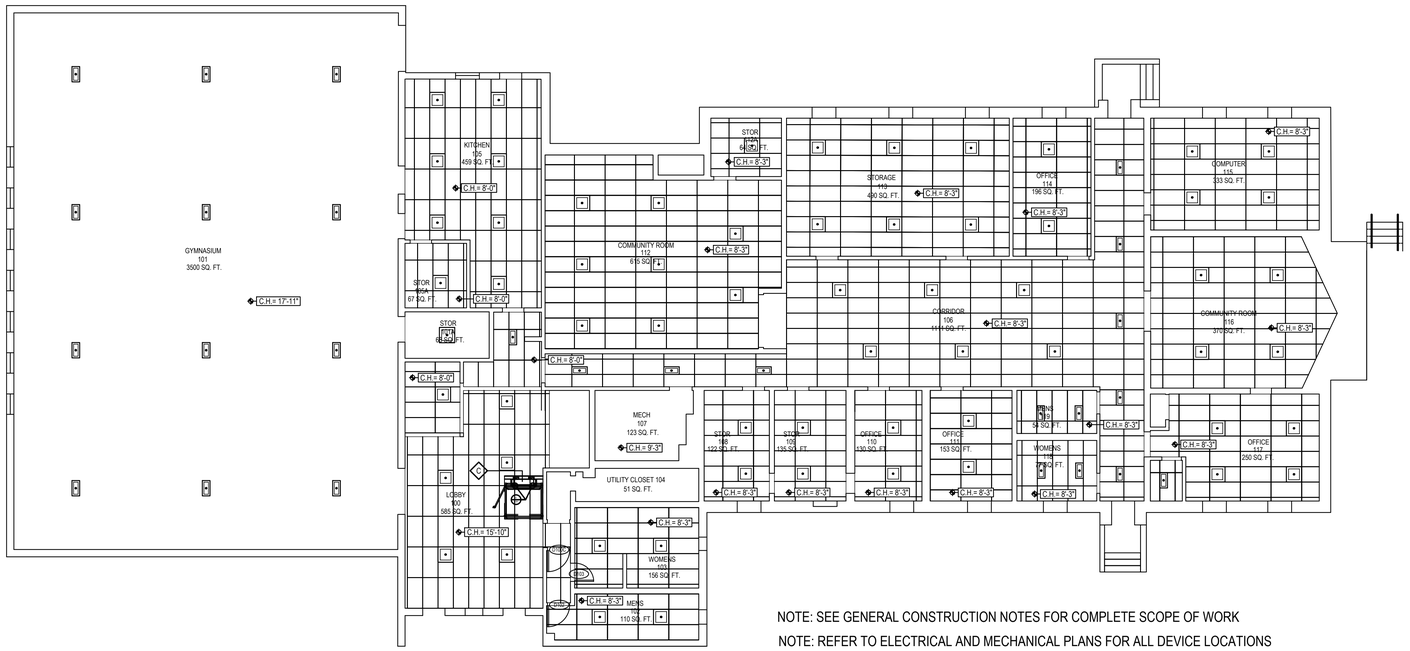
DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

AC100

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION IN USE, IN BRIEF UNDERSTANDS AND AGREES AS FOLLOWS: - "THE ELECTRONIC DATA TRANSMITTED (THAT I MAY BE A TERM) DURING TRANSIT AND TRANSLATION, - JAED CORPORATION DO NOT WARRANT OR ENSURE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. - THE RECEIVER WILL CONFIRM THE DATA WITH AVAILABLE HARD COPIES. - JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT HAS BEEN SUPPLIED. - JAED CORPORATION SHALL BE EXEMPT FROM ANY LIABILITY ARISING OUT OF REUSE OF ELECTRONIC DATA FOR ANY PURPOSE OTHER THAN THE USE OF ELECTRONIC DATA.

12/3/2021 7:23 PM



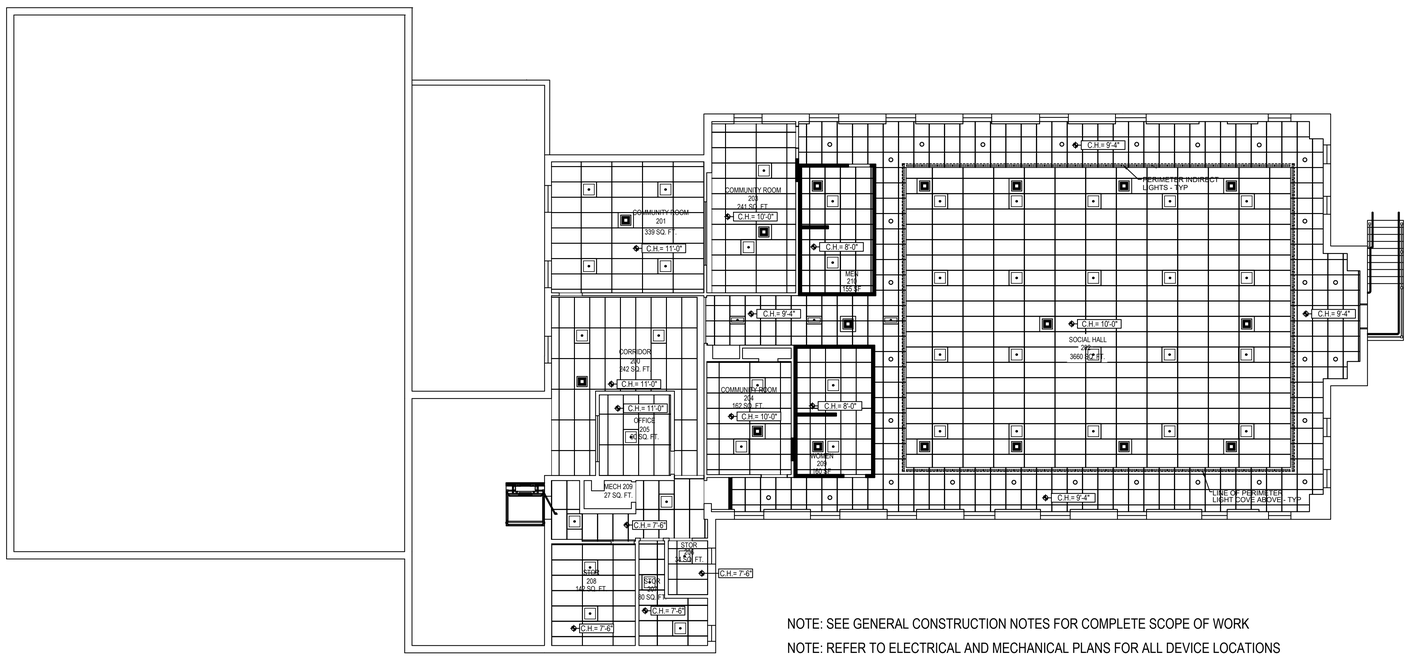
NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

NOTE: REFER TO ELECTRICAL AND MECHANICAL PLANS FOR ALL DEVICE LOCATIONS

1 / AC101

FIRST FLOOR CEILING CONSTRUCTION PLAN

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



NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

NOTE: REFER TO ELECTRICAL AND MECHANICAL PLANS FOR ALL DEVICE LOCATIONS

2 / AC101

SECOND FLOOR CEILING CONSTRUCTION PLAN

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

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
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C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
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C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

SYMBOL LEGEND

001	GENERAL NOTE
ETR	EXISTING TO REMAIN
C-02	KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
DR01	INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
A	INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
	INDICATES EXISTING TO REMAIN
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155 NIAGARA STREET,
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REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

FIRST & SECOND FLOOR REFLECTED CEILING CEILING PLANS

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

AC101

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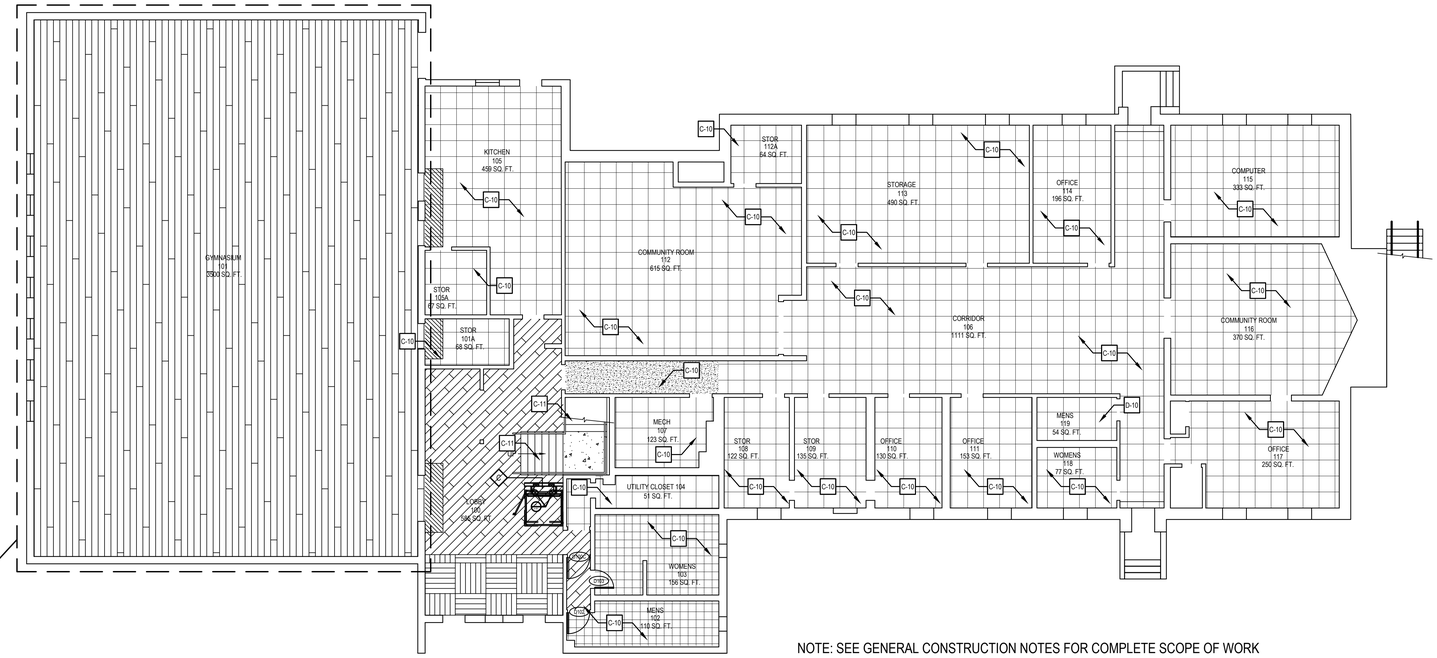


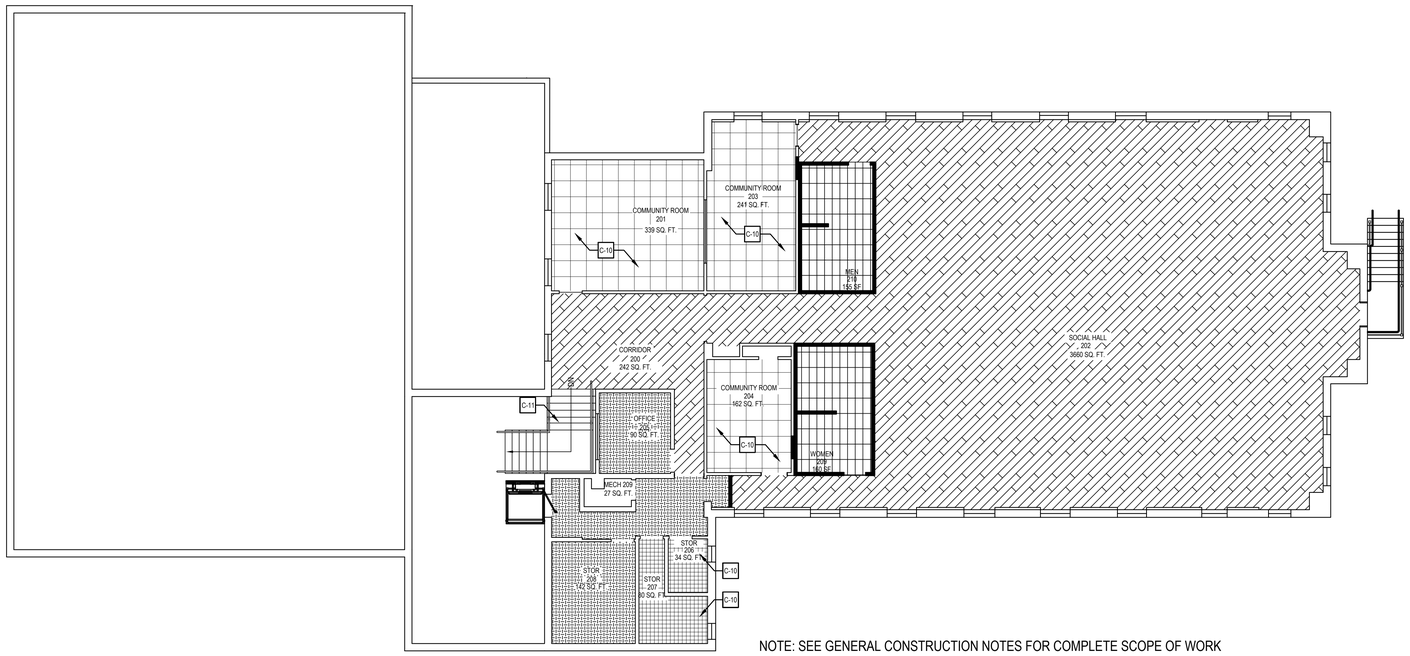
1
A-400

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

1
AC102

FIRST FLOOR FINISH CONSTRUCTION PLAN

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



NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

2
AC102

SECOND FLOOR FINISH CONSTRUCTION PLAN

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

FINISH SCHEDULE

NO.	NAME	FLOOR	WALLS BASE	NORTH	EAST	SOUTH	WEST	CEILING
203	COMMUNITY ROOM	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x4 ACT
210	MEN	CT-1	WB-1	CT-2/PT-1	CT-2/PT-1	CT-2/PT-1	CT	2x2 ACT
202	SOCIAL HALL	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x2 ACT/2x4 ACT
209	WOMEN	CT-1	WB-1	CT-2/PT-1	CT-2/PT-1	CT-2/PT-1	CT	2x2 ACT
204	COMMUNITY ROOM	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x4 ACT

CONSTRUCTION KEY NOTES

- C-01 FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
- C-02 (NOT IN USE)
- C-03 FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
- C-04 FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
- C-05 (NOT IN USE)
- C-06 (NOT IN USE)
- C-07 FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
- C-08 FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
- C-09 (NOT IN USE)
- C-10 WAX FLOOR.
- C-11 FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
- C-12 FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- C-13 FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
- C-14 PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
- C-15 FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
- C-16 APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
- C-17 REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
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- C-19 FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
- C-20 FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
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- C-23 REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
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C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

SYMBOL LEGEND

- 001 GENERAL NOTE
- ETR EXISTING TO REMAIN
- C-02 KEY NOTE TAG. SEE KEY NOTE INSTRUCTIONS / NARRATIVE FOR MORE INFORMATION
- DR01 INDICATES FRAME AND DOOR - SEE DOOR SCHEDULE AND A-652 FOR MORE INFORMATION
- A INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION
- INDICATES EXISTING TO REMAIN
- INDICATES EXISTING TO BE DEMOLISHED
- INDICATES NEW WALL TYPE - SEE TYPICAL WALL TYPES FOR MORE INFORMATION

FINISH LEGEND

- EXISTING VCT FLOOR TO REMAIN
- EXISTING RUBBER FLOOR TO REMAIN
- EXISTING TILE FLOOR TO REMAIN
- EXISTING CARPET FLOOR TO REMAIN
- NEW HARDWOOD FLOOR
- NEW RUBBER FLOOR
- NEW LVT FLOOR
- NEW TUFF WALK-OFF MATT FLOOR
- NEW 12" x 24" CERAMIC TILE FLOOR
- NEW CARPET FLOOR

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DATE OF SIGNATURE: _____
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ARCHITECT / ENGINEER SEAL

PROJECT

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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

FIRST & SECOND FLOOR FINISH PLANS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

AC102

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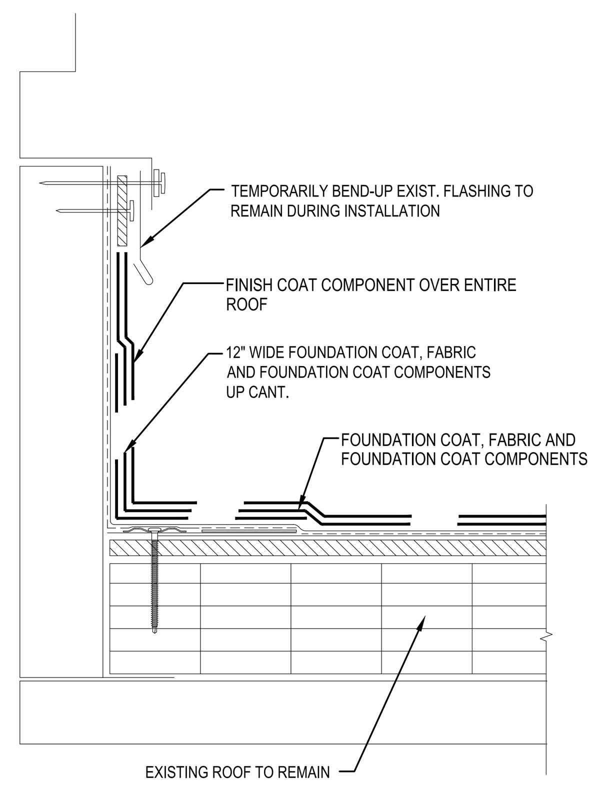
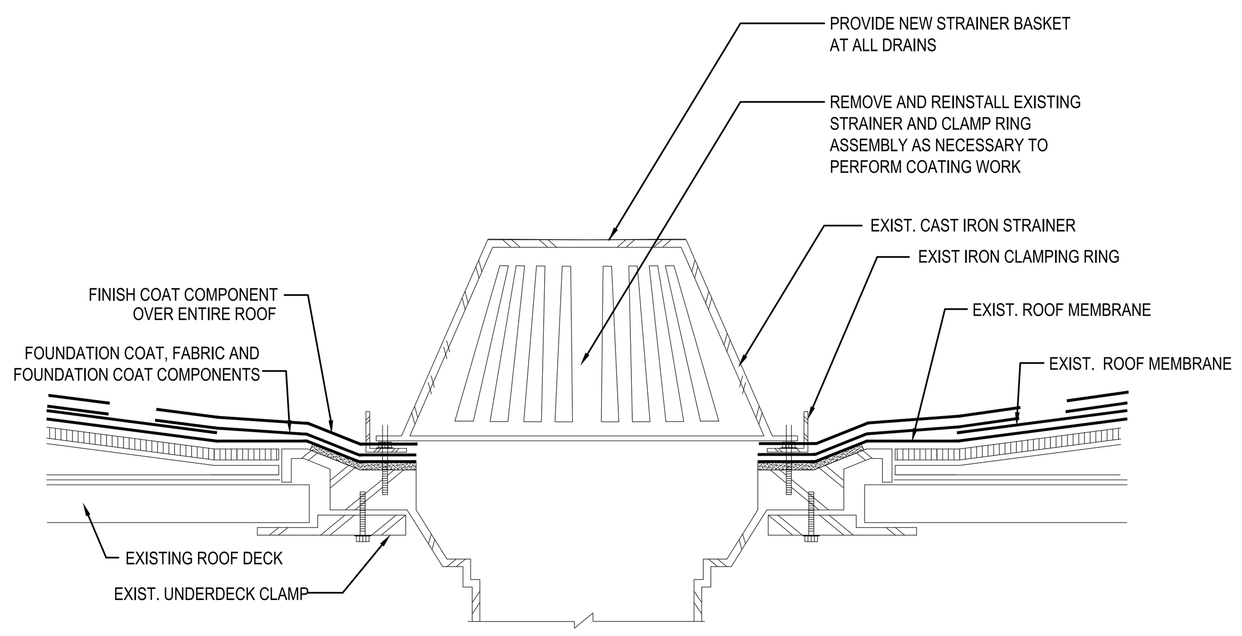


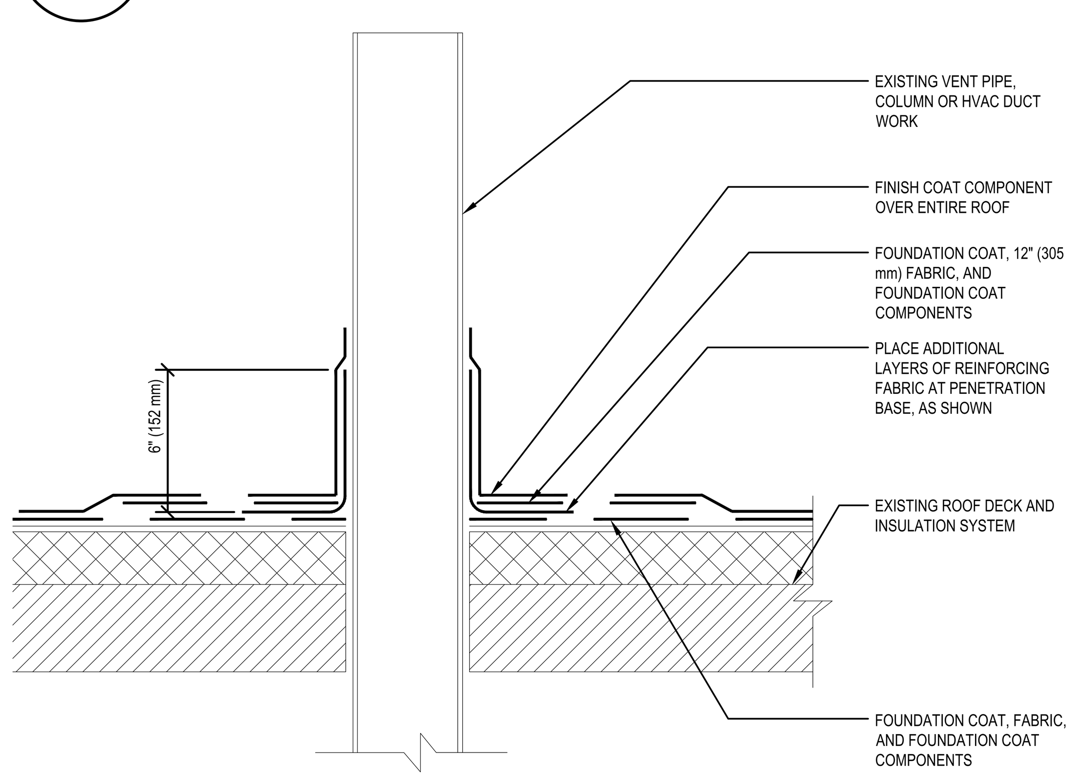
2 / A-100 TYP. CURB FLASHING DETAIL

SCALE: 3" = 1'-0"



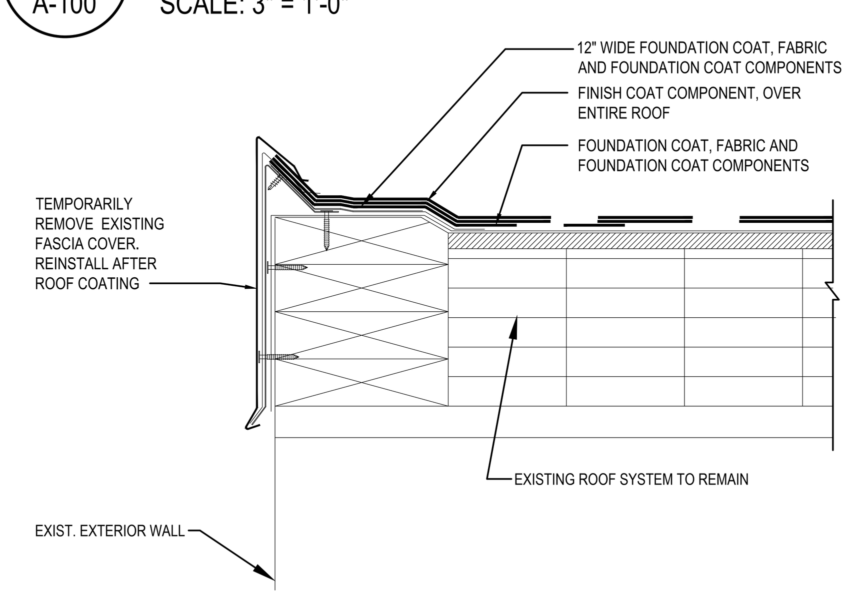
3 / A-100 TYP. ROOF DRAIN DETAIL

SCALE: 3" = 1'-0"



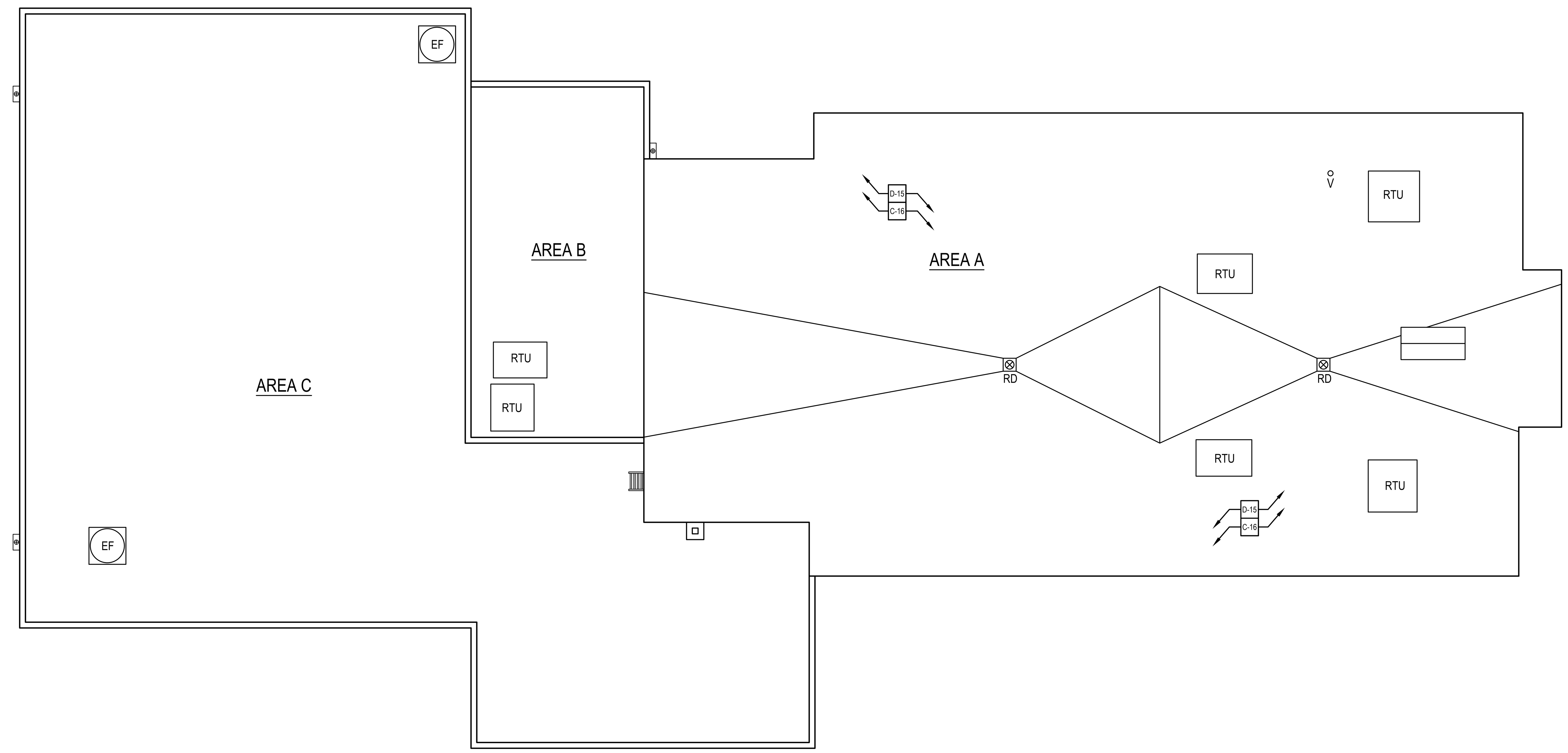
4 / A-100 TYP. PENETRATION FLASHING DETAIL

SCALE: 3" = 1'-0"



5 / A-100 TYP. ROOF EDGE DETAIL

SCALE: 3" = 1'-0"



1 / A-100 ROOF PLAN

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

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

FLUID APPLIED ROOFING SYSTEM NOTES

1. SEE SPECIFICATIONS FOR FLUID-APPLIED ROOFING SYSTEM PRODUCT AND INSTALLATION DETAILS.
2. EXAMINE THE SUBSTRATES, FLASHING CONDITIONS, PENETRATIONS, EQUIPMENT SUPPORTS, CURBS, ADJOINING CONSTRUCTION AND THE CONDITIONS UNDER WHICH THE WORK IS TO BE INSTALLED. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED AND SUBSTRATE IS ACCEPTABLE.
3. EXISTING ROOF DRAIN, FLASHING, HUB AND STRAINER BASKETS TO BE REMOVED. FLASH AND INSTALL BASE COAT, RE-INSTALL IRON CLAMPING RING, AND INSTALL ROOFING FINISH COAT. INSTALL NEW ROOF DRAIN STRAINER BASKET.
4. APPLICATOR SHALL BE RESPONSIBLE FOR PROVIDING A PROPER SUBSTRATE TO RECEIVE THE FLUID-APPLIED ROOFING SYSTEM.
5. VERIFY THE SUBSTRATE IS DRY AND FREE OF OIL, GREASE, DUST, RUST AND OTHER CONTAMINANTS.
6. DEFECTS IN THE SUBSTRATE SHALL BE NOTED AND WORK SHALL NOT PROCEED UNTIL SUCH DEFECTS HAVE BEEN CORRECTED.
7. FLASH ALL ROOF TOP EQUIPMENT, WALLS, AND OTHER ROOFTOP PENETRATIONS IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS AND AS REQUIRED BY THE ROOF MEMBRANE MANUFACTURER.
8. AT ROOF PARAPETS WITH SNAP ON 2 PIECE COPING - REMOVE TOP METAL COPING. INSTALL FOUNDATION AND FINISH SYSTEM UP AND OVER PARAPET WALL AND UNDER COPING. INSTALL EXISTING COPING BACK IN PLACE.
9. AT ROOF PARAPETS WITH COPING EDGE - INSTALL FOUNDATION AND FINISH SYSTEM UP AND OVER PARAPET WALL AND OVER TOP OF COPING.
10. INSTALL A LIQUID MEMBRANE SYSTEM AT ALL ROOF AREAS SHOWN ON DRAWING INCLUDING THOSE AREAS SCHEDULED TO RECEIVE NEW ROOFS. SEE "FLUID-APPLIED ROOFING SYSTEM NOTES" FOR ROOF PREPARATION. SEE FLUID-APPLIED ROOFING SYSTEM SPECIFICATION FOR PRODUCT AND INSTALLATION REQUIREMENTS.
11. CONTRACTOR SHALL CONFORM TO MANUFACTURER'S INSTRUCTIONS PERTAINING TO ENVIRONMENTAL CONDITIONS PRIOR TO INSTALLATION OF ROOFING MATERIALS.
12. CONTRACTOR SHALL BECOME FAMILIAR WITH AND VERIFY THE CONDITIONS, DIMENSIONS AND LOCATIONS OF ALL ROOF AREAS INCLUDING ROOF TOP EQUIPMENT, FLASHINGS, PIPE LINES, CONDUIT, PIPE SUPPORTS, ETC., BEFORE SUBMITTING A BID OR COMMENCING WORK. ALL EXISTING PIPES, CONDUIT, ELECTRICAL LINES, CABLES, GUY WIRES, AND DUCTWORK ABOVE THE ROOF SURFACE HAVE NOT BEEN SHOWN ON THE ROOF PLAN.

LEGEND

RTU	LEGACY HVAC EQUIPMENT TO BE REMOVED AND DECK INFILLED
EF +#" *DIM	EXISTING EXHAUST FAN (+ #") EQUALS AMOUNT OF WOOD BLOCKING REQUIRED TO RAISE EXHAUST FAN (*DIM) EQUALS DIMENSION OF BASE OPENING
V	VENT PIPE. SELECT VENT PIPES ARE TO BE EXTENDED ABOVE INCREASED INSULATION DEPTH
	PROVIDE NEW ROOF HATCH WITH OSHA COMPLIANT GUARD RAILING AT LOCATION OF EXISTING ROOF HATCH. VERIFY SIZE IN FIELD. SEE SPECIFICATIONS
RD	NEW SUMPED RETROFIT ROOF DRAIN ASSEMBLY INCLUDING, BUT NOT LIMITED TO, DRAIN STEM, DRAIN BODY, SEAL, FLANGE, AND STRAINER DOME
#"	APPROXIMATE HEIGHT OF ADDITIONAL INSULATION AT THIS POINT, ABOVE/ ON EXISTING TO REMAIN
	TPO WALKWAY ROOL
	NEW CRICKET SLOPE 1/2" /ft WITH SCUPPERS AT EITHER END
	NON PENETRATING SAFETY RAIL SYSTEM 5' OUTRIGGERS & (2) 10' LONG RAILS
+#'-#" #'-#"	DENOTES CHANGE IN ELEVATION
SAT	SATELLITE DISH
#	LOCATION OF ASBESTOS TEST AND HOLE #
	EXISTING HOOD

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DATE OF REGISTRATION EXPIRATION: ____________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

R E V I S I O N S

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ROOF PLAN & DETAILS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
-	-	20057

SHEET NO.

A-100

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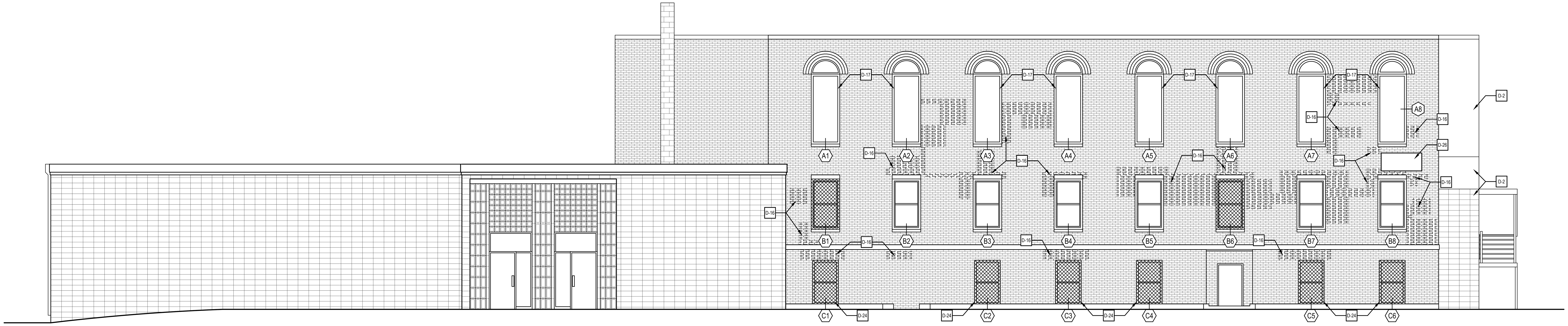
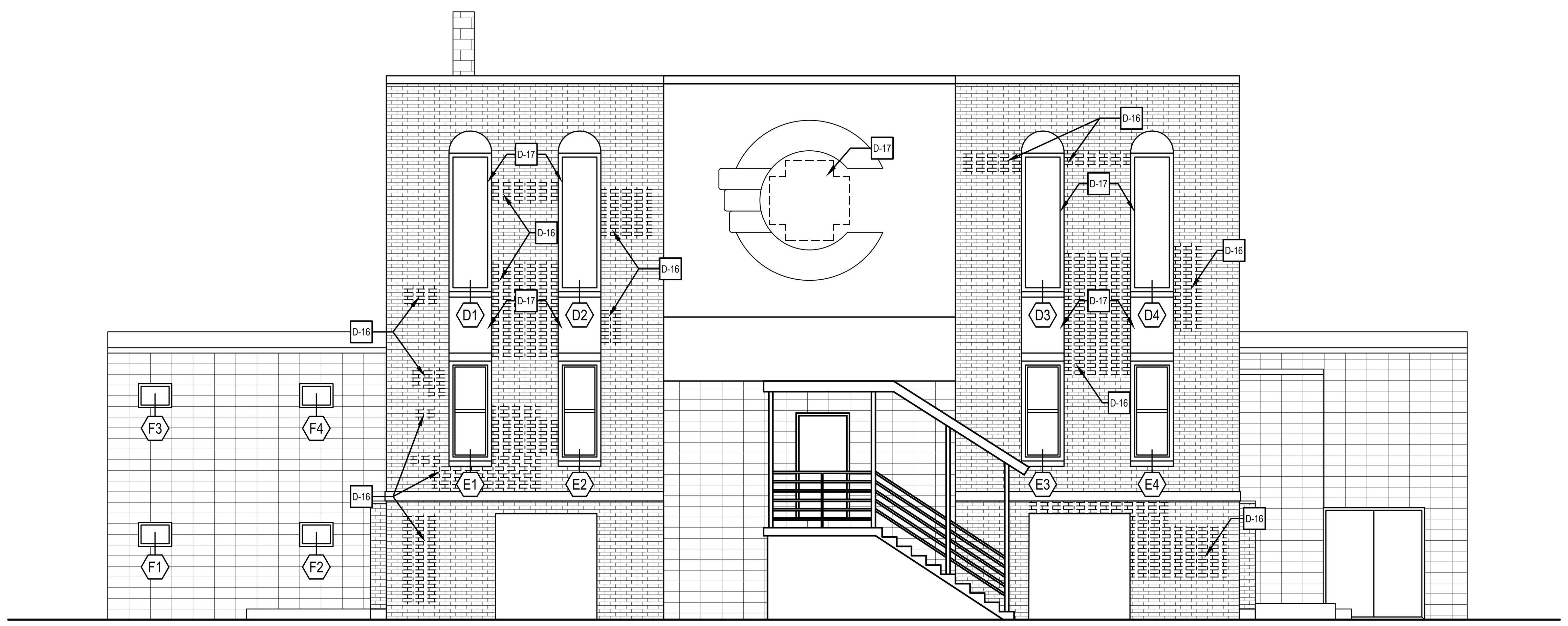


NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

1 / A-200 EXTERIOR DEMOLITION ELEVATION

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



2 / A-200 EXTERIOR DEMOLITION ELEVATION

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

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

GENERAL MASONRY CONSTRUCTION NOTES

REMOVE EXISTING LOOSE MORTAR MATERIAL FROM DETERIORATING JOINT. CLEAN/GRIND AND PREPARE HORIZONTAL AND/OR VERTICAL JOINT FOR REPOINTING ACCORDING TO SPECIFICATIONS.

DRILL AND PIN THE EXISTING FACE BRICK PER DRAWINGS. SAW CUT MORTAR JOINTS AND REMOVE EXTERIOR WYTHE OF CRACKED BRICK. FURNISH AND INSTALL NEW BRICK VENEER AND MORTAR TO MATCH EXISTING WITH TWO (2) PIECE BRICK TIES AT 16" o/c HORIZONTALLY AND VERTICALLY ACCORDING TO DETAILS AND SPECIFICATIONS.

POWER WASH AND REMOVE, THROUGH ABRASIVE BRUSH SCRUBBING, ALL EFFLORESCENCE WITH A MURIATIC ACID SOLUTION. PROTECT ALL ADJACENT SURFACES INCLUDING, BUT NOT LIMITED TO, ROOF SYSTEMS, WINDOW FRAMES AND GLAZING, GROUND COVERING, TREES, MECHANICAL EQUIPMENT, AND WALL MOUNTED DEVICES. FURNISH AND INSTALL A CLEAR WATERPROOFING SEALER PER SPECIFICATIONS TO ALL EXTERIOR MASONRY AND CONCRETE WALL SURFACES. SEE BASIS OF DESIGN ON A-202 & A-203 FOR MORE INFORMATION

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

MASONRY GENERAL NOTES FOR REPOINTING

JOINT PREPARATION.

ALL MORTAR IN THE WORK AREA SHALL BE CUT BACK TO A DEPTH OF AT LEAST ¾", 2 TIMES THE WIDTH OF THE JOINT OR TO SOUND MORTAR, WHICHEVER IS GREATER.

CARE MUST BE TAKEN TO AVOID DAMAGE TO THE MASONRY UNITS AND TO PREVENT WIDENING OF JOINTS. BACK OF THE JOINT SHALL BE CUT SQUARE.

REMOVE ANY SEALANTS , TAR OR OTHER NON-MORTAR JOINT FILLER; REMOVE ALL TRACE OF SEALANT, TAR, ETC. TO ASSURE BOND. ALL LOOSE MATERIAL SHALL BE WASHED FROM THE JOINTS USING A HOSE. JOINTS SHALL BE WETTED BEFORE THE NEW MORTAR IS APPLIED.

MORTAR PREPARATION AND MIXING.

THE LIME, CEMENT AND SAND SHOULD BE CAREFULLY MEASURED AND WELL MIXED TOGETHER DRY. ANY PIGMENT SHOULD BE ADDED IN MEASURED QUANTITIES AND WELL DISPERSED INTO THE OTHER MATERIALS. MORTAR SHALL BE MIXED IN SMALL BATCHES SO THAT IT WILL BE USED WITHIN ONE HOUR AFTER PREPARATION.

MORTAR PROPORTIONS

FOR REPOINTING AND REBUILDING/RESETTING SHALL BE ASTM C 270 TYPE N MORTAR BY PROPORTION SPECIFICATION.

JOINT FILLING.

MORTAR SHOULD BE PACKED IN THIN LAYERS, NOT EXCEEDING ½". COMPACT AND ALLOW EACH LAYER TO BECOME THUMBPRINT HARD BEFORE INSTALLATION OF NEW LIFT. FILLED JOINTS SHOULD BE TOOLED TO MATCH THE ORIGINAL JOINT PROFILE. NO MORTAR SHALL EXTEND ONTO THE FACE OF THE UNITS.

DAMP CURE MORTAR

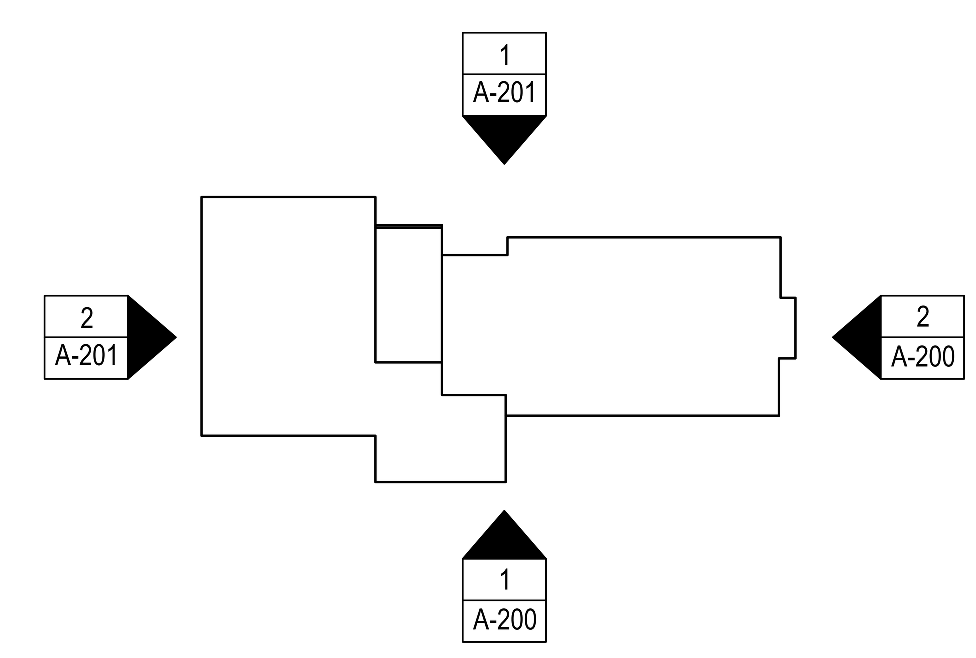
MIST MORTAR FOR AT LEAST 4 HOURS AFTER TOOLING. IN WINDY OR HOT WEATHER, REVIEW CURE PROCEDURES WITH THE ARCHITECT TO ENSURE THAT MORTAR DOES NOT CURE EXCESSIVELY FAST.

CLEAN-UP EXCESS MORTAR

AT ALL AREAS REPOINTED OR REBUILT. EXCESS MORTAR SHOULD BE REMOVED FROM THE SURFACE BEFORE IT SETS USING A BRISTLE BRUSH OR BY RUBBING THE SURFACE WITH BURLAP OR CLEAN SAND. DRIED MORTAR SHALL BE REMOVED WITH CHEMICAL MORTAR REMOVER.

GENERAL NOTES

CONTRACTOR TO TEMPORARILY MOVE AND REINSTALL BARRIER SYSTEM AT ENTIRE PERIMETER OF ROOF EDGE TO ACCESS WORK AREAS. CONTRACTOR TO MAINTAIN A SAFE WORK AREA AND FALL PROTECTION DURING THE MASONRY SCOPE OF WORK.



KEY PLAN

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SIGNATURE: ______
DATE OF SIGNATURE: ______
DATE OF REGISTRATION EXPIRATION: ______

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXTERIOR DEMOLITION ELEVATIONS

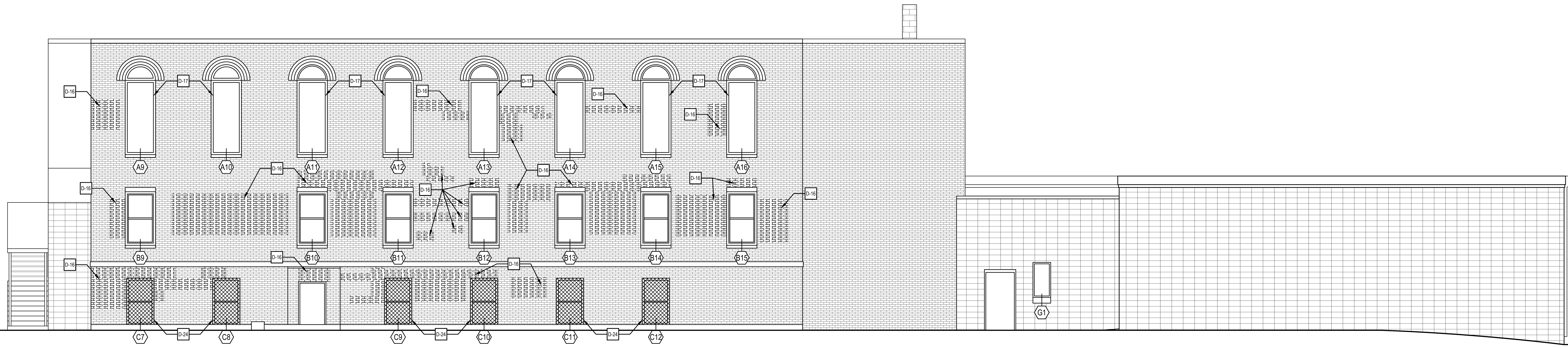
CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

A-200

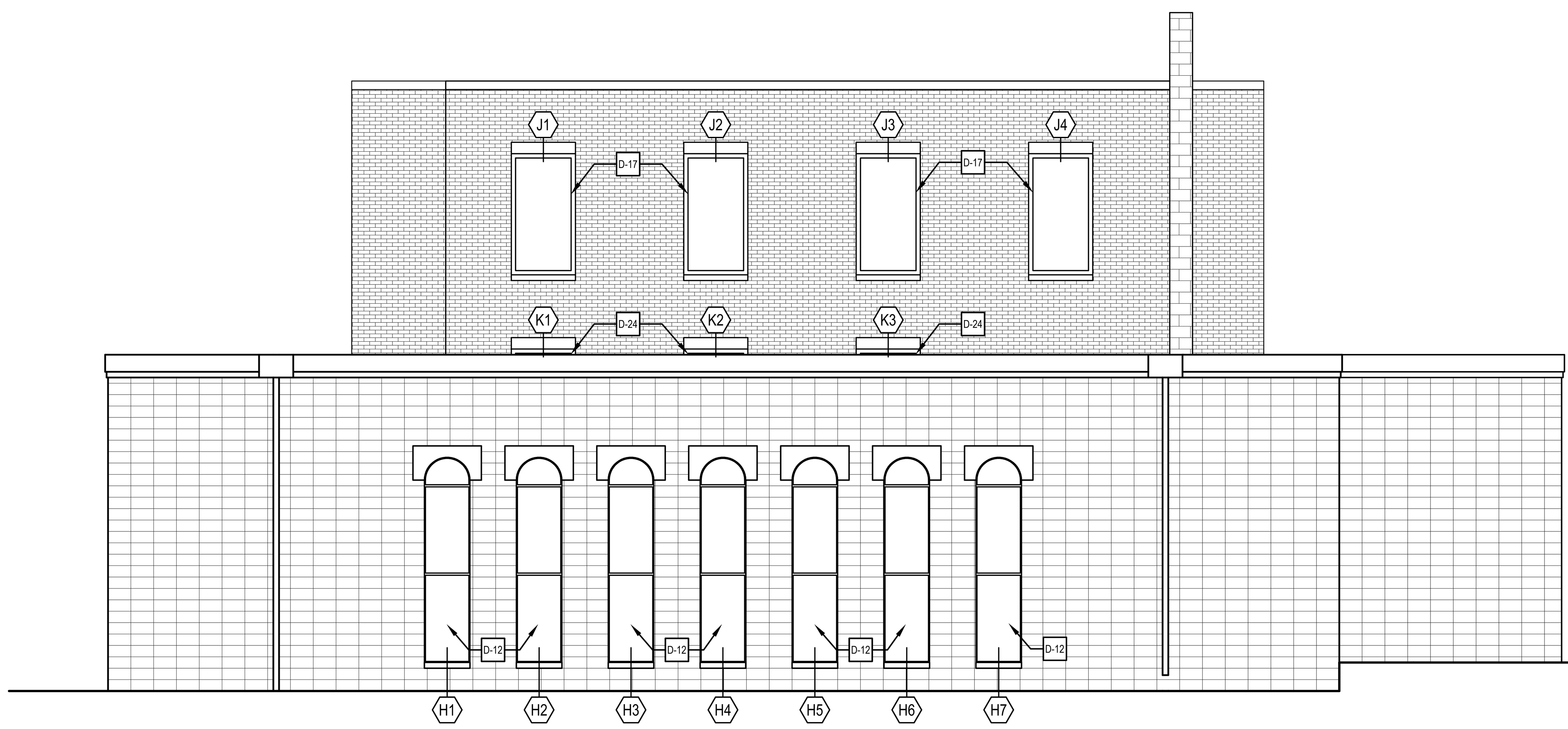


NOTE: SEE GENERAL DEMOLITION NOTES FOR COMPLETE SCOPE OF WORK

1 / A-201

EXTERIOR DEMOLITION ELEVATION

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



2 / A-201

EXTERIOR DEMOLITION ELEVATION

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

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

GENERAL MASONRY CONSTRUCTION NOTES

REMOVE EXISTING LOOSE MORTAR MATERIAL FROM DETERIORATING JOINT. CLEAN/GRIND AND PREPARE HORIZONTAL AND/OR VERTICAL JOINT FOR REPOINTING ACCORDING TO SPECIFICATIONS.

DRILL AND PIN THE EXISTING FACE BRICK PER DRAWINGS. SAW CUT MORTAR JOINTS AND REMOVE EXTERIOR WYTHE OF CRACKED BRICK. FURNISH AND INSTALL NEW BRICK VENEER AND MORTAR TO MATCH EXISTING WITH TWO (2) PIECE BRICK TIES AT 16" o/c HORIZONTALLY AND VERTICALLY ACCORDING TO DETAILS AND SPECIFICATIONS.

POWER WASH AND REMOVE, THROUGH ABRASIVE BRUSH SCRUBBING, ALL EFFLORESCENCE WITH A MURIATIC ACID SOLUTION. PROTECT ALL ADJACENT SURFACES INCLUDING, BUT NOT LIMITED TO, ROOF SYSTEMS, WINDOW FRAMES AND GLAZING, GROUND COVERING, TREES, MECHANICAL EQUIPMENT, AND WALL MOUNTED DEVICES. FURNISH AND INSTALL A CLEAR WATERPROOFING SEALER PER SPECIFICATIONS TO ALL EXTERIOR MASONRY AND CONCRETE WALL SURFACES. SEE BASIS OF DESIGN ON A-202 & A-203 FOR MORE INFORMATION

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

MASONRY GENERAL NOTES FOR REPOINTING

JOINT PREPARATION.

ALL MORTAR IN THE WORK AREA SHALL BE CUT BACK TO A DEPTH OF AT LEAST ¾", 2 TIMES THE WIDTH OF THE JOINT OR TO SOUND MORTAR, WHICHEVER IS GREATER.

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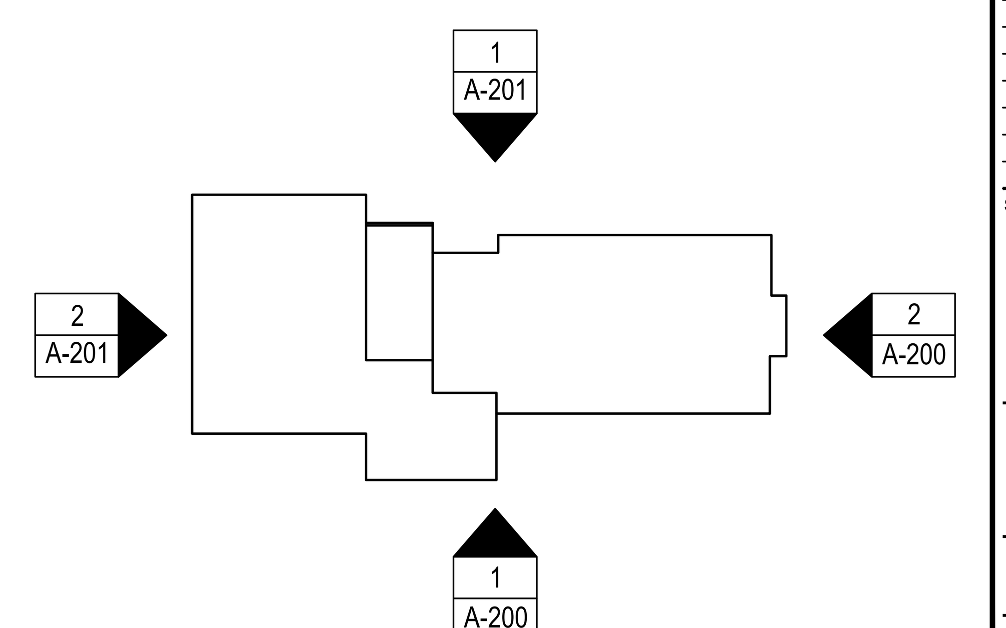

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SIGNATURE: ______________
DATE OF SIGNATURE: ______________
DATE OF REGISTRATION EXPIRATION: ______________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXTERIOR DEMOLITION ELEVATIONS

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BS	PC	20057

SHEET NO.

A-201

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: *THE ELECTRONIC DATA TRANSMITTED ("DATA") MAY BE ALTERED DURING TRANSIT AND TRANSLATION. * JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. * THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. * JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. * THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PRODUCED. * THE RECEIVER SHALL MAKE NO CLAIM NOR INITIATE ANY ACTION IN LAW OR EQUITY AGAINST JAED CORPORATION WITH RESPECT TO ANY DEFECT ERROR OR OMISSION IN THE DATA. * THE RECEIVER AGREES TO THE FULLEST EXTENT PERMITTED BY LAW TO DEFEND, INDEMNIFY AND HOLD HARMLESS JAED CORPORATION FROM AND AGAINST ALL CLAIMS, DAMAGES, LIABILITIES AND COSTS (INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

2/3/2021 7:23 PM

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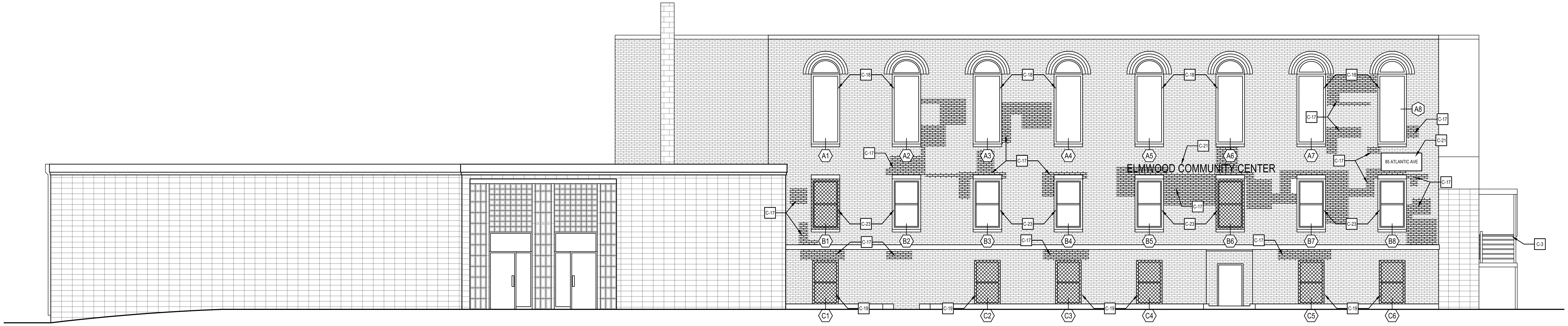
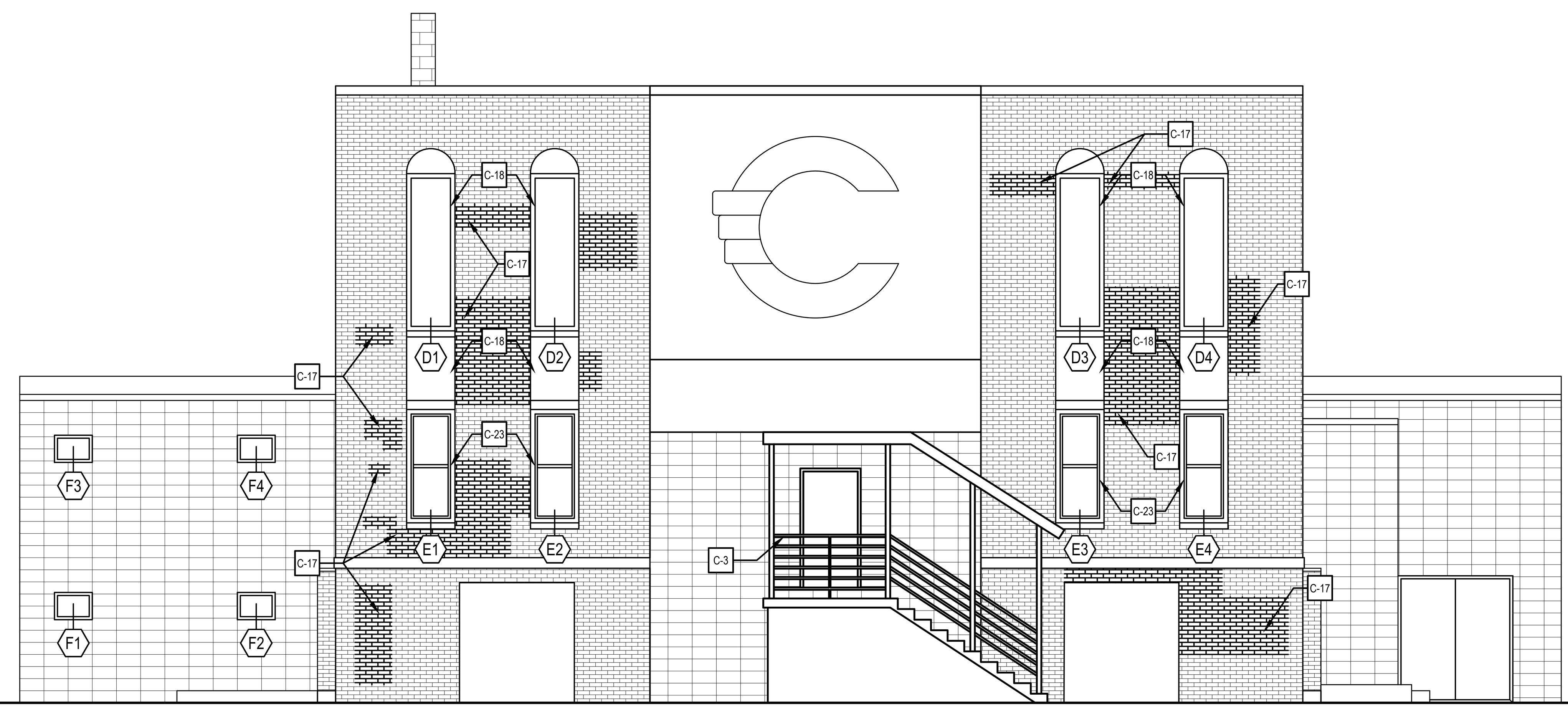


1 / A-202 — EXTERIOR CONSTRUCTION ELEVATION

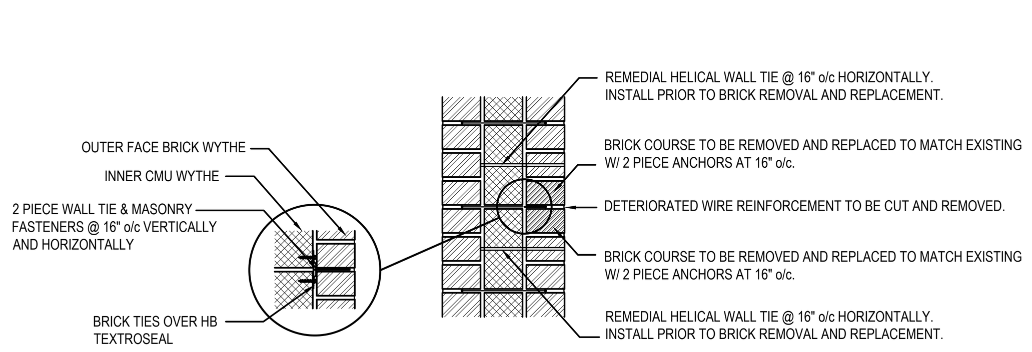
SCALE: 3/16" = 1'-0"

NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK



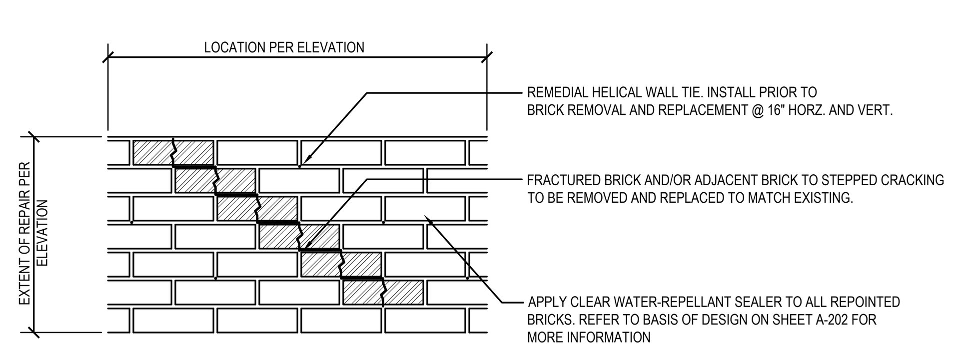
2 / A-202 — EXTERIOR CONSTRUCTION ELEVATION

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



3 / A-202 — TYPICAL RE-POINTING SECTION

SCALE: 1" = 1'-0"



4 / A-202 — TYPICAL RE-POINTING ELEVATION DETAIL

SCALE: 1" = 1'-0"

GENERAL MASONRY CONSTRUCTION NOTES

REMOVE EXISTING LOOSE MORTAR MATERIAL FROM DETERIORATING JOINT. CLEAN/GRIND AND PREPARE HORIZONTAL AND/OR VERTICAL JOINT FOR REPOINTING ACCORDING TO SPECIFICATIONS.

DRILL AND PIN THE EXISTING FACE BRICK PER DRAWINGS. SAW CUT MORTAR JOINTS AND REMOVE EXTERIOR WYTHE OF CRACKED BRICK. FURNISH AND INSTALL NEW BRICK VENEER AND MORTAR TO MATCH EXISTING WITH TWO (2) PIECE BRICK TIES AT 16" o/c HORIZONTALLY AND VERTICALLY ACCORDING TO DETAILS AND SPECIFICATIONS.

POWER WASH AND REMOVE, THROUGH ABRASIVE BRUSH SCRUBBING, ALL EFFLORESCENCE WITH A MURIATIC ACID SOLUTION. PROTECT ALL ADJACENT SURFACES INCLUDING, BUT NOT LIMITED TO, ROOF SYSTEMS, WINDOW FRAMES AND GLAZING, GROUND COVERING, TREES, MECHANICAL EQUIPMENT, AND WALL MOUNTED DEVICES. FURNISH AND INSTALL A CLEAR WATERPROOFING SEALER PER SPECIFICATIONS TO ALL EXTERIOR MASONRY AND CONCRETE WALL SURFACES. SEE BASIS OF DESIGN ON A-202 & A-203 FOR MORE INFORMATION

BASIS OF DESIGN

BASIS OF DESIGN PRODUCT
WATER BASED SILOXANE, CONCENTRATED (SITE DILUTED)
DESIRED AMOUNT OF ACTIVE SOLIDS IS 15%
DESIRED APPLICATION / COVERAGE IS 2 COATS

APPLICATION
WET ON WET APPLICATION

METHOD
APPLY A FLOOD COAT WITH A MINIMUM OF 4 TO 8 INCHES RUNDOWN. ALLOW FIRST APPLICATION TO PENETRATE SURFACE FOR 2-3 MINUTES. APPLY A SECOND COAT AGAIN USING 6 TO 8 INCH RUNDOWN. IF APPLICATION IS TO BE BY ROLLER EXTRA CARE SHOULD BE TAKEN TO ASSURE SUFFICIENT MATERIAL IS APPLIED TO SATURATE THE SURFACE THOROUGHLY. HEAVY RUNS OR DRIPS SHOULD BE BRUSHED OUT IF THEY DO NOT PENETRATE.

EQUIPMENT
LOW PRESSURE 50PSI MAXIMUM AIRLESS SPRAY.

ACCEPTABLE PRODUCTS & APPLICATION COVERAGE

1. MANUFACTURER: DOW CORNING
   PRODUCT: 1-6184 WATER REPELLENT
   1 GALLON CONCENTRATE
   5 GALLON WATER
   6 GALLONS OF MATERIAL WILL COVER 300 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 15%
2. MANUFACTURER: HOHMANN & BARNARD, DIEDRICH TECHNOLOGIES
   PRODUCT: 300-C CONCENTRATE WATER-BASE SILOXANE WATER REPELLENT
   1 GALLON CONCENTRATE
   7 GALLON WATER
   8 GALLONS OF MATERIAL WILL COVER 400 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 15%
3. MANUFACTURER: PROSOCO
   PRODUCT: SURE KLEAN WEATHER SEAL SILOXANE WB CONCENTRATE
   1 GALLON CONCENTRATE
   7 GALLON WATER
   8 GALLONS OF MATERIAL WILL COVER 400 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 10% TO 15%

END

MASONRY GENERAL NOTES FOR REPOINTING

JOINT PREPARATION.

ALL MORTAR IN THE WORK AREA SHALL BE CUT BACK TO A DEPTH OF AT LEAST ¾", 2 TIMES THE WIDTH OF THE JOINT OR TO SOUND MORTAR, WHICHEVER IS GREATER.

CARE MUST BE TAKEN TO AVOID DAMAGE TO THE MASONRY UNITS AND TO PREVENT WIDENING OF JOINTS. BACK OF THE JOINT SHALL BE CUT SQUARE.

REMOVE ANY SEALANTS , TAR OR OTHER NON-MORTAR JOINT FILLER; REMOVE ALL TRACE OF SEALANT, TAR, ETC. TO ASSURE BOND. ALL LOOSE MATERIAL SHALL BE WASHED FROM THE JOINTS USING A HOSE. JOINTS SHALL BE WETTED BEFORE THE NEW MORTAR IS APPLIED.

MORTAR PREPARATION AND MIXING.

THE LIME, CEMENT AND SAND SHOULD BE CAREFULLY MEASURED AND WELL MIXED TOGETHER DRY. ANY PIGMENT SHOULD BE ADDED IN MEASURED QUANTITIES AND WELL DISPERSED INTO THE OTHER MATERIALS. MORTAR SHALL BE MIXED IN SMALL BATCHES SO THAT IT WILL BE USED WITHIN ONE HOUR AFTER PREPARATION.

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MIST MORTAR FOR AT LEAST 4 HOURS AFTER TOOLING. IN WINDY OR HOT WEATHER, REVIEW CURE PROCEDURES WITH THE ARCHITECT TO ENSURE THAT MORTAR DOES NOT CURE EXCESSIVELY FAST.

CLEAN-UP EXCESS MORTAR

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GENERAL NOTES

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CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.

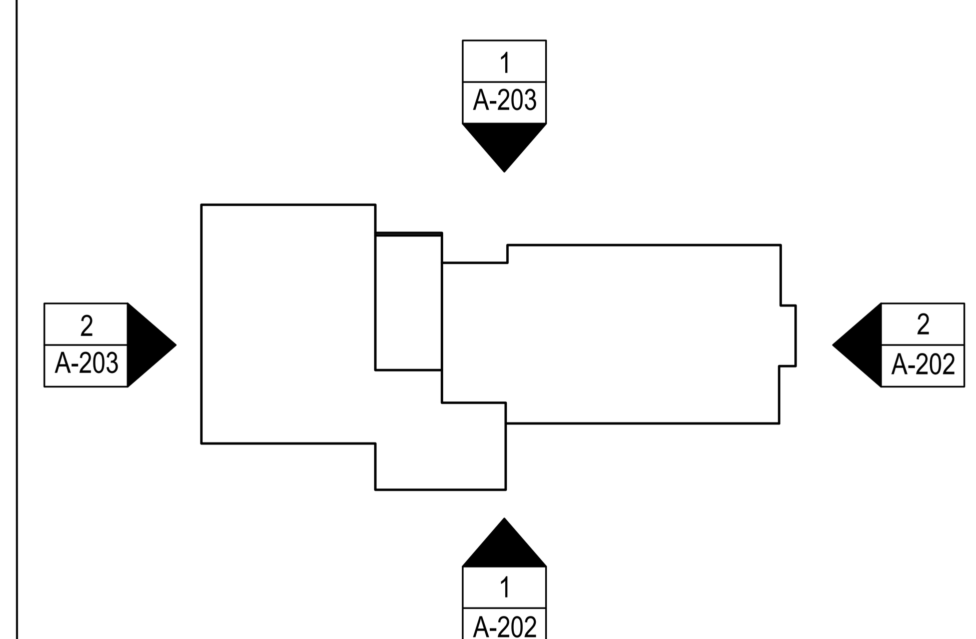
GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.



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SIGNATURE: ____________
DATE OF SIGNATURE: ____________
DATE OF REGISTRATION EXPIRATION: ____________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXTERIOR ELEVATIONS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-202

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: "THE ELECTRONIC DATA TRANSMITTED ("DATA") MAY BE ALTERED DURING TRANSIT AND TRANSLATION. * JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. * THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. * JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. * THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PRODUCED. * THE RECEIVER SHALL MAKE NO CLAIM NOR INITIATE ANY ACTION IN LAW OR EQUITY AGAINST JAED CORPORATION WITH RESPECT TO ANY DEFECT ERROR OR OMISSION IN THE DATA. * THE RECEIVER AGREES TO THE FULLEST EXTENT PERMITTED BY LAW TO DEFEND, INDEMNIFY AND HOLD HARMLESS JAED CORPORATION FROM AND AGAINST ALL CLAIMS, DAMAGES, LIABILITIES AND COSTS (INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS OF DEFENSE) ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

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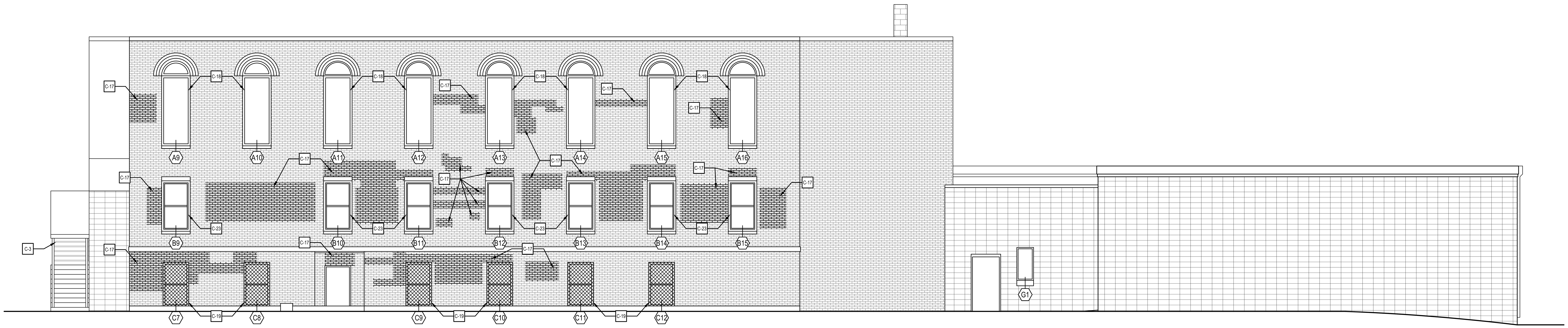
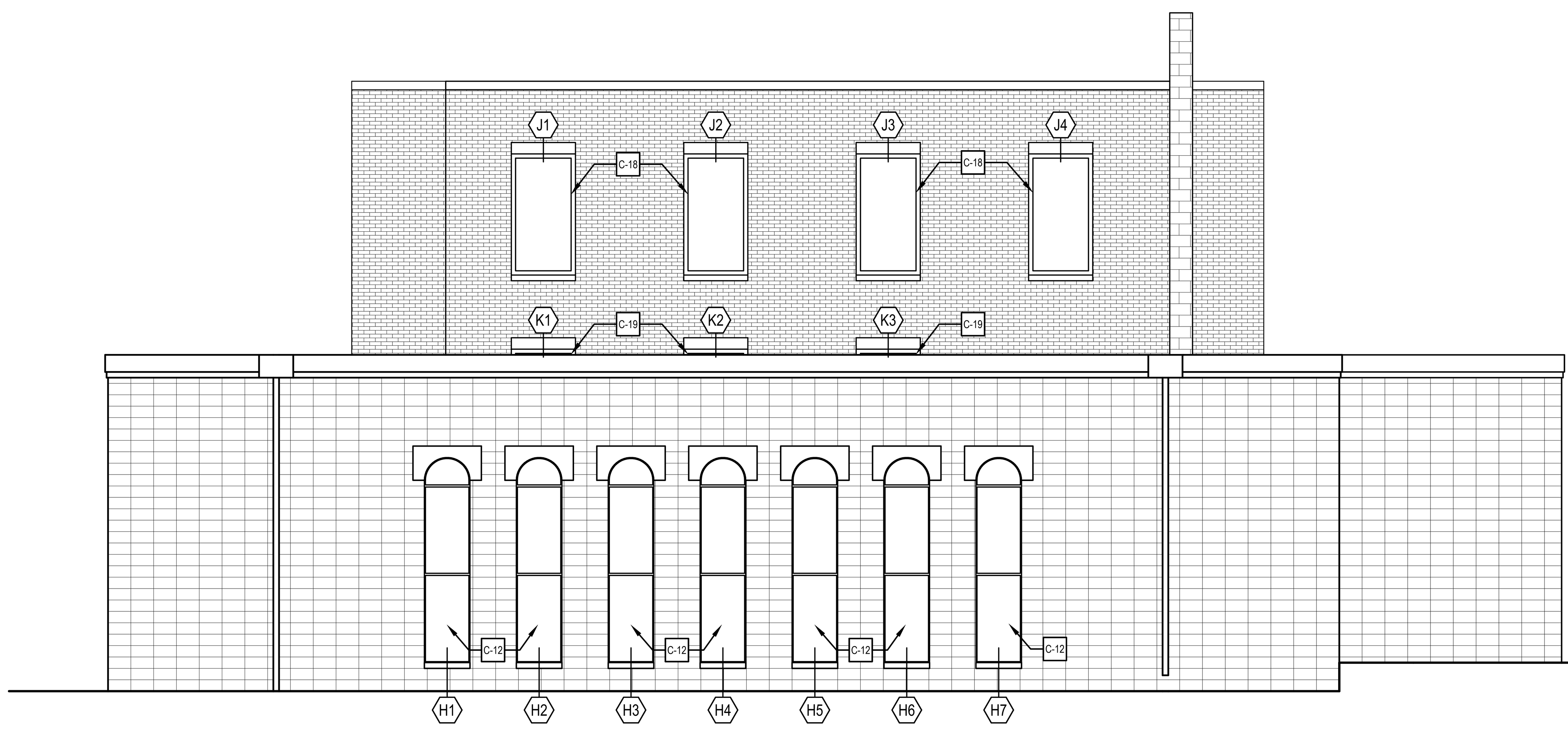


NOTE: SEE GENERAL CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

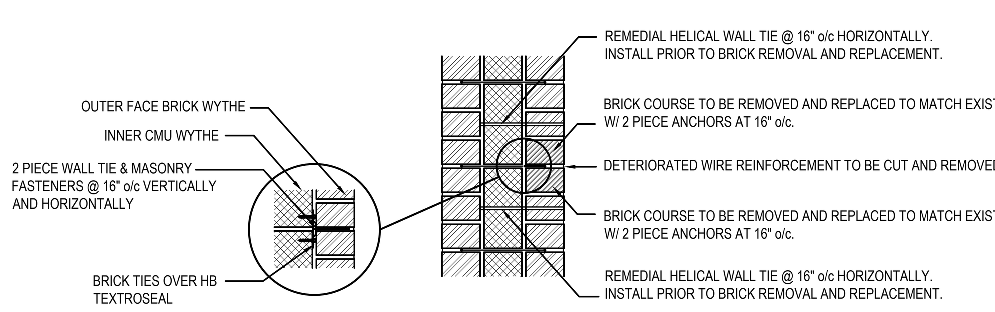
1 / A-203 EXTERIOR CONSTRUCTION ELEVATION

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



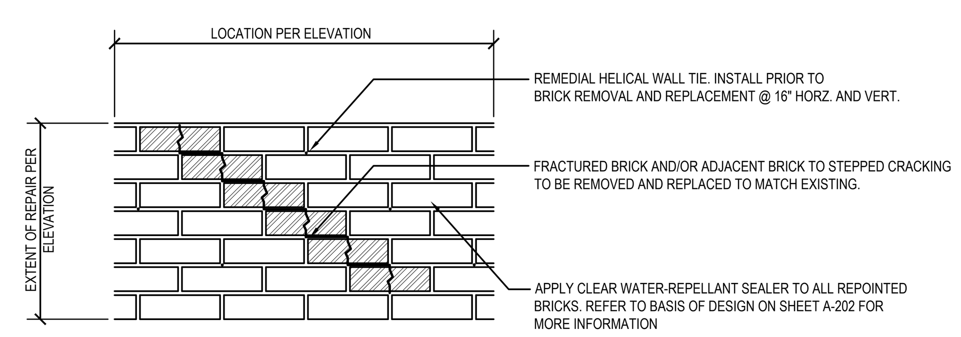
2 / A-203 EXTERIOR CONSTRUCTION ELEVATION

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



3 / A-203 TYPICAL RE-POINTING SECTION

SCALE: 1" = 1'-0"



4 / A-203 TYPICAL RE-POINTING ELEVATION DETAIL

SCALE: 1" = 1'-0"

GENERAL MASONRY CONSTRUCTION NOTES

REMOVE EXISTING LOOSE MORTAR MATERIAL FROM DETERIORATING JOINT. CLEAN/GRIND AND PREPARE HORIZONTAL AND/OR VERTICAL JOINT FOR REPOINTING ACCORDING TO SPECIFICATIONS.

DRILL AND PIN THE EXISTING FACE BRICK PER DRAWINGS. SAW CUT MORTAR JOINTS AND REMOVE EXTERIOR WYTHE OF CRACKED BRICK. FURNISH AND INSTALL NEW BRICK VENEER AND MORTAR TO MATCH EXISTING WITH TWO (2) PIECE BRICK TIES AT 16" o/c HORIZONTALLY AND VERTICALLY ACCORDING TO DETAILS AND SPECIFICATIONS.

POWER WASH AND REMOVE, THROUGH ABRASIVE BRUSH SCRUBBING, ALL EFFLORESCENCE WITH A MURIATIC ACID SOLUTION. PROTECT ALL ADJACENT SURFACES INCLUDING, BUT NOT LIMITED TO, ROOF SYSTEMS, WINDOW FRAMES AND GLAZING, GROUND COVERING, TREES, MECHANICAL EQUIPMENT, AND WALL MOUNTED DEVICES. FURNISH AND INSTALL A CLEAR WATERPROOFING SEALER PER SPECIFICATIONS TO ALL EXTERIOR MASONRY AND CONCRETE WALL SURFACES. SEE BASIS OF DESIGN ON A-202 & A-203 FOR MORE INFORMATION

BASIS OF DESIGN

BASIS OF DESIGN PRODUCT
WATER BASED SILOXANE, CONCENTRATED (SITE DILUTED)
DESIRED AMOUNT OF ACTIVE SOLIDS IS 15%
DESIRED APPLICATION / COVERAGE IS 2 COATS

APPLICATION
WET ON WET APPLICATION

METHOD
APPLY A FLOOD COAT WITH A MINIMUM OF 4 TO 8 INCHES RUNDOWN. ALLOW FIRST APPLICATION TO PENETRATE SURFACE FOR 2-3 MINUTES. APPLY A SECOND COAT AGAIN USING 6 TO 8 INCH RUNDOWN. IF APPLICATION IS TO BE BY ROLLER EXTRA CARE SHOULD BE TAKEN TO ASSURE SUFFICIENT MATERIAL IS APPLIED TO SATURATE THE SURFACE THOROUGHLY. HEAVY RUNS OR DRIPS SHOULD BE BRUSHED OUT IF THEY DO NOT PENETRATE.

EQUIPMENT
LOW PRESSURE 50PSI MAXIMUM AIRLESS SPRAY.

ACCEPTABLE PRODUCTS & APPLICATION COVERAGE

1. MANUFACTURER: DOW CORNING
   PRODUCT: 1-6184 WATER REPELLENT
   1 GALLON CONCENTRATE
   5 GALLON WATER
   6 GALLONS OF MATERIAL WILL COVER 300 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 15%
2. MANUFACTURER: HOHMANN & BARNARD, DIEDRICH TECHNOLOGIES
   PRODUCT: 300-C CONCENTRATE WATER-BASE SILOXANE WATER REPELLENT
   1 GALLON CONCENTRATE
   7 GALLON WATER
   8 GALLONS OF MATERIAL WILL COVER 400 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 15%
3. MANUFACTURER: PROSOCO
   PRODUCT: SURE KLEAN WEATHER SEAL SILOXANE WB CONCENTRATE
   1 GALLON CONCENTRATE
   7 GALLON WATER
   8 GALLONS OF MATERIAL WILL COVER 400 SQ.FT. AT 2 COAT APPLICATION
   SOLIDS 10% TO 15%

END

MASONRY GENERAL NOTES FOR REPOINTING

JOINT PREPARATION.

ALL MORTAR IN THE WORK AREA SHALL BE CUT BACK TO A DEPTH OF AT LEAST ¾", 2 TIMES THE WIDTH OF THE JOINT OR TO SOUND MORTAR, WHICHEVER IS GREATER.

CARE MUST BE TAKEN TO AVOID DAMAGE TO THE MASONRY UNITS AND TO PREVENT WIDENING OF JOINTS. BACK OF THE JOINT SHALL BE CUT SQUARE.

REMOVE ANY SEALANTS , TAR OR OTHER NON-MORTAR JOINT FILLER; REMOVE ALL TRACE OF SEALANT, TAR, ETC. TO ASSURE BOND. ALL LOOSE MATERIAL SHALL BE WASHED FROM THE JOINTS USING A HOSE. JOINTS SHALL BE WETTED BEFORE THE NEW MORTAR IS APPLIED.

MORTAR PREPARATION AND MIXING.

THE LIME, CEMENT AND SAND SHOULD BE CAREFULLY MEASURED AND WELL MIXED TOGETHER DRY. ANY PIGMENT SHOULD BE ADDED IN MEASURED QUANTITIES AND WELL DISPERSED INTO THE OTHER MATERIALS. MORTAR SHALL BE MIXED IN SMALL BATCHES SO THAT IT WILL BE USED WITHIN ONE HOUR AFTER PREPARATION.

MORTAR PROPORTIONS

FOR REPOINTING AND REBUILDING/RESETTING SHALL BE ASTM C 270 TYPE N MORTAR BY PROPORTION SPECIFICATION.

JOINT FILLING.

MORTAR SHOULD BE PACKED IN THIN LAYERS, NOT EXCEEDING ½". COMPACT AND ALLOW EACH LAYER TO BECOME THUMBPRINT HARD BEFORE INSTALLATION OF NEW LIFT. FILLED JOINTS SHOULD BE TOOLED TO MATCH THE ORIGINAL JOINT PROFILE. NO MORTAR SHALL EXTEND ONTO THE FACE OF THE UNITS.

DAMP CURE MORTAR

MIST MORTAR FOR AT LEAST 4 HOURS AFTER TOOLING. IN WINDY OR HOT WEATHER, REVIEW CURE PROCEDURES WITH THE ARCHITECT TO ENSURE THAT MORTAR DOES NOT CURE EXCESSIVELY FAST.

CLEAN-UP EXCESS MORTAR

AT ALL AREAS REPOINTED OR REBUILT. EXCESS MORTAR SHOULD BE REMOVED FROM THE SURFACE BEFORE IT SETS USING A BRISTLE BRUSH OR BY RUBBING THE SURFACE WITH BURLAP OR CLEAN SAND. DRIED MORTAR SHALL BE REMOVED WITH CHEMICAL MORTAR REMOVER.

GENERAL NOTES

CONTRACTOR TO TEMPORARILY MOVE AND REINSTALL BARRIER SYSTEM AT ENTIRE PERIMETER OF ROOF EDGE TO ACCESS WORK AREAS. CONTRACTOR TO MAINTAIN A SAFE WORK AREA AND FALL PROTECTION DURING THE MASONRY SCOPE OF WORK.

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

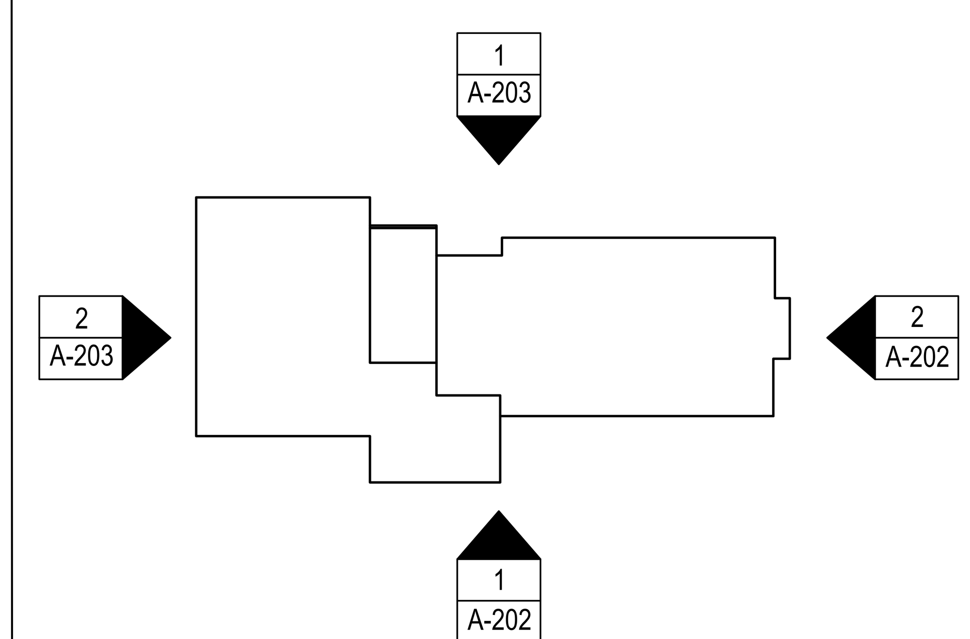
GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.



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SIGNATURE: ____________
DATE OF SIGNATURE: ____________
DATE OF REGISTRATION EXPIRATION: ____________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

EXTERIOR ELEVATIONS

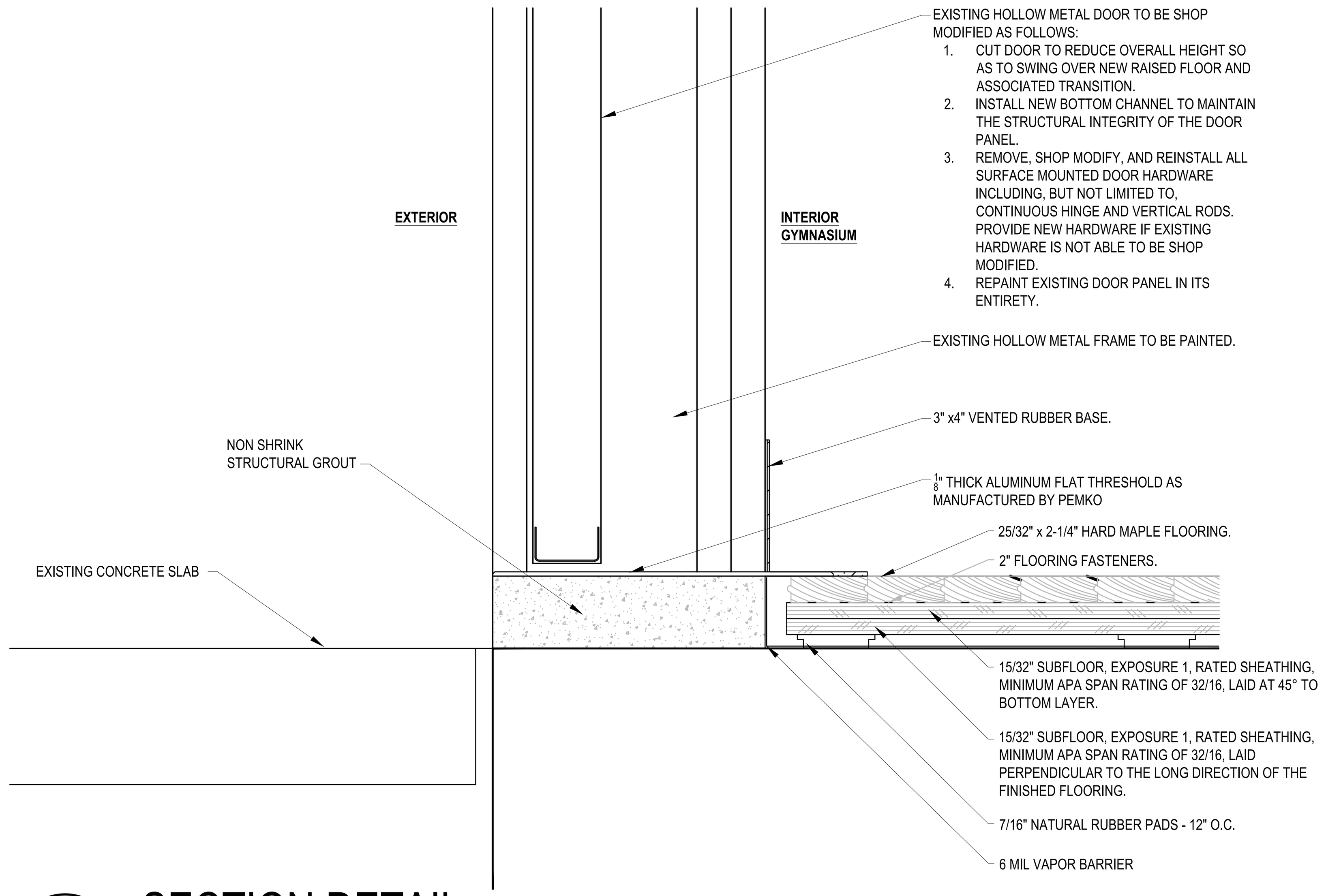
CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

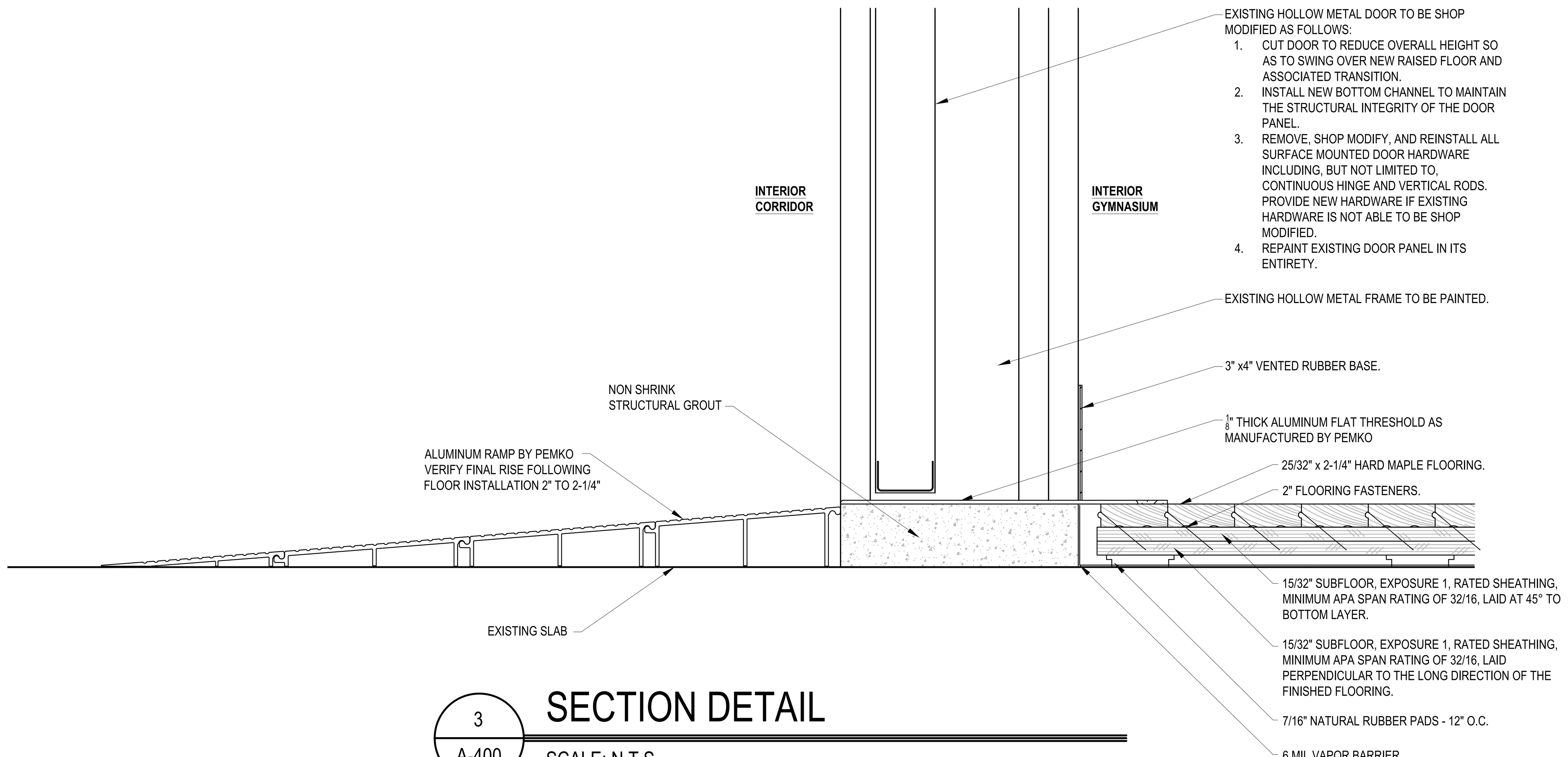
SHEET NO.

A-203



2 / A-400 SECTION DETAIL

SCALE: N.T.S.



3 / A-400 SECTION DETAIL

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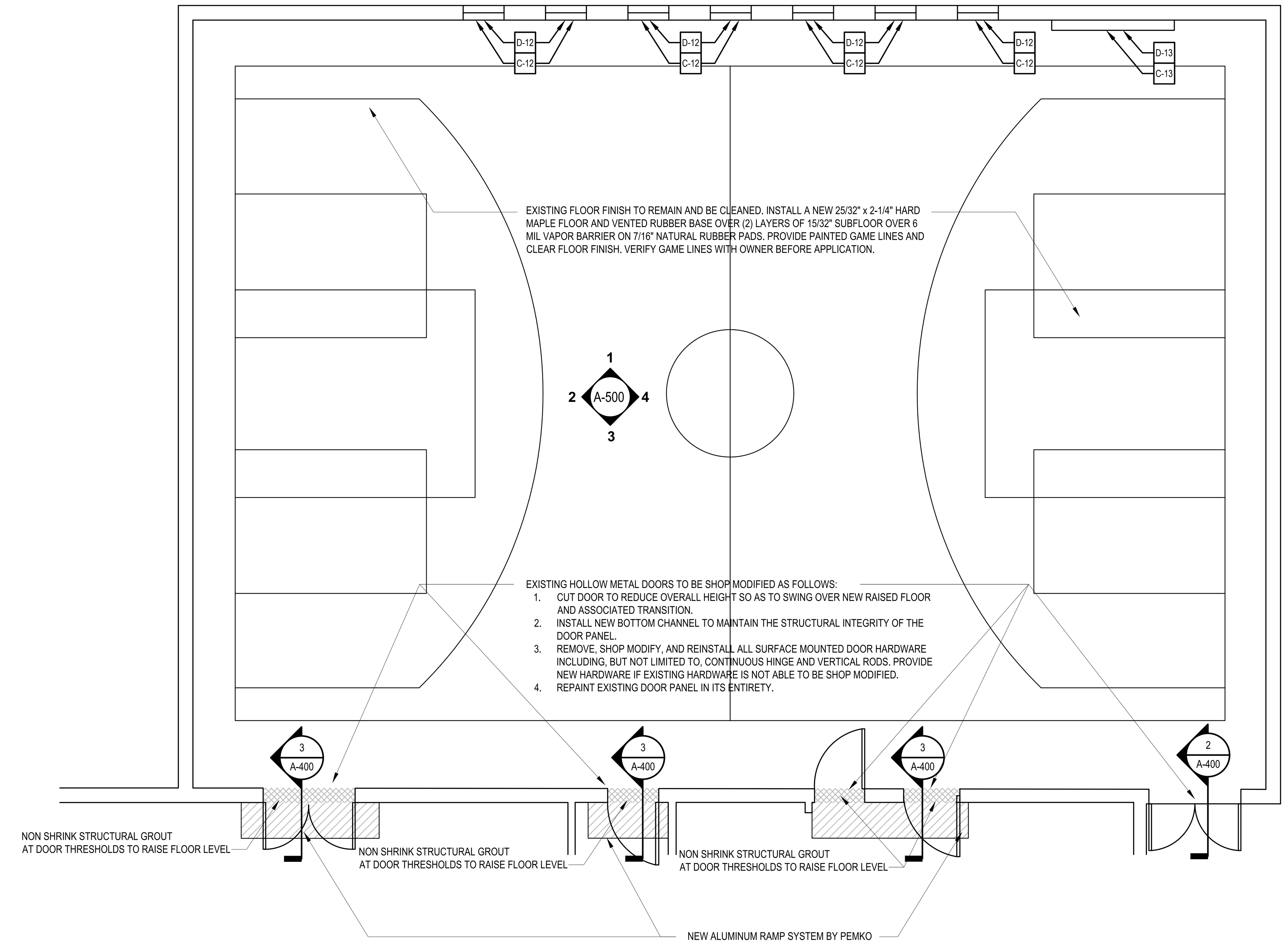

1 / A-400 GYMNASIUM FLOOR PLAN

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

NOTE: SEE GENERAL DEMOLITION AND CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-23	DEMOLISH EXISTING DESK IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, HARDWARE, AND SIGNAGE.
D-24	DEMOLISH AND DISPOSE OF EXISTING WINDOW IN ITS ENTIRETY, REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-25	DEMOLISH EXISTING DOOR TRIM / WOOD SURROUNDING. DOOR AND FRAME TO REMAIN.
D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
C-03	FURNISH AND INSTALL NEW ADA COMPLIANT RAILING.
C-04	FURNISH AND INSTALL NEW PLUMBING FIXTURE. SEE PLUMBING PLANS AND TYPICAL MOUNTING HEIGHTS FOR MORE INFORMATION.
C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
C-08	FURNISH AND INSTALL GYP. BD. AND 3 5/8" CFMF WALL. CONTRACTOR TO VERIFY WALL THICKNESS IN FIELD WHERE INFILL IS REQUIRED.
C-09	(NOT IN USE)
C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

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SIGNATURE: ______
DATE OF SIGNATURE: ______
DATE OF REGISTRATION EXPIRATION: ______

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ENLARGED GYMNASIUM PLAN

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-400

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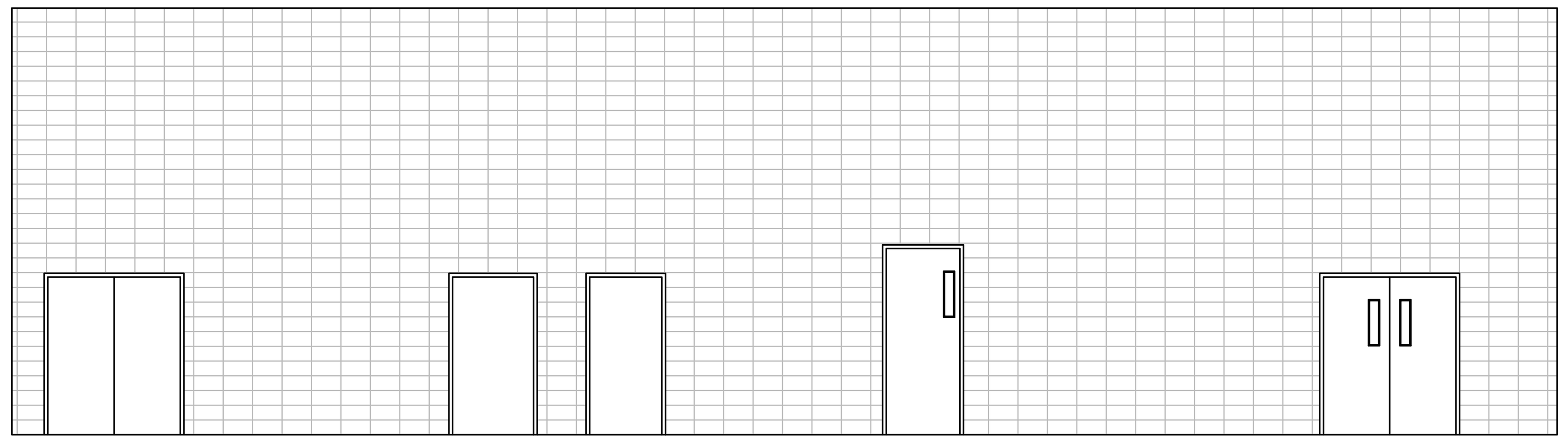
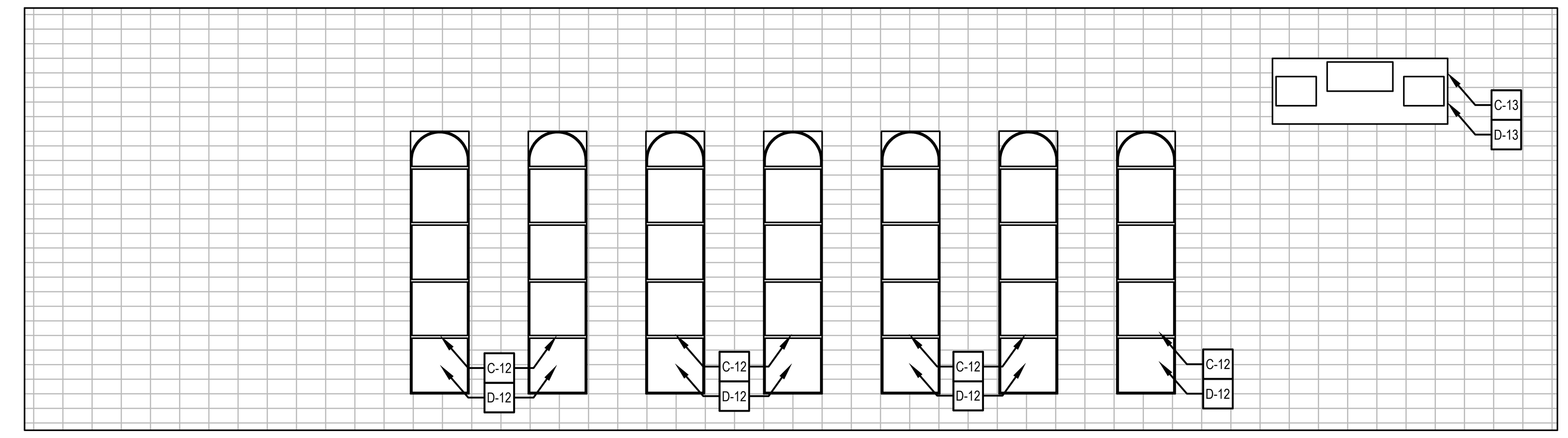


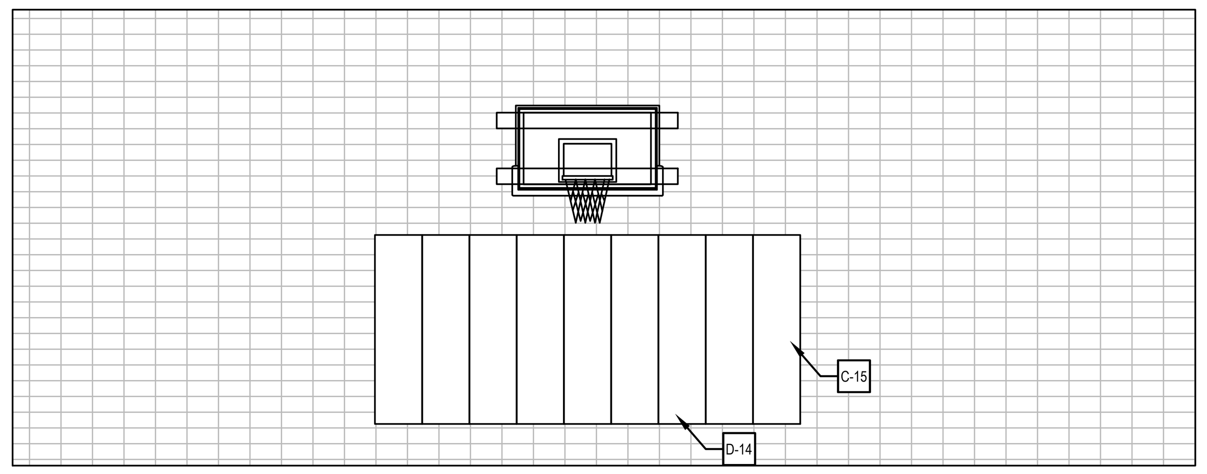
3 / A-500 — EAST GYMNASIUM INTERIOR ELEVATION

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



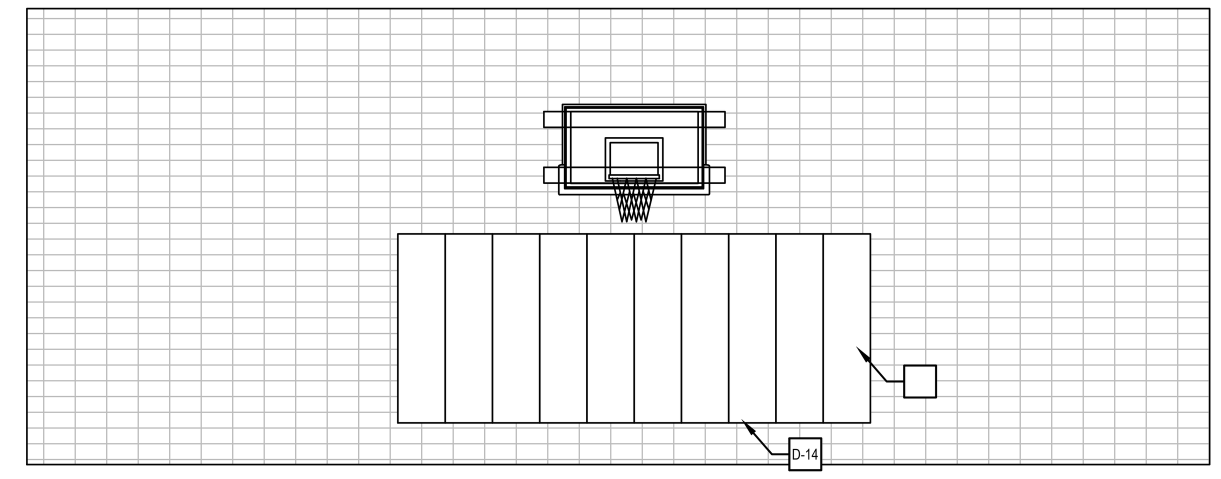
1 / A-500 — WEST GYMNASIUM INTERIOR ELEVATION

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



4 / A-500 — NORTH GYMNASIUM INTERIOR ELEVATION

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



2 / A-500 — SOUTH GYMNASIUM INTERIOR ELEVATION

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

NOTE: SEE GENERAL DEMOLITION AND CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQ'D. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

DEMOLITION KEY NOTES

D-01	DEMOLISH AND DISPOSE OF EXISTING WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, DOORS, ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS. INFILL CONC. FLOOR AT REMOVED FASTENERS.
D-02	(NOT IN USE)
D-03	DEMOLISH AND DISPOSE OF EXISTING RAILING IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL FASTENERS, AND HARDWARE.
D-04	DEMOLISH AND DISPOSE OF EXISTING PLUMBING FIXTURE IN ITS ENTIRETY AND CAP ABANDONED PLUMBING BELOW FLOOR. SEE PLUMBING PLANS FOR MORE INFORMATION.
D-05	(NOT IN USE)
D-06	(NOT IN USE)
D-07	DEMOLISH AND DISPOSE OF EXISTING FRAME AND DOOR IN ITS ENTIRETY.
D-08	DEMOLISH AND DISPOSE OF EXISTING WALL IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES, DATA FIXTURES, MECHANICAL FIXTURES, FIRE PROTECTION FIXTURES, CMU, STUDS, AND FASTENERS. SEE MECHANICAL AND ELECTRICAL PLANS FORE MORE INFORMATION.
D-09	(NOT IN USE)
D-10	REMOVE ALL LARGE OBJECTS AND STRIP FLOOR.
D-11	DEMOLISH AND DISPOSE OF EXISTING STAIR FINISH IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ADHESIVES AND FASTENERS.
D-12	DEMOLISH AND DISPOSE OF EXISTING FROSTED GLASS SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-13	WITH CARE REMOVE EXISTING SCOREBOARD AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-14	WITH CARE REMOVE EXISTING GYM EQUIPMENT AND IN ITS ENTIRETY. CONTRACTOR TO PROVIDE OWNER FIRST REFUSAL BEFORE DISPOSAL.
D-15	REMOVE ALL LARGE OBJECTS FROM ROOF BEFORE PROCEEDING TO POWER WASH AND CLEAN THE MEMBRANE. THOROUGHLY CLEAN ROOF SURFACE OF DIRT, DEBRIS, AND CONTAMINATES AT AREA OF WORK. TEMPORARILY REMOVE PIPE SUPPORTS
D-16	REMOVE EXISTING GROUT UP TO A 1/2" DEEP, CAREFUL NOT TO DAMAGE EXISTING BRICK. REMOVAL AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-200 - A203
D-17	WITH CARE, DEMOLISH AND DISPOSE OF EXISTING PLYWOOD SHEATHING IN ITS ENTIRETY. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
D-18	DEMOLISH AND DISPOSE OF EXISTING 4'-0" HIGH CHAIN-LINK FENCE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-19	CUT AND REMOVE EXISTING TREE IN ITS ENTIRETY, INCLUDING ALL ROOTS AND BRANCHES, FOR INSTALLATION OF NEW SPRINKLER SYSTEM.
D-20	TRIM TREE OF ALL DEAD BRANCHES AND ANY HANGING BELOW 10 FEET. PROPERLY DISPOSE OF ALL TRIMMINGS
D-21	DE-THATCH AREA IN PREPARATION FOR NEW GRASS SEED.
D-22	WITH CARE REMOVE EXISTING MESH WINDOW PROTECTION. CLEAN AND REMOVE PAINT TO AN INTACT CONDITION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
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D-26	DEMOLISH PLYWOOD SIGN IN ITS ENTIRETY INCLUDING ALL FASTENERS.
D-27	DEMOLISH EXISTING HM DOOR, INCLUDING TRANSOM AND HM FRAME. STEEL LINTEL ABOVE TO REMAIN.
D-28	DEMOLISH AND DISPOSE OF EXISTING 8'-0" HIGH CHAIN-LINK FENCE AND GATE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL CONCRETE FOOTINGS, POSTS, GATES, FASTENERS AND CLAMPS.
D-29	REMOVE EXISTING STEEL STAIR NOSINGS.

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
C-02	(NOT IN USE)
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C-05	(NOT IN USE)
C-06	(NOT IN USE)
C-07	FURNISH AND INSTALL NEW HM FRAME WITH NEW FIRE-RATED DOOR AND ASSOCIATED HARDWARE. SEE DOOR SCHEDULE FOR MORE INFORMATION. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION.
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C-09	(NOT IN USE)
C-10	WAX FLOOR.
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C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
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C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

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DATE OF SIGNATURE: ____________
DATE OF REGISTRATION EXPIRATION: ____________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ENLARGED GYMNASIUM INTERIOR ELEVATIONS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-500

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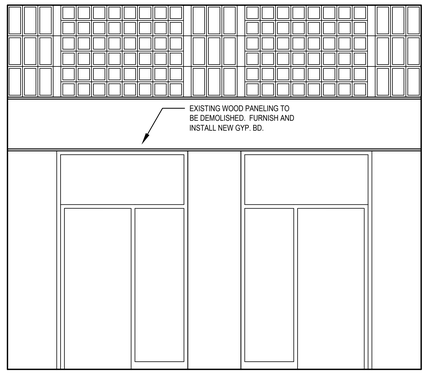
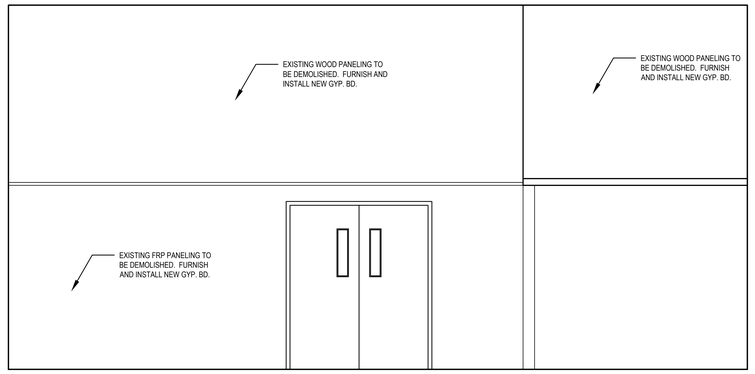


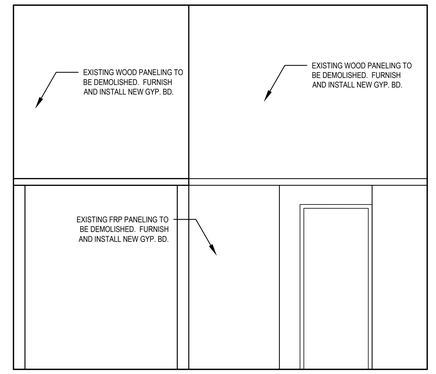
3 A-501 LOBBY INTERIOR ELEVATION

SCALE: 3/8" = 1'-0"



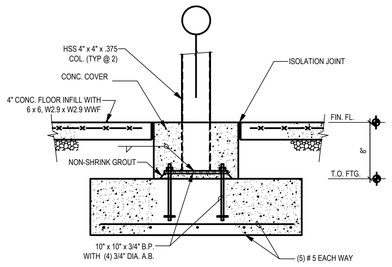
2 A-501 LOBBY INTERIOR ELEVATION

SCALE: 3/8" = 1'-0"



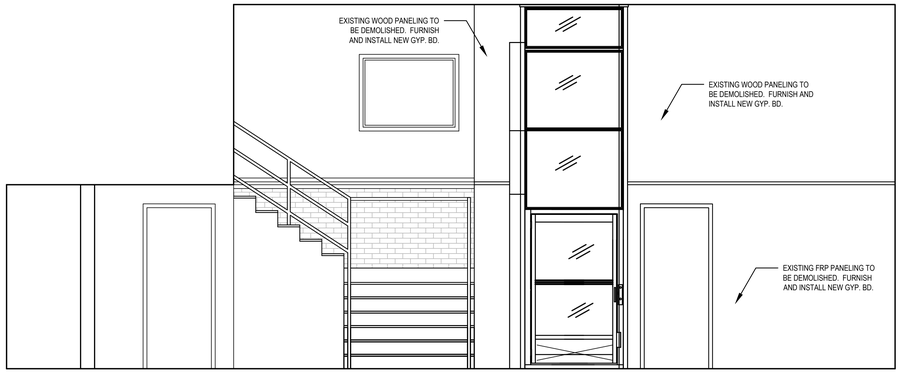
1 A-501 LOBBY INTERIOR ELEVATION

SCALE: 3/8" = 1'-0"



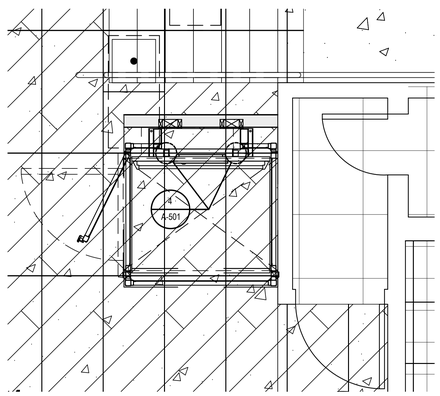
4 A-501 COLUMN FOOTING DETAIL

NOT TO SCALE



4 A-501 LOBBY INTERIOR ELEVATION

SCALE: 3/8" = 1'-0"



4 A-501 LIFT PLAN

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

NOTE: SEE GENERAL DEMOLITION AND CONSTRUCTION NOTES FOR COMPLETE SCOPE OF WORK

CONSTRUCTION KEY NOTES

C-01	FURNISH AND INSTALL NEW 42" x 54" APEX WHEELCHAIR LIFT AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, ALL ELECTRICAL FIXTURES, WIRING, MECHANICAL DEVICES, FASTENERS, AND SEALANTS.
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C-06	(NOT IN USE)
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C-10	WAX FLOOR.
C-11	FURNISH AND INSTALL NEW STAIR FINISH AND STEEL RISER.
C-12	FURNISH AND INSTALL NEW FROSTED GLAZING SYSTEM. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-13	FURNISH AND INSTALL NEW NEVCO SCOREBOARD - MODEL 2700. LOCATION TO MATCH EXISTING.
C-14	PATCH DAMAGED WALL, CMU OR GYP. BD TO BE REPLACED IF NECESSARY.
C-15	FURNISH AND INSTALL NEW 6' x 2' WALL PADDING.
C-16	APPLY ELASTOMERIC FLUID ROOF COATING TO EXISTING MEMBRANE.
C-17	REPOINT BRICK. REPOINTING AREA TO NEVER EXCEED 5 FEET WIDE TO PRESERVE STRUCTURAL INTEGRITY OF THE WALL. FOR MORE INFORMATION SEE SHEETS A-202 & A-203.
C-18	FURNISH AND INSTALL NEW 3/4" MARINE GRADE PLYWOOD SHEATHING. CONTRACTOR TO VERIFY ALL DIMENSION IN FIELD PRIOR TO FABRICATION. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-19	FURNISH AND INSTALL NEW STORM WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-20	FURNISH AND INSTALL NEW 4'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-21	FURNISH AND INSTALL NEW SIGNAGE. FOR MORE INFORMATION SEE SPECIFICATIONS.
C-22	MILL AND OVERLAY ASPHALT WHERE SHOWN HATCHED.
C-23	REFURBISH EXISTING WINDOW. REFER TO SHEET A-651 - WINDOW TYPES AND A-653 - WINDOW DETAILS FOR MORE INFORMATION.
C-24	AREA TO BE SEEDED WITH NEW GRASS SEED.
C-25	FURNISH AND INSTALL NEW 8'-0" HIGH CHAIN-LINK FENCE. VERIFY DIMENSIONS IN FIELD PRIOR TO FABRICATION.
C-26	PROVIDE W8 x 10 ABOVE EXISTING STEEL FRAMING IN ATTIC SPACE TO BRACE TOP OF HSS 4 x 4 x 3/8 LIFT COLUMNS. BOLT TO EXISTING STRUCTURAL STEEL AND CANTILEVER TO COLUMN CONNECTION POINTS.

GENERAL DEMOLITION NOTES

D1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE CLEANED FOR REPAINTING. EXISTING PAINT TO BE REMOVED TO AN INTACT CONDITION.

D2. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING SUSPENDED ACOUSTICAL CEILING TILES, IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING ELECTRICAL FIXTURES AND DEVICES, MECHANICAL EQUIPMENT AND DEVICES, INFORMATION TECHNOLOGY EQUIPMENT AND DEVICES, FIRE PREVENTION AND DETECTION EQUIPMENT AND DEVICES, AND SECURITY DEVICES. EXISTING GRID TO REMAIN UNLESS REPLACEMENT IS REQD. CONTRACTOR TO COORDINATE WITH CONSTRUCTION PLANS AND MEP PLANS FOR MORE INFORMATION.

D3. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING LIGHT FIXTURES IN THEIR ENTIRETY, INCLUDING BUT NOT LIMITED TO, WIRING BACK TO SOURCE, SWITCHES, FASTENERS, AND CABLES. SEE ELECTRICAL PLANS FOR MORE INFORMATION.

D4. UNLESS NOTED OTHERWISE, DEMOLISH AND DISPOSE OF ALL EXISTING FINISH FLOOR IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO, EXISTING WALL BASE, ADHESIVES, AND TRANSITIONS.

GENERAL CONSTRUCTION NOTES

C1. UNLESS NOTED OTHERWISE, ALL DOORS, WALLS AND WINDOW FRAMES TO BE PAINTED. PAINT IN ACCORDANCE WITH FINISH SCHEDULE. FOR MORE INFORMATION SEE SHEET AC104 & AC107.

C2. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW SUSPENDED ACOUSTIC CEILING SYSTEM, INCLUDING BUT NOT LIMITED TO, ASSOCIATED MECHANICAL DIFFUSERS / RETURNS, 2x2 LED LIGHT FIXTURES, FIRE PREVENTION AND DETECTION DEVICES, INFORMATION TECHNOLOGY DEVICES, AND SECURITY DEVICES. SEE ELECTRICAL AND MECHANICAL PLANS FOR MORE INFORMATION. EXISTING CEILING GRID TO BE PAINTED WHITE.

C3. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW LIGHT FIXTURES. FOR MORE INFORMATION, SEE ELECTRICAL PLAN.

C4. UNLESS NOTED OTHERWISE, FURNISH AND INSTALL NEW FINISH FLOOR, INCLUDING WALL BASE. SEE FINISH FLOOR PLAN FOR MORE INFORMATION.

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PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ENLARGED LOBBY
INTERIOR ELEVATIONS

CONSTRUCTION
DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-501

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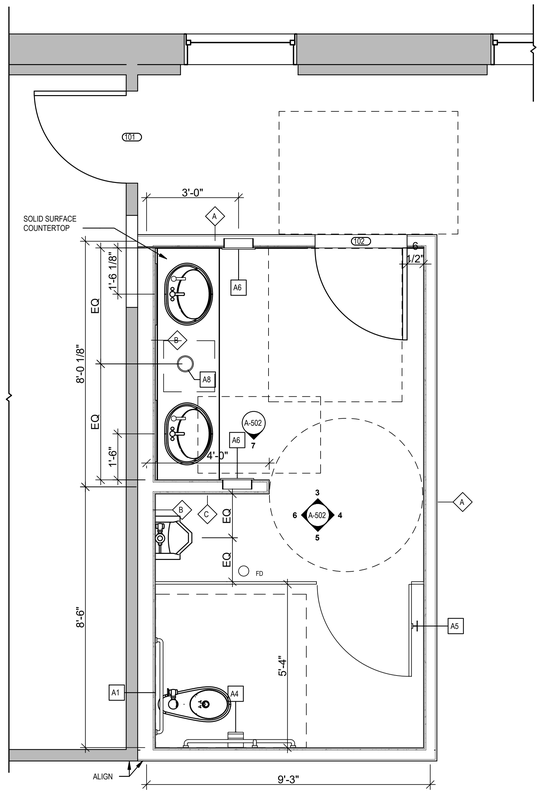
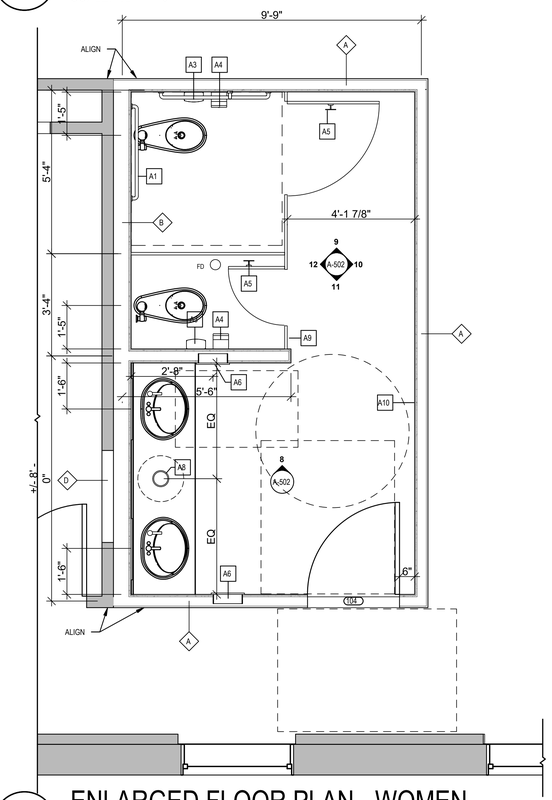


1 A-502 ENLARGED FLOOR PLAN - MEN

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



2 A-502 ENLARGED FLOOR PLAN - WOMEN

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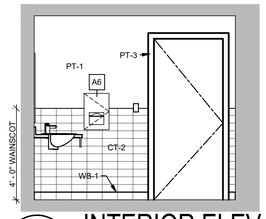

3 A-502 INTERIOR ELEVATION - MEN

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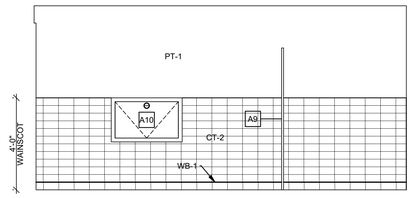
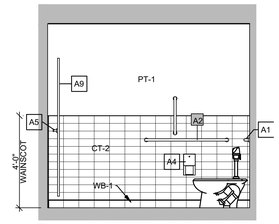


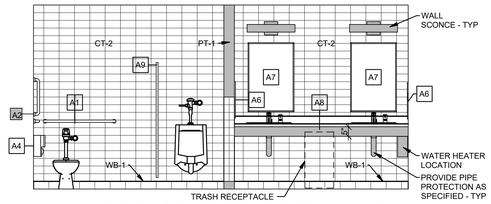
4 A-502 INTERIOR ELEVATION - MEN

SCALE: 3/8" = 1'-0"



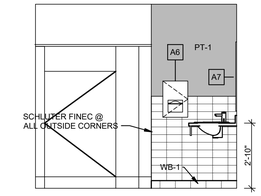
5 A-502 INTERIOR ELEVATION - MEN

SCALE: 3/8" = 1'-0"



6 A-502 INTERIOR ELEVATION - MEN

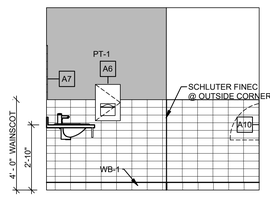
SCALE: 3/8" = 1'-0"



7 A-502 INTERIOR ELEVATION - MEN

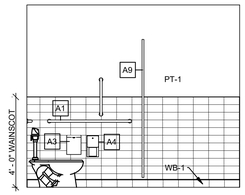
SCALE: 3/8" = 1'-0"

FINISH SCHEDULE								
			WALLS					
NO.	NAME	FLOOR	BASE	NORTH	EAST	SOUTH	WEST	CEILING
203	COMMUNITY ROOM	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x4 ACT
210	MEN	CT-1	WB-1	CT-2/PT-1	CT-2/PT-1	CT-2/PT-1	CT	2x2 ACT
202	SOCIAL HALL	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x2 ACT/2x4 ACT
209	WOMEN	CT-1	WB-1	CT-2/PT-1	CT-2/PT-1	CT-2/PT-1	CT	2x2 ACT
204	COMMUNITY ROOM	LVT	WB-2	PT-1	PT-1	PT-1	PT-1	2x4 ACT



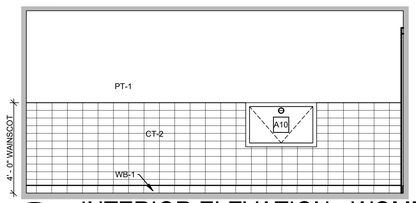
8 A-502 INTERIOR ELEVATION - WOMEN

SCALE: 3/8" = 1'-0"



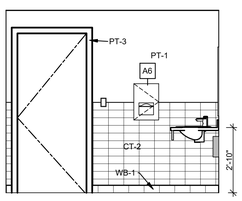
9 A-502 INTERIOR ELEVATION - WOMEN

SCALE: 3/8" = 1'-0"



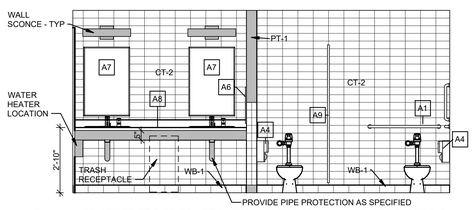
10 A-502 INTERIOR ELEVATION - WOMEN

SCALE: 3/8" = 1'-0"



11 A-502 INTERIOR ELEVATION - WOMEN

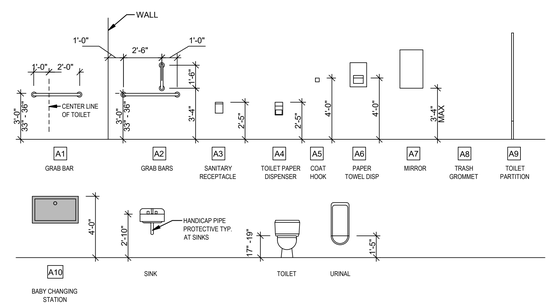
SCALE: 3/8" = 1'-0"



12 A-502 INTERIOR ELEVATION - WOMEN

SCALE: 3/8" = 1'-0"

PLUMBING AND ACCESSORIES MOUNTING HEIGHT LEGEND



SEE SPECIFICATION FOR ADDITIONAL ACCESSORY INFORMATION. REFER TO PLUMBING DRAWINGS FOR FIXTURE INFORMATION.

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BUILDING RENOVATIONS
AT THE
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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ENLARGED BATHROOM PLANS & INTERIOR ELEVATIONS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-502

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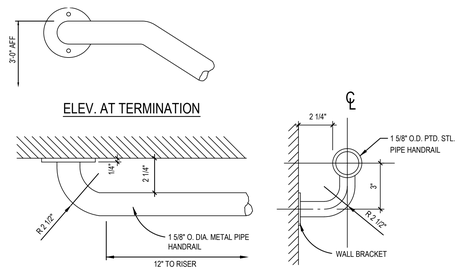
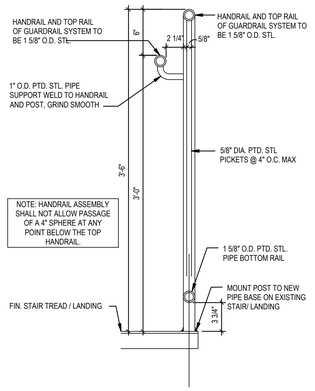


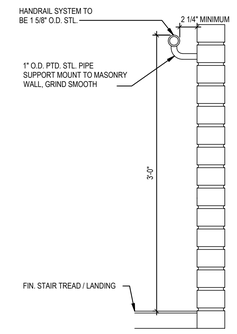
5 / A-650 RAILING END DETAILS

SCALE: 3" = 1'-0"



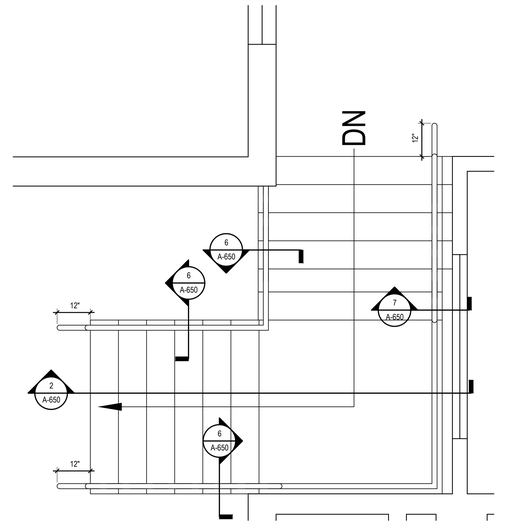
6 / A-650 TYPICAL GUARDRAIL MOUNTING

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



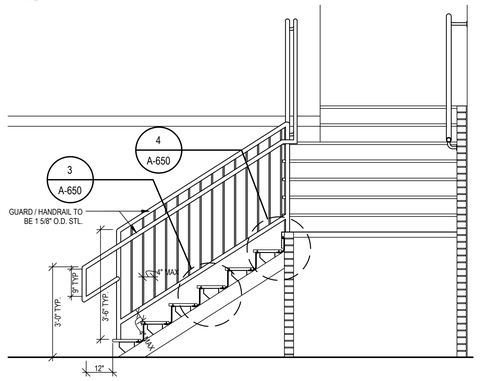
7 / A-650 TYPICAL HANDRAIL MOUNTING

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



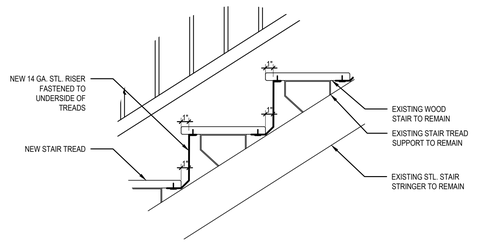
1 / A-650 ENLARGED LOBBY STAIR PLAN

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



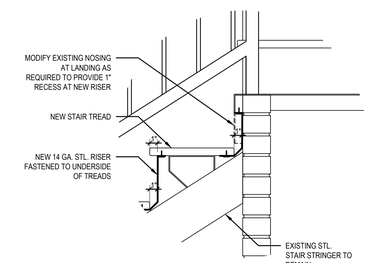
2 / A-650 LOBBY STAIR SECTION

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



3 / A-650 LOBBY STAIR RISER DETAIL

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



4 / A-650 LOBBY STAIR LANDING DETAIL

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

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HANDRAIL DETAILS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

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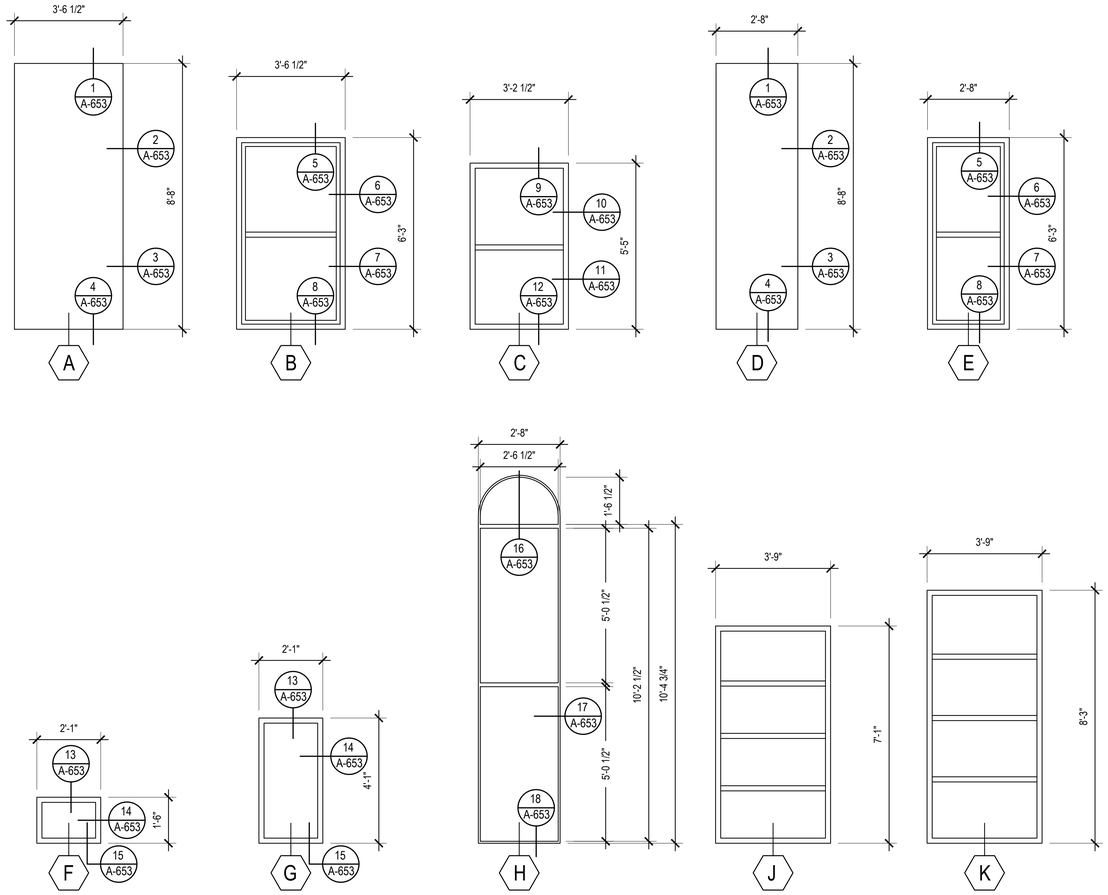

1 A-651 WINDOW TYPES

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

WINDOW SCHEDULE						
WINDOW LABEL	TYPE	DESCRIPTION	HEIGHT	WIDTH	GLAZING	REMARKS
A1	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A2	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A3	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A4	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A5	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A6	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A7	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A8	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A9	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A10	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A11	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A12	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A13	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A14	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A15	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
A16	A		8'-8"	3'-6 1/2"		EXISTING WINDOW AND FRAME TO REMAIN.
B1	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B2	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B3	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B4	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B5	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B6	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B7	B	SINGLE HUNG	6'-3"	3'-6 1/2"		
B8	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN & NEW LOWER INSULATED GLASS UNIT TO MATCH EXISTING
B9	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN & NEW UPPER SASH TO MATCH EXISTING
B10	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW UPPER INSULATED GLASS UNIT TO MATCH EXISTING
B11	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B12	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN TO MATCH EXISTING
B13	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN & NEW LOWER INSULATED GLASS UNIT TO MATCH EXISTING
B14	B	SINGLE HUNG	6'-3"	3'-6 1/2"		NEW SCREEN & NEW LOWER INSULATED GLASS UNIT TO MATCH EXISTING
B15	B	SINGLE HUNG	6'-3"	3'-6 1/2"		
C1	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C2	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C3	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C4	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C5	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C6	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C7	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C8	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C9	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C10	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C11	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
C12	C	SINGLE HUNG	5'-5"	3'-2 1/2"		REMOVE & PAINT MESH WINDOW PROTECTION TO MATCH EXISTING. INSTALL NEW STORM WINDOW. REINSTALL MESH WINDOW PROTECTION.
D1	D		8'-8"	2'-8"		EXISTING WINDOW AND FRAME TO REMAIN.
D2	D		8'-8"	2'-8"		EXISTING WINDOW AND FRAME TO REMAIN.
D3	D		8'-8"	2'-8"		EXISTING WINDOW AND FRAME TO REMAIN.
D4	D		8'-8"	2'-8"		EXISTING WINDOW AND FRAME TO REMAIN.
E1	E	SINGLE HUNG	6'-3"	2'-8"		NEW SCREEN TO MATCH EXISTING
E2	E	SINGLE HUNG	6'-3"	2'-8"		NEW SCREEN & NEW LOWER INSULATED GLASS UNIT TO MATCH EXISTING. REPLACE WINDOW STOOL.
E3	E	SINGLE HUNG	6'-3"	2'-8"		NEW SCREEN TO MATCH EXISTING. REPLACE WINDOW STOOL.
E4	E	SINGLE HUNG	6'-3"	2'-8"		NEW SCREEN & NEW LOWER INSULATED GLASS UNIT TO MATCH EXISTING. REPLACE WINDOW STOOL.
F1	F		1'-6"	2'-1"		NEW PROJECT- OUT WINDOW
F2	F		1'-6"	2'-1"		NEW PROJECT- OUT WINDOW
F3	F		1'-6"	2'-1"		NEW PROJECT- OUT WINDOW
F4	F		1'-6"	2'-1"		NEW PROJECT- OUT WINDOW
G1	G		4'-1"	2'-1"		NEW PROJECT- OUT WINDOW
H1	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H2	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H3	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H4	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H5	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H6	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
H7	H		10'-4"	2'-8"		NEW FROSTED GLAZING SYSTEM
J1	J		7'-1"	3'-9"		EXISTING WINDOW AND FRAME TO REMAIN.
J2	J		7'-1"	3'-9"		EXISTING WINDOW AND FRAME TO REMAIN.
J3	J		7'-1"	3'-9"		EXISTING WINDOW AND FRAME TO REMAIN.
J4	J		7'-1"	3'-9"		EXISTING WINDOW AND FRAME TO REMAIN.
K1	K		8'-3"	3'-9"		
K2	K		8'-3"	3'-9"		
K3	K		8'-3"	3'-9"		

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ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

WINDOW TYPES

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

A-651

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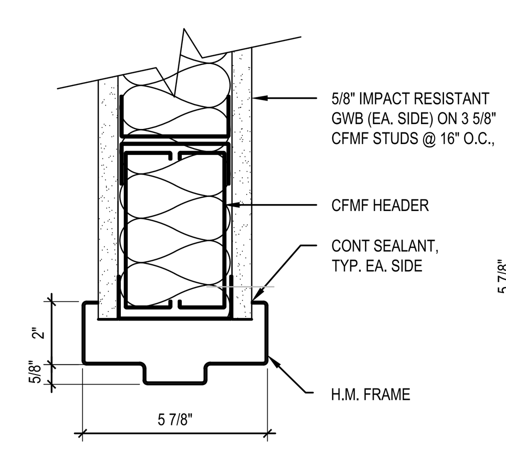
DOOR SCHEDULE

DOOR #	DESCRIPTION							FRAME DETAILS		HARDWARE SET	REMARKS
	DOOR WIDTH	DOOR HEIGHT	DOOR THICKNESS	DOOR TYPE	FRAME TYPE	MATERIAL: DOOR	MATERIAL: FRAME	HEAD	JAMB		
E100A	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E100B	3'-0"	7'-0"	1 3/4"			HM	HM			A	
D100C	3'-0"	7'-0"	1 3/4"			HM	HM	H-1	J-1	F	
E100D	3'-0"	7'-0"	1 3/4"			HM	HM			F	
E101A	3'-4"	8'-5"	1 3/4"			WD	WD			E	
E101B	6'-0"	7'-3"	1 3/4"			HM	HM			H	
E101C	6'-0"	7'-0"	1 3/4"			HM	HM			G	
D102	3'-0"	7'-0"	1 3/4"			HM	HM	H-2	J-2	C	
D103	3'-0"	7'-0"	1 3/4"			HM	HM	H-2	J-2	C	
E104	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E105A	3'-0"	7'-0"	1 3/4"			WD	WD			E	
E105B	3'-3 1/2"	7'-2"	1 3/4"			WD	WD			B	
E105C	3'-8"	7'-2"	1 3/4"			WD	WD			B	
E105D	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E105E	3'-0"	7'-0"	1 3/4"			WD	WD			B	
E106A	3'-0"	7'-0"	1 3/4"			HM	HM			B	
E106B	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E106C	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E107	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E108A	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E108B	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E109	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E110A	3'-0"	7'-0"	1 3/4"			HM	HM			B	
E110B	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E111	3'-0"	7'-0"	1 3/4"			HM	HM			B	
E112	6'-0"	7'-0"	1 3/4"			HM	HM			H	
EX112A	3'-0"	7'-0"	1 3/4"			WD	WD			E	
E113A	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E113B	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E114	3'-0"	7'-0"	1 3/4"			WD	WD			B	
E115	3'-0"	7'-0"	1 3/4"			WD	WD			B	
E116A	6'-0"	7'-0"	1 3/4"			HM	HM			H	
E116B	3'-0"	7'-0"	1 3/4"			WD	WD			B	
E117A	3'-0"	7'-0"	1 3/4"			WD	WD			B	
E117B	3'-0"	7'-0"	1 3/4"			WD	WD			D	
E117C	3'-0"	7'-0"	1 3/4"			WD	WD			D	
E118	3'-0"	7'-0"	1 3/4"			WD	WD			C	
E119	3'-0"	7'-0"	1 3/4"			WD	WD			C	
D200	6'-0"	7'-0"	1 3/4"			HM	HM	H-1	J-1	H	
E201	3'-0"	7'-0"	1 3/4"			HM	HM			B	
E202A	3'-0"	7'-0"	1 3/4"			HM	HM			A	
E202B	3'-0"	7'-0"	1 3/4"			HM	HM			D	
D203	3'-0"	7'-0"	1 3/4"			HM	HM	H-1	J-1	B	
D204	3'-0"	7'-0"	1 3/4"			HM	HM	H-1	J-1	B	
E205	3'-0"	7'-0"	1 3/4"			HM	HM			B	
E206	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E207	3'-0"	7'-0"	1 3/4"			HM	HM			E	
E208	3'-0"	7'-0"	1 3/4"			HM	HM			E	
D209	3'-0"	7'-0"	1 3/4"			WD	WD	H-1	J-1	C	
D210	3'-0"	7'-0"	1 3/4"			WD	WD	H-1	J-1	C	
E211	3'-0"	7'-0"	1 3/4"			HM	HM			E	



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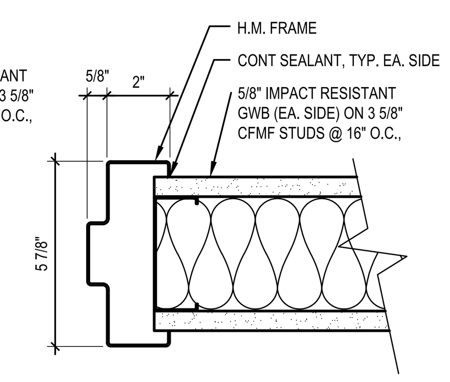

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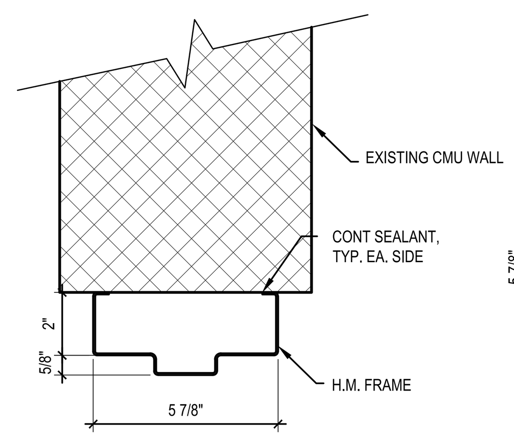

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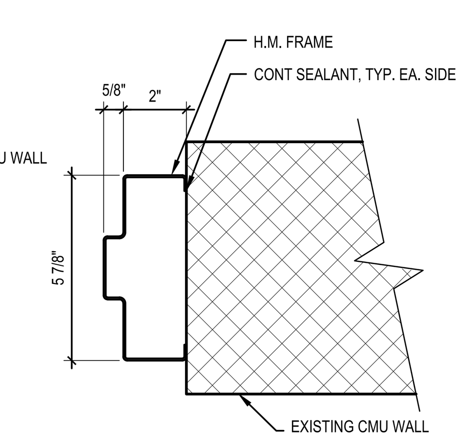

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HARDWARE SET "A": EXTERIOR DOOR

Opening to Have:

Qty Description	Finish Mfg
3 HINGE CB168 4.5 x 4.5	652 DORMAKABA
1 EXTERIOR LOCKSET (7 PIN SFIC) - ARROW MLX CYLINDRICAL LEVER	26D SATIN CHROME PLATED
1 DOOR CLOSER 4011 x REG-H	689 LCN
1 WALL STOP 1270WV	630 TRIMCO
3 SILENCERS 1229A	GRAY TRIMCO

HARDWARE SET "B": SINGLE DOOR (OFFICE)

Opening to Have:

Qty Description	Finish Mfg
3 HINGE CB168 4.5 x 4.5	652 DORMAKABA
1 OFFICE LOCKSET (7 PIN SFIC) - ARROW MLX CYLINDRICAL LEVER	26D SATIN CHROME PLATED
1 DOOR CLOSER 4011 x REG-H	689 LCN
1 KICK PLATE 10" x 2" LDW .050 x B4E x CTSK	630 TRIMCO
1 MOP PLATE 6" x 1" LDW .050 x B4E x CTSK	630 TRIMCO
1 WALL STOP 1270WV	630 TRIMCO
3 SILENCERS 1229A	GRAY TRIMCO

HARDWARE SET "C": SINGLE DOOR (PRIVACY)

Opening to Have:

Qty Description	Finish Mfg
3 HINGE CB168 4.5 x 4.5	652 DORMAKABA
1 PRIVACY LOCKSET (7 PIN SFIC) - ARROW MLX CYLINDRICAL LEVER	26D SATIN CHROME PLATED
1 DOOR CLOSER 4011 x REG-H	689 LCN
1 KICK PLATE 10" x 2" LDW .050 x B4E x CTSK	630 TRIMCO
1 MOP PLATE 6" x 1" LDW .050 x B4E x CTSK	630 TRIMCO
1 WALL STOP 1270WV	630 TRIMCO
3 SILENCERS 1229A	GRAY TRIMCO

HARDWARE SET "D": SINGLE DOOR (CLOSET)

Opening to Have:

Qty Description	Finish Mfg
3 HINGE CB168 4.5 x 4.5	652 DORMAKABA
1 CLOSET LOCKSET (7 PIN SFIC) - ARROW MLX CYLINDRICAL LEVER	26D SATIN CHROME PLATED
1 DOOR CLOSER 4011 x REG-H	689 LCN
1 KICK PLATE 10" x 2" LDW .050 x B4E x CTSK	630 TRIMCO
1 MOP PLATE 6" x 1" LDW .050 x B4E x CTSK	630 TRIMCO
1 WALL STOP 1270WV	630 TRIMCO
3 SILENCERS 1229A	GRAY TRIMCO

DOOR AND FRAME NOTES:

1. SEE ENLARGED H.M. FRAME ELEVATIONS AND DETAILS FOR ADDITIONAL INFORMATION.
2. VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION
3. PREP AND PAINT H.M. FRAME TO REMAIN.
4. COLOR SELECTION:
   HM FRAME: PT - 04
   WD DOOR: TBD

HARDWARE NOTES:

1. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP W/ ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST TO OPERATE. (ANSI A117.1-2009 SECTION 404.2.6)
2. DOOR CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO AN OPEN POSITION OF 12 DEGREES SHALL BE 5 SECONDS MINIMUM. (ANSI A117.1-2009 SECTION 404.2.7.1)
3. DOOR SPRING HINGES SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 70 DEGREES, THE DOOR SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MINIMUM. (ANSI A117.1-2009 SECTION 404.2.7.2
4. IF DOOR THRESHOLDS ARE PROVIDED THEY SHALL BE 1/2" MAXIMUM HEIGHT. RAISED THRESHOLDS AND CHANGES IN LEVELS AT DOORWAYS SHALL COMPLY W/ ANSI A117.1- 2009 SECTIONS 302 AND 303)
5. ALL WIRING CONDUIT IDENTIFIED ON THE DWGS, OR REQUIRED FOR THE INSTALLATION OF ELECTRONIC COMPONENTS, THAT IS WITHIN HOLLOW METAL FRAMES SHALL BE PROVIDED AS PART OF THE HOLLOW METAL FRAME, W/ TERMINATIONS APPROPRIATE FOR EXTENSION BY OTHER TRADES.
6. ALL LOCKSETS SHALL BE IN COMPLIANCE WITH BAY HEALTH STANDARDS AND SHALL MATCH EXISTING MANUFACTURER, STYLE, COLOR, AND FINISH. ALL LOCKS SHALL BE KEYED TO EXISTING MASTER

HARDWARE SET "E": STOREROOM DOOR

OPENING TO HAVE:

QTY DESCRIPTION:	FINISH MFG
3 HINGE BB0168 4.5 X 4.5	652 BAHCO
1 STOREROOM LOCKSET C880Y X LRC	626 DORMAKABA
1 CYLINDER CORE (LFIC) K800 X 7-PIN	626 YALE
1 KICK PLATE 16" X 2" LDW .050 X B4E X CTSK	630 TRIMCO
1 MOP PLATE 6" X 1" LDW .050 X B4E X CTSK	630 TRIMCO
1 WALL STOP 1270WV	630 TRIMCO
3 SILENCERS 1229A	GRAY TRIMCO

HARDWARE SET "F": PUSH/PULL DOOR

QTY DESCRIPTION	FINISH MFG
3 HINGE BB0168 4.5 X 4.5	652 BAHCO
2 PUSH / PULL BAR 1747-1 X (1) TYPE-N X (1) TYPE-L	710CU TRIMCO
1 DOOR CLOSER 8916FC X SDST X LSN	689 DORMAKABA
1 DROP PLATE DP89	689 DORMAKABA
1 BLADE STOP SPACER BSHD	689 DORMAKABA
1 ANGLE BRACKET SHOE NFHD	689 DORMAKABA
3 SILENCERS 1229A	GRAY TRIMCO

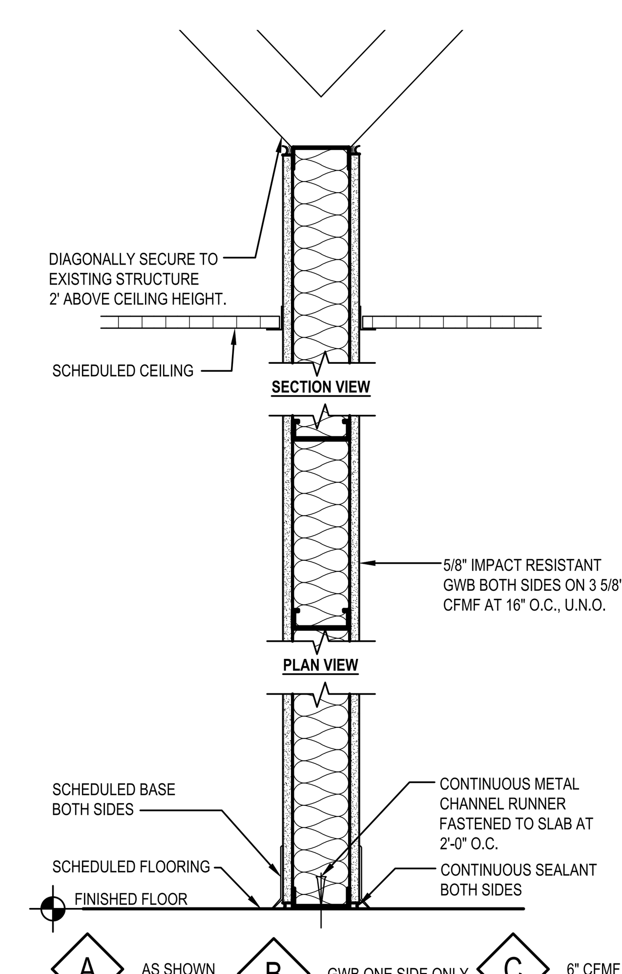
HARDWARE SET "G": PAIR OF EXT. DOORS

QTY DESCRIPTION	FINISH MFG
6 HINGE CB168 4.5 X 4.5 X NRP	652 DORMAKABA
1 RIM CYLINDER (IC) 64-6334	626 SARGENT
1 SVR EXIT DEVICE 9827L-F X 996L X LBR	626 VON DUPRIN
2 DOOR CLOSER 4011 X REG	689 LCN
2 KICK PLATE 16" X 1" LDW .050 X B4E X CTSK X ULS	630 TRIMCO
2 MOP PLATE 6" X 1" LDW .050 X B4E X CTSK X ULS	630 TRIMCO
2 WALL STOP 1270WV	630 TRIMCO
1 TEAR DROP SEAL 797B X HEAD & JAMBS	BLK REESE
2 FLUSH BOLT 3917 1" X 6-3/4" X 12"	626 TRIMCO
1 O/H SURFACE STOP 4414 X HO (36" TO 48" DR)	630 ABH
1 ASTRAGAL A548S X SQUARE EDGE X FULL HEIGHT	630 ABH

HARDWARE SET "H": PAIR OF INT. DOORS

OPENING TO HAVE:

QTY DESCRIPTION	FINISH MFG
6 HINGE BB0168 4.5 X 4.5 X NRP	652 BAHCO
1 RIM CYLINDER (LFIC) K840 X 7-PIN X CT7LL	626 YALE
1 SVR EXIT DEVICE F9400 X YR08C X L X LB	630 DORMAKABA
1 SVR EXIT DEVICE F9400 X YRDT X L X LB	630 DORMAKABA
2 DOOR CLOSER 8916FC X SPA X LSN	689 DORMAKABA
2 KICK PLATE 16" X 1" LDW .050 X B4E X CTSK	630 TRIMCO
2 MOP PLATE 6" X 1" LDW .050 X B4E X CTSK	630 TRIMCO
2 WALL STOP 1270WV	630 TRIMCO
1 TEAR DROP SEAL 797B X HEAD & JAMBS	BLK REESE



TYPICAL WALL TYPE

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

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SIGNATURE: ______________
DATE OF SIGNATURE: ______________
DATE OF REGISTRATION EXPIRATION: ______________

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

DOOR SCHEDULE, WALL TYPES AND DETAILS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

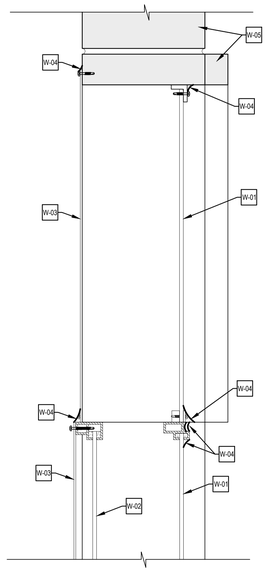
A-652

WINDOW KEY NOTES

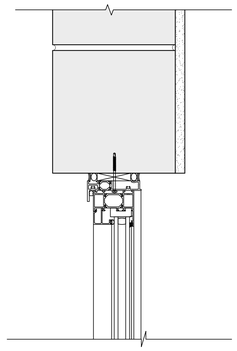
W-01	TYPE "H" EXTERIOR UNITS - REMOVE EXISTING FIXED TRANSLUCENT 1/4" ACRYLIC GLAZING UNITS (T0P, BOTTOM & ARCH HEAD) INCLUDING ALL FRAMES AND FASTENERS. INSTALL NEW ALUMINUM FRAME FIXED TRANSLUCENT 1/4" ACRYLIC GLAZING UNITS (T0P, BOTTOM & ARCH HEAD). FILL FASTENER HOLES LEFT BY DEMOLITION AND INSTALL NEW UNITS WITH CONCEALED FASTENERS.
W-02	TYPE "H" CENTER UNITS - REMOVE ONLY BROKEN FIXED 1/4" ACRYLIC UNITS AND REPLACE WITH NEW ALUMINUM FRAMED 1/4" ACRYLIC UNITS. BASE BID TO INCLUDE REPLACEMENT VALUE FOR 25% OF OVERALL TYPE "H" CENTER UNITS. PROVIDE UNIT PRICE FOR EACH 32" x 32" UNIT.
W-03	TYPE "H" INTERIOR UNITS - REMOVE EXISTING FIXED TRANSLUCENT 1/4" ACRYLIC SHEETS AND FASTENERS FROM FACE OF CENTER UNITS BEHIND. INSTALL NEW ALUMINUM FRAME FIXED TRANSLUCENT 1/4" ACRYLIC GLAZING UNITS (INCLUDING ARCH HEAD).
W-04	REMOVE EXISTING SEALANT, PREP SURFACES, AND INSTALL NEW SEALANT AT ALL JOINTS.
W-05	EXISTING MASONRY OPENING TO REMAIN. REPOINT MASONRY JOINTS AT SILLS, JAMBS AND HEADS AS REQUIRED TO PROVIDE FLUSH, EVEN AND CLEAN MASONRY SURFACES TO RECEIVE SEALANT BED.

GENERAL NOTES AT WINDOW UNITS

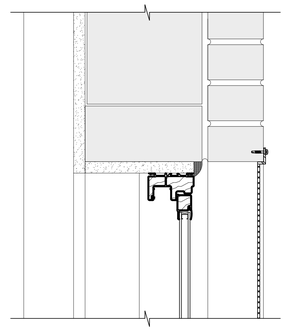
AT ALL NEW WINDOW UNITS, REMOVE EXISTING SEALANT FROM PERIMETER OF UNIT. REPOINT MASONRY JOINTS AT SILLS, JAMBS AND HEADS AS REQUIRED TO PROVIDE FLUSH, EVEN AND CLEAN MASONRY SURFACES TO RECEIVE SEALANT BED. INSTALL NEW SEALANT AT PERIMETER JOINTS AND AT JOINTS BETWEEN NEW FIXED UNITS. SHADED AREAS DENOTE EXISTING MASONRY OPENINGS TO REMAIN. SEE DETAILS 16, 17 AND 18 ON THIS SHEET FOR EXAMPLES.



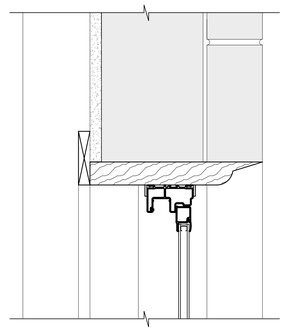
16 / A-653 TYPE H- HEAD DETAIL
SCALE: 3" = 1'-0"



13 / A-653 TYPE F, G- HEAD DETAIL
SCALE: 3" = 1'-0"



9 / A-653 TYPE C- HEAD DETAIL
SCALE: 3" = 1'-0"



5 / A-653 TYPE B, E- HEAD DETAIL
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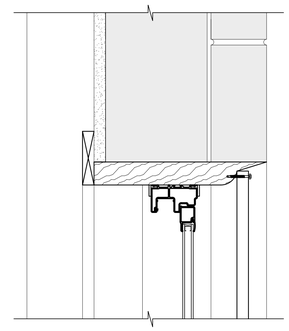

1 / A-653 TYPE A, D- HEAD DETAIL
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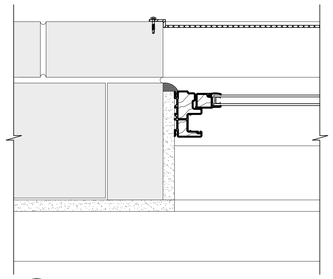

10 / A-653 TYPE C- UPPER JAMB DETAIL
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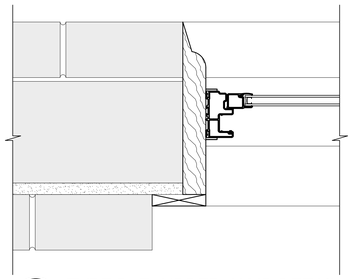

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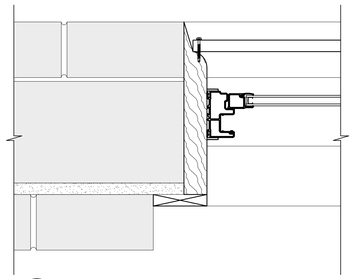

2 / A-653 TYPE A, D- UPPER JAMB DETAIL
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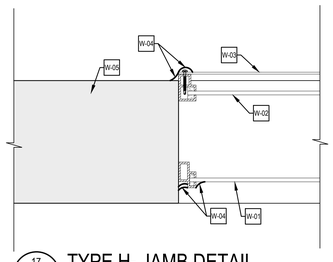

17 / A-653 TYPE H- JAMB DETAIL
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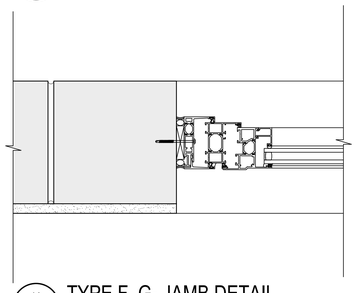

14 / A-653 TYPE F, G- JAMB DETAIL
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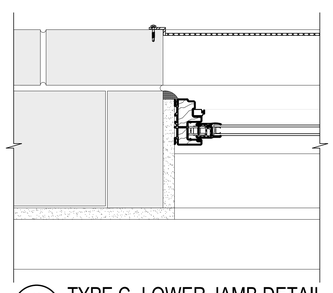

11 / A-653 TYPE C- LOWER JAMB DETAIL
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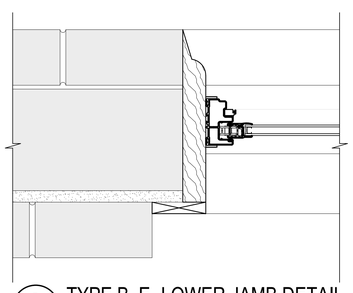

7 / A-653 TYPE B, E- LOWER JAMB DETAIL
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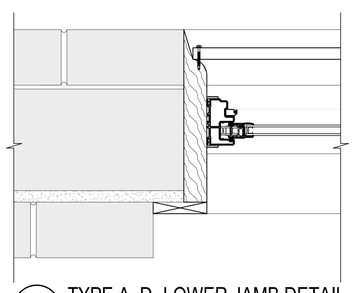

3 / A-653 TYPE A, D- LOWER JAMB DETAIL
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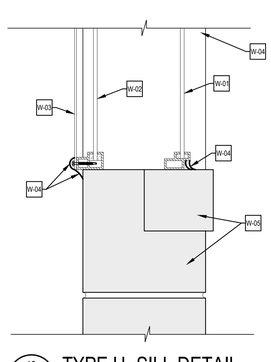

18 / A-653 TYPE H- SILL DETAIL
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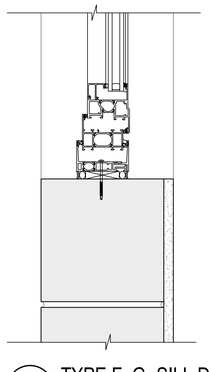

15 / A-653 TYPE F, G- SILL DETAIL
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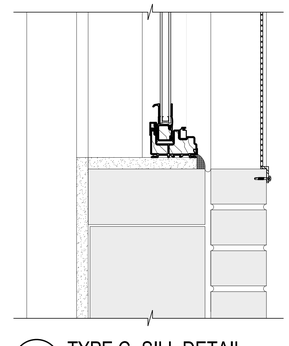
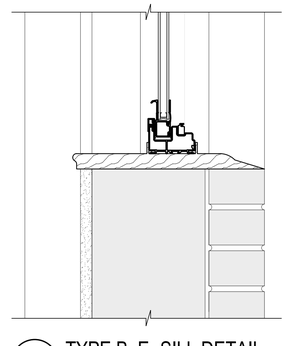


12 / A-653 TYPE C- SILL DETAIL
SCALE: 3" = 1'-0"



8 / A-653 TYPE B, E- SILL DETAIL
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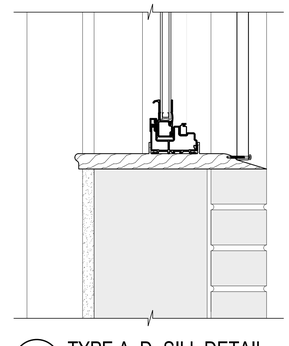

4 / A-653 TYPE A, D- SILL DETAIL
SCALE: 3" = 1'-0"

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2/3/2021 7:24 PM

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DATE OF SIGNATURE: _____
DATE OF REGISTRATION EXPIRATION: _____

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

WINDOW DETAILS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.
A-653

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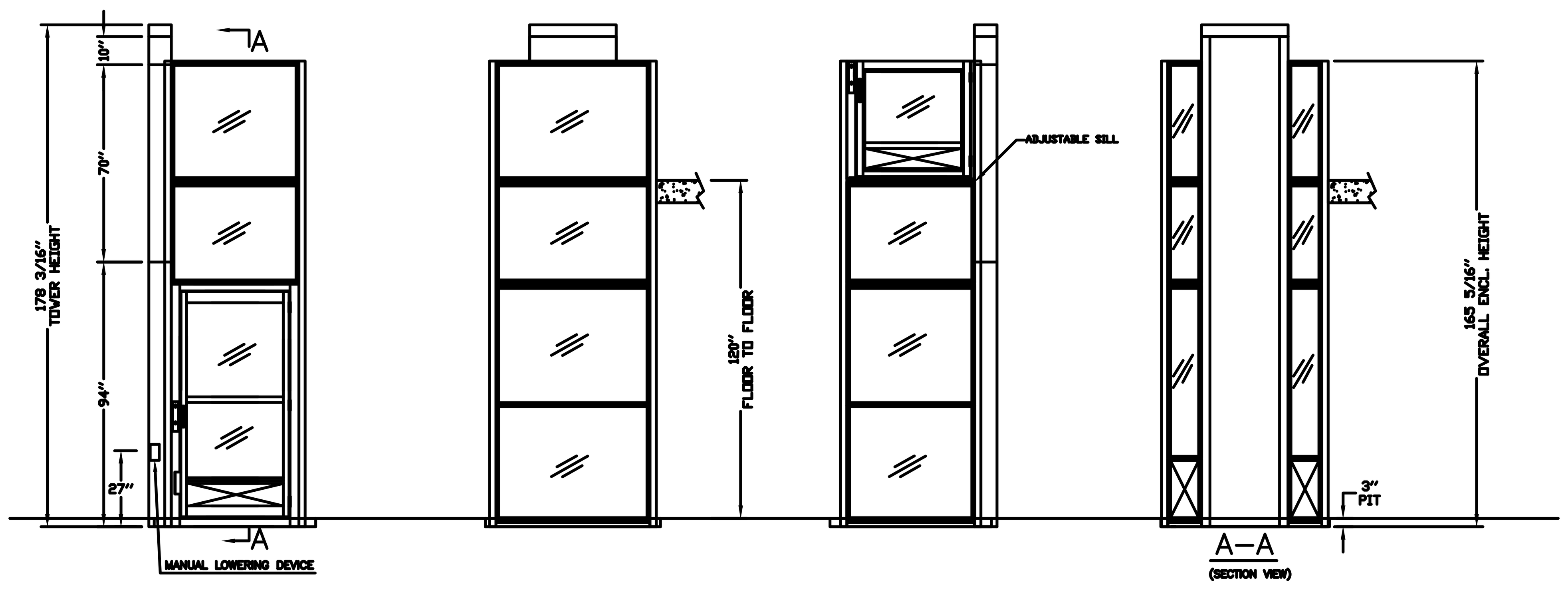
2/3/2021 7:24 PM

PANEL DRAWING



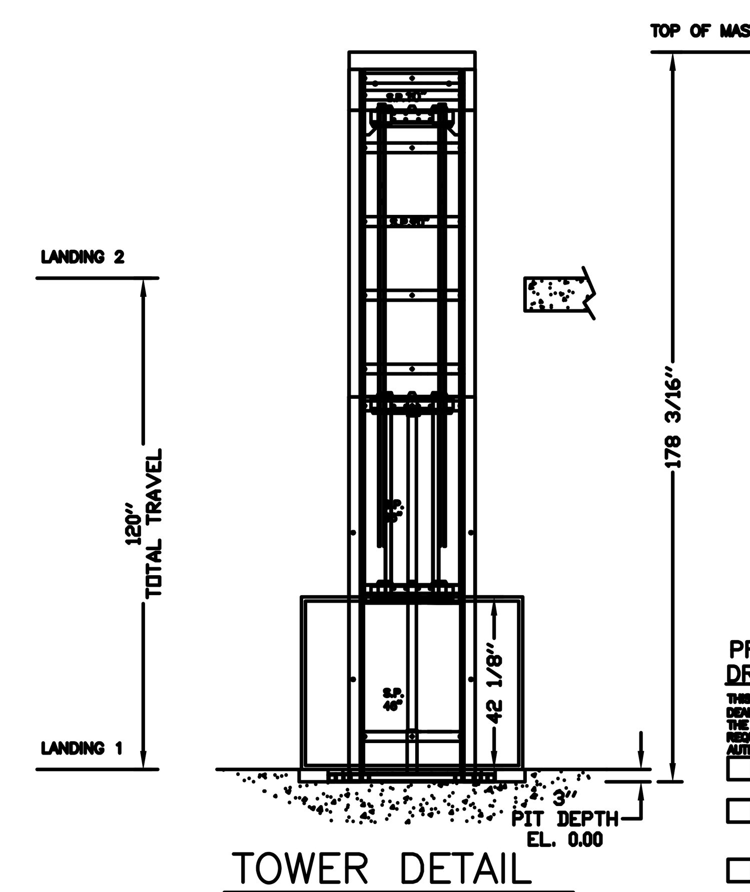
INSERT STYLE: DOOR & GATE
- SHEET METAL
- CLEAR PLEXIGLASS

INSERT STYLE: Enclosure
- SHEET METAL
- CLEAR PLEXIGLASS

OFFICE USE ONLY:		Part No. V-1504 ENCLOSURE
	0.0	Variant No. 1003151
CUSTOMER: 101 MOBILITY – NEW ENGLAND	DATED: 12/14/20	
PROJECT: CITY OF PROVIDENCE	12/14/20	
ADDRESS: No. Street, City		JOB No. P00000 SHEET No. 3 OF 4

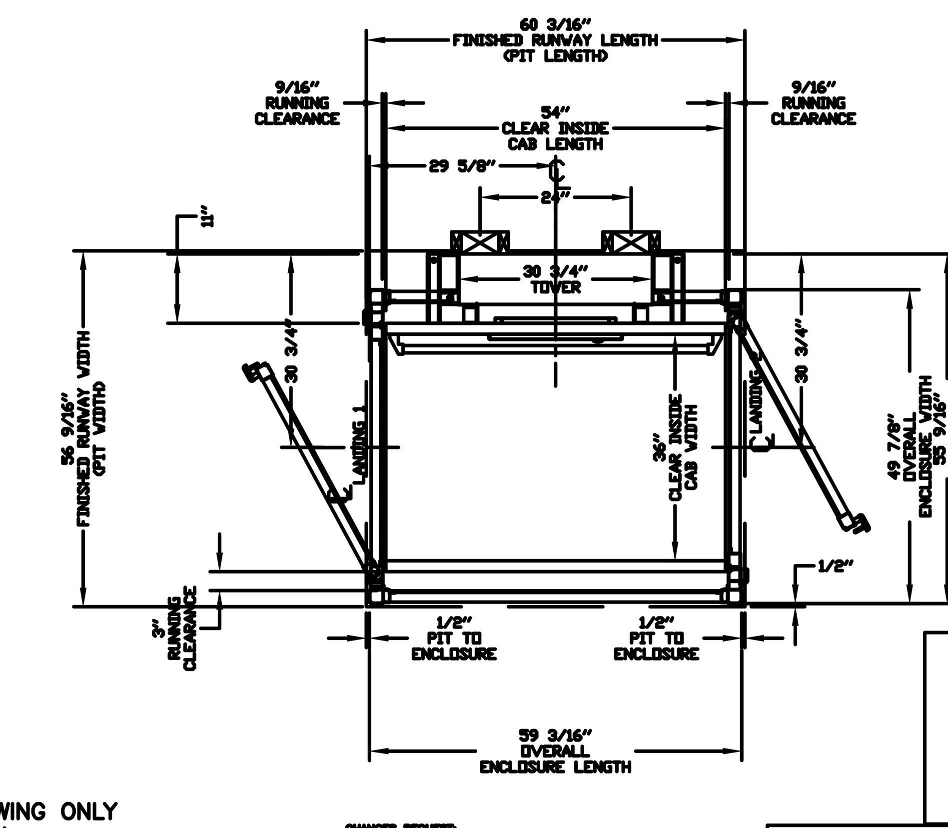
ELEVATION VIEWS
ENCLOSED VERTICAL WHEELCHAIR PLATFORM LIFT

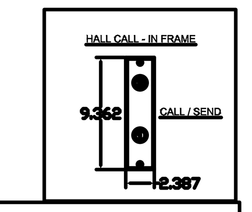
ENCLOSURE DOOR WIDTH DOESN'T ALWAYS MATCH INSIDE PLATFORM DIMENSION. IF THERE ARE CONCERNS ABOUT THE DOOR SWING CONFLICTING WITH AN OBSTRUCTION, PLEASE REQUEST FURTHER DETAIL.

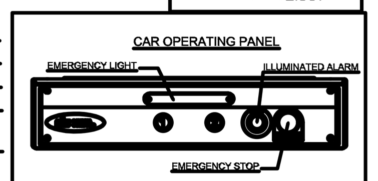


TOWER DETAIL

TYPICAL PLAN







PRELIMINARY DRAWING ONLY
DRAWING APPROVAL:
THIS DRAWING REFLECTS OUR INTERPRETATION OF THE INFORMATION PROVIDED BY THE DEALER ON THE ORDER FORM. THIS INFORMATION IS THE DEALER'S RESPONSIBILITY, AND IS THE BASIS FROM WHICH THIS LIFT IS DESIGNED AND MANUFACTURED. PLEASE INDICATE THE REQUESTED ACTION BY CHECKING ONE OF THE FOLLOWING BOXES AND SIGNING BELOW TO AUTHORIZE COMPLETION OF THIS ORDER.
- ☐ APPROVED WITH NO EXCEPTIONS — MANUFACTURE PRODUCT AS PER DRAWING
- ☐ APPROVED WITH EXCEPTIONS, NO REAPPROVAL REQUIRED — MAKE CHANGES AS NOTED, NO REAPPROVAL DRAWING REQUIRED
- ☐ CHANGE AS NOTED, REAPPROVAL REQUIRED — MAKE CHANGES AS NOTED, SEND CORRECTED DRAWING FOR REAPPROVAL BEFORE MANUFACTURE

CHANGES REQUEST:
1. ______
2. ______
3. ______
4. ______

SIGNATURE: ______ DATE: ______
CAUTION: ONCE THE DRAWING IS APPROVED, JOB CANCELLATION FEES WILL APPLY

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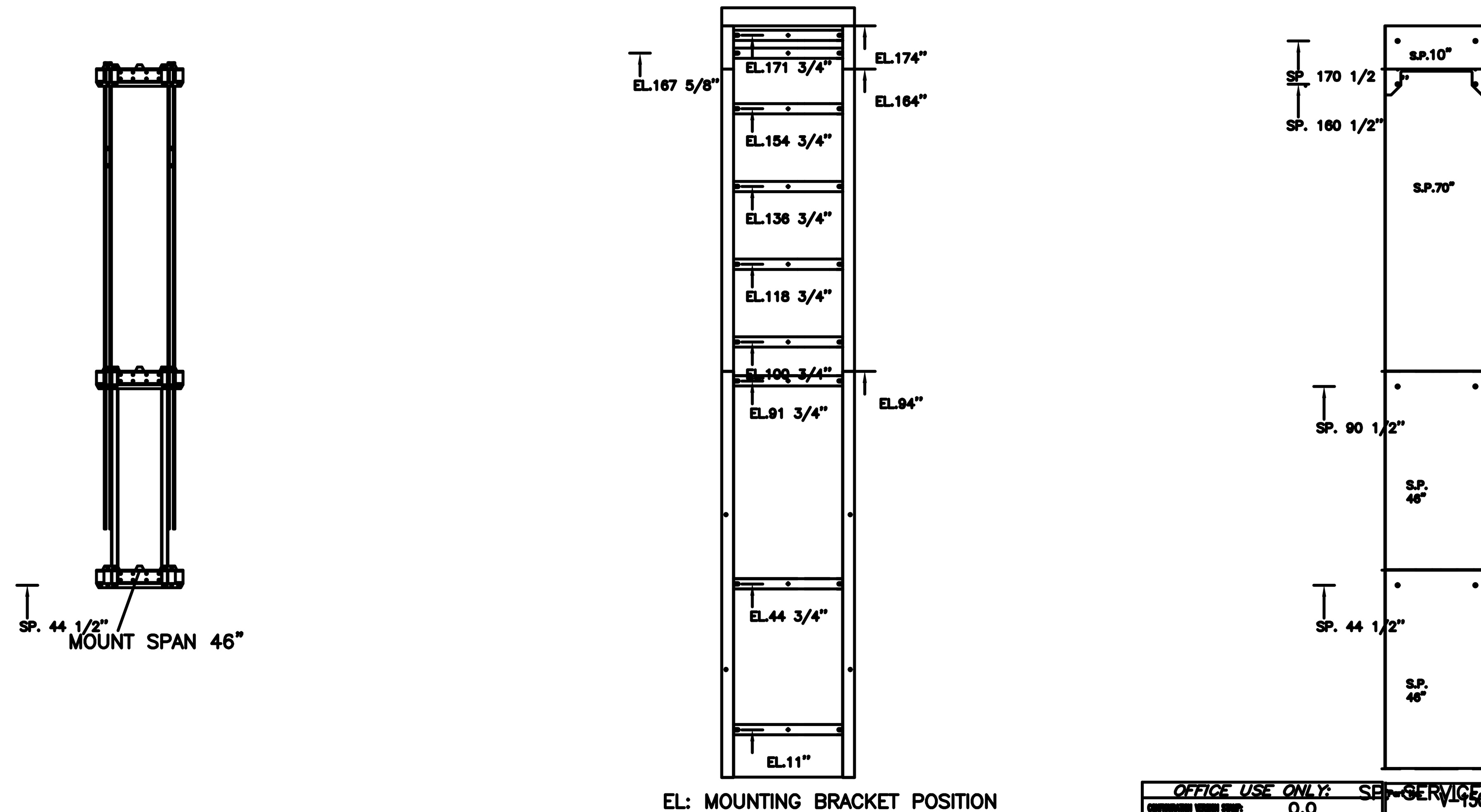
	0.0	Variant No. 1003151
CUSTOMER: 101 MOBILITY – NEW ENGLAND	DATED: 12/14/20	
PROJECT: CITY OF PROVIDENCE	12/14/20	
ADDRESS: No. Street, City		JOB No. P00000 SHEET No. 1 OF 4

GENERAL ARRANGEMENT
ENCLOSED VERTICAL WHEELCHAIR PLATFORM LIFT



EL: MOUNTING BRACKET POSITION

SP: SERVICE PANEL

LOADS CALCULATED ON BASED ON ANCHOR POINTS EVERY 48" EVERY TOWER SECTION NEEDS TO BE ANCHORED. IF SPACING IS INCREASED, LOADS PER BRACKETS WILL INCREASE ACCORDINGLY

OFFICE USE ONLY:		Part No. V-1504 ENCLOSURE
	0.0	Variant No. 1003151
CUSTOMER: 101 MOBILITY – NEW ENGLAND	DATED: 12/14/20	
PROJECT: CITY OF PROVIDENCE	12/14/20	
ADDRESS: No. Street, City		JOB No. P00000 SHEET No. 4 OF 4

ELEVATION VIEWS
ENCLOSED VERTICAL WHEELCHAIR PLATFORM LIFT

PROVISIONS BY OTHERS

GENERAL
HOISTWAY – THE HOISTWAY MUST BE DESIGNED AND BUILT IN ACCORDANCE WITH "SAFETY STANDARD FOR PLATFORM LIFTS AND STAIRWAY CHAIRLIFTS" OR "SAFETY CODE FOR ELEVATORS AND ESCALATORS" AND ALL STATE AND LOCAL CODES.

PLUMB RUNWAY– DUE TO CLOSE RUNNING CLEARANCES OWNER/AGENT MUST ENSURE THAT HOISTWAY AND PIT (WHERE PROVIDED) ARE LEVEL, PLUMB (–/+ 1/8" (3 mm)) AND SQUARE AND ARE IN ACCORDANCE WITH THE DIMENSIONS ON THESE DRAWINGS.

MINIMUM OVERHEAD CLEARANCE– OWNER/AGENT MUST ENSURE MINIMUM OVERHEAD CLEARANCE IS IN COMPLIANCE WITH CODES.

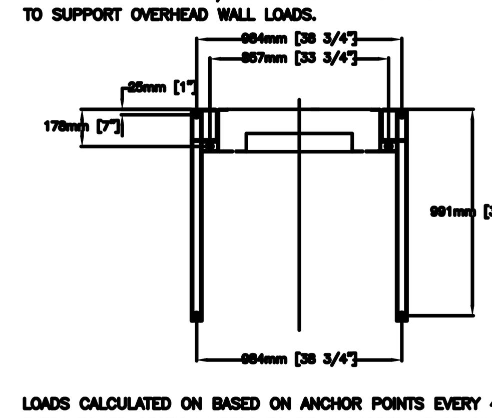
CONSTRUCTION SITE– OWNER/AGENT TO PROVIDE ALL MASONRY, CARPENTRY AND DRYWALL WORK AS REQUIRED AND SHALL PATCH AND MAKE GOOD (INCLUDING FINISH PAINTING) ALL AREAS WHERE WALLS/FLOORS MAY REQUIRE TO BE CUT, DRILLED OR ALTERED IN ANY WAY TO PERMIT THE PROPER INSTALLATION OF THE LIFT.

DIMENSIONS– CONTRACTOR/CUSTOMER TO VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO OUR OFFICE IMMEDIATELY.

STRUCTURAL
FLOOR/SUPPORT WALL LOADS– CONTRACTOR TO ASSURE THAT BUILDING AND SHAFT WILL SAFELY SUPPORT ALL LOADS IMPOSED BY THE LIFT EQUIPMENT. REFER TO THE LOAD DIAGRAM ON THIS DRAWING.

MAST TO BE SECURELY FASTENED– WHERE REQUIRED THE MAST MUST BE SECURELY FASTENED TO THE STRUCTURAL SUPPORT WALL. REFER TO WALL / FLOOR SUPPORT LOAD DIAGRAM AND WALL LAG DIMENSIONS ON THIS DRAWING.

WHERE DOORS ARE REQUIRED– SUITABLE LINTELS MUST BE PROVIDED BY OWNER/AGENT. DOOR FRAMES ARE NOT DESIGNED TO SUPPORT OVERHEAD WALL LOADS.



LOADS CALCULATED ON BASED ON ANCHOR POINTS EVERY 48" EVERY TOWER SECTION NEEDS TO BE ANCHORED. IF SPACING IS INCREASED, LOADS PER BRACKETS WILL INCREASE ACCORDINGLY

ELECTRICAL
GENERAL– ELECTRICAL EQUIPMENT AND WIRING TO COMPLY WITH SECTION 38 OF CSA C22.1 (CANADA) OR SECTION 620 OF NEC ANSI/NFPA 70 (USA).

POWER SUPPLY– 120VAC, 20A, 60HZ, 1PH CIRCUIT THROUGH A FUSE DISCONNECT WITH AUXILIARY CONTACT ON MAIN POWER SUPPLY. PROVIDE TWO 18 AWG CONDUCTORS BETWEEN CONTACT AND CONTROLLER.

LIGHTING– LIGHTING OF 100 LX MIN. AT PLATFORM AND LANDINGS. LIGHTING WITH SWITCH AND ELECTRICAL GFCI OUTLET IN HOISTWAY PIT.

PHONE–IF A TELEPHONE CIRCUIT IS REQUIRED, JACK OR PHONE ARE PROVIDED ON THE CAR. A DEDICATED ANALOG PHONE LINE (NO VOIP) IS REQUIRED TO BE PROVIDED BY OTHERS TO THE CONTROLLER FOR VOIP, PLEASE CONTACT SAVARIA.

SAVARIA LINK REMOTE MONITORING – NOT APPLICABLE
Not required

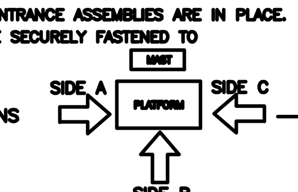
ENTRANCES
UPPER LANDING GATES– WHERE REQUIRED, SMOOTH SOLID BARRIERS ARE TO BE SUPPLIED AND INSTALLED ON BOTH SIDES OF ENTRANCE AT UPPER LEVEL AND MUST BE A MINIMUM OF 42" (1067 mm) HIGH. ENTRANCE ASSEMBLY MUST BE IN PLACE PRIOR TO THIS PROVISION.

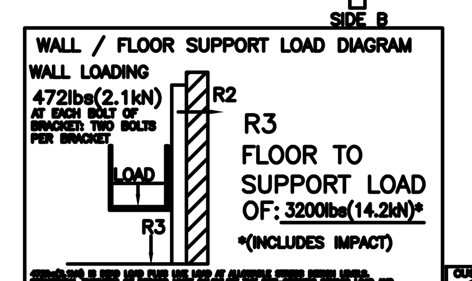
FASCIA PANEL BELOW UPPER LEVEL ENTRANCE– WHERE REQUIRED, FASCIA PANEL MUST BE FASTENED TO A SOLID WALL AND BE PERPENDICULAR TO THE FLOOR AND WALLS. HOISTWAY FASCIA IS NOT SELF–SUPPORTING FOR LONG, CONTINUOUS RUNS VOID OF ENTRANCES. ADEQUATE SUPPORT FOR THE FASCIA MUST BE PROVIDED.

ENTRANCE ASSEMBLIES– ENTRANCE ASSEMBLIES MUST BE ADJUSTED TO ALIGN WITH PLATFORM AND INTERLOCK EQUIPMENT. OTHERS TO ALLOW AN ADEQUATE ROUGH OPENING.

RETURN WALLS– RETURN WALLS AT ENTRANCES MUST BE BUILT–IN BY OTHERS AFTER ENTRANCE ASSEMBLIES ARE IN PLACE. ENTRANCE ASSEMBLY MUST BE SECURELY FASTENED TO WALLS.

ENTRANCE LOCATIONS





SPECIFICATIONS

GENERAL

CLASSIFICATION:	Enclosed Vertical Wheelchair Platform Lift
APPLIED CODE:	ASME A18.1-2014 Section 2 Pub
SPECIAL NOTE:	
MODEL:	V–1504 Enclosure
CAPACITY:	750 lbs (341 kg)
NOMINAL SPEED:	20 fpm (0.102 m/s)
TRAVEL:	120" (3048 mm)
PIT DEPTH:	3" (76 mm)
PLATFORM SIZE:	36" X 54" (914 mm X 1372 mm)
POWER SUPPLY:	120V,20A,60Hz,SINGLE PHASE
BATTERY BACK UP:	down direction only

JACK UNIT

STROKE:	72" (1829 mm)
PLUNGER O/D:	1.5" (38 mm)
CYL. O/D:	2.125" (54 mm)
CYL. I/D:	1.75" (44 mm)

CONTROLLER

MODEL:	V–1504
TYPE:	CPFS
QPS #:	LR1390–7R1
H.P.:	1.5 HP USED FROM 3HP
MFR.:	SAVARIA

POWER UNIT

MOTOR:	3.0 HP, 24V DC
FLOW:	1.15 Gal/min (4.35L/min)

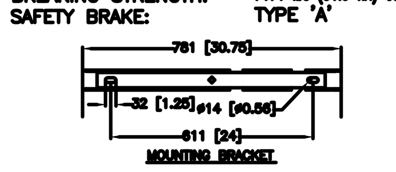
CAB FINISH STEEL W PAINT

HYDRAULIC DATA

OIL TYPE:	UNIVIS 32 INDOOR DEXRON ATF OUTDOOR
GALLONS REQ'D:	1.0 Gal (3.79 L)
MAXIMUM WORKING PRESSURE:	2500 psi (17.2 MPa)
RELIEF PRESSURE:	WPx125% MAX.
MAXIMUM RELIEF PRESSURE:	2500 psi (17.2 MPa)
HYDRAULIC HOSE:	1/4" (6.4 mm) ID
BURST:	20000 psi (137.9 MPa)
FITTINGS:	1/4" (6.4 mm) NPT MALE

SUSPENSION CHAIN
2X #50 ROLLER CHAIN

BREAKING STRENGTH:	7171 lbs (31.9 kN) each
SAFETY BRAKE:	TYPE 'A'



DOORS / GATES / CALL STATIONS

	LANDING 1	LANDING 2	LANDING 3	LANDING 4
DOOR TYPE	Enclosure 80" Door	42" Gate		
ENTRANCE SIDE	a	c		
DOOR SWING	lh	lh		
DOOR INSERT	Clear Plexiglass	Clear Plexiglass		
LOCK TYPE	WR500 Lock (24V)	WR500 Lock (24V)		
AUTO DOOR OPENER	None	None		
CUSTOM DOOR WIDTH				
CUSTOM DOOR HEIGHT				
IN FRAME CALL STN.	yes	yes		
CALL STN. TYPE	Call/Send Buttons	Call/Send Buttons		
CALL STN. KEYED	Not Required	Not Required		
CALL STN. STOP BUTTON	no	no		
CALL STN. MOUNTING	Flush Mounted in Frame	Flush Mounted in Frame		
INSULATED PRODOOR KIT	No	No		

OPTIONS PROVIDED
EMERGENCY PENDENT PLUG IN MANUAL LOWERING BOX

WINGS:	no	RAMP:	No Ramp Required
TOUCH UP PAINT:	1 can(s)	EXTRA KEYS:	0
BUILDING:	Public Building	WALL FASTENERS:	none
LIGHT CURTAIN:	no	UNDERPAN SENSOR:	no
PHONE OR PHONE PLUG:	Hands free phone	UNIT COLOUR:	Standard Color – Almond Beige
FLOOD SWITCH:	no	FLOOR:	Anti–Skid Paint (Grey)
REMOTE MACHINE ROOM:	Not required	FOLD SEAT:	no
LOCATION:	INDOOR		

OFFICE USE ONLY:		Part No. V-1504 ENCLOSURE
	0.0	Variant No. 1003151
CUSTOMER: 101 MOBILITY – NEW ENGLAND	DATED: 12/14/20	
PROJECT: CITY OF PROVIDENCE	12/14/20	
ADDRESS: No. Street, City		JOB No. P00000 SHEET No. 2 OF 4

DATA SHEET
ENCLOSED VERTICAL WHEELCHAIR PLATFORM LIFT

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SIGNATURE: ______
DATE OF SIGNATURE: ______
DATE OF REGISTRATION EXPIRATION: ______
ARCHITECT / ENGINEER SEAL

PROJECT
CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE
LIFT DETAILS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
AM	RJC	20057

SHEET NO.
A-654

GENERAL HVAC NOTES

1. ALL NEW SUPPLY AIR DIFFUSERS AND RETURN AIR REGISTERS SHALL BE EQUIPPED W/ MFGR. SUPPLIED VOLUME DAMPERS.
2. FIRE DAMPERS SHALL BE PLACED IN ALL DUCT OR TRANSFER AIR PENETRATIONS OF ALL FIRE RATED PARTITIONS. SEE ARCHITECTURAL DRAWINGS FOR FIRE RATED PARTITIONS. PROVIDE LABELED ACCESS DOORS AS NEEDED. FIRE DAMPERS AND INSTALLATION ARE TO BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL MECHANICAL CODE.
3. DUCT SMOKE DETECTORS ARE TO BE SUPPLIED AND INSTALLED WHERE SHOWN IN ACCORDANCE WITH NFPA 72. ACCESS SHALL BE PROVIDED TO SMOKE DETECTORS FOR INSPECTION AND MAINTENANCE. ELECTRICAL CONTRACTOR SHALL MAKE APPROPRIATE AND REQUIRED ELECTRICAL CONNECTIONS TO THE DUCT SMOKE DETECTORS AS SPECIFIED AND REQUIRED FOR PROPER OPERATION. DUCT SMOKE DETECTORS SHALL DE-ENERGIZE THE AIR HANDLING UNIT, OR EXHAUST FAN, THAT THEY ARE ASSOCIATED WITH AND ACTIVATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL IN THE BUILDING'S FIRE PROTECTIVE SIGNALING SYSTEM AT A CONSTANTLY ATTENDED LOCATION. ANY SYSTEM THAT IS DE-ENERGIZED BY THE ALARM SHALL NOT RESTART EXCEPT BY MANUAL RESET ON THE UNIT R THROUGH THE BAC SYSTEM. SMOKE DETECTORS SHALL COMPLY WITH SECTIONS 606.2, 606.3 AND 606.4 OF THE 1996 INTERNATIONAL MECHANICAL CODE IN ENTIRETY.
4. PIPES, BUS DUCTS, CABLES, WIRES, AIR DUCTS AND SIMILAR BUILDING SERVICE EQUIPMENT THAT PASS THROUGH SMOKE PARTITIONS SHALL BE PROTECTED AS STATED IN NFPA 101 CHAPTER 6-3.6. THE SPACE BETWEEN THE PENETRATING PIPE OR DUCT AND THE SMOKE BARRIER SHALL:

   A. BE FILLED WITH A MATERIAL CAPABLE OF MAINTAINING THE SMOKE-RESISTANCE OF THE SMOKE BARRIER OR

   B. BE PROTECTED BY AN APPROVED DEVICE DESIGNED FOR THE SPECIFIC PURPOSE.

   INSULATION AND COVERINGS FOR PIPES AND DUCTS SHALL NOT PASS THROUGH FIRE BARRIERS UNLESS ONE OF THESE REQUIREMENTS IS MET. CONTRACTOR IS RESPONSIBLE FOR CHOOSING WHICH ALTERNATIVE TO USE UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS OR SPECIFICATIONS.
5. INSULATE ALL NEW DUCTWORK AND EQUIPMENT, AS SPECIFIED UNLESS OTHERWISE NOTED. ALL NON-FLEXIBLE DUCTWORK SHALL BE METAL. DUCTBOARD IS PROHIBITED.
6. PROVIDE AND INSTALL ALL GAUGES AND METERS AS SHOWN AND SPECIFIED.
7. MFGR'S OF ALL COILS SHALL ENSURE THAT THE COILS ARE CLEAN AND FREE OF ANY RESIDUE FROM THE MANUFACTURING AND SHIPPING PROCESS. IF COILS ARE FOUND TO BE DIRTY OR SMOKE WHEN HOT WATER IS PROVIDED TO THEM, THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING OF THE COILS, AS WELL AS, CLEANING THE BUILDING FROM SMOKE, COIL EMANATIONS, OR VAPORS.
8. ALL DUCTS SHALL BE CONNECTED TO AIR OUTLETS, AIR INLETS, AND AIR HANDLING DEVICES TO PROVIDE A COMPLETE DUCTWORK SYSTEM. FOR CONNECTION TO AIR OUTLETS UP TO 5 FEET OF FLEX DUCT SHALL BE USED WHERE CONCEALED FROM OCCUPANT VIEW. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRANSITIONS TO ENSURE PROPER AND ADEQUATE CONNECTIONS OF ALL DUCTWORK TO ALL AIR INLETS, OUTLETS, AIR HANDLING DEVICES AND AIR TERMINAL DEVICES. DUCTWORK IS TO BE COORDINATED WITH TRANSFER AIR OPENINGS AND ROOF TRUSS SYSTEM, OR STRUCTURAL STEEL.
9. THE RETURN AIRFLOWS INDICATED ON THE PLANS CORRESPOND TO THE OCCUPIED MODE WITH MINIMUM OUTSIDE AIR BEING SUPPLIED. THE BALANCE REPORT IS TO INDICATE THESE AIRFLOWS IN THIS MODE OF OPERATION.
10. GRAVITY VENTILATORS, ROOF EXHAUSTERS AND ASSOCIATED DUCTWORK CONNECTIONS ARE TO BE COORDINATED WITH BUILDING STRUCTURAL COMPONENTS.
11. HVAC EQUIPMENT SHALL BE FURNISHED WITH A MOTOR STARTER SUITABLE FOR THE OFF-ON CONTROL OF THE MOTOR BY A REMOTE THERMOSTAT OR BAS CONTACT. THESE STARTERS SHALL COMPLY WITH NATIONAL ELECTRIC CODE.
12. ALL AIR HANDLING UNITS ARE TO BE INSTALLED TO PROVIDE ADEQUATE, UNOBSTRUCTED, ACCESS AND CLEARANCE FOR AIR FILTER REPLACEMENT.
13. ALL MOTORS FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR (OR A MECHANICAL SUBCONTRACTOR) SHALL BE PROTECTED AGAINST OVERLOAD IN ACCORDANCE WITH N.E.C. ARTICLE 430, SECTION C.
14. WHERE DEMOLISHING AND REMOVING UV'S, REMOVE ASSOCIATED LOUVER. CONTRACTOR MUST PATCH AND PAINT TO MATCH EXISTING SURROUNDINGS.
15. VENTS AND PLUMBING VENTS SHALL BE LOCATED A MINIMUM OF 10' FROM ANY INTAKE AIR OPENING.
16. MECHANICAL EQUIPMENT AND DEVICES SHALL OPERATE WITHOUT OBJECTIONABLE NOISE AND VIBRATION BEING TRANSMITTED TO OCCUPIED PORTIONS OF THE BUILDING OR ANY PART OF THE BUILDING STRUCTURE BY APPARATUS, PIPING, DUCTWORK, CONDUITS, OR OTHER PARTS OF THE MECHANICAL SYSTEM. SECURE AND BRACE ALL PIPING AND DUCTWORK, PROVIDE FLEXIBLE CONNECTION, VIBRATION ISOLATORS, OR OTHER DEVICES WHERE INDICATED OR REQUIRED TO PREVENT THE TRANSMISSION OF NOISE AND VIBRATION TO THE BUILDING. NC LEVEL IS 35.
17. ALL NEW CEILING MOUNTED AIR INLETS AND AIR OUTLETS ARE TO BE COORDINATED WITH LIGHTING. A NEAT, SYMMETRICAL INSTALLATION IS TO BE MAINTAINED, WITH CEILING MOUNTED AIR INLETS/OUTLETS IN PROXIMITY TO LOCATIONS SHOWN ON THE PLANS. IN THE CASE THAT THERE IS A CONFLICT, THE LOCATION OF THE LIGHTING WILL TAKE PRIORITY AND THE INLET/OUTLET SHALL BE RELOCATED AS CLOSE AS POSSIBLE. DUCTWORK SHOP DRAWINGS ARE TO SHOW PLACEMENT OF AIR INLETS/OUTLETS WITH LIGHTING OVERLAID ON THE SAME PLAN. CONTRACTORS ARE TO USE REFLECTED CEILING PLAN AS BASIS FOR COORDINATION.
18. THE CONTRACTOR SHALL PROVIDE ALL WALL AND ROOF PENETRATIONS REQUIRED FOR DUCT ROUTING. THE CONTRACTOR SHALL PATCH AND PAINT ALL PENETRATIONS LEFT BY DEMOLITION WORK AND BY CLEARANCE OPENINGS THAT REMAIN AFTER NEW DUCT INSTALLATIONS.
19. NOTIFY THE OWNER IN THE EVENT ANY EXISTING HAZARDOUS MATERIALS, SUCH AS ASBESTOS, PCB'S, LEAD, ETC., ARE ENCOUNTERED ON THE PROJECT. THE OWNER WILL ARRANGE WITH A QUALIFIED SPECIALIST FOR THE IDENTIFICATION, TESTING, REMOVAL, HANDLING AND PROTECTION AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION, TO COMPLY WITH APPLICABLE REGULATIONS, LAWS AND ORDINANCES.
20. ALL THERMOSTATS SHOWN ON HVAC PLANS ARE TO BE MOUNTED 4'-0" MAXIMUM AFF (TOP OF UNIT), UNLESS NOTED OTHERWISE. CONTRACTOR IS RESPONSIBLE FOR MOUNTING & WIRING ALL THERMOSTATS. PLENUM RATED CABLES MUST BE USED.
21. VARIABLE FREQUENCY DRIVES (VFD) SHALL BE CONSIDERED SYNONYMOUS WITH ADJUSTABLE FREQUENCY DRIVES (AFD).
22. THE CONTRACTOR SHALL PROVIDE RADIUSED ELBOWS OR SQUARE THROAT ELBOWS WITH VANES FOR ALL DUCTWORK CHANGES IN DIRECTION, PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE. SQUARE THROAT ELBOWS WITHOUT VANES AND MITERED ELBOWS ARE NOT PERMITTED.
23. ALL BLOWER COILS UNITS ARE TO HAVE 24" MINIMAL CLEARANCE ON ACCESS SIDE COORDINATE UNIT SUSPENSION WITH STRUCTURE.
24. ALL GANG TOILET ROOM DOORS ARE TO BE UNDERCUT TO PROVIDE 0.75" CLEARANCE BETWEEN BOTTOM OF DOOR AND FINISHED FLOOR.
25. HANG ALL CEILING MOUNTED UNITS HIGH TO ALLOW FOR CONDENSATE TRAPPING AND GRAVITY VENTS.
26. ALL QUANTITIES TO BE VERIFIED BY CONTRACTOR.
27. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIALS, LABOR AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE BY THE CONTRACTOR.
28. INSTALL ALL EQUIPMENT AND MATERIALS PER MANUFACTURER'S WRITTEN INSTRUCTION.
29. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL COSTS INCURRED AS A RESULT OF SUBSTITUTIONS OR DEVIATIONS FROM THE BASIS OF DESIGN SHOWN ON THESE DRAWINGS.
30. CONTROLS ARE TO BE EXTENDED TO ALL EXISTING, REUSED MECHANICAL EQUIPMENT, INCLUDING EXISTING UNIT VENTILATORS AND EXHAUST FANS. THESE ARE TO BE TIED INTO AND CONTROLLED BY THE NEW BAS SYSTEM.
31. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRANSITIONS AND FLEXIBLE CONNECTIONS BETWEEN ALL UNITS AND SUPPLY, RETURN, OR OUTSIDE AIR DUCTS.
32. CONTRACTOR SHALL PROVIDE NEW DANFOSS OR APPROVED EQUAL VALVES FOR ALL HEAT ONLY COILS.
33. CONTRACTOR SHALL VERIFY THAT ALL EXISTING EQUIPMENT TO BE REUSED IS IN WORKING ORDER.
34. INSTALL REMOTE EMERGENCY SHUTDOWN SWITCH FOR BOILERS ADJACENT TO EACH BOILER ROOM DOOR.

HVAC LEGEND

T	THERMOSTAT
CO	CARBON MONOXIDE
	EXTENT OF WORK
RTU - ?	ROOF TOP UNIT

GENERAL PIPING NOTES

1. INSTALL ALL GAUGES AND METERS AS SHOWN ON DRAWINGS AND AS SPECIFIED.
2. INSULATE ALL PIPING AS SPECIFIED.
3. UNLESS OTHERWISE SHOWN OR SPECIFIED, ALL CONDENSATE DRAINS FROM ALL HVAC UNITS SHALL BE TRAPPED AND PIPED THROUGH THE BUILDING AND DRAINED THROUGH THE EXTERIOR WALL OF THE BUILDING AT A HEIGHT NOT TO EXCEED 18" ABOVE GRADE. PIPE SIZES SHALL MATCH SIZE OF DRAIN CONNECTION AT A MINIMUM. UNIT DRAINS SHALL NOT BE GANGED TOGETHER UNLESS APPROVED BY ARCHITECT/ENGINEER. UNLESS OTHERWISE SHOWN OR STATED, CONDENSATE PIPING SHALL NOT BE EXPOSED.
4. ALL FLOOR PENETRATIONS SHALL BE SLEEVED AND SEALED AS SPECIFIED.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL NEW PIPING PENETRATIONS IN WALLS AND FLOORS. THE PIPING PLANS DO NOT SPECIFICALLY NOTE WHERE PIPING PENETRATES WALLS AND FLOORS. IT IS THE CONTRACTOR'S RESPONSIBILITY PRIOR TO BID TO STUDY THE PLANS AND IF NECESSARY EVALUATE THE SITE, TO ACCOUNT FOR ALL PIPING PENETRATIONS OF THE EXISTING STRUCTURE.
6. THE CONTRACTOR SHALL PROVIDE NEW SUPPORTS OF COMPATIBLE MATERIAL FOR ALL NEW PIPING.
7. PROVIDE NEW DUAL TEMPERATURE WATER SUPPLY AND RETURN PIPING SYSTEM, TO THE EXTENT SPECIFIED AND SHOWN ON CONTRACT DRAWINGS.
8. PROVIDE CHILLED WATER SUPPLY AND RETURN SYSTEM, DOMESTIC WATER DISTRIBUTION SYSTEM, DOMESTIC HOT WATER SUPPLY AND RETURN SYSTEM TO THE EXTENT SHOWN ON PLAN DRAWINGS AND IN DETAILS.
9. ALL CONTROL VALVES TO BE INSTALLED OVER DRAIN PANS IN HVAC UNITS.
10. ALL PIPING SHALL BE SIZED AS CALLED OUT ON DRAWINGS, AND MAY NOT BE DOWN SIZED BETWEEN CONTROL VALVE AND COIL.
11. ALL GAS PIPING IS TO BE INSTALLED PER NFPA 54, AND ALL LOCAL AND NATIONAL CODES.
12. BEFORE ANY SYSTEM OF GAS PIPING IS FINALLY PUT IN SERVICE, IT SHALL BE TESTED TO ENSURE THAT IT IS GAS TIGHT. TO TEST FOR TIGHTNESS, THE PIPING SHALL BE FILLED WITH AIR OR AN INERT GAS, BUT NOT WITH ANY OTHER GAS OR LIQUID. TESTING, INSPECTION AND PURGING OF GAS PIPING SYSTEMS SHALL COMPLY WITH NFPA 54.
13. GAS PIPING ROUTED AT GROUND LEVEL IS TO SIT IN PIPING SADDLES, AND NOT TO BE IN CONTACT WITH CONCRETE OR GROUND.
14. PROVIDE REDUCERS, FITTINGS, AND CONNECTORS TO EQUIPMENT FOR A COMPLETE GAS PIPING INSTALLATION. FITTINGS, JOINTS AND CONNECTIONS SHALL BE OF AN APPROVED TYPE FOR GAS PIPING SYSTEMS.
15. ALL NEW EXPOSED PIPING IN OCCUPIED AREAS SHALL BE ENCLOSED IN CUSTOM FIN TUBE ENCLOSURES OF 14 GA. STEEL. ENCLOSURES SHALL BE BY VULCAN, SHAW-PERKINS, OR TRANE COMPANY. UNITS SHALL BE PAINTED. COLOR SHALL BE SELECTED BY ARCHITECT.
16. PROVIDE AIR VENTS AT ALL HIGH POINTS IN SYSTEM. PROVIDE DRAIN VALVES TO ALL LOW POINTS IN SYSTEM.
17. PROVIDE ISOLATION VALVES AT ALL BRANCH PIPING TAKEOFFS.
18. COORDINATE INSTALLATION OF ALL NEW PIPING WITH EXISTING FIRE PROTECTION PIPING, CONDUIT, EXHAUST/RELIEF DUCT WORK, AND STRUCTURE.
19. PROVIDE SPLASH BLOCKS FOR ALL CONDENSATE DRAINS.
20. FOR CONDENSATE DRAIN PIPING RUNS LONGER THAN 50 FEET, PROVIDE A REMOVABLE PLUG AT A CHANGE OF DIRECTION EVERY 50 FT.

PIPING LEGEND

———	GAS PIPING

MECHANICAL DEMO NOTES & LEGEND

1. ALL DEMOLISHED MECHANICAL UNITS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.
2. ALL DEMOLISHED DUCTWORK, DIFFUSERS, REGISTERS, GRILLES, INSULATION, AND HANGERS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.
3. ALL DEMOLISHED HEATING SUPPLY AND RETURN PIPING, VALVES, FITTINGS, INSULATION AND HANGERS ARE TO BE REMOVED AND TAKEN OFF SITE AND BECOME PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE. PIPING THAT IS TO BE ABANDONED IN PLACE SHALL BE CUT AND CAPPED BELOW FLOOR OR WITHIN TRENCH, AND THE OPENING SEALED WITH CONCRETE.
4. PROVIDE TEMPORARY COVERS AND CAPS FOR TEMPORARILY EXPOSED EXISTING PIPING, EQUIPMENT AND WALL OPENINGS. TEMPORARY COVERS AND CAPS SHALL BE SUFFICIENT TO ENSURE DIRT, WEATHER AND CONSTRUCTION DEBRIS WILL NOT ENTER ANY SYSTEM OR WALL, ROOF OR FLOOR OPENING.
5. REMOVAL AND DISPOSAL OF GAS PIPING AND GAS FIRED APPLIANCES SHALL BE IN CONFORMANCE WITH NFPA 54.
6. EXISTING GAS PIPING SHALL FIRST BE DISCONNECTED FROM ALL SOURCES OF GAS AND THEN THOROUGHLY PURGED WITH AIR, WATER, OR INERT GAS BEFORE CUTTING OR WELDING IS DONE.
7. WHEN GAS PIPING IS OPENED, THE SECTION TO BE WORKED ON SHALL BE TURNED OFF FROM THE GAS SUPPLY AT THE NEAREST CONVENIENT POINT, AND THE LINE PRESSURE VENTED TO THE OUTDOORS, OR TO VENTILATED AREAS OF SUFFICIENT SIZE TO PREVENT ACCUMULATION OF FLAMMABLE MIXTURES. IF THIS SECTION EXCEEDS 50 FEET OF 2.5" PIPING, THE REMAINING GAS PIPING SHALL BE DISPLACED WITH AN INERT GAS.
8. SEE ELECTRICAL PLANS FOR INFORMATION ON WIRING TERMINATION OF DEMO'D EQUIPMENT.
9. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING DEMOLITION PLAN.
10. PATCHING AND PAINTING AT UNIT VENTILATOR, FIN TUBE, UNIT HEATER, AND THERMOSTAT LOCATIONS BY GENERAL TRADES. SEE ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULE.
11. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR ALL ROOFTOP AND WALL OPENINGS CREATED BY DEMOLITION SUITABLE FOR WITHSTANDING WEATHER CONDITIONS.
12. THE CONTRACTOR SHALL PROVIDE FLOOR PROTECTION IN THE GYMNASIUM. ANY DAMAGE TO THE GYMNASIUM FLOOR SHALL BE THE CONTRACTOR'S RESPONSIBILITY, AND REPAIR COSTS SHALL BE BACK CHARGED TO THE CONTRACTOR.
13. ALL ASBESTOS CONTAINING MATERIALS WILL BE REMOVED BY OTHERS PRIOR TO DEMOLITION.
14. THE INFORMATION SHOWN ON THESE DRAWINGS WAS COMPILED FROM EXISTING DRAWINGS AND SITE VISITS. HOWEVER, THE INFORMATION MAY STILL VARY FROM THE ACTUAL INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION FOR DEMOLITION WORK.

(dashed box)	GAS FIRED UNIT HEATER
- - - - - - - -	GAS PIPING

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SIGNATURE: ______
DATE OF SIGNATURE: ______
DATE OF REGISTRATION EXPIRATION: ______

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

MECHANICAL COVER SHEET

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

SHEET NO.

M-000

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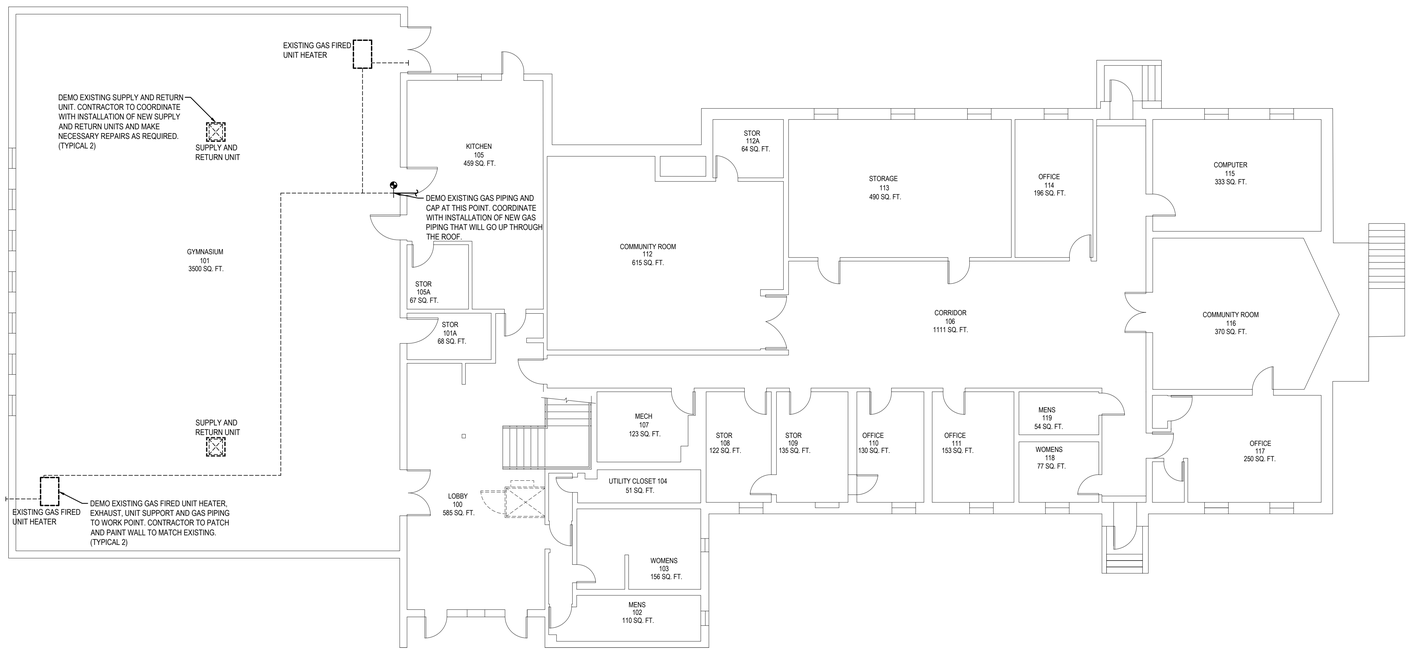

1 MD101 MECHANICAL DEMOLITION PLAN

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

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ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS

AT THE

ELMWOOD COMMUNITY CENTER

155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

MECHANICAL DEMOLITION FLOOR PLAN

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

SHEET NO.

MD101

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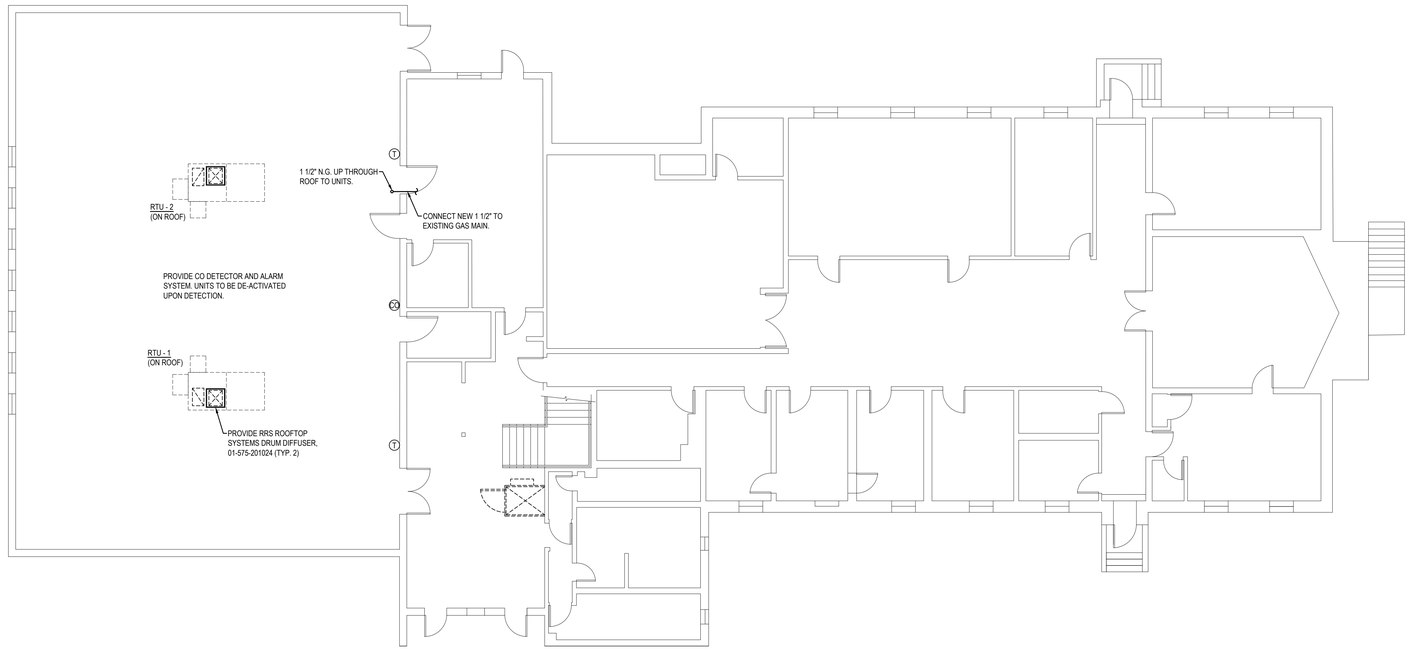


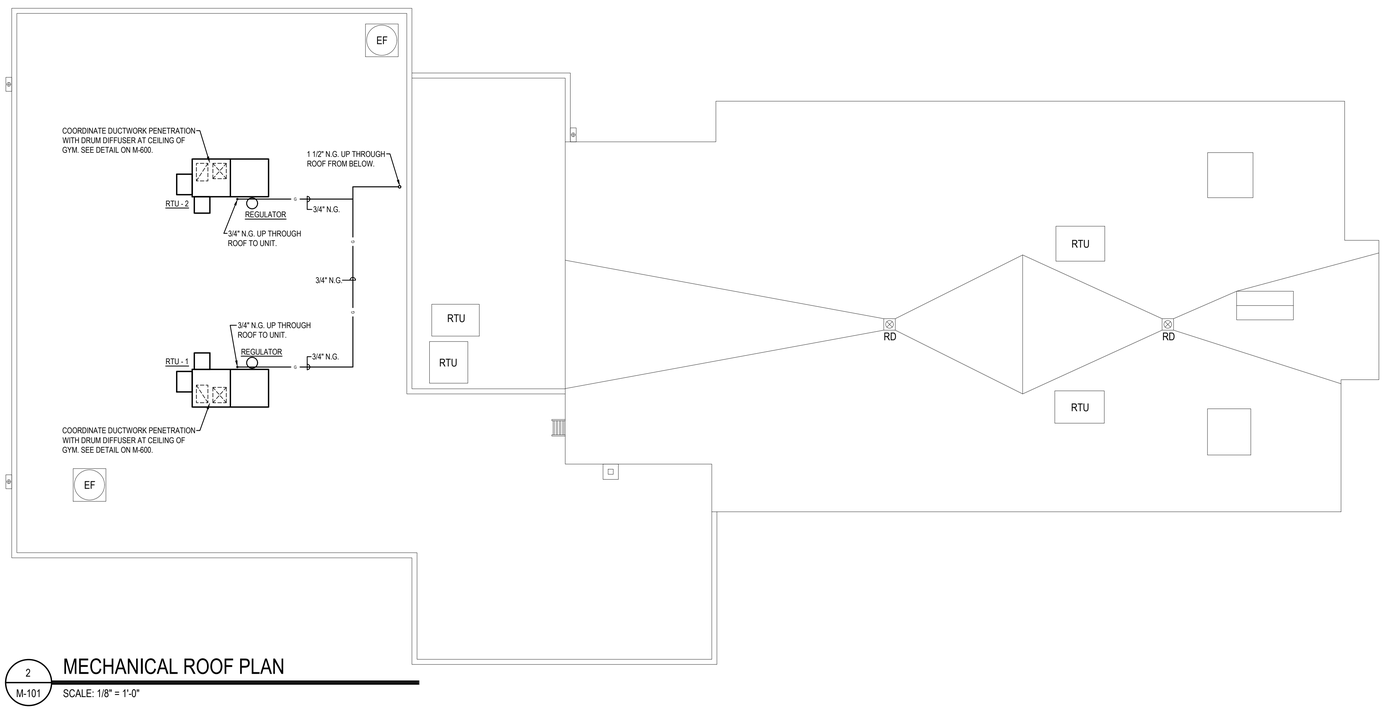
1 M-101 MECHANICAL GYM PLAN

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

Rooftop Air Handling Unit Schedule

						DX Cooling Coil								Natural Gas Heating				
Tag	CFM	Min O/A (CFM)	Ext. SP (in H2O)	Fan HP	Elec	EDB	EWB	LDB	LWB	Sens MBH	Total MBH	EER	IEER	EAT	LAT	INPUT / OUTPUT MBH	EWT	Remarks
RTU-1, 2	3,400	500	1.00	3	208/3/60	79.1	66	57	56	80	106	13.1	21	63.4	90	120 / 96	120	JCI PRO J08ZTN12R2B2G or approved equal.

Notes: Provide factory roof curb, factory programmable thermostat with CO2 controls for outdoor air control, Enthalpy-based economizer, single-point power connection, VFD control for fans, 3-stage cooling.



2 M-101 MECHANICAL ROOF PLAN

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

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SHEET TITLE

MECHANICAL FIRST FLOOR PLAN

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

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M-101

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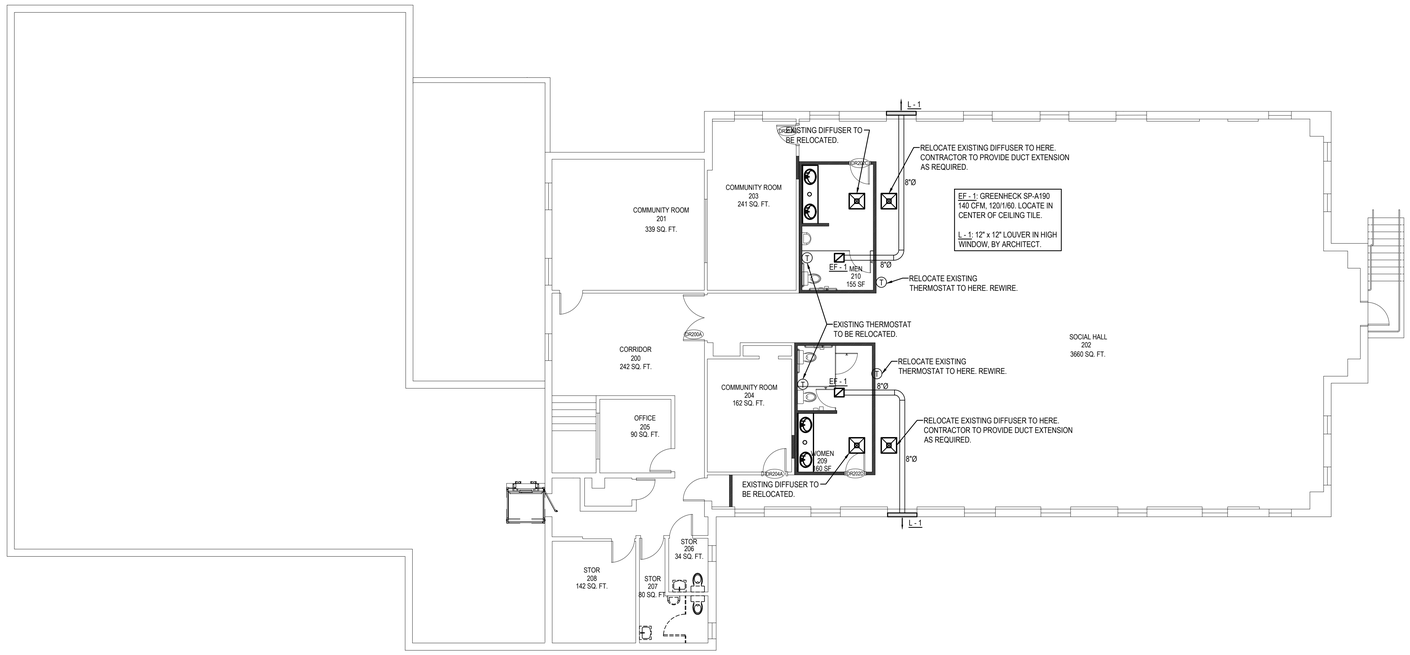

1 / M-102 MECHANICAL SECOND FLOOR PLAN

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

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CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

SHEET NO.

M-102

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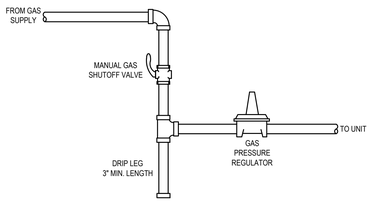


1 M-600

NATURAL GAS DRIP LEG AND REGULATOR DETAIL

SCALE: Not To Scale

RRS ROOFTOP SYSTEMS

SPECIFICATION DATA FOR 01-575-201024 DRUM DIFFUSER

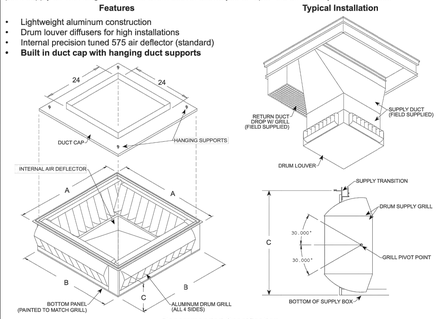
Application

The Ruskin Rooftop Systems 575 series supply diffuser systems are designed to provide an air distribution system with the benefit of having directional air control. The system is ideal for open ceiling applications that need single point supply air with long throws. The Drum Louver allows you to "spot" the air where you need it most.

Features

- Lightweight aluminum construction
- Drum louver diffusers for high installations
- Internal precision tuned 575 air deflector (standard)
- **Built in duct cap with hanging duct supports**

Typical Installation



Recommended Specification

Drum Louver diffuser shall be aluminum construction and provide minimum 30 degree vertical adjustment with full horizontal blade adjustment to deliver single point supply air for large space applications. Manufacturers published data sheet shall include CFM rating, noise, static, and throw information. Drum louver shall be in all respects equivalent to Ruskin Rooftop Systems model 575. Critical: Drum louver shall incorporate a standard 575 precision tuned internal air deflector to ensure quite even airflow to all sides with low pressure drop.

DIMENSIONAL DATA

RRS MODEL#	A	B	C	GRILL SIZE	WEIGHT
01-575-201024	29.625	27.500	13.000	20 x 10	53 LBS

ENGINEERING DATA

RRS MODEL#	CFM	30° DEFLECTION			0° DEFLECTION			GRILL COLOR	DUCT CAP
		NOISE	STATIC	THROW	NOISE	STATIC	THROW		
01-575-201024	4000-5000	<45	.420	34-37	<40	.29	40-45	ALUMINUM/GRAY	INCLUDED

APRIL 3, 2020 FORM# RRS_575201024

SUPERSEDES: 10-22-19

RRS ROOFTOP SYSTEMS 1625 Diplomat Drive, Carrollton, Texas 75006-6848 Phone (972) 247-7447 (800) 552-4822 Fax (972) 243-0940

Johnson Controls

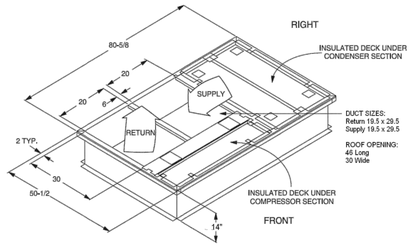
Johnson-Controls® Pro 3- 12.5 Ton Package

Single Package R-410A Air Conditioner

Project Name: **Elmwood Rec Center** Unit Model #: **J08ZTN12R2B2GAA1A1**

Quantity: **2** Tag #: **RTU-1A & 1B high** System: **J08ZTN12R2B2GAA1A1**

1RC0471 Roof Curb



* Supply and Return Air (Including duct support rails) as shown, are typical for bottom duct applications.

For location of horizontal duct applications (On rear of unit), refer to Unit Dimensions details.

1RC0471 Roof Curb Dimensions

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SHEET NO.

M-600

ELECTRICAL SYMBOL LEGEND

Power Devices

SYMBOL	DESCRIPTION
	GENERAL PURPOSE DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R. ELECTRICAL BOX TO BE 2-1/8" DEEP.
	GENERAL PURPOSE QUADRUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R. ELECTRICAL BOX TO BE 2-1/8" DEEP.
GFCI	GENERAL PURPOSE GFCI RECEPTACLE (DUPLEX OR QUADRUPLEX) - 20AMP, 125VOLTS, NEMA5-20R. ELECTRICAL BOX TO BE 2-1/8" DEEP.
WP/GFCI	GENERAL PURPOSE GFCI DUPLEX RECEPTACLE - 20AMP, 125VOLTS, NEMA5-20R. ELECTRICAL BOX TO BE 2-1/8" DEEP. OUTLETS INSTALLED OUTDOORS OR ON ROOF SHALL HAVE DIECAST ALUMINUM BOX 2-1/8" DEEP (MIN.), AND WHILE IN USE WEATHERPROOF COVER; THOMAS&BETTS CKSUV OR APPROVED EQUAL.
	GENERAL PURPOSE SINGLE RECEPTACLE - 220V, NEMA RATING NOTED ON PLANS.
J	JUNCTION BOX
SM	FRACTIONAL HORSEPOWER MOTOR STARTER WITH OVERLOAD IN NEMA 1 ENCLOSURE; SQ'D FG1P OR APPROVED EQUAL FOR INDOORS, FW1P FOR OUTDOORS WITH NEMA 4 ENCLOSURE
	FUSED DISCONNECT SWITCH-HEAVY DUTY, 3POLE WITH FUSE CLIPS SUITABLE FOR CLASS "R" FUSES. NEMA1 UNLESS NOTED. WP-WEATHER PROOF-NEMA3R ENCLOSURE. (NOMENCLATURE: 30A/20A = SWITCH SIZE/FUSE SIZE). SQ D CLASS 3110 OR EQUAL

Lighting Controls

SYMBOL	DESCRIPTION
$	WALL SWITCH - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$3	WALL SWITCH (3-WAY) - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
$4	WALL SWITCH (4-WAY) - 20A, 120/277V, SINGLE POLE, HEAVY DUTY, TOGGLE TYPE
MS	WIRELESS CEILING MOUNTED MOTION SENSOR (OCCUPANCY); LUTRON / LRF2-OCR2B-P-WH OR APPROVED EQUAL.
OR	WALL MOUNTED OR CEILING MOUNTED EMERGENCY EXIT SIGN
OR	WALL MOUNTED OR CEILING MOUNTED EMERGENCY EXIT SIGN WITH EMERGENCY LIGHTS
	WALL MOUNTED EMERGENCY LIGHTS

Communication Devices

SYMBOL	DESCRIPTION
SP	SPEAKER - CEILING MOUNT

ELECTRICAL GENERAL NOTES

1. PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, ADDITIONAL DESIGN AND ALL INCIDENTALS NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DETAILED ON PLANS TO THE SATISFACTION OF THE ENGINEER AND THE OWNER. COORDINATE ALL WORK WITH THE ENGINEER BEFORE THE START OF WORK.
2. PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIAL, LABOR, AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE VISIT BY THE CONTRACTOR.
3. PERFORM WORK AS REQUIRED BY APPLICABLE CODES, REGULATIONS, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE.
4. MATERIAL AND EQUIPMENT SHALL BE NEW (UNLESS NOTED), UL, NEMA, ANSI, IEEE, ADA & CMB APPROVED FOR INTENDED PURPOSE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND LOCAL ELECTRICAL CODE.
5. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS, AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
6. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
7. GUARANTEE WORK IN WRITING PER SPECIFICATIONS, REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER DURING THE GUARANTEE PERIOD. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER. SUBMIT GUARANTEE TO OWNER BEFORE FINAL PAYMENT.
8. COORDINATE ALL ELECTRICAL ITEMS WITH EXISTING FIELD CONDITIONS. LOCATIONS SHOWN ARE APPROXIMATE AND MAY REQUIRE MINOR ADJUSTMENT IN THE FIELD TO SATISFY THE DESIGN INTENT.
9. DAMAGE TO EXISTING FACILITIES AND EQUIPMENT SHALL BE REPAIRED OR REPLACED IMMEDIATELY BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. THE LOCATIONS ON THESE PLANS ARE APPROXIMATE AND REQUIRE COORDINATION WITH ALL OTHER TRADES AND VERIFICATION OF EXISTING CONDITIONS. ROUTING OF CONDUIT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL REQUIRED OFFSETS AND DETAILS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING ASSOCIATED EQUIPMENT AND CONDITIONS. COORDINATE THE LOCATION OF ALL EQUIPMENT WITH THE ENGINEER AND THE OWNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL OTHER TRADE'S DRAWINGS AND SPECIFICATIONS AND COORDINATING WITH ALL OTHER TRADES DURING BIDDING AND CONSTRUCTION. THE CONTRACTOR IS TO INCLUDE CIRCUIT LENGTHS OF WIRE AND CONDUIT REQUIRED TO INSTALL CONNECTED DEVICES AND EQUIPMENT SUCH AS PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, ETC. WITHIN 15 FEET OF THE LOCATION SHOWN.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUITY OF ALL POWER, CONTROL, FIRE ALARM, SECURITY SYSTEMS, AND COMMUNICATIONS FUNCTIONS TO ALL AREAS AFFECTED BY DEMOLITION AND/OR NEW CONSTRUCTION.
12. REPAIR AND PATCH ANY DISTURBED AREAS TO MATCH ADJACENT CONSTRUCTION.
13. DISCONNECT AND MAKE SAFE ANY EQUIPMENT TO BE REMOVED BY OTHERS. COORDINATE REMOVAL OF EQUIPMENT WITH OTHER TRADES PRIOR TO DEMOLITION.
14. IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADE'S WORK, THIS CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY OR ALL ELECTRICAL ITEMS IN PATH OF WORK, REINSTALLING, AND RECONNECTING SAME AS REQUIRED, IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADE'S WORK IN THAT AREA.
15. PRIOR TO THE START OF DEMOLITION, CONTRACTOR SHALL FIELD VERIFY ALL BRANCH CIRCUITS AND MAINTAIN THOSE CIRCUITS THAT EXTEND OUTSIDE THE SCOPE OF WORK.
16. AFTER RENOVATING EXISTING ELECTRICAL WORK, THE CONTRACTOR SHALL ENSURE THAT ALL REMAINING AND NEW EQUIPMENT WILL OPERATE PROPERLY, INCLUDING BUT NOT LIMITED TO BACKFEEDING OF EXISTING POWER AND LIGHTING CIRCUITS. REFER TO SINGLE LINE DIAGRAM.
17. ALL ELECTRICAL WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED TO PREVENT ANY DAMAGE.
18. WHERE ELECTRICAL SYSTEMS PASS THROUGH RENOVATED AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, SYSTEMS SHALL BE SUITABLY PROTECTED TO PREVENT DAMAGE OR RELOCATED AND THE SYSTEMS RESTORED TO NORMAL OPERATION. ANY OUTAGES IN SYSTEMS SHALL BE COORDINATED WITH OWNER. RESTORE POWER TO EXISTING TO REMAIN EQUIPMENT IF INTERRUPTED BY DEMOLISHED CIRCUITS IN THE AREA.
19. CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL EQUIPMENT AND MATERIALS USED ON THE PROJECT. SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER BEFORE PURCHASE OF MATERIALS.
20. ALL WIRING SHALL BE COPPER, 600V, 75°/90° RATED WITH FLAME-RETARDENT, HEAT AND MOISTURE RESISTANT INSULATION.
21. PERMANENTLY LABEL ALL NEW ELECTRICAL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, DEVICE DESIGNATION AND SUPPLY CIRCUIT DESIGNATION. UPDATE OR REPLACE PANEL DIRECTORIES TO INCLUDE NEW CIRCUIT INFORMATION RESULTING FROM THIS PROJECT.
22. PROVIDE TEMPORARY POWER AND LIGHTING FOR ALL TRADES AS REQUIRED TO COMPLETE THE PROJECT. ALL TEMPORARY AND INTERIM EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS INCLUDING, BUT NOT LIMITED TO NFPA 110 AND NFPA 70.
23. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION THAT IS NOT SHOWN ON THE DRAWINGS.
24. OPENINGS IN EXISTING CONCRETE AND MASONRY WALLS AND FLOORS REQUIRED FOR CONDUIT INSTALLATION SHALL BE CORE DRILLED. MAXIMUM CORE DRILL SIZE SHALL BE 5" IN DIAMETER. CORE DRILL LOCATIONS SHALL BE SPACED A MINIMUM OF 6" FROM EACH OTHER MEASURED FROM THE OUTSIDE EDGE OF THE CORE DRILL. ALL CORE DRILL OPENINGS SHALL BE PROPERLY SEALED ACCORDING TO THEIR LOCATION AND APPLICATION.
25. ALL OUTAGES SHALL BE KEPT TO A MINIMUM. ALL WORK THAT REQUIRES A SUSTAINED EQUIPMENT OUTAGE SHALL BE PERFORMED CONTINUOUSLY AROUND THE CLOCK UNTIL WORK IS COMPLETED UNLESS NOTED OTHERWISE. COORDINATE OUTAGES WITH OWNER REPRESENTATIVE.
26. PROVIDE FOR EACH BRANCH CIRCUIT AND FEEDER CIRCUIT A DEDICATED EQUIPMENT GROUND WIRE. FOR SINGLE PHASE BRANCH CIRCUITS OF 120 V/1PH OR 277V/1 PH, PROVIDE DEDICATED HOT, DEDICATED NEUTRAL AND DEDICATED EQUIPMENT GROUND WIRES. SHARING OF NEUTRAL OR EQUIPMENT GROUND WIRES IS NOT PERMITTED. WIRING TO ALL HVAC EQUIPMENT OR OTHER TRADE EQUIPMENT SHALL BE IN CONDUIT. ALL EQUIPMENT AND FEEDER WIRING IN MECHANICAL ROOM/ELECTRICAL ROOM SHALL BE IN RIGID CONDUIT. USE OF MC CABLE IS LIMITED TO BRANCH CIRCUIT WIRING ABOVE RECESSED CEILING OR CONCEALED IN WALL. WIRING TO OUTLETS ON TABLE SHALL BE PROVIDE IN EITHER EMT CONDUIT OR FLEXIBLE METAL CONDUIT. DO NOT USE PLASTIC TIE WRAPS TO SUPPORTS CONDUITS AND MC CABLES.
27. PROVIDE IDENTIFICATION LABELS FOR ALL BRANCH CIRCUITS AND FEEDERS CIRCUITS AT JUNCTION BOXES, PANELBOARDS, TROUGHS, AND SPLICE BOXES.
28. PROVIDE UNSPLICED FEEDERS FROM PANELBOARD OR SWITCHBOARD TO ALL EQUIPMENT, INCLUDING ALL 20 AMPERE, SINGLE POLE BRANCH CIRCUIT WIRING.
29. ALL WIRING DEVICES ARE TO BE RECESSED WHERE POSSIBLE. WHERE RECESSING IS NOT POSSIBLE, WIRING DEVICES ARE TO BE SURFACE MOUNTED WITH CIRCUIT WIRING ROUTED IN SURFACE MOUNTED CONDUIT PER SPECIFICATIONS.
30. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL (2) #14-3/4" FROM EACH VENDOR SUPPLIED DUCT SMOKE DETECTOR TO FACP. INSTALLATION OF DETECTOR BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY ELECTRICAL TERMINATIONS. EACH BLOWER COIL (BC) AND EACH ENERGY RECOVERY VENTILATOR (ERV) WILL HAVE (1) SUPPLY DUCT SMOKE DETECTOR AND (1) RETURN DUCT SMOKE DETECTOR.
31. VFD CABLE SHALL BE OKONITE C-L-X TYPE MC-HL (XHHW2) OR APPROVED EQUAL. 3/C VFD CABLE SHALL BE RATED FOR 2000V MARINE CABLE AND UL LISTED AS TYPE MC-HL CABLE PER UL2225(E38916). VFD CABLES SHALL HAVE UNCOATED SOFT COPPER STRANDED CONDUCTORS RATED FOR 90 DEG CENTIGRADE WET OR DRY , CROSS LINK POLYETHYLENE HIGH DIELECTRIC STRENGTH COLOR CODED INSULATION, AND THREE BARE SOFT STRANDED GROUND CONDUCTORS WITH NON-HYGROSCOPIC FILLER AND BINDER TAPE. SHEATH SHALL BE CLOSE FITTING, IMPERVIOUS, CONTINUOUS WELDED CORRUGATED ALUMINUM C-L-X PER UL1569. SHEATH SHALL BE PROTECTED WITH LOW TEMPERATURE BLACK PVC JACKET. CONTRACTOR SHALL PROVIDE PROPER FITTINGS FOR INSTALLATION OF VFD CABLE.
32. ALL CONDUIT PENETRATIONS THROUGH WALLS OR CEILINGS SHALL BE PATCHED AND SEALED WITH FIRE RATED FOAM SEALANT.
33. PROVIDE INSULATING BUSHINGS ON CONDUIT THREADS OR CONNECTORS WHERE RACEWAYS WITH CONDUITS OR MC CABLES ENTER A BOX OR ENCLOSURE. THIS BUSHING SHALL BE INSTALLED ON ALL CABLES AND CONDUITS.
34. PROVIDE FIRE ALARM RATED MC CABLE FOR CONNECTIONS BETWEEN FIRE ALARM DEVICES. MC CABLE SHALL RUN CONCEALED ABOVE CEILINGS AND IN DRYWALL. WHERE EXPOSED, PROVIDE EMT; NO EXPOSED MC CABLE IS PERMITTED.

ELECTRICAL ABBREVIATIONS

(D) - DENOTES EQUIPMENT OR WIRING TO BE DEMOLISHED
(E) - DENOTES EXISTING EQUIPMENT OR WIRING TO REMAIN
(N) - DENOTES NEW EQUIPMENT OR WIRING

A - AMPS
AC - ABOVE CEILING
AF - AMPERE FRAME
AFF - ABOVE FINISHED FLOOR
AT - AMPERE TRIP
ATS - AUTOMATIC TRANSFER SWITCH
BLDG - BUILDING
C - CONDUIT
CB - CIRCUIT BREAKER
DISC - DISCONNECT
ENCL - ENCLOSURE
FA - FIRE ALARM
G - GROUND
GE - GENERAL ELECTRIC
GFCI - GROUND FAULT CIRCUIT INTERRUPTER
KA - KILO AMPERE
KV - KILO VOLT
KVA - KILO VOLT AMPERE
LG - LG CORPORATION
LI - LONG TIME + INSTANTANEOUS
LSI - LONG TIME + SHORT TIME + INSTANTANEOUS
MCB - MINIATURE CIRCUIT BREAKER
MCCB - MOLDED CASE CIRCUIT BREAKER
MDP - MAIN DISTRIBUTION PANEL
MTS - MANUAL TRANSFER SWITCH
MVASC - MEGA VOLT AMPERE SHORT CIRCUIT
NTS - NOT TO SCALE
OC - ON CENTER
PH - PHASE
PNL - PANEL
QO - QWIK OPEN PROTECTION
SP - SPEAKER
SPD - SURGE PROTECTIVE DEVICE
SW - SWITCH
SWBD - SWITCHBOARD
UG - UNDERGROUND
UPS - UNINTERRUPTIBLE POWER SOURCE
V - VOLTS
W - WATTS OR WIRE
WP - WEATHERPROOF
XFMR - TRANSFORMER
Z - IMPEDANCE

GRAPHIC CONVENTIONS

Wiring Devices

HOMERUN PANEL DESIGNATION → PLA-11 ← BRANCH CIRCUIT DESIGNATION

OUTLETS TO BE MOUNTED AT STANDARD HEIGHT UNLESS OTHERWISE NOTED

Disconnects

30A, WP ← DISCONNECT SIZE, WP: WEATHER PROOF

20A, RK1 ← FUSE SIZE, TYPE RK1

Lighting Fixtures

TYPE: A ← LUMINAIRE TYPE - SEE LIGHT FIXTURE SCHEDULE

PLA-11-d

CONTROL DEVICE IDENTIFICATION

BRANCH CIRCUIT NUMBER

PANEL DESIGNATION

Lighting Switches

$ a ← CONTROL DEVICE IDENTIFICATION

D ← DEVICE TYPE DESIGNATION

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	VOLTAGE	MOUNT	FIXTURE DESCRIPTION	MANUFACTURER/CATALOG NUMBER	REMARKS
A	LED 3506 LUMENS	120/277	RECESSED	HIGH PERFORMANCE 2X2 LED LIGHT FIXTURE	FINTELITE / HPR LED-A-2X2-DCO-S-840-277V-SC-C1 OR APPROVED EQUAL	PROVIDE MOUNTING HARDWARE AS REQUIRED.
B	LED 744 LUMENS	120/277	RECESSED	6" REFLECTOR LED OPEN DOWNLIGHT STANDARD OUTPUT, IC RATED	PRESCOLITE / LTR-6RD-H-SL-06L-IC-LTR-6RD-T-SL-40K-8-MD-SS-WT OR APPROVED EQUAL	PROVIDE MOUNTING HARDWARE AS REQUIRED.
C	LED 27750 LUMENS	120/277	PENDANT	HIGH EFFICIENCY 1X2 LED HIGH LUMEN FIXTURE	COLUMBIA / LLHP 2-40 H-W-E U-CP6TL20	PROVIDE MOUNTING HARDWARE AS REQUIRED.
D	LED 1559 LUMENS	120/277	RECESSED	HIGH PERFORMANCE 1X2 LED LIGHT FIXTURE	FINTELITE / HPR LED-A-1X2-DCO-V-840-277V-SC-C1 OR APPROVED EQUAL	PROVIDE MOUNTING HARDWARE AS REQUIRED.
E	LED 3158 LUMENS	120/277	RECESSED	6" REFLECTOR LED OPEN DOWNLIGHT MEDIUM OUTPUT, IC RATED	PRESCOLITE / LTR-6RD-H-SL-15L-IC-LTR-6RD-T-SL-40K-8-XW-SS-WT OR APPROVED EQUAL	PROVIDE MOUNTING HARDWARE AS REQUIRED.
EX	LED 3W HEADS	120/277	SURFACE	LED EMERGENCY LIGHT FIXTURE WITH BATTERY BACKUP AND 3W LED HEADS	DUALLITE / LM-33-I-03L OR APPROVED EQUAL.	INDOOR EMERGENCY LIGHTS. PROVIDE MOUNTING HARDWARE AS REQUIRED.
EX/EM	LED 3W HEADS	120/277	SURFACE	COMBINATION EXIT AND EMERGENCY LIGHT WITH BATTERY BACKUP AND 3W LED HEADS	DUALLITE / HCX-U-R-W-03L-RC12 OR APPROVED EQUAL	INDOOR EMERGENCY EXIT LIGHTS. PROVIDE MOUNTING HARDWARE AS REQUIRED.
RH	LED 3W HEAD	6 VDC	SURFACE	REMOTE HEAD EMERGENCY LED LIGHT - 3W HEAD	DUALLITE / CPR-S-X-0603L OR APPROVED EQUAL	PROVIDE MOUNTING HARDWARE AS REQUIRED. PROVIDE LOW VOLTAGE WIRING TO EX/EM LIGHT FIXTURE. ARCHITECT TO SELECT COLOR.

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MARK	DESCRIPTION	DATE
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ELECTRICAL COVER SHEET

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
DZ	PP	20057

SHEET NO.

E-000

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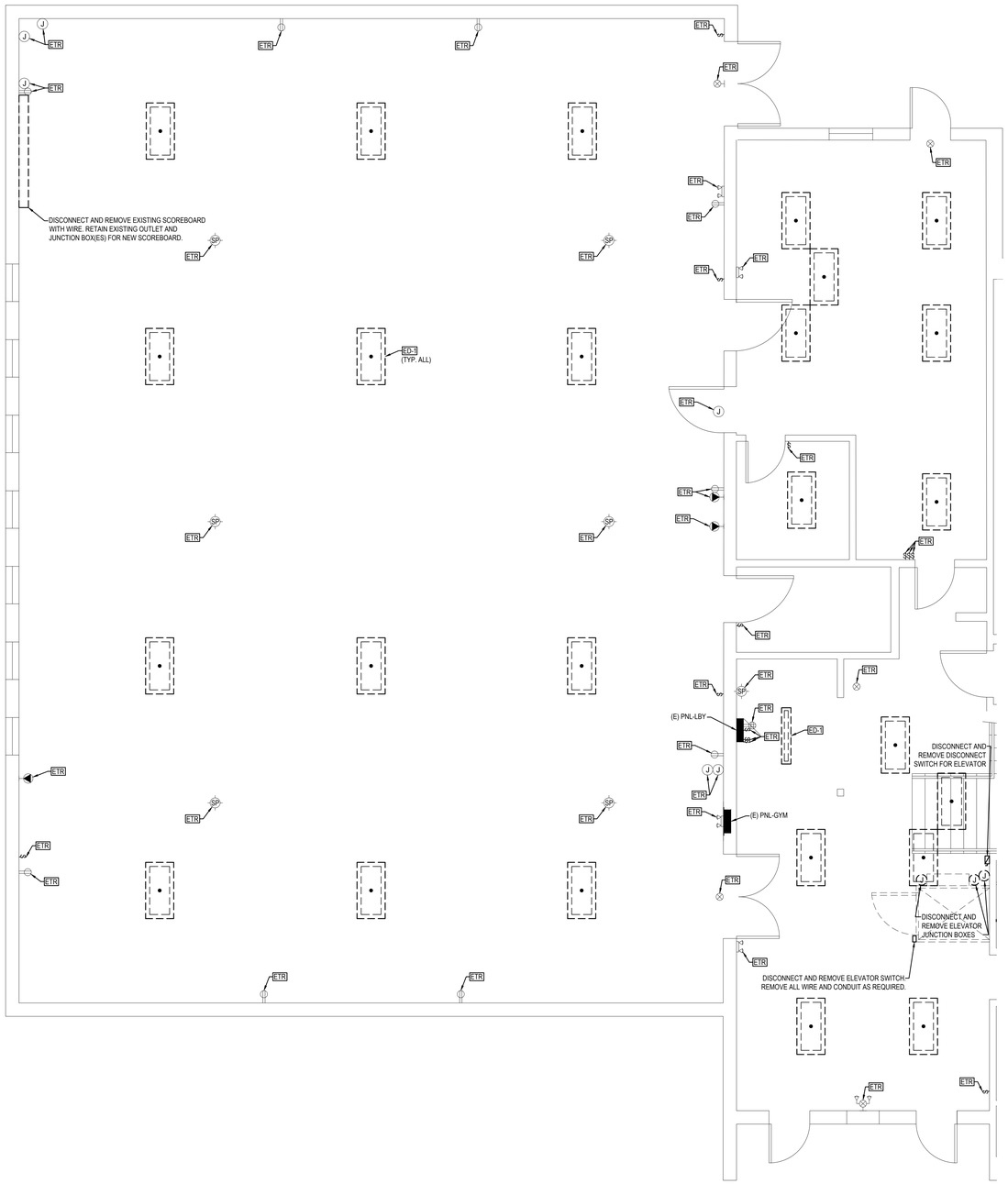
2/3/2021 7:24 PM

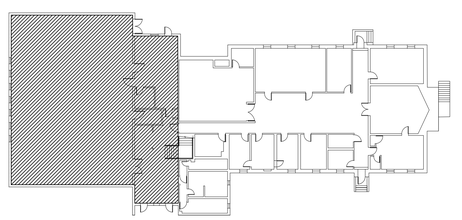
ELECTRICAL DEMOLITION NOTES:

ETR	EXISTING TO REMAIN.
ED-1	DISCONNECT AND REMOVE ALL LIGHT FIXTURES. RETAIN ALL EXISTING WIRING FOR NEW LIGHT FIXTURES.



1 ED101A ELECTRICAL FIRST FLOOR DEMOLITION PLAN - WEST

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



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ELECTRICAL FIRST FLOOR DEMOLITION PLAN - WEST

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

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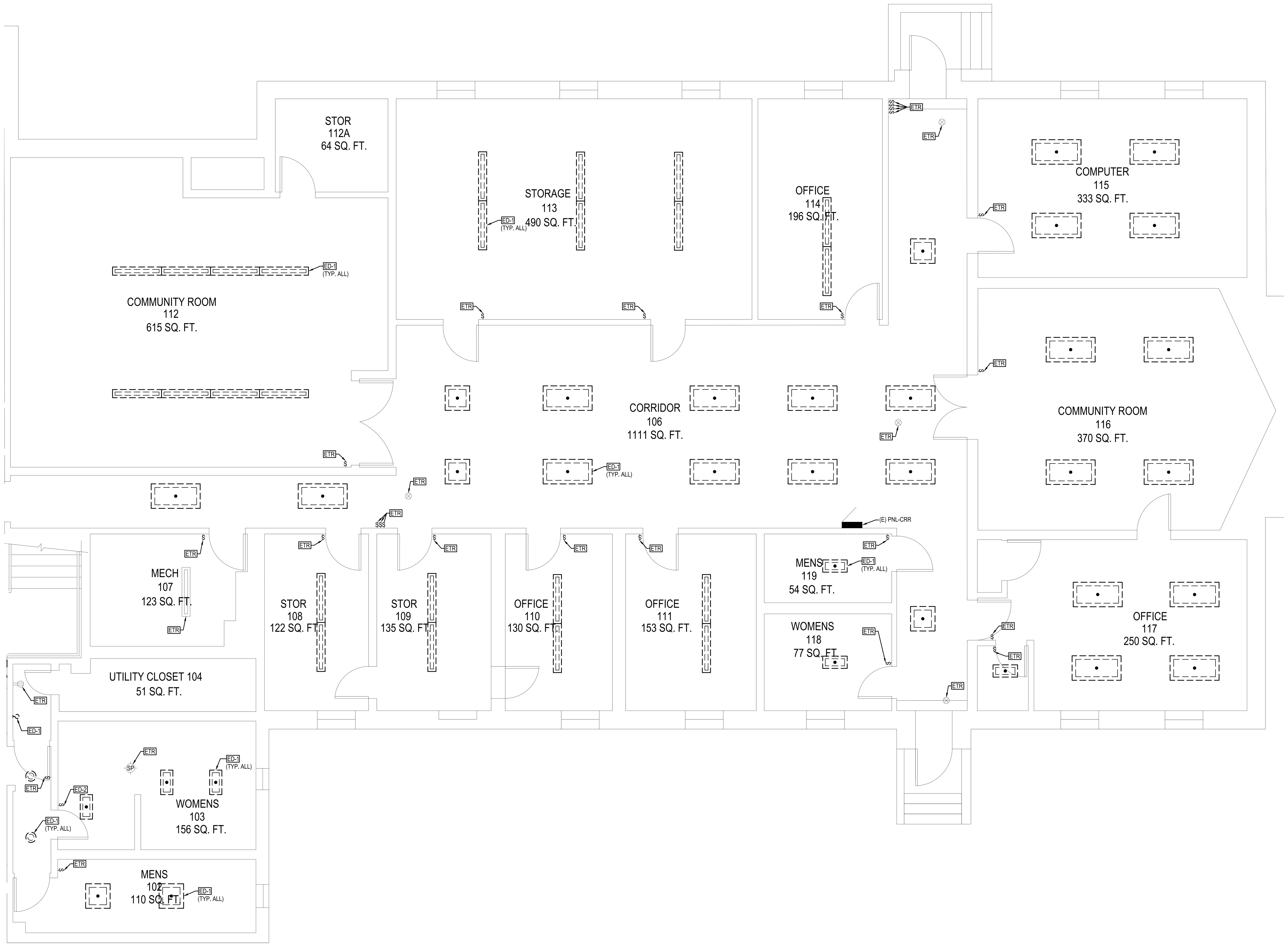

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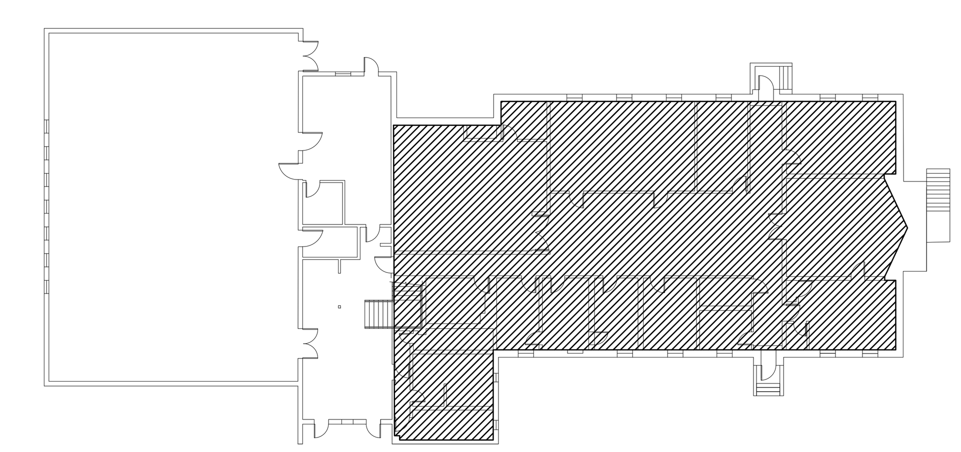
ED101B

ELECTRICAL FIRST FLOOR DEMOLITION PLAN - EAST

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

TRUE NORTH



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TRUE NORTH

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ELECTRICAL FIRST FLOOR DEMOLITION PLAN - EAST

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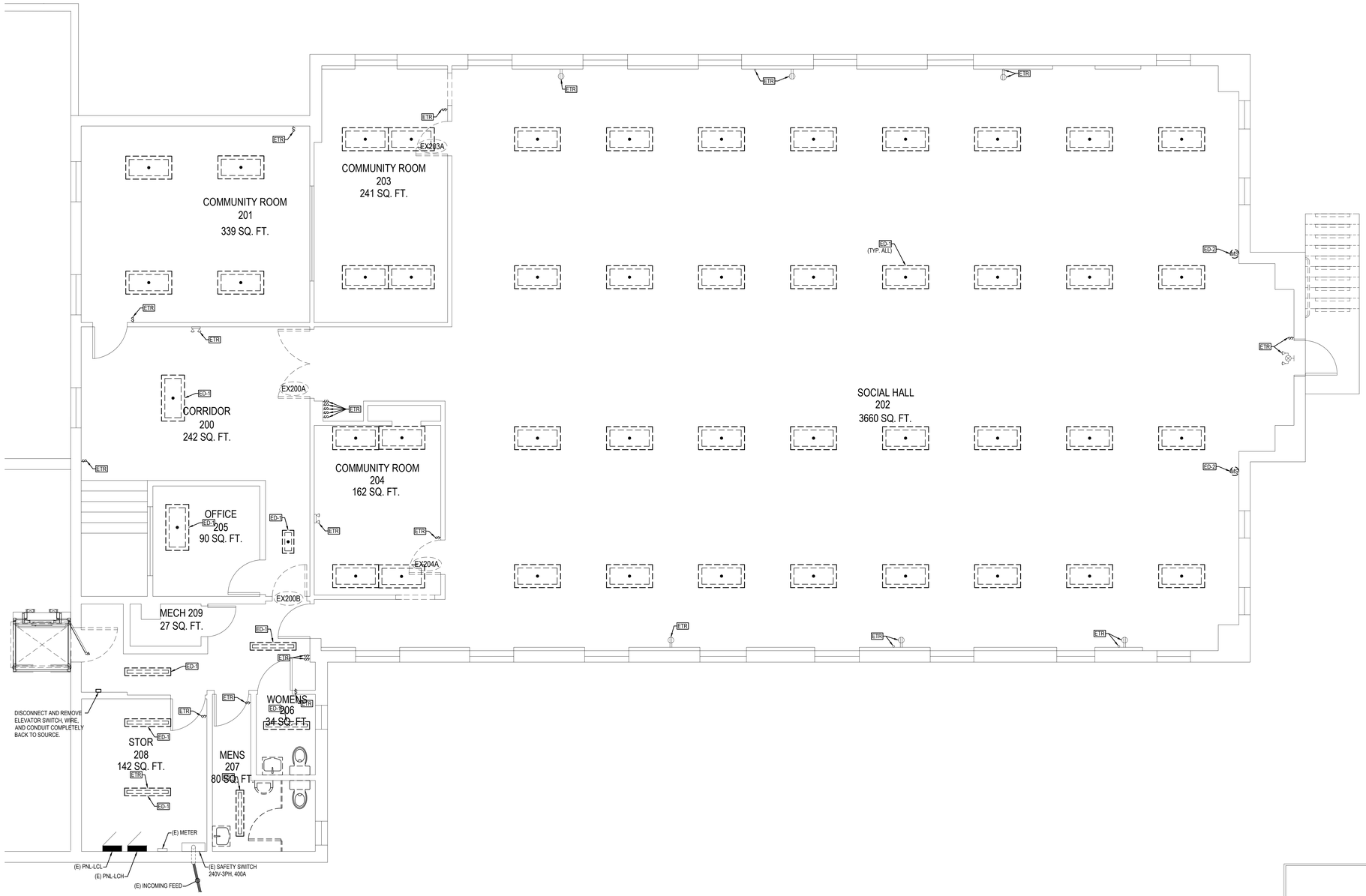
ELECTRICAL DEMOLITION NOTES:

ETR EXISTING TO REMAIN.

ED-1 DISCONNECT AND REMOVE ALL LIGHT FIXTURES. RETAIN ALL EXISTING WIRING FOR NEW LIGHT FIXTURES.



1 / ED102 ELECTRICAL SECOND FLOOR DEMOLITION PLAN - EAST

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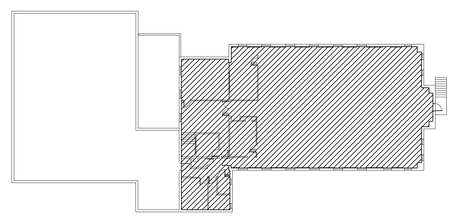

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ELECTRICAL SECOND FLOOR DEMOLITION PLAN

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

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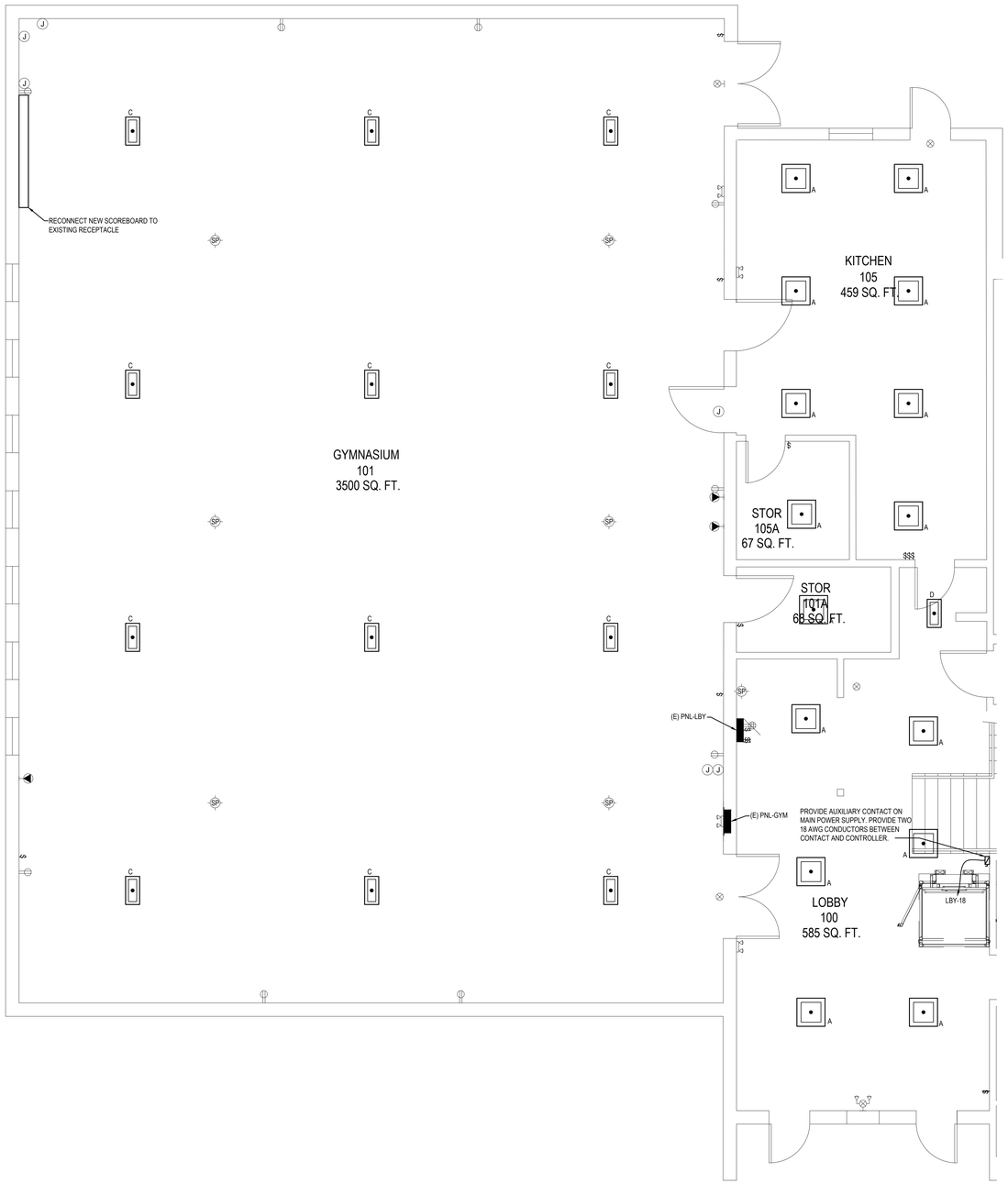


1 E-101A

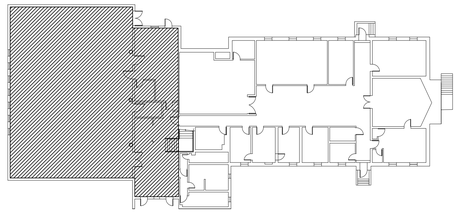
ELECTRICAL FIRST FLOOR PLAN - WEST

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

ELECTRICAL POWER AND LIGHTING NOTES:

1. PROVIDE NEW LIGHT FIXTURES AND RECONNECT TO EXISTING LIGHTING SWITCHES WITH WIRE EXTENSIONS AS REQUIRED. SEE LIGHT FIXTURE SCHEDULE ON ELECTRICAL COVER SHEET FOR FIXTURE DETAILS.
2. PROVIDE STARTER MOTORS AND DISCONNECT SWITCHES WITH WIRE AND CONDUIT FOR MECHANICAL EQUIPMENT AS REQUIRED.

NOT ALL NOTES APPLICABLE TO THIS SHEET



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ELECTRICAL FIRST FLOOR PLAN - WEST

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FEBRUARY 4, 2021

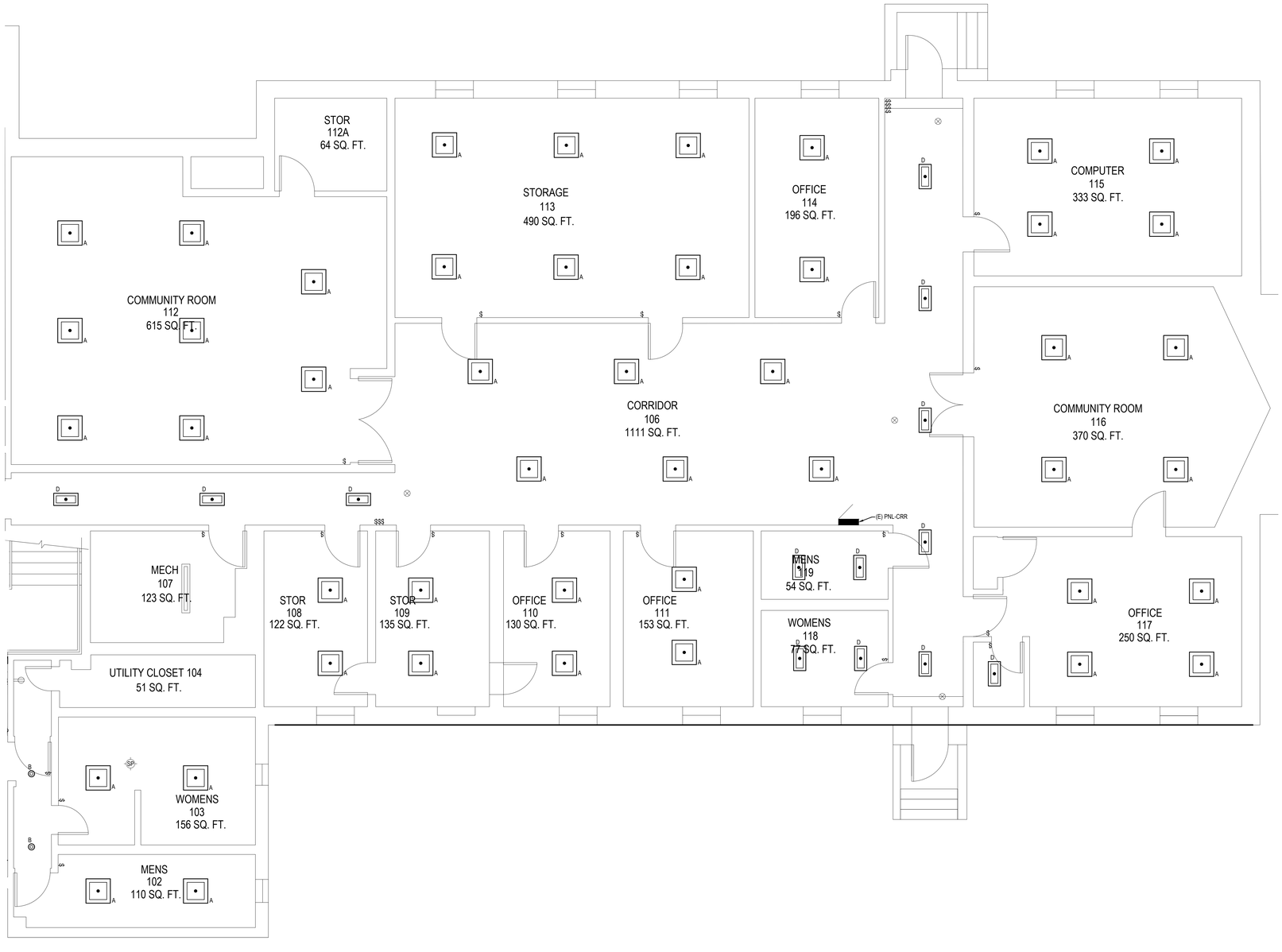
DRAWN	CHK'D	PROJECT NO.
DZ	PP	20057

SHEET NO.

E-101A

2/3/2021 7:25 PM

THE RECEIVER OF THESE PLANS BY HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: - THE ELECTRONIC DATA IS TRANSMITTED ("DATA") MAY BE ALTERED DURING TRANSFER AND TRANSLATION. - JMD CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PROVIDED. - THE RECEIVER AGREES TO HOLD JMD CORPORATION HARMLESS FROM ANY AND ALL CLAIMS, DAMAGES, LOSSES AND COSTS TO INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS TO DEFEND, ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA. - THE RECEIVER AGREES AND ACCEPTS THE DATA AS IS AND AS AVAILABLE AND ACCEPTS ALL RISKS ASSOCIATED WITH THE USE OF THE DATA. - JMD CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. - THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PROVIDED. - THE RECEIVER AGREES TO HOLD JMD CORPORATION HARMLESS FROM ANY AND ALL CLAIMS, DAMAGES, LOSSES AND COSTS TO INCLUDING REASONABLE ATTORNEY'S FEES AND COSTS TO DEFEND, ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.



1 E-101B

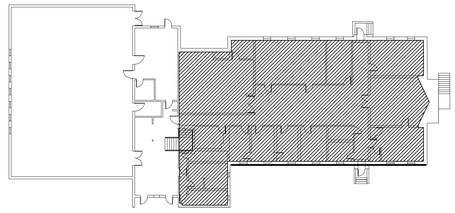
ELECTRICAL FIRST FLOOR DEMOLITION PLAN - EAST

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

ELECTRICAL POWER AND LIGHTING NOTES:

1. PROVIDE NEW LIGHT FIXTURES AND RECONNECT TO EXISTING LIGHTING SWITCHES WITH WIRE EXTENSIONS AS REQUIRED. SEE LIGHT FIXTURE SCHEDULE ON ELECTRICAL COVER SHEET FOR FIXTURE DETAILS.
2. PROVIDE STARTER MOTORS AND DISCONNECT SWITCHES WITH WIRE AND CONDUIT FOR MECHANICAL EQUIPMENT AS REQUIRED.

NOT ALL NOTES APPLICABLE TO THIS SHEET



KEY PLAN

SCALE: NTS

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DATE OF SIGNATURE: _____
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ARCHITECT / ENGINEER SEAL

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CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ELECTRICAL FIRST FLOOR PLAN - EAST

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
DZ	PP	20057

SHEET NO.

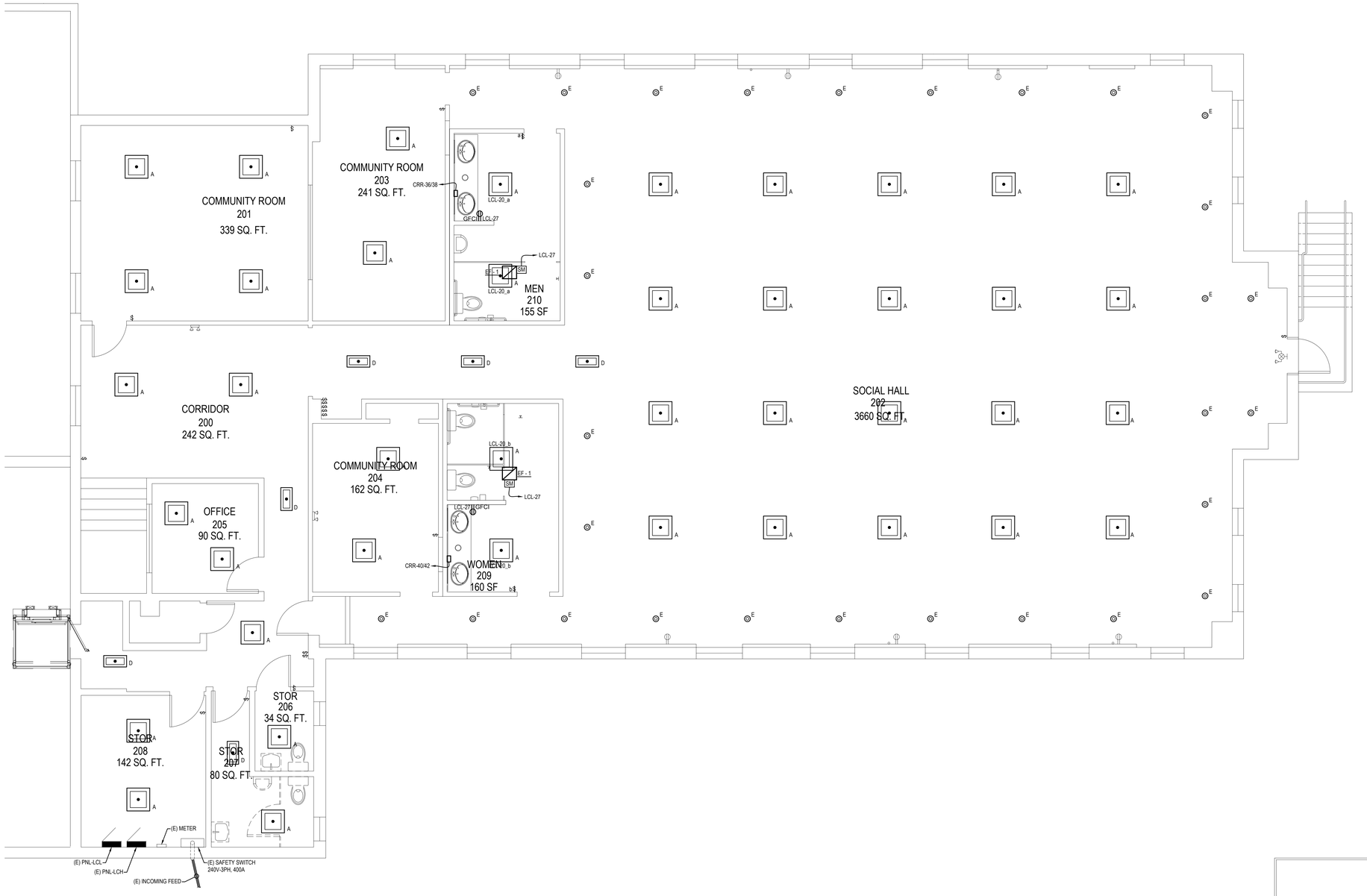
E-101B

2/3/2021 7:25 PM

ELECTRICAL POWER AND LIGHTING NOTES:

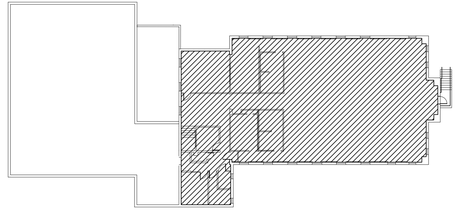
1. PROVIDE NEW LIGHT FIXTURES AND RECONNECT TO EXISTING LIGHTING SWITCHES WITH WIRE EXTENSIONS AS REQUIRED. SEE LIGHT FIXTURE SCHEDULE ON ELECTRICAL COVER SHEET FOR FIXTURE DETAILS.
2. PROVIDE STARTER MOTORS AND DISCONNECT SWITCHES WITH WIRE AND CONDUIT FOR MECHANICAL EQUIPMENT AS REQUIRED.

NOT ALL NOTES APPLICABLE TO THIS SHEET



1 / E-102 ELECTRICAL SECOND FLOOR PLAN

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



KEY PLAN

SCALE: NTS

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DATE OF SIGNATURE: _____

DATE OF REGISTRATION EXPIRATION: _____

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PROJECT

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DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS

AT THE

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REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

ELECTRICAL SECOND FLOOR PLAN

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
DZ	PP	20057

SHEET NO.

E-102

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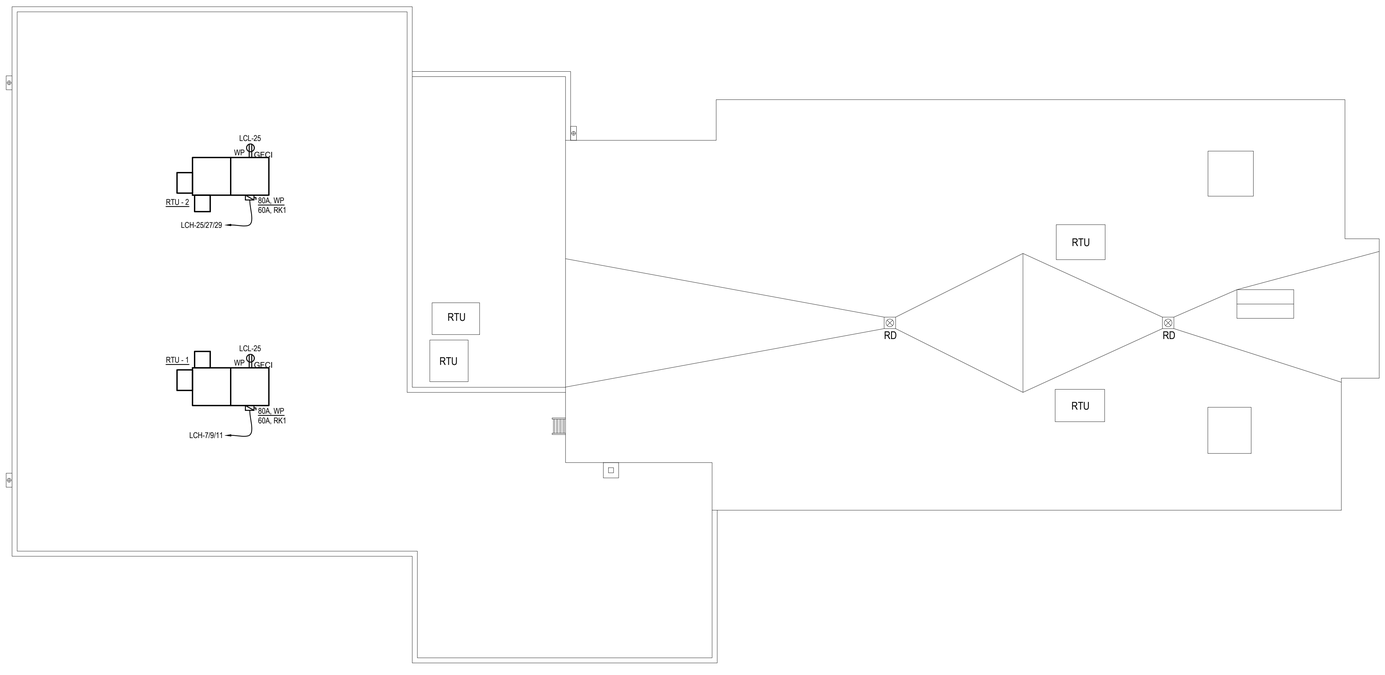
2/3/2021 7:25 PM

ELECTRICAL POWER AND LIGHTING NOTES:

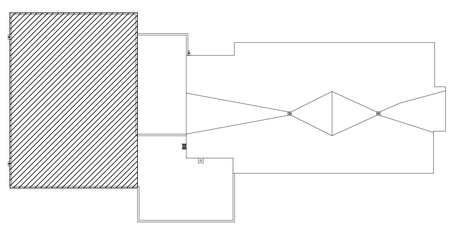
1. PROVIDE NEW LIGHT FIXTURES AND RECONNECT TO EXISTING LIGHTING SWITCHES WITH WIRE EXTENSIONS AS REQUIRED. SEE LIGHT FIXTURE SCHEDULE ON ELECTRICAL COVER SHEET FOR FIXTURE DETAILS.
2. PROVIDE STARTER MOTORS AND DISCONNECT SWITCHES WITH WIRE AND CONDUIT FOR MECHANICAL EQUIPMENT AS REQUIRED.

NOT ALL NOTES APPLICABLE TO THIS SHEET



1 E-103 ELECTRICAL ROOF PLAN

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



KEY PLAN

SCALE: NTS

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PROJECT

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DEPARTMENT OF PUBLIC PROPERTIES
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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ELECTRICAL ROOF PLAN

CONSTRUCTION DOCUMENTATION

FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
BMS	RJC	20057

SHEET NO.

E-103

THE RECEIVER OF THESE PLANS IN HARD COPY OR ELECTRONIC TRANSMISSION BY USE THEREOF UNDERSTANDS AND AGREES AS FOLLOWS: "THE ELECTRONIC DATA TRANSMITTED (TOGETHER WITH ANY ATTACHMENTS) IS IN A FORM THAT MAY BE A TRIED-DURING TRANSIT AND TRANSLATION. "JAED CORPORATION DO NOT WARRANT OR MAKE ANY REPRESENTATIONS WITH RESPECT TO THE ACCURACY OF THE DATA. "THE RECEIVER WILL COMPARE THE DATA WITH AVAILABLE HARD COPIES. "JAED CORPORATION RETAINS ALL OWNERSHIP, COPYRIGHT, AND OTHER INTELLECTUAL PROPERTY INTERESTS IN THE DATA AND INFORMATION ON THE PLANS. "THE RECEIVER WARRANTS THAT IT WILL NOT REPRODUCE OR OTHERWISE MAKE USE OF THE DATA OR PLANS IN ANY ENDEAVOR NOT DIRECTLY RELATED TO THE PROJECT FOR WHICH IT WAS PROVIDED. "THE RECEIVER AGREES TO CLEAR AND DISCHARGE AT ITS OWN COSTS OR DEFENDS JAED CORPORATION WITH RESPECT TO ANY EFFECT LEVIED OR SUFFERED BY JAED CORPORATION BEAR OF JAED CORPORATION FOR ANY CLAIM, DAMAGE, LIABILITY AND COSTS MADE AGAINST JAED CORPORATION BY ANY PERSON OR ENTITY ARISING OUT OF OR RESULTING FROM THE USE OF ELECTRONIC DATA.

2/3/2021 7:25 PM

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2/3/2021 7:25 PM

EXISTING PANEL

PANEL: LBY
LOCATION: 1ST FLR. - LOBBY 100
BUS: ___
MAIN: MLO
VOLTAGE: 240/120V, 3PH-4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	15	1	2	15	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	15	3	4	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	15	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	2	30	13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-				15	16	-	-	SPACE	-	-	-	
	-	-	-	EXISTING LOAD	1	20	17	18	20	1	WHEELCHAIR LIFT	-	-	1.38	*
**	1.69	-	-	GYM LIGHTING	1	20	19	20	20	1	GYM LIGHTING	1.69	-	-	**

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C WIRING.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#8 + 1#10G - 3/4"C WIRING.

EXISTING PANEL

PANEL: CRR
LOCATION: 1ST FLR. - CORRIDOR 106
BUS: ___
MAIN: MLO
VOLTAGE: 240/120V, 3PH-4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	1	20	1	2	30	2	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	15	3	4				-	-	-	
	-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	2	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-				9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	2	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-				13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	15	16	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	17	18	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	19	20	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	21	22	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	23	24	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	25	26	50	2	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	27	28				-	-	-	
	-	-	-	EXISTING LOAD	1	20	29	30	20	1	FIRST FLOOR LIGHTING - EAST	-	-	0.60	*
	-	-	-	EXISTING LOAD	1	20	31	32	20	1	FIRST FLOOR LIGHTING - EAST	0.29	-	-	*
*	-	0.44	-	FIRST FLOOR LIGHTING - WEST	1	20	33	34	20	1	FIRST FLOOR LIGHTING - EAST	-	0.59	-	*
	-	-	-	SPACE	-	-	35	36	50	2	WATER HEATER - 2ND FLR. BATHROOM	-	-	4.75	**
	-	-	-	SPACE	-	-	37	38				4.75	-	-	
	-	-	-	SPACE	-	-	39	40	50	2	WATER HEATER - 2ND FLR. BATHROOM	-	4.75	-	**
	-	-	-	SPACE	-	-	41	42				-	-	4.75	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C WIRING.
** PROVIDE NEW CIRCUIT BREAKER AND NEW 2#8 + 1#10G - 3/4"C WIRING.

EXISTING PANEL

PANEL: LCL
LOCATION: 2ND FLR. - STOR 208
BUS: ___
MAIN: MLO
VOLTAGE: 240/120V, 3PH-4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA	
	-	-	-	EXISTING LOAD	2	60	1	2	60	2	SOCIAL HALL MAIN	-	-	-	
	-	-	-				3	4				-	-	-	
	-	-	-	EXISTING LOAD	1	15	5	6	15	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	15	15	16	15	1	EXISTING LOAD	-	-	-	
	-	-	-	EXISTING LOAD	1	20	17	18	15	1	EXISTING LOAD	-	-	-	
	-	-	-	OLD BLDG MAIN	2	100	19	20	20	1	SECOND FLOOR LIGHTING	0.77	-	-	*
	-	-	-				21	22	20	1	SOCIAL HALL LIGHTING	-	1.00	-	*
	-	-	-	EXISTING LOAD	1	20	23	24	20	1	EXISTING LOAD	-	-	-	
*	0.36	-	-	EXTERIOR RECEPTACLE	1	20	25	26	20	1	EXISTING LOAD	-	-	-	
*	-	0.40	-	EXHAUST FANS / GFCI RECEPTS. - RESTROOMS	1	20	27	28	20	1	EXISTING LOAD	-	-	-	
	-	-	-	SPACE	-	-	29	30	20	1	EXISTING LOAD	-	-	-	

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

* PROVIDE NEW CIRCUIT BREAKER AND NEW 2#12 + 1#12G - 3/4"C WIRING.

EXISTING PANEL

PANEL: LCH
LOCATION: 2ND FLR. - STOR 208
BUS: ___
MAIN: MLO
VOLTAGE: 240/120V, 3PH-4W
ENCLOSURE: NEMA-1
A.I.C: ___
RATINGS: ___

	ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
	-	-	-	ROOFTOP HVAC - FROM CIR. #3/5/7	3	30	1	2	20	1	ROOF RECEPTACLE - FROM CIR. #27	-	-	-
	-	-	-				3	4	30	3	ROOFTOP HVAC - TO REMAIN	-	-	-
	-	-	-				5	6				-	-	-
*	3.82	-	-	RTU-1	3	60	7	8				-	-	-
	-	3.82	-				9	10	100	3	HALL REAR - TO REMAIN	-	-	-
	-	-	3.82				11	12				-	-	-
	-	-	-	EXISTING LOAD - FROM CIR. #15/17/19	3	20	13	14				-	-	-
	-	-	-				15	16	60	3	EXISTING LOAD - TO REMAIN	-	-	-
	-	-	-				17	18				-	-	-
	-	-	-	EXISTING LOAD - FROM CIR. #21/23/25	3	20	19	20				-	-	-
	-	-	-				21	22	20	3	EXISTING LOAD - TO REMAIN	-	-	-
	-	-	-				23	24				-	-	-
*	3.82	-	-	RTU-2	3	60	25	26				-	-	-
	-	3.82	-				27	28	40	2	EXISTING LOAD - TO REMAIN	-	-	-
	-	-	3.82				29	30				-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA

NOTE: DISCONNECT EXISTING CIRCUIT BREAKERS AND WIRES AND REPOSITION LOADS TO MATCH PANEL SCHEDULE SHOWN FOR PANEL LCH. RECONNECT WIRES TO THEIR EXISTING CIRCUIT BREAKERS.

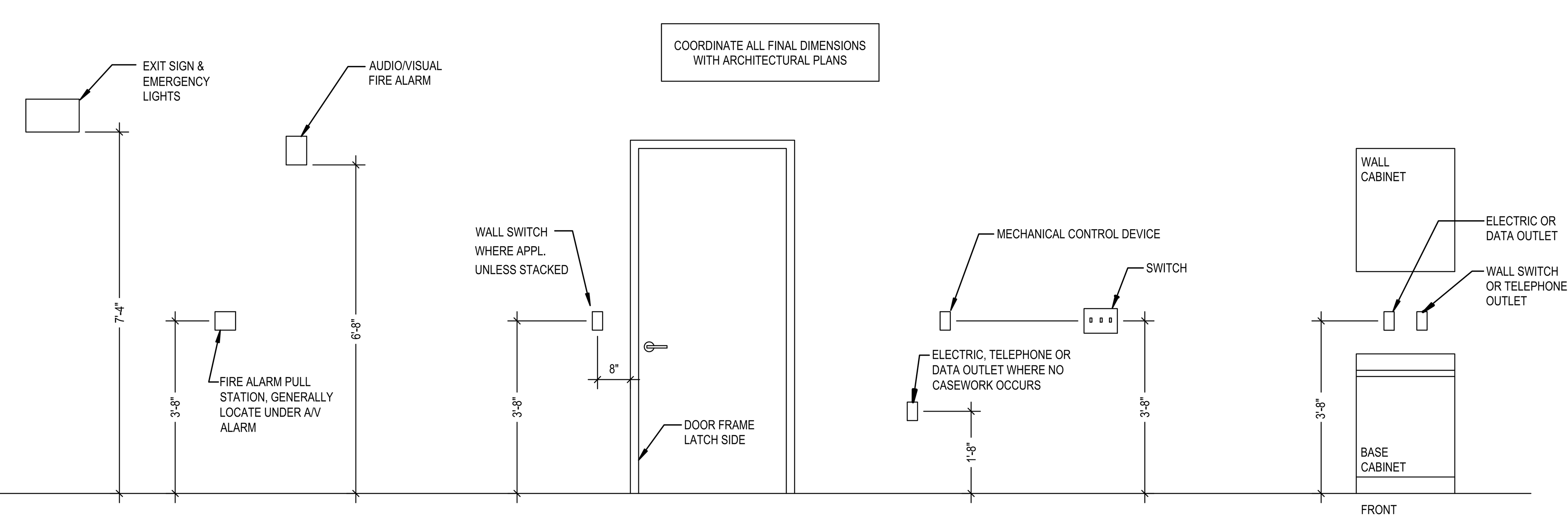
* PROVIDE NEW CIRCUIT BREAKER AND NEW 3#4 + 1#6G - 1 1/2"C WIRING.

EXISTING PANEL

PANEL: GYM
LOCATION: GYM
BUS: ___
MAIN: MLO
VOLTAGE: ___
ENCLOSURE: ___
A.I.C: ___
RATINGS: ___

ØA kVA	ØB kVA	ØC kVA	DESCRIPTION	Pole	Br	Ckt	Ckt	Br	Pole	DESCRIPTION	ØA kVA	ØB kVA	ØC kVA
-	-	-	EXISTING LOAD	1	20	1	2	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	3	4	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	5	6	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	7	8	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	9	10	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	11	12	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	13	14	20	1	EXISTING LOAD	-	-	-
-	-	-	EXISTING LOAD	1	20	15	16	-	-	SPACE	-	-	-
-	-	-	EXISTING LOAD	1	20	17	18	20	1	EXISTING LOAD	-	-	-
-	-	-	SPACE	1	20	19	20	20	1	EXISTING LOAD	-	-	-

CONNECTED LOAD
PHASE A: __ kVA
PHASE B: __ kVA
PHASE C: __ kVA
TOTAL CONNECTED LOAD = __ kVA



TYPICAL ELECTRICAL MOUNTING HEIGHTS

SCALE: NO SCALE

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DATE OF SIGNATURE: ___
DATE OF REGISTRATION EXPIRATION: ___

ARCHITECT / ENGINEER SEAL

PROJECT

CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
ELMWOOD COMMUNITY CENTER
155 NIAGARA STREET,
PROVIDENCE, RI 02907

R E V I S I O N S

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

ELECTRICAL DETAILS AND PANEL SCHEDULES

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
DZ	PP	20057

SHEET NO.
E-500

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GENERAL PLUMBING NOTES

1. SEE THE ARCHITECTURAL DRAWINGS FOR INFORMATION ON THE SCOPE OF CONSTRUCTION.
2. COLLECT FIXTURE VENTS IN VENT HEADER ABOVE CEILING AND CONNECT TO CLOSEST EXISTING VTR OR BRANCH VENT (OF THE SAME OR LARGER SIZE).
3. FOR ALL EQUIPMENT REQUIREMENTS, REFER TO SPECIFICATIONS, PLUMBING SCHEDULE OR DRAWINGS. CONTRACTOR SHALL NOT INSTALL EQUIPMENT/MATERIALS UNTIL SAME IS APPROVED.
4. INSTALL WATER HAMMER ARRESTORS IN DOMESTIC WATER PIPING AS REQUIRED PER P.D.I. WH-201 STANDARDS FOR WATER HAMMER ARRESTORS.
5. PROVIDE TRAPS FOR ALL PLUMBING EQUIPMENT CONNECTIONS AND/OR IN ANY SANITARY PIPING AS REQUIRED BY THE APPLICATION.
6. PRIOR TO SUBMITTING BID, THE CONTRACTOR/BIDDER SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR/BIDDER SHALL INCLUDE IN THEIR BID ALL MATERIALS, LABOR AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY INDICATED OR NOT. ALL ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR/BIDDER. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE BY THE CONTRACTOR/BIDDER.
7. ALL INSTALLATIONS SHALL COMPLY WITH ALL CODES OR REGULATIONS, LOCAL, STATE, OR NATIONAL HAVING JURISDICTION OVER THE PROJECT.
8. ALL FIXTURES AND PIPING INSTALLATIONS SHALL BE PROPERLY BRACED, RIGIDLY SUPPORTED, AND INSTALLED WITH ADEQUATE VIBRATION ISOLATION AND INSULATION.
9. PROVIDE ALL LABOR, MATERIALS, AND INSTALLATION APPARATUS TO INSURE A COMPLETE OPERATING SYSTEM IMPLIED BY DRAWING CONTENT AND AS SPECIFIED.
10. THOROUGHLY COORDINATE ALL PLUMBING INSTALLATIONS WITH WORK OF OTHER CONSTRUCTION DISCIPLINES.
11. SEAL ALL RESPECTIVE WALL, FLOOR, AND CEILING/ROOF PENETRATIONS AS APPROPRIATE TO MAINTAIN A WEATHER TIGHT ENCLOSURE, FIRE BARRIER, SMOKE BARRIER, ETC. AS APPLICABLE. REFER TO ARCHITECTURE PLANS FOR SMOKE AND FIRE BARRIERS/PARTITIONS.
12. CONTRACTOR TO PAY FOR ALL FEES AND PERMITS ASSOCIATED WITH PLUMBING WORK INDICATED AS NECESSARY TO SECURE A COMPLETE AND OPERATIONAL SYSTEM ON SCHEDULE AND IN A TIMELY MANNER.
13. CONNECT DHW, DCW, DHWR VENT, AND SOIL & WASTE LINES TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON FIXTURE SCHEDULE.
14. RUN 2" MINIMUM SIZES SOIL & WASTE PIPING BELOW GROUND INSIDE BUILDING REGARDLESS OF SIZE ON FIXTURE CONNECTION SCHEDULE.
15. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES, UNLESS NOTED OTHERWISE.
16. FURNISH AND INSTALL ACCESS PANELS WHERE REQUIRED FOR ACCESS TO ALL CONCEALED VALVES, TRAPS, OR OTHER EQUIPMENT FURNISHED UNDER THIS CONTRACT WHERE NO OTHER MEANS IS AVAILABLE.
17. INSTALL ALL SHUT-OFF AND ISOLATION VALVES (WITH ACCESS PANELS IF NECESSARY) IN A LOCATION WHICH IS ACCESSIBLE FROM THE MAIN FLOOR.
18. CONTRACTOR TO PROVIDE SHUT-OFF VALVES AT ALL DEVICES.
19. KEEP ALL OPENINGS IN PIPES OR FITTINGS PLUGGED OR CAPPED UNTIL CONNECTED.
20. SLOPE ALL DWV LINES ¼" PER FOOT (3" AND ABOVE), ½" PER FOOT (2½" AND BELOW).
21. INSTALL ALL FIXTURES, AS SPECIFIED, WITH SUPPLY STOPS.
22. INSTALL WASTE AND SUPPLY GUARDS UNDER ALL LAVS-SEE FIXTURE SCHEDULE.
23. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE , CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.

PLUMBING LEGEND

- FLOOR MOUNTED TANK TYPE WATER CLOSET - ADA
- WALL MOUNTED LAVATORY - ADA
- WALL MOUNTED URINAL - ADA
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER RETURN
- SANITARY SEWER
- SANITARY VENT PIPING
- DIRECTION OF FLOW
- BALL VALVE
- CAPPED PIPE
- PIPE UP
- PIPE DOWN

C.O.	CLEANOUT IN FLOOR
RIW	RUN IN WALL
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
	CONNECTION POINT BETWEEN NEW & EXISITNG SYSTEM

PLUMBING FIXTURE & CONNECTION SCHEDULE - BASIS OF DESIGN

SYMBOL	FIXTURE	MANUFACTURER/MODEL #	TRIM (ADD GPM)	COLOR	DRAIN	VENT	CW	HW	REMARKS
P - 1	TANK TYPE FLOOR MOUNTED WATER CLOSET	KOHLER HIGHLINE COMFORT HEIGHT ELONGATED: MODEL K-3999-T, 1.28 GPM	-	WHITE	4"	2"	-	-	PROVIDE WITH TANK LID LOCKS
P - 2	OVAL LAV	KOHLER BACHATA OVAL BATHROOM SINK: MODEL K-2609-SU	PROVIDE WITH TOTO STANDARD ECOPOWER TEL105 FAUCET, 0.5 GPM, MODEL: TEL105-D10ET	STAINLESS STEEL	1 1/4"	1 1/4"	1/2"	1/2"	PROVIDE WITH EEMAX MODEL AM0102407. TWO UNITS TOTAL, ONE PER BATHROOM FOR HOT WATER TO LAVS.
P - 3	WALL MOUNTED URINAL	AMERICAN STANDARD WASHBROOK, 0.125 GPF, TOP STUD	PROVIDE WITH TOTO ECOPOWER FLUSH VALVE, 0.125GPF. MODEL TEU1UA12#CP	WHITE	2"	1 1/2"	3/4"	-	-

NOTES: ALL ABOVE FIXTURES AND RELATED EQUIPMENT ABOVE SHALL BE SUBMITTED FOR APPROVAL. SEE SPECIFICATIONS FOR FIXTURE SUBSTITUTIONS. PROVIDE FIXTURE STOPS FOR ALL EQUIPMENT. ALL MOUNTING HEIGHTS ARE TO BE COORDINATED WITH ARCHITECTURAL DETAILS.

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CITY OF PROVIDENCE
DEPARTMENT OF PUBLIC PROPERTIES
BUILDING RENOVATIONS
AT THE
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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
-	-	-

SHEET TITLE

PLUMBING COVER SHEET

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

SHEET NO.

P-000

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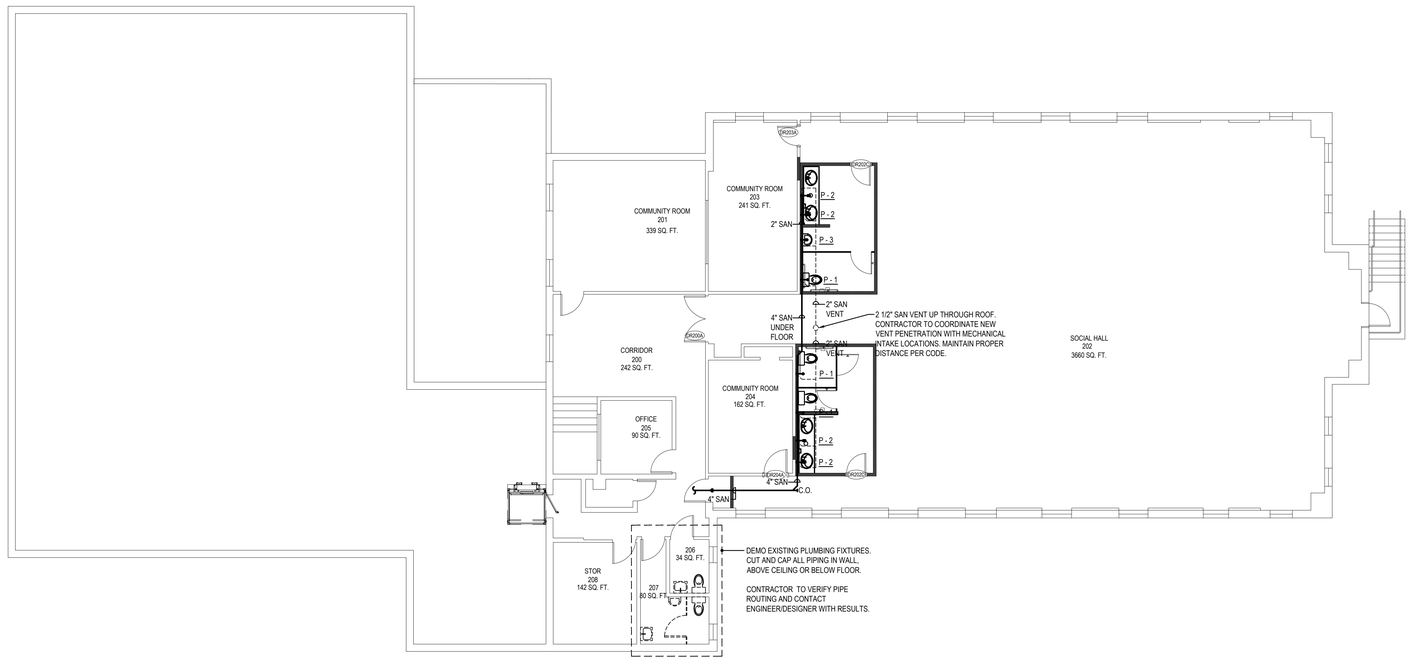
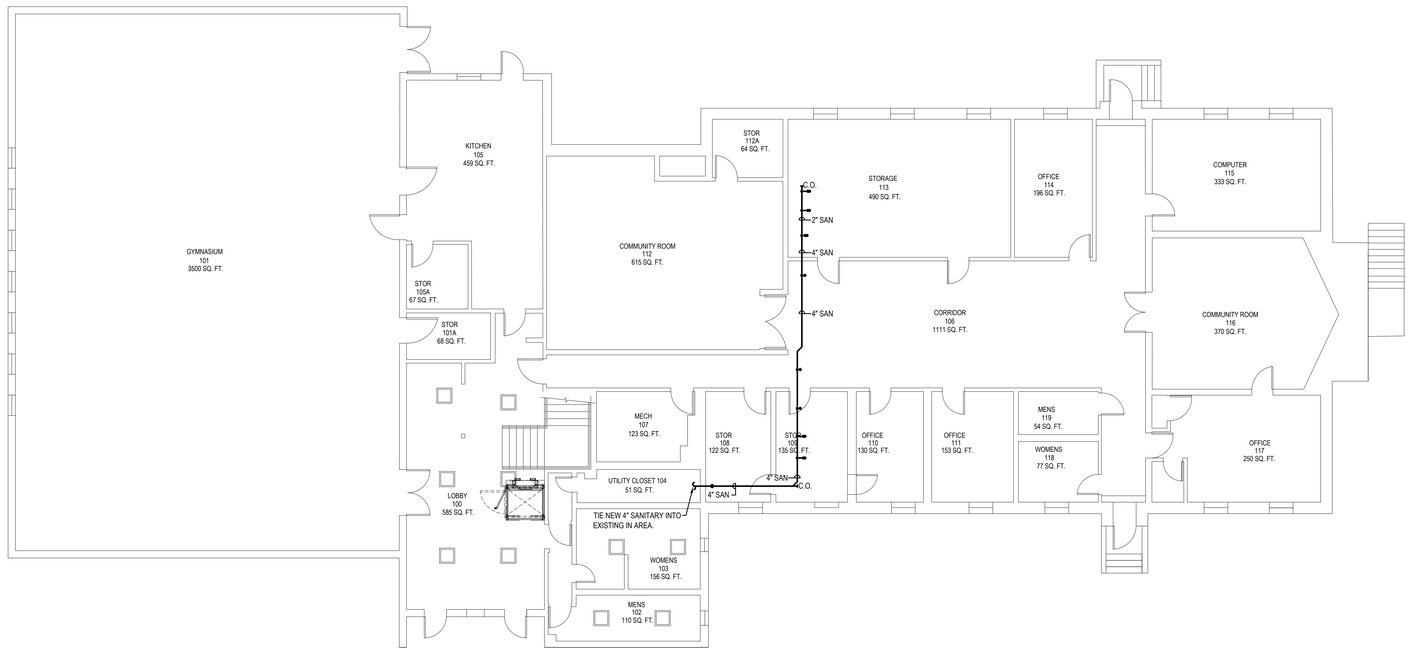


1 P-101 SECOND FLOOR SANITARY PLAN

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



2 P-101 FIRST FLOOR SANITARY PLAN

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

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-	-	-

SHEET TITLE

PLUMBING SANITARY PLANS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

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P-101

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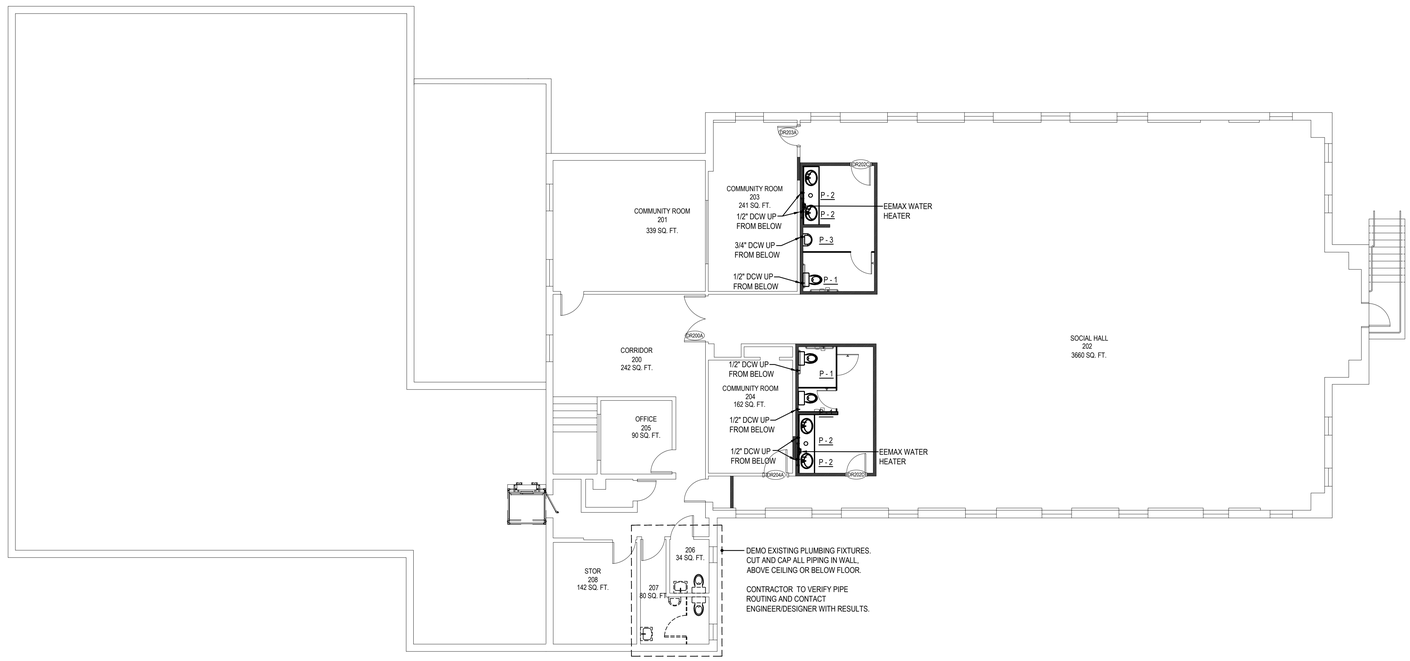
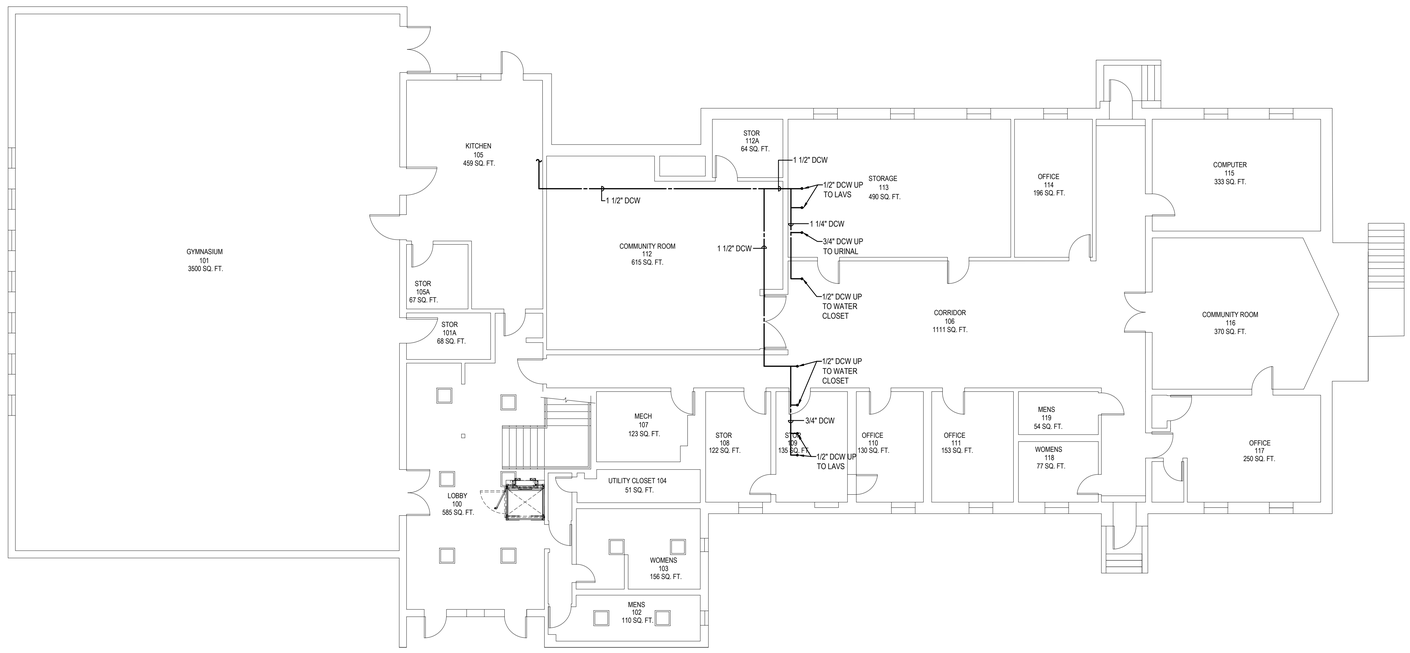


1 P-102 SECOND FLOOR DOMESTIC WATER PLAN

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



2 P-102 FIRST FLOOR DOMESTIC WATER PLAN

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

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155 NIAGARA STREET,
PROVIDENCE, RI 02907

REVISIONS

MARK	DESCRIPTION	DATE
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SHEET TITLE

PLUMBING DOMESTIC WATER PLANS

CONSTRUCTION DOCUMENTATION
FEBRUARY 4, 2021

DRAWN	CHK'D	PROJECT NO.
JRB	BMZ	20057

SHEET NO.

P-102

SECTION 00 01 01
PROJECT TITLE PAGE

PROJECT MANUAL

FOR

ELMWOOD COMMUNITY CENTER BUILDING RENOVATIONS
CITY OF PROVIDENCE
155 NIAGARA ST.
PROVIDENCE RI

DATE: FEBRUARY 4, 2021
PREPARED BY:

ABC ARCHITECT
42 WEYBOSSET ST,
SUITE 403
PROVIDENCE, RI 02903
401 648 0884

END OF SECTION 00 01 01

SECTION 00 01 10

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END OF SECTION 00 01 10

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SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Elmwood Community Center Building Renovation.

B. The Project consists of the renovation of the Elmwood Community Center. In general the scope of work inlcudes interior and exterior renovations inlcuding, but not limited to, interior finihses, electrical, plumbing, fire supression, exterior building envelope, and site work..

1.02 CONTRACT DESCRIPTION

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

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is indicated on drawings.

B. Scope of alterations work is indicated on drawings.

C. Plumbing: Alter existing system and add new construction, keeping existing in operation.

D. HVAC: Alter existing system and add new construction, keeping existing in operation.

E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.

F. Fire Suppression Sprinklers: Provide new system.

G. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.

1.04 WORK BY OWNER

1.05 OWNER OCCUPANCY

A. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.
   1. Locate and conduct construction activities in ways that will limit disturbance to site.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.
   3. No on site parking is permitted.

D. Existing building spaces may not be used for storage.

E. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to the hours of 7am to 3pm.

F. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to communications, fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

END OF SECTION 01 10 00

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preconstruction meeting.

B. Site mobilization meeting.

C. Progress meetings.

D. Construction progress schedule.

E. Coordination drawings.

F. Submittals for review, information, and project closeout.

G. Number of copies of submittals.

H. Submittal procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   5. Designation of personnel representing the parties to Contract, OMB and Architect.
   6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   7. Scheduling.

D. StudioJAED will record minutes and distribute copies after meeting to participants and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.
   5. Contractor's Project Manager.
   6. Major Subcontractors.

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and occupancy prior to completion.

3. Construction facilities and controls provided by Contractor and Owner.
4. Security and housekeeping procedures.
5. Schedules.
6. Application for payment procedures.
7. Procedures for maintaining record documents.
8. Requirements for start-up of equipment.

D. StudioJAED will record minutes and distribute copies after meeting to participants and those affected by decisions made.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.

B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, and Architect, as appropriate to agenda topics for each meeting.

C. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to Work.

D. StudioJAED will record minutes and distribute copies after meeting to participants and those affected by decisions made.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.05 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
1. Product data.
2. Shop drawings.
3. Samples for selection.

4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.06 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Certificates.
3. Test reports.
4. Inspection reports.
5. Manufacturer's instructions.
6. Manufacturer's field reports.
7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

B. Submit for Owner's benefit during and after project completion.

3.08 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.09 SUBMITTAL PROCEDURES

A. Submittals to be electronic.

B. Transmit each submittal with approved form.

C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

E. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

F. Schedule submittals to expedite the Project, and coordinate submission of related items.

G. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

I. Provide space for Contractor and Architect review stamps.

J. When revised for resubmission, identify all changes made since previous submission.

K. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

L. Submittals not requested will not be recognized or processed.

END OF SECTION 01 30 00

SECTION 01 35 53
SECURITY PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Security measures including entry control.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: use of premises.

B. Section 01 50 00 - Temporary Facilities and Controls: Temporary lighting, site fence, and barriers and enclosures.

1.03 SECURITY PROGRAM

A. Protect Work, existing premises and Owner's operations from theft, vandalism, and unauthorized entry.

B. Initiate program in coordination with Owner's existing security procedures at project mobilization.

C. Maintain program throughout construction period until Owner acceptance precludes the need for Contractor security.

1.04 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into Project site and existing facilities.

B. Allow entrance only to authorized persons with proper identification.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 35 53

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. References and standards.

B. Control of installation.

C. Tolerances.

D. Testing and inspection services.

E. Manufacturers' field services.

1.02 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference 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 of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

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

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

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

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

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

2.02 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

2.03 TESTING AND INSPECTION

A. See individual specification sections for testing required.

B. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

C. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

2.04 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and operation as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

2.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION 01 40 00

SECTION 01 42 16
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 42 16

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Security requirements.

F. Vehicular access and parking.

G. Waste removal facilities and services.

1.02 TEMPORARY UTILITIES

A. Owner will provide the following:
   1. Electrical power , consisting of connection to existing facilities.
   2. Water supply, consisting of connection to existing facilities.

B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.04 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

C. Traffic Controls: Coordinate with the Owner.

1.05 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.06 INTERIOR ENCLOSURES

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

B. Construction: Framing, plywood and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.07 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Coordinate with Owner's security program.

1.08 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Parking is limited in this area. Parking will be coordinated by the contractor and will be off-site.

1.09 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site daily.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

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

C. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 50 00

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Transportation, handling, storage and protection.

B. Product option requirements.

C. Substitution limitations and procedures.

D. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

B. Where all other criteria are met, Contractor shall give preference to products that:
   1. If used on interior, have lower emissions, as defined in Section 01 61 16.
   2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
   3. Have a published GreenScreen Chemical Hazard Analysis.

C. Motors: Refer to Section 22 05 13 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

C. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

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

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

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

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

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

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

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 60 00

SECTION 01 61 16

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for VOC-Content-Restricted products.

1.02 DEFINITIONS

A. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings.
   2. Interior adhesives and sealants, including flooring adhesives.

B. Interior of Building: Anywhere inside the exterior weather barrier.

C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

1.04 QUALITY ASSURANCE

A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.

B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Joint Sealants: SCAQMD 1168 Rule.
   3. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION 01 61 16

SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Cleaning and protection.

F. Starting of systems and equipment.

G. Demonstration and instruction of Owner personnel.

H. Closeout procedures, except payment procedures.

I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 30 00 - Administrative Requirements: Submittals procedures.

C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.

D. Section 01 79 00 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections

E. Section 07 84 00 - Firestopping.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.

1. On request, submit documentation verifying accuracy of survey work.
2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
3. Submit surveys and survey logs for the project record.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate Contractor.

1.04 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.05 PROJECT CONDITIONS

A. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into adjacent building areas, into atmosphere and over adjacent property.

D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

E. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

G. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. See Section 01 10 00 for occupancy-related requirements.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new 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.

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

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 clean-up of work of separate sections.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00.

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Promptly notify Architect of any discrepancies discovered.

B. Layout work following survey on interior and exterior conditions.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    b. Provide temporary connections as required to maintain existing systems in service.
4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

D. Protect existing work to remain.
    1. Prevent movement of structure; provide shoring and bracing if necessary.
    2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
    3. Repair adjacent construction and finishes damaged during removal work.

E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.

F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

G. Refinish existing surfaces as indicated:
    1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
    2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

H. Clean existing systems and equipment.

I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

J. Do not begin new construction in alterations areas before demolition is complete.

K. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
    1. Complete the work.
    2. Fit products together to integrate with other work.
    3. Provide openings for penetration of mechanical, electrical, and other services.
    4. Match work that has been cut to adjacent work.
    5. Repair areas adjacent to cuts to required condition.
    6. Repair new work damaged by subsequent work.
    7. Remove samples of installed work for testing when requested.
    8. Remove and replace defective and non-conforming work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

3.11 ADJUSTING

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

B. Testing, adjusting, and balancing HVAC systems: See Section 23 05 93.

3.12 FINAL CLEANING

A. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

B. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

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

B. Notify Architect when work is considered ready for Substantial Completion.

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.

D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

E. Notify Architect when work is considered finally complete.

F. Complete items of work determined by Architect's final inspection.

G. Provided completed documentation as follows:
   1. Consent to Surety of Final Payment
   2. Certificate of Substantial Completion
   3. Contractor Satisfaction of Debt and Claims
   4. Release of Liens for the Contractor, his Subcontractors, and his Suppliers

3.14 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION 01 70 00

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury

F. Hazardous materials shall be removed and remediated in accordance with the Hazardous Material Abatement Plan. See Specification Section 00 01 02 Project Information for additional inofrmation.

G. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.

H. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

I. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Other illegal dumping or burying.

J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

C. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. See Section 01 60 00 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:
   1. Relative amount of waste produced, compared to specified product.
   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
   3. Proposed disposal method for waste product.
   4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 10 00 for list of items to be salvaged from the existing building for relocation in project or for Owner.

B. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.

D. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.

E. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

END OF SECTION 01 74 19

SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Operation and Maintenance Data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. 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.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants,Contractorand subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Operation and maintenance data.
      c. Field quality control data.
      d. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 78 00

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. Electrical systems and equipment.
   2. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

D. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION 01 79 00

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Legal disposal of demolished items.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 10 00 - Summary: Sequencing and staging requirements.

C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.

E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 PROJECT CONDITIONS

A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

PART 3 EXECUTION

2.01 SCOPE

A. As indicated on Drawings and herein specified.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Execution and Closeout Requirements.

B. Comply with applicable codes and regulations for demolition operations and safety of the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary dust proof partitions/wall assembly barriers and security devices.
   4. Use adequate physical barriers and wall assemblies to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent construction and occupants.
   6. Do not close or obstruct means of egress corridors, roadways or sidewalks without permit.

7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

2.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without permission from the Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without permission from the Owner.

F. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

G. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions and wall assemblies during demolition and construction.

C. Remove existing work as indicated and as required to accomplish new work.
   1. At areas of demolition and transition, remove materials and finishes including, but not limited to, rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings and notes.

D. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removal neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.
   5. Patch to match existing at areas of transition and demolition unless noted and/or scheduled otherwise.

END OF SECTION 02 41 00

SECTION 04 01 00

MAINTENANCE OF MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Repointing mortar joints.

1.02 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.

1.04 SUBMITTALS

A. Product Data: Provide data on cleaning compounds.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of the contract documents.

B. Restorer: Company specializing in masonry restoration with minimum three years of documented experience.

1.06 MOCK-UP

A. Restore and repoint an existing masonry wall area sized 8 feet long by 6 feet high; include in mock-up area instances of mortar.

B. Locate where directed.

C. Acceptable panel and procedures employed will become the standard for work of this section.

D. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

1.08 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Restoration and Cleaning Chemicals:
   1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
   2. HMK Stone Care System: www.hmkstonecare.com.
   3. PROSOCO: www.prosoco.com.

2.02 CLEANING MATERIALS

A. Cleaning Agent: Detergent type.

B. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid, mixed one part to 10 parts of potable water.

2.03 MORTAR MATERIALS

A. Conform to requirements of Section 04 05 11.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to be cleaned are ready for work of this section.

3.02 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

F. Protect roof membrane and flashings from damage with 1/2 inch plywood laid on roof surfaces over full extent of work area and traffic route.

G. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

H. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.03 REPOINTING

A. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached.

B. Use power tools only after test cuts determine no damage to masonry units will result.

C. Do not damage masonry units.

D. When cutting is complete, remove dust and loose material by brushing.

E. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.

F. Moist cure for 72 hours.

3.04 CLEANING EXISTING MASONRY

A. Cleaning Detergent: Brush clean masonry surfaces at all stone locations with cleaning agent in accordance with the manufacturer's instructions. Saturate masonry with clean water and flush loose mortar and dirt.

3.05 CLEANING

A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

END OF SECTION 04 01 00

SECTION 04 05 11
MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

B. ASTM C91/C91M - Standard Specification for Masonry Cement.

C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

D. ASTM C270 - Standard Specification for Mortar for Unit Masonry.

E. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.

F. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.

1.04 SUBMITTALS

A. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.

B. Samples: Submit two samples of mortar, illustrating mortar color and color range.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of the contract documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Exterior Masonry Pointing Mortar: Type O; color to match existing.
   2. Exterior Masonry Veneer: Type N.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type N.
   2. Color: Mineral pigments added as required to produce approved color sample.

B. Mortar Aggregate: ASTM C144.

C. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from manufacturer's full range.

D. Water: Clean and potable.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Do not use anti-freeze compounds to lower the freezing point of mortar.

D. If water is lost by evaporation, re-temper only within two hours of mixing.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install mortar to requirements of section(s) in which masonry is specified.

3.02 GROUTING

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of contract documents.

B. Low-Lift Grouting:
   1. Limit height of pours to 12 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. High-Lift Grouting:
   1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
   2. Place grout for spanning elements in single, continuous pour.

END OF SECTION 04 05 11

SECTION 05 50 00

METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items.

B. Prefabricated ladders and ship ladders.

C. Bollards

D. Structural supports for miscellaneous attachments

E. Loose base plates and anchors for structural steel and steel joists

F. Door frames for overhead door openings

G. Loose lintels

H. Ledge angles; shelf angles; channels; and plates

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

G. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.

H. Section 09 90 00 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

H. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

I. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

J. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

K. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

L. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

M. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

N. AWS D1.1/D1.1M - Structural Welding Code - Steel.

O. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel.

P. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

Q. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

R. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M; or ASTM A 572 / A 572M Grade 50.

B. Plates: ASTM A283; or A 36.

C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black and hot-dip galvanized finish, as indicated. All exterior fabrications to be hot-dip galvanized.

D. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M where connecting galvanized components.

E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic; SSPC-Paint 20, Type II - Organic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by intermittent welds and plastic filler at interior; or continuous welds at exterior.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe 6" diameter, concrete filled, crowned cap, as detailed; galvanized finish.

B. Ledge Angles, Shelf Angles, Channels, and Plates not attached to Structural Framing: For support of metal decking, joists, and masonry; prime paint or galvanized finish. Galvanized at all exterior locations.

C. Loose Lintels: As detailed; prime paint; galvanized; or de-scaled mill finish. Galvanized at all exterior locations.

D. Plate & Platform Walk Framing: As detailed on the Structural Drawings.Galvanized at all exterior locations.

E. Structural supports for miscellaneous attachments: As detailed; prime paint; galvanized finish.

F. Loose base plates and anchors for structural steel and steel joists: As detailed; prime paint.

2.04 PREFABRICATED LADDERS

A. Prefabricated Ship Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
   1. Manufacturers:
      a. Industrial Ladder & Scaffolding, Inc.: www.anyladder.com/#sle.
      b. O'Keeffe's Inc: www.okeeffes.com/#sle.
      c. Precision Ladders, LLC: www.precisionladders.com/#sle.
      d. FS Industries: fsindustries.com/catalog.shtml.
      e. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 FINISHES - STEEL

A. Prime paint all steel items.
   1. Exceptions: Galvanize all fabrications on the exterior of the building.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: Two coats.

E. Galvanizing of Structural Steel Members exposed to the exterior: Galvanize after fabrication to ASTM A 123/A 123M requirements. Provide minimum 2.0 oz/sq ft galvanized coating.

2.06 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal and aluminum, where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components indicated on drawings and on shop drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 50 00

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair and ramp railings and guardrails.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 03 30 00 - Cast-in-Place Concrete: Placement of anchors in concrete.

G. Section 04 20 00 - Unit Masonry: Placement of anchors in masonry.

H. Section 09 90 00 - Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

E. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

F. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.

G. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.05 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

B. Fabricator Qualifications:

1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
   2. Intermediate Rails: 1-1/2 inches diameter, round.
   3. Posts: 1-1/2 inches diameter, round.
   4. Balusters: 1/2 inch square solid bar.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
   2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
   3. For anchorage to stud walls, provide backing plates, for bolting anchors.
   4. Posts: Provide adjustable flanged brackets.

2.02 STEEL RAILING SYSTEM

A. Steel Tube: ASTM A500, Grade B cold-formed structural tubing.

B. Steel Pipe: ASTM A53/A53M, Grade B Schedule 80, black finish.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D. Exposed Fasteners: No exposed bolts or screws.

E. Straight Splice Connectors: Steel concealed spigots.

F. Galvanizing at exterior railings: In accordance with requirements of ASTM A123/A123M.
   1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.

3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 52 13

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough opening framing for doors, windows, and roof openings.

B. Sheathing.

C. Roofing nailers.

D. Preservative treated wood materials.

E. Fire retardant treated wood materials.

F. Miscellaneous framing and sheathing.

G. Communications and electrical room mounting boards.

H. Wood nailers and curbs for roofing and items installed on roof.

I. Concealed wood blocking, nailers, and supports.

J. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 05 12 00 - Structural Steel Framing: Prefabricated girders, beams, columns, and hangers for support of wood blocking.

G. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors, support angles, and shapes for wood blocking.

H. Section 07 62 00 - Sheet Metal Flashing and Trim: Drip flashings.

I. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; American Forest and Paper Association.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board.

E. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

F. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

G. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

I. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood Protection Association.

J. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood Protection Association.

K. AWPA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association.

L. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association.

M. AWPA U1 - Use Category System: User Specification for Treated Wood.

N. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.

O. PS 1 - Structural Plywood.

P. PS 20 - American Softwood Lumber Standard.

Q. SPIB (GR) - Grading Rules.

R. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17.

S. WWPA G-5 - Western Lumber Grading Rules.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

D. LEED Submittals: Submit applicable LEED Submittal Form for each different product made of sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, as well as locally-sourced wood, as specified in Section .

1.05 QUALITY ASSURANCE

A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
   1. Lumber of other species or grades, or graded by other agencies, is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.

C. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.

2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

C. Provide sustainably harvested wood.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

E. Miscellaneous Blocking, Furring, Nailers, and Curbs:
1. Lumber: S4S, No. 1 or Construction Grade.
2. Boards: Standard.

2.03 CONSTRUCTION PANELS

A. Wall Sheathing, For roof locations at parapets: Plywood, PS 1, Grade C-D Exposure I; Exterior Exposure, Fire retardant treated.
1. Thickness: 5/8", nominal, or as noted.

B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

C. Other Applications:
1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
3. Other Locations: PS 1, C-D Plugged or better.
4. Electrical Component Mounting: APA rated plywood B-C sheathing, fire retardant treated.

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M; or Stainless Steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
3. Anchors: Toggle bolt type for anchorage to hollow masonry.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.

2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc: www.wolmanizedwood.com/#sle.
      b. Hoover Treated Wood Products, Inc: www.frtw.com/#sle.
      c. Osmose, Inc: www.osmose.com/#sle.
      d. Substitutions: Not permitted.
   2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Do not use treated wood in direct contact with the ground.
   3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat rough carpentry items as scheduled; or as indicated.
      c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
   1. Manufacturers:
      a. Arch Wood Protection, Inc.: www.wolmanizedwood.com.
      b. Viance, LLC: www.treatedwood.com.
      c. Osmose, Inc: www.osmose.com.
      d. Substitutions: Not permitted.

D. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
   1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   2. Treat lumber in contact with roofing, flashing, or waterproofing.
   3. Treat lumber in contact with masonry or concrete.
   4. Treat lumber less than 18 inches above grade.
      a. Treat lumber in other locations as indicated.
   5. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry plywood after treatment to maximum moisture content of 15 percent.
      b. Treat plywood in contact with masonry or concrete.
      c. Treat plywood in other locations as indicated.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 FRAMING INSTALLATION

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

D. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

E. Install structural members full length without splices unless otherwise specifically detailed.

F. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

E. Specifically, provide the following non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Bath accessories.
   6. Wall-mounted door stops.
   7. Visual display and marker boards.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.05 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

A. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.

B. Coordinate curb installation with installation of decking and support of deck openings, roofing vapor retardant, and parapet construction.

3.06 INSTALLATION OF CONSTRUCTION PANELS

A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using screws.
   1. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 78 39.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 10 00

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood casings and moldings.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with installation of associated and adjacent components.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.

B. Interior Woodwork Items:

1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 60 00.

C. Wood fabricated from timber recovered from riverbeds or otherwise abandoned is permitted, unless otherwise noted, provided it is clean and free of contamination; identify source; provide lumber re-graded by an inspection service accredited by the American Lumber Standard Committee, Inc.

2.03 LUMBER MATERIALS

A. Hardwood Lumber: hard maple species, plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.04 ACCESSORIES

A. Lumber for Shimming

B. Wood Filler: Solvent base, tinted to match surface finish color.

2.05 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.06 SHOP FINISHING

A. Apply wood filler in exposed nail and screw indentations.

B. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

C. Prime paint surfaces in contact with cementitious materials.

D. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION 06 20 00

SECTION 06 65 10

SOLID SURFACE FABRICATIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.02 1.2 SUMMARY

A. This Section includes the following horizontal and trim solid surface product types:
   1. Reception areas

B. B. Related Sections include the following:
   1. Division 5 Section 05 50 00 “Metal Fabrications” for Blocking.
   2. Division 6 Section 06 10 00 “Rough Carpentry” for Blocking.

1.03 DEFINITION

A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.04 1.4 SUBMITTALS

A. Shop drawings:
   1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
      a. a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
      b. b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
      c. c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.

B. Samples:
   1. For each type of product indicated.
      a. Submit minimum 6-inch by 6-inch sample in specified gloss.
      b. Cut sample and seam together for representation of inconspicuous seam.
      c. Indicate full range of color and pattern variation.
   2. Approved samples will be retained as a standard for work.

C. Product data:
   1. Indicate product description, fabrication information and compliance with specified performance requirements.

D. Product certificates:
   1. For each type of product, signed by product manufacturer.

E. Manufacturer certificates:
   1. Signed by manufacturers certifying that they comply with requirements.

F. Maintenance data:
   1. Submit manufacturer’s care and maintenance data, including repair and cleaning instructions.
      a. Maintenance kit for finishes shall be submitted.
   2. Include in project closeout documents.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:
   1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.

C. Applicable standards:
   1. Standards of the following, as referenced herein:
      a. American National Standards Institute (ANSI)
      b. American Society for Testing and Materials (ASTM)
      c. National Electrical Manufacturers Association (NEMA)
      d. NSF International
   2. Fire test response characteristics:
      a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
         1) Flame Spread Index: 25 or less.
         2) Smoke Developed Index: 450 or less.

D. Coordination drawings:
   1. Shall be prepared indicating:
      a. Plumbing work.
      b. Electrical work.
      c. Miscellaneous steel for the general work.
      d. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
   2. Content:
      a. Project-specific information, drawn accurately to scale.
      b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
      c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
      d. Provide alternate sketches to designer for resolution of such conflicts.
         1) Minor dimension changes and difficult installations will not be considered changes to the contract.

E. Drawings shall:
   1. Be produced in 1/2-inch scale for all fabricated items.

F. Drawings must be complete and submitted to the architect within 60 days after award of contract for record only.
   1. No review or approval will be forthcoming.
   2. Coordination drawings are required for the benefit of contractor’s fabricators/installers as an aid to coordination of their work so as to eliminate or reduce conflicts that may arise during the installation of their work.

G. Job mock-up:
   1. Prior to fabrication of architectural millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.
   2. Build the mock-up to comply with the contract documents and install in a location as directed by the architect.
   3. Notify the architect two weeks in advance of the date of when the mock-up will be delivered.
   4. Should mock-up not be approved, re-fabricate and reinstall until approval is secured.

a. Remove rejected units from project site.
5. After approval, the mock-up may become a part of the project.
6. This mock-up, once approved, shall serve as a standard for judging quality of all completed units of work.

H. Pre-installation conference:
1. Conduct conference at project site to comply with requirements in Division 1.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.

B. Store components indoors prior to installation.

C. Handle materials to prevent damage to finished surfaces.
1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.07 WARRANTY

A. Provide manufacturer's warranty against defects in materials.
1. Warranty shall provide material and labor to repair or replace defective materials.
2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

B. Manufacturer's warranty period:
1. Ten years from date of substantial completion.

1.08 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
1. Subject to compliance with requirements, provide products by one of the following:
a. Corian® surfaces from the DuPont company (basis of design).
b. Approved equal.

2.02 MATERIALS

A. Solid polymer components
1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness:
1. 1/2 inch

C. Edge treatment:
1. See drawings

2.03 ACCESSORIES

A. Joint adhesive:
1. Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.

B. Sealant:
1. Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

2.04 FACTORY FABRICATION

A. Shop assembly
   1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
   2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.
      a. Reinforce with strip of solid polymer material, 2" wide.
   3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
   4. Rout and finish component edges with clean, sharp returns.
      a. Rout cutouts, radii and contours to template.
      b. Smooth edges.
      c. Repair or reject defective and inaccurate work.

2.05 FINISHES

A. Color Price Group A & B

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
   1. Provide product in the largest pieces available.
   2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
   3. Exposed joints/seams shall not be allowed.
   4. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
   5. Cut and finish component edges with clean, sharp returns.
   6. Rout radii and contours to template.
   7. Anchor securely to base cabinets or other supports.
   8. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
   9. Carefully dress joints smooth, remove surface scratches and clean entire surface.
   10. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

B. Coved backsplashes and applied sidesplashes:
   1. Install applied sidesplashes using manufacturer's standard color-matched silicone sealant.
   2. Adhere applied sidesplashes to countertops using manufacturer's standard color-matched silicone sealant.

3.03 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.04 CLEANING AND PROTECTION

A. Keep components clean during installation.

B. Remove adhesives, sealants and other stains.

END OF SECTION 06 65 10

SECTION 07 56 00

FLUID-APPLIED ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-applied roofing materials.

B. Accessories.

1.02 REFERENCE STANDARDS

A. Factory Mutual (FM Global) – Approval Guide.
   1. Factory Mutual Standard 4470 – Approval Standard for Class 1 Roof Covers.

B. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).

C. ASTM International (ASTM) – Annual Book of ASTM Standards.
   1. ASTM D 1079 – Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.
   2. ASTM D 1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films.
   3. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
   4. ASTM D 4798 / D4798M – 1- Standard Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method).
   5. ASTM D 6083 - Standard Specification for Liquid Applied Acrylic Coating Used in Roofing
   6. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
   7. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
   8. ASTM G 26 - Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
   9. ASTM G 53 - Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV- Condensation Type) for Exposure of Nonmetallic Materials.

D. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.

E. National Roofing Contractors Association (NRCA).

F. American Society of Civil Engineers (ASCE).
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data for membrane and accessory materials.

C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.

D. Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Include standard installation instructions, acceptable installation temperature range, and procedures for unusual perimeter conditions.

F. Field Quality Control Test Report.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Source Limitations: Components listed shall be provided by a single manufacturer or approved by the primary roofing manufacturer.

B. Work shall be performed in a safe, professional manner, conforming to federal, state and local codes.

C. UL Listing: Provide coating system and component materials which have been evaluated by Underwriters Laboratories for flame-spread, and are listed in the "Underwriters Laboratory Roofing Materials and Systems Directory" for Class A construction over existing metal or other non-combustible roofing (Flame-spread shall pass ASTM E-108 and/or UL 790). Provide roof covering materials bearing UL approval marking on the container. This indicates that the material has been subjected to UL's examination, test procedures and follow-up inspection service.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture, and in a manner that will ensure that there is no possibility of contamination.

C. Store in a dry, well ventilated, weather tight location at temperatures between 50°F (10°C) and 90°F (32°C) until the products are ready to be applied (keep from freezing). Do not stack material pallets more than two (2) high.

D. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Weather:
   1. Proceed with roofing only when existing and forecasted weather conditions permit.
   2. Ambient temperatures shall be above 50°F (10°C) and rising when applying water based coatings.

B. Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with Manufacturer's recommendations and guarantee requirements as follows:

C. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. NDL Roof Guarantee: Manufacturers standard form, without money limitation, in which Manufacturer agrees to repair leaks through the fluis-applied roof system on the roof caused by manufacturing defects, natural deterioration of, or workmanship in application.
   1. Warranty Duration:
      a. Twenty (20) Years Labor and Material

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design: GAF, Commercial Roofing Products Division, which is located at: 1 Campus Drive; Parsippany, NJ 07054; Toll Free Tel: 800-ROOF-411; Tel: 973-628-3000; Fax: 973-628-3451; Email: technicalquestions@gaf.com; Web: www.gaf.com

B. Subject to requirements of the specification, and subject to approval by the Owner and Architect prior to submission of the bid, coating systems may be provided by the following manufacturers:
   1. Carlisle Syntec.

2. Caco / Firestone.
3. Siplast.
4. Soprema.

C. Substitutions: Se Section 01 60 00 - Product Requirements.

2.02 COATINGS

A. HydroStop Elastomeric Membrane Roofing.
   1. United Coatings™ Elastuff® 103 Roof Coating: A two-part UV-resistant, color stable aliphatic polyurethane roof coating. It is a high solids, moisture-catalyzed, polyurethane coating system consisting of Elastuff®101 Base Roof Coat and Elastuff®103 Roof Coating.
   2. Application Rate: 1.0 to 1.5 gal per 100 ft2 (4.07 to 6.11 L/ 10 m2) per coat.
   3. Application Method: Airless sprayer, brush, or roller.
   4. Application Temperature (air, surface): 50°F (10°C) - 110°F (43°C).
   5. Dry Time to foot traffic (70°F (21°C), 50% relative humidity): Approximately 8 to 12 hours per coat.

B. HydroStop® PremiumCoat® Foundation Coat: An acrylic, permanently flexible, highly UV-resistant, chemical-resistant elastomeric compound fully reinforced with a tough stitch-bonded polyester fabric designed for roofing and flashing applications of all types.
   1. Application Rate: 1.00 - 1.50 gal per 100 ft2 (4.07 - 6.11 L/10 m2) per coat.
   2. Application Method: Roof brush.
   3. Application Temperature (air, surface): 50°F (10°C) - 110°F (43°C).
   4. Dry time: (touch dry) 1-4 hours at 77°F (25°C), 40% relative humidity (full cure): 7 days.

2.03 FLASHINGS, FABRIC, AND BULKING AGENTS

A. HydroStop® PremiumCoat® Fabric: tough, non-woven, stitch-bonded, heat-set polyester designed for roofing and flashing applications of all types. Available in 300ft rolls and varying widths.
   1. Length: 300ft; Width: 4”, 6”, 8”, 12”, 16”, 20", 24".
   2. Length: 336ft: Width: 40”.

2.04 PRIMERS AND SEALANTS

A. Clean Act Primer is specifically developed for dramatically increasing the bond to new or weathered black EPDM surfaces. It is a low viscosity, pinkish liquid that chemically alters the black EPDM surface to which it is applied, creating a “lock and key” effect with the subsequent topcoat.
   1. Application Rate: 0.20 gal per 100 ft2 (0.81 L/ 10 m2)
   2. Application Method: pump-up sprayer.
   3. Application Temperature (air, surface): 50°F (10°C) - 110°F (43°C)
   4. Dry Time: 20 minutes. Should be power-washed after a minimum of 20 minutes and maximum of 2 hours.

B. FlexSeal™ Sealant: White, solvent-based synthetic elastomeric compound designed to line and waterproof interior and exterior gutters typically found in metal buildings. FlexSeal™ Sealant is capable of withstanding ponding water. This product is easiest to apply at temperatures over 42°F.
   1. Application Rate: 2.0 gal per 200 linear feet with a 6 inch width (7.6 L per 61 linear meters with a 152 mm width); 2 coats typically required.
   2. Application Method: Roller or airless sprayer.
   3. Application Temperature (air, surface): 20°F (-6.6°C) - 120°F (49°C).
   4. Dry Time: 75°F (24°C), 50% relative humidity: Approximately 24 hours.

PART 3 EXECUTION

3.01 PRE-INSTALLATION CONFERENCE

A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect, owner, Manuracturer's representative and any other persons directly involved with the performance of the work. The installer shall record conference discussions to include decisions, agreements, and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work.
   1. Tour representative areas of roofing substrates to inspect and discuss conditions of substrate, penetrations and other preparatory work to be performed.
   2. Review coating system requirements, specifications, detail drawings, and the Contract Documents.
   3. Review required submittals, both completed and in progress.
      a. Review and finalize the construction schedule related to roofing work, and verify availability of materials, installer's personnel, equipment and facilities needed to consistently make progress and avoid delays.
      b. Review required inspection(s), testing, and certifying, and material usage accounting procedures. Review forecasted weather conditions.
   4. Establish procedures for coping with unfavorable conditions, including the possibility of temporary roofing work.

3.02 EXAMINATION

A. Verify existing conditions prior to starting this work.

B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of roofing system.

C. Verify that substrate surfaces are smooth, free of honeycombs or pitting, and not detrimental to full contact bond of roofing materials.

D. Verify that roof openings, curbs, and items that penetrate surfaces to receive roofing materials are securely and properly installed.

3.03 ADHESION

A. Installer shall verify adhesion. Questionable substrates shall be directed to GAF’s Field Services Department for resolution.

3.04 PREPARATION

A. Follow GAF’s Substrate Preparation Guidelines at gaf.com.

B. Moisture Survey: A moisture survey shall be performed on the roof system to determine the suitability of the existing roof for application of the HydroStop® PremiumCoat® System. Any wet or deteriorated areas shall be removed and replaced.

C. Preparation of the roof substrate is the responsibility of the installer who shall address and correct all of the conditions listed in this section. Do not proceed with the installation of the HydroStop® PremiumCoat® System until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer (GAF).

D. Treatment of damaged/deteriorated membrane: Any areas where the membrane has torn, cracked and/or buckled must be repaired using similar or compatible products manufactured by GAF. Any wet insulation must be replaced as part of the roofing repair. Allow 24 hours drying time before application of other HydroStop® PremiumCoat® products.

E. Treatment of ponding water areas: Installer shall make every effort to mechanically eliminate all ponding water areas on the roof prior to application of HydroStop® PremiumCoat® products.

Ponding water is defined as water that does not properly drain and remains on the roof for more than 48 hours after precipitations stops.

F. Deteriorated Seams: Repair all delaminated or open seams using method acceptable to the manufacturer.

G. Pitch Pans: Pitch Pans shall be capped with sheet metal so they may be sealed with HydroStop® PremiumCoat® products.

H. Condensate Lines: Condensate lines shall be installed from HVAC units to gutters as part of the overall drainage system. The type of piping used for condensate lines may vary depending on local building codes.

I. Application of primer: Spray Clean Act Rinseable Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2) over the entire surface to be coated.

J. Membrane Cleaning: Roof substrate must be carefully pressure washed with water. Use an approximate working pressure of 2,000 psi (depending on condition of roof) to remove all dirt, dust, chalking, loose materials, etc. Take care not to damage the roof surface or force water into the roof system. Use hot water and mild detergent to remove grease and/or oils from the roof substrate. If mildew or algae are present, use bleach to treat these areas, then pressure wash surface.

K. Protect adjacent surfaces not designated to receive roofing.

3.05 INSTALLATION, GENERAL

A. Install fluid-applied roofing in accordance with manufacturer's instructions and recommendations, to specified minimum thickness.

3.06 FLASHING APPLICATION

A. Preliminary work consists of substrate preparation and all flashing details. After completion of substrate preparation, all flashing details, penetrations and curbs shall be flashed with either 6 inches (152 mm) or 12 inches (305 mm) HydroStop® PremiumCoat® Fabric and foundation coat in accordance with HydroStop® PremiumCoat® Detail Drawings. foundation coat shall be feathered at the edges (see current HydroStop® PremiumCoat® Detail Drawings) so that water may flow over the various flashing details.

B. Parapet Walls: All parapet wall details within the roof system shall be secured and sealed with a 12 inches (305 mm) minimum width of HydroStop® PremiumCoat® Fabric and foundation coat. All voids and open areas shall be filled with polyurethane foam prior to application of HydroStop® PremiumCoat® Fabric and foundation coat.

C. Curb Flashings: All curb flashings, including cricket details, shall be flashed with at least a 12 inches (305 mm) width of HydroStop® PremiumCoat® Fabric and foundation coat. Encapsulate all fasteners using foundation coat. Do not bridge fasteners. HydroStop® PremiumCoat® Fabric shall be cut around all fasteners so fabric lies flat.

D. Penetrations: foundation coat shall be applied around the base of the penetration extending at least 6 inches (152 mm) onto the vertical and 6 inches (152 mm) onto the base. Embed a 12 inches (305 mm) width of HydroStop® PremiumCoat® Fabric using additional foundation coat as necessary. Cut the HydroStop® PremiumCoat® fabric to accommodate the shape of the penetration. Both the top and bottom of neoprene pipe boots shall be flashed using HydroStop® PremiumCoat® Butter Grade and HydroStop® PremiumCoat® Fabric as describes above.

E. Skylights: Curb skylights shall be treated in the same fashion as curb flashings. After flashing work has been completed and the coating has cured, treat deteriorated fiberglass skylight panels with United Coatings™ Acrysheen Sealer.

F. Gutters: Trowel or brush apply FlexSeal™ Sealant to the interior or exterior gutter incorporating 12 inches (305 mm) HydroStop® PremiumCoat® fabric at all gutter seams. Gutter shall be completely clean and dry before applying FlexSeal™ Sealant

G. Ponding Water Areas: The severity of the ponding water condition will determine the requirements for additional preparation. Contact the GAF'S Technical Service Department for information.

H. Inspect Preliminary Work/Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.

3.07 FIELD OF ROOF APPLICATION RATES

A. Resurfacing EPDM Substrates 10 year System:
   1. Before applying the HydroStop® PremiumCoat® System, an adhesion test is required to ensure an adhesion minimum of 2.0 PLI. Test patches to be applied with the rates listed below.
   2. Conduct moisture survey and remove/replace all wet areas.
   3. Repair membrane including seams, penetrations, flashings, curbs, and terminations with like materials.
   4. Power wash roof to ensure it is free of dirt, debris, oil and other contaminants that could negatively affect adhesion.
   5. Prime using Clean Act Rinseable Primer at the rate of 0.20 gal per 100 ft2 (0.81 L/10 m2).
   6. Treat all penetrations, drains, curbs, and scuppers.
   7. Apply HydroStop® PremiumCoat® Foundation Coat at a rate of 1.5 gal per 100 ft2 (6.11 L/10 m2). Allow at least 24 hours drying time, and then inspect for defects, flaws or areas of insufficient coverage. Correct any unsatisfactory conditions.
   8. Apply intermediate coat of United Coatings™ Elastuff® 103 at the rate of 1.5 gal per 100 ft2 (6.11 L/m2). Allow at least 24 hours drying time, and then inspect for defects, flaws or areas of insufficient overage. Correct any unsatisfactory conditions.
   9. Apply finish coat of United Coatings™ Elastuff® 103 at the rate of 1.5 gal per 100 ft2 (6.11 L/m2). Allow at least 24 hours drying time, and then inspect for defects, flaws or areas of insufficient overage. Correct any unsatisfactory conditions.
   10. After a minimum of 24 hours has elapsed, inspect the final roof surface for flaws, areas of insufficient coverage, insufficient thickness, etc. The HydroStop® PremiumCoat® dry film thickness is approximately 40 mils in the field of the roof. All unsatisfactory areas must be repaired.

3.08 INSPECTION INFORMATION

A. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fishmouths, air pockets, etc.) to ensure that work is complete and satisfactory.

B. Inform Project Architect and GAF's Field Services Department when all preliminary work and flashing details will be complete and the Installer is ready to proceed with application of United Coatings™ Roofing Membrane. Allow a minimum of two (2) weeks for the interim inspection to be made by the GAF's Field Services Department.

C. Any final roofing installation prior to this interim inspection is subject to rejection by the Project Architect and/or the GAF's Field Services Department. Please be advised that Technical On-Site Support for instructing Certified Contractors in the proper application of the United Coatings™ Roofing System is available. The first day of instruction is at no-charge to the Certified Contractor. Any additional days or return trips for instruction will be at a cost of $600.00 per day, plus all incurred travel expenses. The two (2) required inspections (interim and final) for the Liquid Applied Roofing System Guarantees are free of charge. Additional inspections will be billed at a rate of $600.00 per day plus all incurred travel costs.

3.09 OTHER ITEMS

A. Installer shall take photographs of representative roof areas, including detail work, before work commences, after the surface has been properly prepared, after all flashing and detail work has been performed, and after the spray application of the HydroStop® PremiumCoat® membrane.

B. Installer shall provide the following support for on-site inspections by a representative from GAF's Field Services Department (list is not comprehensive):
   1. Representative from the installer's company who has authority to make binding decisions
   2. Required means to access all areas of the treated roof.
   3. Previous photographs of the roof, including test patch results, as applicable
   4. HydroStop® PremiumCoat® products and application equipment required to repair roof areas where destructive tests are to be performed by GAF's Field Services Department.

C. Special care shall be taken to avoid shading when spraying dark HydroStop® PremiumCoat® Roofing Membrane colors. When applying foundation coat, Installer shall always spray wet material onto wet material to ensure that spray lines do not appear. HydroStop® strongly recommends the installation of any dark-colored finish coat by spraying two lighter coats (instead of one heavy coat) using a smaller tip size. Installer should also use the roof ribs or standing seams to terminate each spray pass.

D. Installer shall take special care when moving spray hoses and other equipment on the roof so that flashing work and encapsulated fastener heads are not damaged. Also, all spray equipment shall remain on the ground for the duration of the job.

E. If there will be an extended period of time (6 months or greater) between application of base and finish coats, the base coat shall be thoroughly cleaned before applying the finish coat.

F. It is strongly recommended that walkways designed for metal roofing systems be installed in all high traffic areas. Contact the GAF's Technical Services Department for recommendations.

3.10 REPAIRS

A. In the event that the membrane is damaged or punctured, repairs are to be performed using finish coat and system manufacturer's fabric (where necessary) as follows:
   1. Damaged areas are to be cut, cleaned and dried.
   2. Apply foundation coat or finish coat with bulking agent, and feather out onto the existing membrane.
   3. If a new penetration area has been cut, embed fabric into the foundation coat or finish coat with bulking agent according to standard specifications.
   4. Once the foundation coat has cured, finish coat may be applied for aesthetic uniformity.

3.11 FIELD QUALITY CONTROL

A. Owner will provide testing and inspection services in accordance with Section 01 40 00 - Quality Requirements, and Contractor shall provide temporary construction and materials for testing.

B. Owner will provide inspection services in accordance with Section 01 40 00 - Quality Requrements. Contractor shall coordinate work schedule with Owner's inspection agency.

3.12 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must proceed over installed roofing materials, protect surfaces using durable materials acceptable to roofing material manufacturer.

END OF SECTION 07 56 00

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 01 70 00 - Execution and Closeout Requirements: Cutting and patching.

G. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.

C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

D. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies.

E. ITS (DIR) - Directory of Listed Products.

F. FM 4991 - Approval Standard for Firestop Contractors.

G. FM P7825 - Approval Guide; Factory Mutual Research Corporation.

H. SCAQMD 1168 - Adhesive and Sealant Applications.

I. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems.

J. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. LEED Report: Submit VOC content documentation for all non-preformed materials.

E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Certificate from authority having jurisdiction indicating approval of materials used.

H. Qualification statements for installing mechanics.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Approved by Factory Mutual Research under FM Standard 4991, Approval of Firestop Contractors, or meeting any two of the following requirements:.
   2. With minimum 5 years documented experience installing work of this type.
   3. Able to show at least 3 satisfactorily completed projects of comparable size and type.
   4. Licensed by authority having jurisdiction.
   5. Approved by firestopping manufacturer.

D. Installing Mechanic's Qualifications: Trained by firestopping manufacturer and able to provide evidence thereof.

1.06 MOCK-UP

A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
   2. Where firestopping is intended to fill a linear opening, install minimum of 2 linear ft.

B. Obtain approval of authority having jurisdiction before proceeding.

C. If accepted, mock-up will represent minimum standard for the Work.

D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.07 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING - GENERAL REQUIREMENTS

A. Manufacturers:
   1. A/D Fire Protection Systems Inc: www.adfire.com.
   2. 3M Fire Protection Products: www.3m.com/firestop.
   3. Hilti, Inc: www.us.hilti.com.
   4. Nelson FireStop Products: www.nelsonfirestop.com.

B. Firestopping Materials with Volatile Content: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Head-of-Wall Firestopping at Joints Between Non-Rated Floor and Fire-Rated Wall: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
   1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.

B. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
   1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
   2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
   3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
   4. Listing by UL, FM, or Intertek in their certification directory will be considered evidence of successful testing.

C. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
   1. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
   2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
   3. Listing by UL, FM, or Intertek in their certification directory will be considered evidence of successful testing.

2.03 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS

A. Concrete and Concrete Masonry Walls and Floors:
   1. Top of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
      a. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      b. 2 Hour Construction: UL System HW-D-1037; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   2. Concrete/Concrete Masonry Wall to Wall Joints:
      a. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      b. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.

B. Gypsum Board Walls:
   1. Wall to Wall Joints:
      a. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
      b. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.

2.04 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:
   1. In Walls:
      a. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE Intumescent Firestop Sealant.

B. Penetrations Through Walls By:

1. Multiple Penetrations in Large Openings:
    a. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE Intumescent Firestop Sealant.
2. Uninsulated Metallic Pipe, Conduit, and Tubing:
    a. 2 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.
    b. 2 Hour Construction: UL System C-AJ-1498; Hilti CP 680-P/M Cast-In Device.
3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
    a. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
    b. 2 Hour Construction: UL System C-BJ-2021; Hilti CP 643N Firestop Collar.
4. Electrical Cables Not In Conduit:
    a. 2 Hour Construction: UL System C-AJ-3216; Hilti CP 658 Firestop Plug.
    b. 2 Hour Construction: UL System W-J-3198; Hilti CFS-SL RK Retrofit Sleeve Kit for existing cables.
    c. 2 Hour Construction: UL System W-J-3199; Hilti CFS-SL SK Firestop Sleeve Kit.
5. Cable Trays with Electrical Cables:
    a. 3 Hour Construction: UL System C-AJ-4035; Hilti FS-ONE Intumescent Firestop Sealant.
6. Insulated Pipes:
    a. 2 Hour Construction: UL System C-AJ-5048; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, or CP 604 Self-Leveling Firestop Sealant.
7. HVAC Ducts, Uninsulated:
    a. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE Intumescent Firestop Sealant.
    b. 2 Hour Construction: UL System C-AJ-7084; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, or CP 604 Self-Leveling Firestop Sealant.

C. Penetrations Through Walls By:
1. Uninsulated Metallic Pipe, Conduit, and Tubing:
    a. 2 Hour Construction: UL System W-J-1067; Hilti FS-ONE Intumescent Firestop Sealant.
2. Electrical Cables Not In Conduit:
    a. 2 Hour Construction: UL System W-J-3060; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
    b. 2 Hour Construction: UL System W-J-3143; Hilti CP 658T Firestop Plug.
3. Insulated Pipes:
    a. 2 Hour Construction: UL System W-J-5041; Hilti FS-ONE Intumescent Firestop Sealant.
    b. 2 Hour Construction: UL System W-J-5042; Hilti FS-ONE Intumescent Firestop Sealant.
    c. 2 Hour Construction: UL System W-J-5028; Hilti FS-ONE Intumescent Firestop Sealant.
4. HVAC Ducts, Uninsulated:
    a. 2 Hour Construction: UL System W-J-7109; Hilti FS-ONE Intumescent Firestop Sealant or CP 606 Flexible Firestop Sealant.
5. HVAC Ducts, Insulated:
    a. 2 Hour Construction: UL System W-J-7112; Hilti FS-ONE Intumescent Firestop Sealant.

2.05 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

A. Blank Openings:
   1. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.

B. Penetrations By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System W-L-1389; Hilti FS-ONE Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE Intumescent Firestop Sealant.
      c. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE Intumescent Firestop Sealant.
      d. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE Intumescent Firestop Sealant.
      e. 2 Hour Construction: UL System W-L-8087; Hilti FS 657 Fire Block.
   2. Uninsulated Metallic Pipe, Conduit, and Tubing:
      a. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE Intumescent Firestop Sealant.
      c. 2 Hour Construction: UL System W-L-1206; Hilti FS-ONE Intumescent Firestop Sealant.
   3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
      a. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
      b. 2 Hour Construction: UL System W-L-2411; Hilti CP 648-E Firestop Wrap Strip.
      c. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE Intumescent Firestop Sealant.
   4. Electrical Cables Not In Conduit:
      a. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
      b. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
      c. 2 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for existing cables.
      d. 2 Hour Construction: UL System W-L-3394; Hilti CFS-SL SK Firestop Sleeve Kit.
      e. 2 Hour Construction: UL System W-L-3395; Hilti CP653 Speed Sleeve.
   5. Cable Trays with Electrical Cables:
      a. 2 Hour Construction: UL System W-L-4011; Hilti FS 657 Fire Block.
      b. 2 Hour Construction: UL System W-L-4060; Hilti FS-ONE Intumescent Firestop Sealant.
   6. Insulated Pipes:
      a. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
      c. 2 Hour Construction: UL System W-L-5096; Hilti FS-ONE Intumescent Firestop Sealant.
      d. 2 Hour Construction: UL System W-L-5257; Hilti FS-ONE Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, or CP 601S Elastomeric Firestop Sealant.
      e. 2 Hour Construction: UL System W-L-5244; Hilti CP 648-E Firestop Wrap Strip.
   7. HVAC Ducts, Insulated:

a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE Intumescent Firestop Sealant.

2.06 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements. Foam, caulk, putty or manufactured device.
   1. Fire Ratings: Use any system listed by UL, FM, or ITS (Warnock Hersey) or that has F Rating equal to fire rating of penetrated assembly and minimum T Rating of 0 and that meets all other specified requirements.
   2. Fire Ratings: See Drawings for required systems and ratings.

B. Firestopping at Uninsulated Metallic Pipe and Conduit Penetrations, of diameter 4 inches or less: Any material meeting requirements. Foam, caulk, putty or manufactured device.

C. Firestopping at Cable Tray Penetrations: Any material meeting requirements. Foam, caulk, putty or manufactured device.

D. Firestopping at Cable Penetrations, not in Conduit or Cable Tray: Any material meeting requirements. Foam, caulk, putty or manufactured device.

E. Firestopping at Control and Expansion Joints (without Penetrations): Any material meeting requirements and caulk.

2.07 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.

C. Foam Firestoppping: Single component silicone foam compound.

D. Fibered Compound Firestopping: Formulated compound mixed with incombustible non-asbestos fibers.

E. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening.

F. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authority having jurisdiction.

C. Install labeling required by code.

CLEANING

4.01 CLEAN ADJACENT SURFACES OF FIRESTOPPING MATERIALS.

4.02 PROTECTION

A. Clean adjacent surfaces of firestopping materials.

B. Protect adjacent surfaces from damage by material installation.

END OF SECTION 07 84 00

SECTION 07 90 05

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backer rods.

B. Precompressed foam sealers.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders:

G. Section 07 62 00: Sealants required in conjunction with flashing.

H. Section 08 80 00 - Glazing: Glazing sealants and accessories.

1.03 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants.

D. ASTM D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

E. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.05 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Samples: Submit two samples, 2 x 1/2 in size illustrating sealant colors for selection.

D. LEED Report: Submit VOC content documentation for all non-preformed sealants and primers.

E. Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, and perimeter conditions requiring special attention.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum 5 years documented experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Polyurethane Sealants:
   1. Pecora Corporation: www.pecora.com.
   2. Bostik, Inc www.bostik-us.com
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Acrylic Sealants (ASTM C920):
   1. Pecora Corporation; www.pecora.com.
   2. Tremco, Inc www.tremcosealants.com.
   3. Bostik, Inc. www.bostik-us.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Preformed Compressible Foam Sealers and backer rods:
   1. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
   2. Emseal Joint Systems, Ltd.
   3. Dayton Superior Corporation: www.daytonsuperior.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SEALANTS

A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Type 1 - General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Color: Standard colors matching finished surfaces.
   2. Product: Dynatrol II manufactured by Pecora.
   3. Applications: Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

C. Type 2 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
   1. Color: Standard colors matching finished surfaces.
   2. Product: AC-20 + Silicone manufactured by Pecora.
   3. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.

c. Other interior joints for which no other type of sealant is indicated.

D. Type 3 - Exterior Expansion Joint Sealer: ASTM D 2628, hollow neoprene (polychloroprene) compression gasket.
   1. Black color.
   2. Size and Shape: . As indicated by drawings.
   3. Product: Poly seal manufactured by Sandell mfg.
   4. Applications: Use for:
      a. Exterior wall expansion joints.

E. Type 4 - Acoustical Sealant: acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   1. Product: AIS-919 manufactured by Pecora.
   2. Applications: Use for concealed locations only:
      a. Sealant bead between top stud runner and structure and between bottom stud track and floor and where shown on plans.

F. Type 5 - Concrete Paving Joint Sealant: Polyurethane, self-leveling; ASTM C920, Class 25, Uses T, I, M and A; single component.
   1. Color: Gray.
   2. Product: Dynatred manufactured by Pecora.
   3. Applications: Use for:
      a. Joints in sidewalks and vehicular paving.
      b. Where shown on plans.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   1. Width/depth ratio of 2:1.
   2. Neck dimension no greater than 1/3 of the joint width.
   3. Surface bond area on each side not less than 75 percent of joint width.

F. Install bond breaker where joint backing is not used.

G. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

H. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

I. Tool joints concave.

J. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect sealants until cured.

END OF SECTION 07 90 05

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel door frames.

B. Non-fire-rated steel doors.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 08 71 00 - Door Hardware.

G. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

H. Section 09 90 00 - Painting and Coating: Field painting.

1.03 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council.

B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100).

C. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames.

F. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute (ANSI/DHI A115 Series).

G. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames.

H. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

D. Samples: Submit two samples of metal, 2 x 2 inches in size showing factory finishes, colors, and surface texture.

E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

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

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

C. Maintain at the project site a copy of all reference standards dealing with installation.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Door Frames:
   1. Assa Abloy Ceco, Curries, or Fleming: www.assaabloydss.com/#sle.
   2. Republic Doors, an Allegion brand; ____: www.republicdoor.com/#sle.
   3. Steelcraft: www.steelcraft.com.
   4. Phillip Manufacturing Company
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND FRAMES

A. Requirements for All Door Frames:
   1. Accessibility: Comply with ANSI/ICC A117.1.
   2. Finish: Factory primed, for field finishing.

2.03 STEEL DOORS

A. Exterior Doors :
   1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 1, full flush.
   2. Core: Polyurethane.
   3. Top Closures for Outswinging Doors: Flush with top of faces and edges.
   4. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
   5. Texture: Smooth faces.
   6. Weatherstripping: Separate, see Section 08 71 00.
   7. Finish: Factory primed, for field finishing.

B. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 1, full flush.
   2. Core: Polystyrene foam.
   3. Thickness: 1-3/4 inches.
   4. Texture: Smooth faces.
   5. Finish: Factory primed, for field finishing.

2.04 STEEL FRAMES

A. General:
   1. Comply with the requirements of grade specified for corresponding door.
      a. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage
   2. Finish: Factory primed, for field finishing.
   3. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

B. Exterior Door Frames: Fully welded.
   1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
   2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
   3. Finish: Factory primed, for field finishing.
   4. Weatherstripping: Integral, recessed into door edge or frame.

C. Interior Door Frames, Non-Fire-Rated: Fully welded type.
   1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
   2. Finish: Factory primed, for field finishing.

D. Sound-Rated Door Frames: Knock-down type.
   1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
   2. Finish: Factory primed, for field finishing.

E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

G. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.

2.05 ACCESSORY MATERIALS

A. Astragals for Double Doors: Specified in Section 08 71 00.
   1. Interior - Removable
   2. Exterior Doors: Steel, Z-shaped.

B. Silencers: Resilient rubber or vinyl, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.06 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard, baked on.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

A. Coordinate frame anchor placement with wall construction.

B. Coordinate installation of hardware.

C. Touch up damaged factory finishes.

3.03 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.04 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION 08 11 13

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; fire rated, acoustical, and smoke rated.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 08 11 13 - Hollow Metal Doors and Frames.

C. Section 08 71 00 - Door Hardware.

D. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - American National Standard for Basic Hardboard.

B. ICC (IBC) - International Building Code; 2003.

C. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; 1997.

D. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

E. WDMA I.S. 1A - Interior Architectural Wood Flush Doors.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.

D. Samples: Submit two samples of door construction, 8 x 12 inch in size cut from top; or bottom corner of door.

E. Samples: Submit two samples of door veneer, 6 x 6 inch in size illustrating wood grain, stain color, and sheen.

F. LEED Report: Submit for wood products made from sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, and locally-sourced wood, as specified in Section .

G. Manufacturer's Installation Instructions: Indicate special installation instructions.

H. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 PROJECT CONDITIONS

A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Provide warranty for the following term:
   1. Interior Doors: Warranty - Provide for replacing, including cost of rehanging and refinishing, at no cost to Owner, wood doors exhibiting defects in materials or workmanship including warp and delaminating for the life of installation.

D. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Graham Wood Doors: www.grahamdoors.com.
   2. Eggers Industries: www.eggersindustries.com/#sle.
   3. VT Industries www.VTindustries.com
   4. Marshfield DoorSystems, Inc: www.marshfielddoors.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS

A. All Doors: See drawings for locations and additional requirements.
   1. Quality Level: Custom Grade, Extra Heavy Duty performance, in accordance with WDMA I.S.1-A.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches; thick unless otherwise indicated; flush construction.
   1. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with International Building Code ("positive pressure"); UL or WH (ITS) labeled without any visible seals when door is open.
   2. Smoke and Draft Control Doors : In addition to required fire rating, provide door assemblies tested in accordance with UBC Standard 7-2, Part II; with "S" label; if necessary, provide additional gasketing or edge sealing.
   3. Wood veneer facing with factory transparent finish .

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type structural composite lumber core (SCLC), plies and faces as indicated above.

B. Fire Rated Doors: Mineral core, Type FD, plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

A. Wood Veneer Facing for Transparent Finish: White oak "A", veneer grade as specified by quality standard.
   1. Cut: Plain Sliced.
   2. Veneer match: Book match and balanced.
   3. Vertical Edges: Same species as face veneer.

B. Facing Adhesive: Type II - water resistant.

2.05 ACCESSORIES

A. Glazing Stops: Wood, of same species as door facing, butted; or mitered corners; prepared for countersink style tamper proof screws.

2.06 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other through bolted hardware.

C. Fit door edge trim to edge of stiles after applying veneer facing.

D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

F. Provide edge clearances in accordance with the quality standard specified.

2.07 FACTORY FINISHING - WOOD VENEER DOORS

A. Factory finish doors in accordance with specified quality standard:
   1. Transparent Finish: Transparent catalyzed polyurethane, Custom quality, semi-gloss sheen.

B. Factory finish doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for telegraphing, warp, and squareness.

C. Maximum Diagonal Distortion (Warp): 1/8 inch measured with straight edge or taut string, corner to corner, over an imaginary 36 by 84 inches surface area.

D. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.

E. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION 08 14 16

SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall access door and frame units.

B. Ceiling access door and frame units.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 09 90 00 - Painting and Coating: Field paint finish.

1.03 REFERENCE STANDARDS

A. ITS (DIR) - Directory of Listed Products.

B. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. LEED Submittals: Submit applicable LEED Submittal Form for each different product, showing recycled content and geographic source of products.

PART 2 PRODUCTS

2.01 ACCESS DOOR AND PANEL APPLICATIONS

A. Walls, Unless Otherwise Indicated:
   1. Material: Steel.
   2. Size: 18 x18 inches, unless otherwise indicated.
   3. Standard duty, hinged door.
   4. Tool-operated spring or cam lock; no handle.
   5. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
   6. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
   7. In Plaster: Drywall bead frame with door surface flush with wall surface.
   8. In Masonry: Surface mounted frame with door surface flush with frame surface.
   9. In Masonry: Frameless with door surface recessed for infill with wall finish.

B. Walls in Wet Areas:
   1. Material: Steel, hot-dipped galvanized.
   2. Size: 18 x18 inches, unless otherwise indicated.
   3. Standard duty, hinged door.
   4. Tool-operated spring or cam lock; no handle.
   5. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
   6. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
   7. In Plaster: Drywall bead frame with door surface flush with wall surface.
   8. In Masonry: Surface mounted frame with door surface flush with frame surface.

C. Fire Rated Walls: See drawings for wall fire ratings.
   1. Material: Steel.

2. Size: 18 x18 inches, unless otherwise indicated.
3. Insulated, double skin door panel.
4. Tool-operated spring or cam lock; no handle.

D. Ceilings, Unless Otherwise Indicated: Same type as for walls.
1. Material: Steel.
2. Size in Lay-in Grid Ceilings: To match grid module.
3. Size in Other Ceilings: 18 x18 inches, unless otherwise indicated.
4. Standard duty, hinged door.
5. Tool-operated spring or cam lock; no handle.

E. Fire Rated Ceilings: See drawings for ceiling fire ratings.
1. Material: Steel.
2. Size: 18 x 18 inches, unless otherwise indicated.
3. Standard duty, hinged door.
4. Tool-operated spring or cam lock; no handle.

2.02 WALL AND CEILING UNITS

A. Manufacturers:
1. Acudor Products Inc: www.acudor.com/#sle.
2. Cendrex, Inc: www.cendrex.com/#sle.
3. Karp Associates, Inc: www.karpinc.com/#sle.
4. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com/#sle.

B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.
1. Door Style: Single thickness with rolled or turned in edges.
2. Double-Skinned Hollow Steel Door Panels: 16 gage, 0.059 inch, minimum, on both sides and all edges.
3. Units in Fire Rated Assemblies: Fire rating as required by applicable code for the fire rated assembly in which they are to be installed.
4. Steel Finish: Primed.
5. Primed Finish: Polyester powder coat; manufacturer's standard color.
6. Hardware:
   a. Hardware for Fire Rated Units: As required for listing.
   b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
   c. Handle: Fixed.
   d. Latch/Lock: Tamperproof tool-operated cam latch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

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

B. Install frames plumb and level in openings. Secure rigidly in place.

C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION 08 31 00

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood doors.

B. Electrically operated and controlled hardware.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 14 16 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; (ADA Standards for Accessible Design).

B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council.

C. BHMA A156.1 - American National Standard for Butts and Hinges.

D. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches.

E. BHMA A156.3 - American National Standard for Exit Devices.

F. BHMA A156.4 - American National Standard for Door Controls - Closers.

G. BHMA A156.5 - American National Standard for Cylinders and Input Devices for Locks.

H. BHMA A156.6 - American National Standard for Architectural Door Trim.

I. BHMA A156.7 - American National Standard for Template Hinge Dimensions.

J. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders.

K. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association (ANSI/BHMA A156.9).

L. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000.

M. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems Sponsor.

1.04 ADMINISTRATIVE REQUIREMENTS

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

B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

C. Convey Owner's keying requirements to manufacturers.

D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project.

C. Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements.

D. Keying Schedule: Submit for approval of Owner.

E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

F. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

G. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

H. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Tools: One set of all special wrenches or tools applicable to each different or special hardware component, whether supplied by the hardware component manufacturer or not.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 DOOR HARDWARE - GENERAL

A. Provide all hardware specified or required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.

B. Provide all items of a single type of the same model by the same manufacturer.

C. Provide products that comply with the following:
   1. Applicable provisions of federal, state, and local codes.
   2. Hardware for Smoke and Draft Control Doors : Provide hardware that enables door assembly to comply with air leakage requirements of the applicable code.

D. Function: Lock and latch function numbers and descriptions of manufactures series as listed in hardware schedule.

E. Finishes: Identified in schedule.

2.02 LOCKS AND LATCHES

A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
   1. If no hardware set is indicated for a swinging door provide an office lockset.
   2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
   3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.

B. Lock Cylinders: Manufacturer’s standard tumbler type, six-pin standard core.
   1. Provide cams and/or tailpieces as required for locking devices required.

C. Keying: Grand master keyed.

D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.03 HINGES

A. Hinges - Basis of Design: See Hardware Schedule.

B. Hinges: Provide hinges on every swinging door.
   1. Provide five-knuckle full mortise butt hinges unless otherwise indicated.

2. Provide ball-bearing hinges at all doors having closers.
3. Provide hinges in the quantities indicated.
4. Provide non-removable pins on exterior outswinging doors.
5. Where electrified hardware is mounted in door leaf, provide power transfer hinges.

C. Quantity of Hinges Per Door:
1. Doors up to 60 inches High: Two hinges.
2. Doors From 60 inches High up to 90 inches High: Three hinges.

2.04 LOCKS AND LATCHES

A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
1. Hardware Sets indicate locking functions required for each door.
2. If no hardware set is indicated for a swinging door provide an office lockset.
3. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
4. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.

B. Lock Cylinders: Manufacturer's standard tumbler type, six-pin standard core.
1. Provide cams and/or tailpieces as required for locking devices required.

C. Keying: Grand master keyed.

D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.05 CYLINDRICAL LOCKSETS

A. Cylindrical Locksets - Basis of Design: See Hardware Schedule.

B. Locking Functions: As defined in BHMA A156.2, and as follows:
1. See Hardware Schedule

2.06 MORTISE LOCKSETS

A. Mortise Locksets - Basis of Design: See Hardware Schedule.

B. Locking Functions: As defined in BHMA A156.13, and as follows:

2.07 EXIT DEVICES

A. Exit Devices - Basis of Design: See Hardware Schedule.

B. Locking Functions: Functions as defined in BHMA A156.3, and as follows:
1. Entry/Exit, Always-Latched: Key outside locks and unlocks lever, no latch holdback (dogging).

2.08 CLOSERS

A. Closers - Basis of Design: See Hardware Schedule.

B. Closers: Complying with BHMA A156.4.
1. Provide surface-mounted, door-mounted closers unless otherwise indicated.
2. Provide a door closer on every exterior door.
3. Provide a door closer on every fire- and smoke-rated door. Spring hinges are not an acceptable self-closing device unless specifically so indicated.
4. On pairs of swinging doors, if an overlapping astragal is present, provide coordinator to ensure the leaves close in proper order.
5. At outswinging exterior doors, mount closer in inside of door.

2.09 STOPS AND HOLDERS

A. Stops and Holders - Basis of Design: See Hardware Schedule.

B. Stops: Complying with BHMA A156.8; provide a stop for every swinging door, unless otherwise indicated.
   1. Provide wall stops, unless otherwise indicated.
   2. If wall stops are not practical, due to configuration of room or furnishings, provide overhead stop.
   3. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop unless specifically so stated.

2.10 GASKETING AND THRESHOLDS

A. Gasketing and Thresholds - Basis of Design: See Hardware Schedule.

B. Gaskets: Complying with BHMA A156.22.

2.11 PROTECTION PLATES AND ARCHITECTURAL TRIM

A. Protection Plates: See Hardware Schedule

B. Protection Plates:
   1. Kickplate: Provide on push side of every door with closer, except storefront and all-glass doors.
   2. Mop Plates:

PART 3 EXECUTION

3.01 EXAMINATION

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

B. Verify that electric power is available to power operated devices and of the correct characteristics.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

3.03 ADJUSTING

A. Adjust work under provisions of Section 01 70 00.

B. Adjust hardware for smooth operation.

3.04 CLEANING

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

3.05 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00.

B. Do not permit adjacent work to damage hardware or finish.

3.06 SCHEDULE - ATTACHED.

HARDWARE SCHEDULE

TOWNSEND BUILDING - AUDITORS OFFICE RENOVATION

HARDWARE SET #: 1 - PRS DRS

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OPENING TO HAVE:

	QTY	DESCRIPTION	FINISH	MFG
A.	6	HINGE CB168 4.5 x 4.5 x NRP	652	STANLEY
B.	3	MORTISE CYLINDER (LFIC) K820 x 7-PIN x CT7LL	626	YALE
C.	1	RIM CYLINDER (LFIC) K840 x 7-PIN x CT7LL	626	YALE
D.	1	POWER SUPPLY PS610RF x (1) MLR		DORMA
E.	1	KEYED REMOVABLE MULLION 1340KR-8 x L	600	DORMA
F.	1	RIM EXIT DEVICE 9300CD x EO x L	630	DORMA
G.	1	RIM EXIT DEVICE 9300CD x 9PBO03 x 486 x L x MLR	630	DORMA
H.	2	DOOR CLOSER D-4550 x HCS	689	STANLEY
I.	1	BLADE STOP SPACER BSHD	689	DORMA
J.	1	ANGLE BRACKET SHOE NFHD	689	DORMA
K.		FLEX LOOP 3218 x 18"	630	DORMA
L.	1	CARD READER - MATCH EXISTING		
M.	2	WALL STOP 1270WV	630	TRIMCO
N.	6	SILENCERS 1229A	GRAY	TRIMCO

HARDWARE SET #: 2 - SGL DRS

301, 302,, 303, 304, 305A

OPENING TO HAVE:

	QTY	DESCRIPTION	FINISH	MFG
A.	3	HINGE CB168 4.5 x 4.5	652	STANLEY
B.	1	OFFICE LOCKSET 93K7-AB-14C-S3 x ABC x CORMAX	626	BEST
C.	1	DOOR CLOSER D-4550 x HCS	689	STANLEY
D.	1	WALL STOP 1270WV	630	TRIMCO
E.	3	SILENCERS 1229A	GRAY	TRIMCO

HARDWARE SET #: 3 - SGL DRS

302A, 305, 305B

OPENING TO HAVE:

	QTY	DESCRIPTION	FINISH	MFG
A.	3	HINGE CB168 4.5 x 4.5 x NRP	652	STANLEY

B.	1 STOREROOM LOCKSET 93K7-D-14C-S3 x ABC x CORMAX	626	BEST
C.	1 DOOR CLOSER D-4550 x HCS	689	STANLEY
D.	1 ELECTRIC STRIKE 8S84 x FSV x U	630	DORMA
E.	POWER SUPPLY PS610RF x (1) MLR		DORMA
F.	1 CARD READER - MATCH EXISTING		
G.	1 WALL STOP 1270WV	630	TRIMCO
H.	3 SILENCERS 1229A	GRAY	TRIMCO

END OF SECTION 08 71 00

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass.

B. Plastic glazing film.

C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section - Joint Sealers: Sealant and back-up material.

B. Section 08 41 26 - All-Glass Entrances and Storefronts: Glazing furnished as part of entrance assembly.

C. Section 08 44 13 - Glazed Aluminum Curtain Walls

D. Section 08 5113 - Aluminum Windows: Glazed windows.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

E. ASTM C1036 - Standard Specification for Flat Glass.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants.

H. ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.

I. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units; 1997.

J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.

K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

L. GANA (GM) - GANA Glazing Manual.

M. GANA (SM) - GANA Sealant Manual.

N. GANA (LGRM) - Laminated Glazing Reference Manual.

O. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use.

1.04 ADMINISTRATIVE REQUIREMENTS

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

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

C. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

D. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

E. Samples: Submit two samples 12 x12 inch in size of glass and plastic units, showing coloration and design.

F. Certificates: Certify that products meet or exceed specified requirements.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience.

1.07 MOCK-UP

A. See Section 01 40 00 - Quality Requirements, for additional mock-up requirements.

B. Provide mockup of sample including glass and air barrier and vapor retarder seal.

1.08 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

1.10 PERFORMANCE REQUIREMENTS

A. General: Provide glass capable of withstanding thermal movement and wind and impact loads (where applicable) as specified in paragraph B following.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:
   1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:
      a. Basic Wind Speed: 120 mph.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from ambient and surface temperatures changes acting on glass framing members and glazing components.

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
   1. For monolithic-glass lites, properties are based on units with lites 1/4 inch (6.0 mm) thick.

2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
3. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
    a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. per h per degree F.
    b. Solar Heat Gain Coefficient: NFRC 200.
    c. Solar Optical Properties: NFRC 300.

PART 2 PRODUCTS

2.01 GLAZING TYPES

2.02 BASIS OF DESIGN - INSULATING GLASS UNITS

A. Type _____ - Sealed Insulating Glass Units: Vision glazing, low-E.
1. Application(s): All exterior glazing unless otherwise indicated.
2. Substitutions: Refer to Section 01 60 00 - Product Requirements.
3. Between-lite space filled with argon.
4. Tint: Light Gray.
5. Thermal Resistance (U-Value):.24.
6. Total Solar Heat Gain Coefficient:.22.
7. Total Visible Light Transmittance: 45 percent.
8. Basis of Design: Guardian Industries Corp: www.sunguardglass.com.
9. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
    a. Coating: SunGuard SNX 62/27 on #2 surface.
    b. Tint: Gray.
10. Inboard Lite: Fully tempered float glass, 1/4 inch thick.
    a. Tint: None (clear).
    b. Film: See Legend for type.
11. Total Thickness: 1 inch.

B. Type - Single Vision Glazing:
1. Applications: All interior glazing unless otherwise indicated.
2. Type: Fully tempered float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch.

C. Type - Sealed Insulating Glass Units: Spandrel glazing, low-E.
1. Between-lite space filled with argon.
2. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum. Tint: Gray
3. Inboard Lite: Fully tempered float glass, 1/4 inch thick. Tint: Opaque

2.03 GLASS MATERIALS

A. Float Glass Manufacturers:
1. Guardian Industries Corp: www.sunguardglass.com.
2. Substitutions: Refer to Section 01 60 00 - Product Requirements.

B. Float Glass: All glazing is to be float glass unless otherwise indicated.
1. Heat-Strengthened and Fully Tempered Types: ASTM C1048.
2. Tinted Types: Color and performance characteristics as indicated.
3. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

C. Glass-Ceramic Safety Glazing: UL- or WH-listed as fire-protection-rated glazing and complying with 16 CFR 1201 test requirements for Category II without the use of a surface-applied film.
1. Products:
    a. TGP,Firelite Plus.

b. Substitutions: Refer to Section 01 60 00 - Product Requirements.

2.04 SEALED INSULATING GLASS UNITS

A. Manufacturers:
   1. Any of the manufacturers specified for float glass.
   2. Substitutions: Refer to Section 01 60 00 - Product Requirements.

B. Sealed Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   2. Edge Spacers: Aluminum, bent and soldered corners.
   3. Edge Seal: Glass to elastomer with supplementary silicone sealant.
   4. Purge interpane space with dry hermetic air.

2.05 PLASTIC FILMS

A. Manufacturers:
   1. 3M Window Film: www.3m.com/US/arch_construct/scpd/windowfilm.
   2. Substitutions: Refer to Section 01 60 00 - Product Requirements.

B. Plastic Film Types
   1. Security - Basis of Design - 3M Ultra S800 Series

2.06 GLAZING COMPOUNDS

A. Manufacturers:
   1. Pecora Corporation: www.pecora.com.
   2. Substitutions: Refer to Section 01 60 00 - Product Requirements.

B. Glazing Putty : Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; grey color.

C. Butyl Sealant : Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.

D. Acrylic Sealant : Single component, solvent curing, non-bleeding; ASTM C 920, Type S, Grade NS, Class 12-1/2, Uses M and A; cured Shore A hardness of 15 to 25; color as selected.

E. Polysulfide Sealant : Two component; chemical curing, non-sagging type; ASTM C 920, Type M, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

F. Polyurethane Sealant : Single component, chemical curing, non-staining, non-bleeding; Shore A Hardness Range 20 to 35; color as selected.

G. Silicone Sealant : Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

2.07 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
   1. Manufacturers:
      a. Pecora Corporation: www.pecora.com.
      b. Substitutions: Refer to Section 01 60 00 - Product Requirements.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I; black color.

E. Glazing Clips: Manufacturer's standard type.

2.08 SOURCE QUALITY CONTROL AND TESTS

A. Provide shop inspection and testing for all glass.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

D. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.

E. Install sealant in accordance with manufacturer's instructions.

3.03 GLAZING METHODS

3.04 INSTALLATION - EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

A. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

E. Trim protruding tape edge.

3.05 MANUFACTURER'S FIELD SERVICES

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.06 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

3.07 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION 08 80 00

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.

B. Removal of existing floor coverings.

1.02 RELATED REQUIREMENTS

A. Section 01 74 19 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Preliminary cleaning.
   3. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   5. Specified remediation, if required.
   6. Patching, smoothing, and leveling, as required.
   7. Other preparation specified.
   8. Adhesive bond and compatibility test.
   9. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
   3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.06 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.07 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

END OF SECTION 09 05 61

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal stud wall, ceiling and soffit framing.

B. Metal framing for top of wall bracing and ceiling framing.

C. Acoustic insulation.

D. Gypsum sheathing.

E. Gypsum wallboard.

F. Cementitious backer board.

G. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 06 10 00 - Rough Carpentry: Building Framing and Wood blocking .

G. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

H. Section - Joint Sealers: Acoustic sealant.

1.03 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute. (replaced SG-971)

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

D. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.

E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.

F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.

I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

K. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base.

L. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.

M. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units.

N. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

O. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.

P. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

S. ASTM E413 - Classification for Rating Sound Insulation.

T. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association.

U. GA-216 - Application and Finishing of Gypsum Panel Products.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate special details associated with vertical deflection joints and acoustic seals. Provide special details for suspended ceilings. Indicate layout, anchorage to structure, type and location of fasteners, framed openings, accessories, and items of related work.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.05 QUALITY ASSURANCE

A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.

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

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies per drawings.

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com/#sle.
   2. Dietrich Metal Framing: www.dietrichindustries.com.
   3. Marino: www.marinoware.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/360 at 5 psf.
   1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness,

and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
    a. Acceptable Products:
        1) Dietrich Metal Framing; UltraSteel (tm): www.dietrichindustries.com.
        2) Clark Western Building Systems; UltraSteel (tm): www.clarkwestern.com.
2. Studs: "C" shaped with flat or formed webs with knurled faces.
3. Runners: U shaped, sized to match studs.
4. Ceiling Channels: C shaped.
5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
3. Provide kickers / framing for top of wall and soffits as necessary.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
1. CertainTeed Corporation: www.certainteed.com/#sle.
2. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
3. National Gypsum Company: www.nationalgypsum.com/#sle.
4. USG Corporation: www.usg.com/#sle.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for ceilings, unless otherwise indicated.
2. Thickness:
    a. Ceilings: 1/2 inch.

C. Impact-Rated Wallboard: Tested to Level 3 soft-body and hard-body impact in accordance with ASTM C1629.
1. Application: Walls.
2. Paper-Faced Type: Gypsum wallboard as defined in ASTM C1396/C1396M.
3. Type: Fire resistance rated Type X, UL or WH listed.
4. Thickness: 5/8 inch.
5. Edges: Tapered.
6. Products:
    a. National Gypsum Company; Gold Bond Hi-Impact Brand XP Wallboard.
    b. USG Corporation; Fiberock Brand Panels--VHI Abuse-Resistant.

D. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas. .
2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9-SystemDeleted or ASTM C1325.
    a. Thickness: 1/2 inch.
    b. Products:
        1) Custom Building Products; Wonderboard.

2) National Gypsum Company; PermaBase Brand Cement Board.
3) National Gypsum Company; PermaBase Flex Brand Cement Board.
4) Substitutions: See Section 01 60 00 - Product Requirements.

3. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
   a. Thickness: 1/2 inch.

E. Gypsum Wallboard: ASTM C 1396/C 1396M. Sizes to minimize joints in place; ends square cut.
1. Ceiling Board: Special sag-resistant type.
   a. Application: Ceilings, and soffits.
   b. Thickness: 1/2" inch.
   c. Edges: Tapered.
2. Impact-Rated Type: Gypsum wallboard especially formulated for increased impact resistance, with enhanced gypsum core and heavy duty face and back paper.
   a. Application: Walls.
   b. Core Type: Regular and Type X, as indicated.
   c. Thickness: 5/8 inch.
   d. Edges: Tapered.

F. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Glass-Mat-Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
4. Core Type: Regular.
5. Regular Board Thickness: 1/2 inch and 5/8"
6. Edges: Square, for vertical application.
7. Glass-Mat-Faced Products:
   a. CertainTeed Corporation; GlasRoc Brand.
   b. Georgia-Pacific Gypsum; DensGlass Sheathing.
   c. National Gypsum Company; Gold Bond Brand e2XP Extended Exposure Sheathing.
   d. Temple-Inland Inc; GreenGlass Exterior Sheathing.
   e. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: _____ inch.

B. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced. Thickness to fit cavity. As specified in Section 07 21 00.

C. Acoustic Sealant: As specified in Section .

D. Water-Resistive Barrier: As specified in Section 07 25 00.

E. Finishing Accessories: ASTM C1047, rigid plastic, unless otherwise indicated.
1. Types: As detailed or required for finished appearance.
2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.

F. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.

3. Ready-mixed vinyl-based joint compound.
4. Powder-type vinyl-based joint compound.
5. Chemical hardening type compound.

G. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

H. Screws for Attachment to Steel Members From 0.033 to 0.112 Inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

I. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

J. Staples: ASTM C 840.

K. Anchorage to Substrate: Tie wire, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
1. Level ceiling system to a tolerance of 1/600.
2. Laterally brace entire suspension system, to structure above.
3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs as indicated.
1. Extend partition framing to structure where indicated and to ceiling in other locations.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling framing in accordance with details.
3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
4. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Connections: Minimum (4) #12 screws per connection of cold formed metal framing members.

F. Blocking: Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, wood frame openings, toilet accessories, and hardware. Comply with Section 06 10 00 for wood blocking.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install as follows:
1. Place two beads continuously on substrate before installation of perimeter framing members.
2. Place continuous bead at perimeter of each layer of gypsum board.

3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes; and other penetrations.

3.04 BOARD INSTALLATION

A. Comply with ASTM C 840 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Installation on Metal Framing: Use screws for attachment of all gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.

D. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as directed.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.06 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use fiberglass joint tape, bedded with ready-mixed vinyl-based; or powder-type vinyl-based; or chemical hardening type joint compound and finished with ready-mixed vinyl-based; or powder-type vinyl-based; or chemical hardening type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish or where FRP panel to be installed.
   3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Finish gypsum board in scheduled areas in accordance with levels defined in GA-214; or ASTM C 840 and as scheduled below.
   1. Above Finished Ceilings Concealed From View: Level 1.
   2. Utility Areas and Areas Behind Cabinetry: Level 2.
   3. Walls and Ceilings to Receive Flat Paint Finish: Level 4.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
   3. Taping, filling and sanding is not required at base layer of double layer applications.

3.07 TOLERANCES

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

3.08 FINISH LEVEL SCHEDULE (SEE 1.03 REFERENCES FOR DEFIINITION)

A. Level 1: Above finished ceilings concealed from view.

B. Level 2: Utility areas and areas behind cabinetry or where FRP will be applied.

C. Level 4: Walls and ceilings scheduled to receive flat paint finish.

END OF SECTION 09 21 16

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

C. Support hangers, channels, and wires.

D. Supplementary acoustical insulation above ceiling.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 07 21 00 - Thermal Insulation: Acoustical insulation.

G. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.

H. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.

I. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

1.03 REFERENCE STANDARDS

A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

D. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute.

1.04 SUBMITTALS

A. See Section 01 33 00 - General Conditions, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.

C. Product Data: Provide data on suspension system components, acoustical units, and supplementary acoustical insulation.

D. Samples: Submit two samples 4x4 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 6 inches long, of suspension system main runner, cross runner, and perimeter molding.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

G. Designer's Qualification Statement.

H. Manufacturer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.07 PROJECT CONDITIONS

A. Sequence 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.

B. Install acoustical units after interior wet work is dry.

1.08 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Extra Acoustic Units: Quantity equal to 5 percent of total installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. USG Corporation: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustical Tile Type A: Painted mineral fiber, ASTM E 1264 Type III, with to the following characteristics:
   1. VOC Content: As specified in Section 01 61 16.
   2. VOC Content: Certified as Low Emission by one of the following :
      a. GreenGuard Children and Schools; www.greenguard.org.
   3. Size: 24 x 48 inches.
   4. Thickness: 3/4 inches.
   5. Edge: Square.
   6. Surface Color: White.
   7. Surface Pattern: Fine fissured.
   8. Product: School. Zone Fine Fissured #1714 by Armstrong.
   9. Suspension System: See specifications below. Where indicated only, provide Axiom Knife Edge profile, color white at Integrated Arts Studio.

C. Acoustical Tile Type B: Washable faced mineral fiber, ASTM E 1264 Type IV, with the following characteristics:
   1. VOC Content: As specified in Section 01 61 16.
   2. VOC Content: Certified as Low Emission by one of the following :
      a. GreenGuard Children and Schools; www.greenguard.org.
   3. Size: 24 x 48 inches.
   4. Thickness: 5/8 inches.
   5. Edge: Square.

6. Surface Color: White.
7. Surface Pattern: Unperforated.
8. Product: Ceramaguard #605 by Armstrong.

2.03 SUSPENSION SYSTEM(S) UNLESS NOTED OTHERWISE ABOVE.

A. Manufacturers:
   1. Same as for acoustical units.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Exposed Tee Steel Suspension System: Formed galvanized steel, commercial quality cold rolled; heavy-duty.
   1. Profile: Tee; for square edge panels 15/16 inch wide face.
   2. Construction: Double web.
   3. Finish: White painted.
   4. Product: Prelude XL, 15/16" by Armstrong.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.

C. Acoustical Sealant For Perimeter Moldings: Specified in Section .

D. Gasket For Perimeter Moldings: Closed cell rubber sponge tape.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C 636, ASTM E 580, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:240.

C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.

D. Locate system on room axis according to reflected plan.

E. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

F. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

I. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

J. Do not eccentrically load system or induce rotation of runners.

K. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Install in bed of acoustical sealant or in bed of acoustical sealant.
   2. Use longest practical lengths.
   3. Miter or Overlap and rivet corners.

L. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Cut to fit irregular grid and perimeter edge trim.
   2. Make field cut edges of same profile as factory edges.
   3. Double cut and field paint exposed reveal edges.

G. Where round obstructions and bullnose corners occur, provide preformed closures to match perimeter molding.

H. Install hold-down clips on panels within 20 ft of an exterior door.

3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09 51 00

SECTION 09 64 29
WOOD STRIP AND PLANK FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood strip and plank flooring, nailed.

B. Secondary subflooring.

C. Sheet vapor retarder.

D. Surface finishing and game markings.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 03 30 00 - Cast-in-Place Concrete: Recessed concrete subfloor surface and formed depressions for deep floor sockets.

G. Section 09 90 00 - Painting and Coating: Product requirements for surface finish materials for application in this section.

1.03 REFERENCE STANDARDS

A. MFMA (SPEC) - Guide Specifications for Maple Flooring Systems.

B. NWFA (IG) - Installation Guidelines.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for flooring.

C. Shop Drawings: Indicate floor joint pattern and termination details.
   1. Indicate provisions for expansion and contraction.
   2. Indicate location, size, design, and color of game markings.

D. Installation Instructions: Indicate standard and special installation procedures.

E. Maintenance Data: Include maintenance procedures.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

G. LEED Submittal: Documentation of recycled content and location of manufacture.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with MFMA (SPEC).
   1. Maintain one copy of each document on site.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing work of this section with minimum five years experience.

1.06 FIELD CONDITIONS

A. Do not install wood flooring until wet construction work is complete and ambient air at installation space has moisture content stabilized at maximum moisture content of 40 percent.

B. Provide heat, light, and ventilation prior to installation.

C. Store materials in area of installation for minimum period of 24 hours prior to installation.

D. Maintain minimum room temperature of 65 degrees F for a period of two days prior to delivery of materials to installation space, during installation, and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hardwood Flooring:
   1. Aacer Flooring: Product "Scissor Loc DC.
   2. "Action Interloc 1" as manufactured by Action Floor Systems, LLC.
   3. Rezill Lock Flooring by Connor Sports Flooring.
   4. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Wood Strip Flooring :FSC® Certified Maple must be certified by the Forest Stewardship Council®
   1. Species: Northern Hard Maple.
   2. Grade: First.
   3. Cut: Flat grain.
   4. Moisture Content: 7 to 9 percent.
   5. Actual Thickness: 33/32 inch.
   6. Actual Width: 2-1/4 inches.
   7. Edge: Tongue and Groove.
   8. End: End matched.
   9. Length: Random, minimum of 9 inches.

B. Sleepers and Shims: Softwood lumber, pressure treated for moisture protection, 2 x 4 inch size.

C. Gym Sleepers: Pine, pressure treated for moisture portection, 1x6 inch size, two layers.

D. Gym underlayment: 1/4" thick closed cell resilient by floor manufacturer.

E. Vapor Retarder: Black polyethylene sheet, 10 mil thick; 2 inch wide tape for joint sealing.

2.03 ACCESSORIES

A. Ventilating Base: Molded rubber, 4 inch high with a 3 inch toe, ventilating type, with adhesives and accessories, black.

B. Divider and Edge Strip: Angle mill finish aluminum.

C. Transition Strip: Same species and finish as flooring material; profiles indicated.

D. Game Socket Devices: Cast aluminum type, with anchors.

E. Back Prime Paint: Type recommended by flooring manufacturer..

F. Floor Finish: Water borne urethane, to achieve satin sheen surface; type recommended by flooring manufacturer.

G. Marking Paint: Type recommended by flooring manufacturer.

H. Sealer and Wax: Types recommended by flooring manufacturer.

2.04 SOURCE QUALITY CONTROL

A. Inspect and stamp species and grade on underside of each piece of wood flooring at factory.

B. FSC® Certified Maple must be certified by the Forest Stewardship Council®

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that concrete subfloor surface is smooth and flat to plus or minus 1/4 inch in 10 feet.

C. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Sleepers and Shims:
   1. Place vapor retarder over subfloor surface, lapping edges and ends minimum 6 inches and tape seal; spot glue in place.
   2. Place resilient underlayment per manufacturer's recommendations.
   3. Place sleepers over underlayment per manufacturer's recommendation.

B. Prepare substrate to receive wood flooring in accordance with manufacturer's, MFMA, and NOFMA instructions.

C. Broom clean substrate.

3.03 INSTALLATION

A. Sheathing Paper: Place over sleepers; lap edges and ends 2 inches, staple in place.

B. Wood Flooring:
   1. Install in accordance with manufacturer's, MFMA, and NOFMA instructions; blind nail to sleepers.
   2. Lay flooring parallel to length of room areas. Verify alignment as work progresses.
   3. Arrange flooring with end matched grain set flush and tight.
   4. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar; provide divider strips and transition strips in accordance with flooring manufacturer's recommendations and as indicated..
   5. Install edge strips at unprotected or exposed edges, and where flooring terminates.
   6. Secure edge strips before installation of flooring with stainless steel screws.
   7. Install flooring tight to floor access covers.
   8. Provide 2" expansion space to fixed walls and other interruptions.

C. Install base at floor perimeter to cover expansion space in accordance with manufacturer's instructions. Miter inside and outside corners.

D. Install floor sockets to a depth sufficient to ensure flush top surface with floor surface.

E. Finishing:
   1. Mask off adjacent surfaces before beginning sanding.
   2. Sand flooring to smooth even finish with no evidence of sander marks. Take precautions to contain dust. Remove dust by vacuum.
   3. Apply finish in accordance with floor finish manufacturer's instructions.
   4. Apply first coat, allow to dry, then buff lightly with steel wool to remove irregularities. Vacuum clean and wipe with damp cloth before applying succeeding coat.
   5. Lightly buff between coats with steel wool and vacuum clean before applying succeeding coat.
   6. Apply colored game lines 2 inches wide to layout indicated on drawings for instructional programs, basketball, volleyball.
   7. Apply last coat of finish.

3.04 CLEANING

A. Clean and polish floor surfaces in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Place protective coverings over finished floors; do not remove coverings until Substantial Completion.

END OF SECTION 09 64 29

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient sheet flooring.

B. Resilient tile flooring.

C. Resilient base.

D. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

1.03 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

C. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.

D. ASTM F1861 - Standard Specification for Resilient Wall Base.

E. CAL (CHPS LEM) - Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS).

F. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute.

G. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings.

H. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; www.aqmd.gov.

I. SCS (CPD) - SCS Certified Products; Scientific Certification Systems.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Verification Samples: Submit two samples, 6x6 inch in size illustrating color and pattern for each resilient flooring product specified.

E. Report recycled content and VOC emission of flooring; VOC content of adhesives.

F. LEED Submittal: Documentation of recycled content and location of manufacture.

1.05 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 SHEET FLOORING

A. Recycled Rubber Sheet Flooring:
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   2. VOC Content: As specified in Section 01 61 16.
   3. VOC Content: Certified as Low Emission by one of the following :
      a. GreenGuard Children and Schools; www.greenguard.org.
   4. Thickness 4mm
   5. Sheet Width: 48 inch minimum.
   6. Design: Flat.
   7. Pattern: Solid color.
   8. Manufacturers:
      a. RETIRE recycled rubber - Shades of Black Collection # RT4011- as manufactured by Capri Cork: capricork.com
      b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Feature Strips: Of same material as sheet flooring, on plans as shown.

2.02 TILE FLOORING

A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness, and:
   1. Minimum Requirements: Comply with ASTM F 1066, of Class corresponding to type specified. Composition 1, class 2.
   2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648.
   3. Size: 12 x 12 inch.
   4. VOC Content: Certified as Low Emission by one of the following :
      a. GreenGuard Children and Schools; www.greenguard.org.
      b. SCS Floorscore; www.scscertified.com.
   5. Thickness: 0.125 inch.
   6. Pattern: Solid color or marbleized. (1) field color w/ (4) color accent pattern.
   7. Manufacturers:
      a. Armstrong World Industries, Inc; Product Excelon Chromaspin: www.armstrong.com.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 RESILIENT BASE

A. Resilient Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set cover and as follows:
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch thick.
   4. Finish: Matte.
   5. Length: Roll.
   6. Color: Color as selected from manufacturer's standards.
   7. Accessories: Premolded external corners and end stops.
   8. Manufacturers:
      a. Burke Flooring: www.burkemercer.com.

b. Johnsonite, Inc: www.johnsonite.com.
c. Roppe Corp: www.roppe.com.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
   1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No.1168 and the Bay Area Air Quality Management District Regulation 8, Rule 51.

C. Moldings and Edge Strips: Rubber.
   1. Products: manufactured by Roppe.

D. Filler for Coved Base: Plastic or as recommended by manufacturer.

E. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive resilient flooring.

C. 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.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

E. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

3.02 PREPARATION

A. Remove existing resilient flooring and flooring adhesives; follow the recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings.

B. Prepare sub-floor surfaces as recommended by flooring and adhesive manufacturers.

C. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

D. Prohibit traffic until filler is cured.

E. Clean substrate.

F. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.

2. Fit joints and butt seams tightly.
3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

G. Spread only enough adhesive to permit installation of materials before initial set.

H. Fit joints tightly.

I. Set flooring in place, press with heavy roller to attain full adhesion.

J. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

K. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

L. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 SHEET FLOORING

A. Install in accordance with manufacturer's instructions.

B. Spread only enough adhesive to permit installation of materials before initial set.

C. Set flooring in place, press with heavy roller to attain full adhesion.

D. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns carefully at seams.

E. Seams are prohibited in custodial closets and no more than (1) seam in toilet rooms centered.

F. Double cut sheet at seams.

G. Double cut sheet; provide heat welded seams.

H. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

I. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. After installation of flooring, secure metal strips with stainless steel screws. Secure resilient strips by adhesive.

J. Coved Base: Install as detailed on drawings, using coved base filler as backing at floor to wall junction. Extend sheet flooring vertically to height indicated, and cover top edge with metal cap strip.

K. Scribe flooring to walls, columns, cabinets, and other appurtenances to produce tight joints.

L. Install flooring in recessed floor access covers. Maintain floor pattern.

M. At movable partitions, install flooring under partitions without interrupting floor pattern.

N. Install feature strips where indicated. Fit joints tightly.

3.05 TILE FLOORING

A. Install in accordance with manufacturer's instructions.

B. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer's instructions say otherwise.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Lay flooring with joints and seams parallel or as shown on plans to building lines to produce symmetrical tile pattern.

F. Install tile to basket weave pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

G. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

H. Scribe flooring to walls, columns, cabinets, and other appurtenances to produce tight joints.

I. Install flooring in recessed floor access covers. Maintain floor pattern.

3.06 RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 48 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.07 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's instructions.

C. Clean, seal, and wax resilient flooring products in accordance with manufacturer's instructions.

3.08 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 65 00

SECTION 09 77 20

DECORATIVE FIBERGLASS REINFORCED WALL PANELS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished gypsum wall board.
   1. Aluminum trim.
   2. Products Not Furnished or Installed under This Section:
      a. Gypsum [Cementitious] substrate board.
      b. Resilient Base.

1.02 RELATED SECTIONS

A. Section 09 21 16 - Gypsum Board Assemblies.

B. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

C. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

D. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

E. Section 01 81 13 LEED & Sustainable Design Requirements

F. Section 01 81 19 Construction IAQ Mgmt

1.03 REFERENCES

A. ASTM D 256 - Izod Impact Strengths (ft #/in).

B. ASTM D 570 - Water Absorption (%).

C. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi).

D. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi).

E. ASTM D 2583 - Barcol Hardness.

F. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.

G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
   1. Preparation instructions and recommendations
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.

C. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.
   1. Submit complete with specified applied finish.
   2. For selected patterns show complete pattern repeat.
   3. Exposed Molding and Trim: Provide samples of each type, finish, and color.

D. Submit Manufacturers Material Safety Data Sheets (MSDS) for adhesives and sealants prior to their delivery to the site.

1.05 QUALITY ASSURANCE

A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
   1. ASTM E 84 (Method of test for surface burning characteristics of building materials)
      a. Wall Required Rating - Class A.

B. Sanitary Standards: System components and finishes to comply with:
   1. United States Department of Agriculture (USDA) requirements for food preparation facilities, incidental contact.
   2. Food and Drug Administration (FDA) 1999 Food Code 6-101.11.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.

B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (70°) for 48 hours prior to installation.

1.07 PROJECT CONDITIONS

A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
   1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.
   2. WARRANTY
   3. Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. Marlite; 202 Harger Street, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com www.marlite.com; http://www.marlite.com.

B. Substitutions: See Section 01 60 00 - Product Requirements.
   1. Product:
      a. Marlite Envue Custom Graphics with Sani-Coat.

2.02 PANELS

A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
   1. Coating: Multi layer print, primer and finish coats.
   2. Dimensions:
      a. Thickness - 0.090 inchnominal
      b. Width - 4'-0" nominal
      c. Length - 10'-0" As indicated on the drawings nominal
         1) Tolerance:
            (a) Length and Width: +/-1/8 inch (3.175mm)
            (b) Square - Not to exceed 1/8 inch for 8 foot (2.4m) panels or 5/32 inch (3.96mm) for 10 foot (2.4m) panels
   3. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
      a. Flexural Strength - 1.0 x 104 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
      b. Flexural Modulus - 3.1 x 105 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)

c. Tensile Strength - 7.0 x 103 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
d. Tensile Modulus - 1.6 x 105 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
e. Water Absorption - 0.72% per ASTM D 570.
f. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
g. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

4. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.
5. Select finish from our full Marlite Finish Palette at www.marlite.com or contact Marlite to create your own Finish.
6. Front Finish and Fire Rating:
   a. Envue FRP Smooth Surface with Sani-Coat with Custom Graphics
      1) All art work and layout to be provided by customer including panel configuration.

2.03 MOLDINGS

A. Aluminum Trim: Heavy weight extruded aluminum 6063-T5 alloy prefinished at the factory.
   1. Finish: Factory oven-baked finish.
   2. Profiles:
      a. F 550 Inside Corner.
      b. F 561 Outside Corner.
      c. F 565 Division.
      d. F 570 Edge.
      e. A 551 Inside Corner.
      f. A 560 Outside Corner.
      g. A 565 Division.
      h. A 570 Edge.
   3. Color: Bright Anodized.

2.04 ACCESSORIES

A. Fasteners: Non-staining nylon drive rivets.
   1. Match panel colors.
   2. Length to suit project conditions.

B. Adhesive: Either of the following construction adhesives complying with ASTM C 557:
   1. Marlite C-551 RFP Adhesive - Water-resistant, non-flammable adhesive.
   2. Marlite C-375 Construction Adhesive - Flexible, water-resistant, solvent-based adhesive formulated for fast, easy application.

C. Sealant:
   1. Marlite Brand MS-250 Clear Silicone Sealant.
   2. Marlite Brand MS-251 White Silicone Sealant.
   3. Marlite Brand - Color Match Sealant.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
   1. Verify that stud spacing does not exceed 24 inch (61cm) on-center.
   2. Repair defects prior to installation.
      a. Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.

3.02 INSTALLATION

A. Comply with manufacturer's recommended procedures and installation sequence.

B. Cut sheets to meet supports allowing 1/8” inch (3 mm) clearance for every 8 foot (2.43m) of panel.
   1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.
   2. Pre-drill fastener holes 1/8 inch (3.175mm) oversize with high speed drill bit.
      a. Space at 8 inches (20.32cm) maximum on center at perimeter, approximately 1 inch from panel edge.
      b. Space at in field in rows 16 inches (40.64cm) on center, with fasteners spaced at 12 inches (30.48 cm) maximum on center.

C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
   1. Install panels with manufacturer's recommended gap for panel field and corner joints.
      a. Adhesive trowel and application method to conform to adhesive manufacturer's recommendations.
      b. Drive fasteners for snug fit. Do not over-tighten.

D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.
   1. All moldings must provide for a minimum 1/8 inch (3.18mm) of panel expansion at joints and edges, to insure proper installation.
   2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

3.03 CLEANING

A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION 09 77 20

SECTION 09 90 00

PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Elevator pit ladders.
   3. Exposed surfaces of steel lintels and ledge angles.
   4. Surfaces inside cabinets.
   5. Mechanical and Electrical:
      a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
   6. Floors, unless specifically so indicated.
   7. Glass.
   8. Acoustical materials, unless specifically so indicated.
   9. Concealed pipes, ducts, and conduits.

E. Painting materials and methods for conduit identification specified in Section 26 05 53.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

1.03 REFERENCE STANDARDS

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

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

C. NACE (IMP) - Industrial Maintenance Painting; NACE International; Edition date unknown.

D. SSPC (PM1) - Good Painting Practice: SSPC Painting Manual, Vol. 1; Society for Protective Coatings.

1.04 DEFINITIONS

A. Conform to ASTM D 16 for interpretation of terms used in this section.

1.05 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products and special coatings, including VOC content.

C. Samples: Submit two paper chip samples, 1 X 1 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, 6 x 6 inch in size.

E. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

F. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.

G. LEED Report: VOC content of all interior opaque coatings actually used.

H. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

I. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum 5 years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Supply 1 gallon of each color; store where directed.

C. Label each container with color, type, texture, and room locations in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. ICI Paints North America: www.icipaints.com
   2. Duron, Inc: www.duron.com/#sle.
   3. Sherwin Williams: www.sherwin-williams.com
   4. Benjamin Moore & Co: www.benjaminmoore.com/#sle.

C. Field-Catalyzed Coatings:

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   3. Supply each coating material in quantity required to complete entire project's work from a single production run.
   4. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

D. Chemical Content: The following compounds are prohibited:
   1. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
   2. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride.

E. Colors: As indicated on drawings
   1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
   2. In finished areas with exposed structure and no ceilings ducts, conduit, and equipment to be painted a seperate color from the wall.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint CE-OP-3L - Masonry/Concrete, Opaque, Latex, 3 Coat:

1. One coat of block filler.
2. Satin: Two coats of latex enamel.

B. Paint ME-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
1. One coat of alkyd primer.
2. Semi-gloss: Two coats of alkyd enamel.

2.04 PAINT SYSTEMS - INTERIOR

A. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel

B. Paint WI-TR-V - Wood, Transparent, Varnish, No Stain:
1. One coat sealer.
2. Satin: One coat of varnish.

C. Paint CI-OP-3L - Concrete/Masonry, Opaque, Latex, 3 Coat:
1. One coat of block filler.
2. Egg Shell: Two coats of latex enamel.

D. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with latex primer or manufacturer recommended.
2. Flat: Two coats of latex enamel.

E. Paint GI-OP-3L - Gypsum Board/Plaster, Latex, 3 Coat:
1. One coat of alkyd or latex primer sealer.
2. Eggshell: Two coats of latex enamel.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Plaster and Stucco: 12 percent.
3. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
5. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.

E. Marks: Seal with shellac or stain blocker those which may bleed through surface finishes.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

I. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.

J. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

K. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

L. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

M. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

N. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

O. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

P. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

Q. Exterior and Interior Wood to Receive Opaque Latex Stain Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after initial coat has been applied. Back stain concealed surfaces before installation.

R. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

C. Apply products in accordance with manufacturer's instructions.

D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

F. Apply each coat to uniform appearance.

G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

H. Sand wood and metal surfaces lightly between coats to achieve required finish.

I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

J. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

K. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Section 22 05 53, Section 23 05 53 and Section 26 05 53 for schedule of color coding of equipment, duct work, piping, and conduit.

B. Paint shop-primed equipment, where indicated.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

3.08 SCHEDULE - SURFACES TO BE FINISHED

A. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.
   3. Stainless steel items.

B. Paint the surfaces described below under Schedule - Paint Systems.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Where indicated as exposed, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment occurring in finished areas to match background surfaces.

2. Paint all equipment, including that which is factory-finished, exposed to weather or to view on the roof and outdoors.
3. Paint shop-primed items occurring in finished areas.
4. 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 paint to visible surfaces.
5. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

D. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

END OF SECTION 09 90 00

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

1.02 REFERENCE STANDARDS

A. ICC A117.1 - Accessible and Usable Buildings and Facilities.

1.03 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

E. Verification Samples: Submit samples showing colors specified.

F. Manufacturer's Qualification Statement.

1.04 QUALITY ASSURANCE

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

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
   1. Best Sign Systems, Inc: www.bestsigns.com/#sle.
   2. InPro Corporation; Aspen produced in one piece photopolymer media: www.inprocorp.com.
   3. Mohawk Sign Systems, Inc: www.mohawksign.com/#sle.
   4. Seton Identification Products: www.seton.com/aec.
   5. Bayuk Graphic Systems, Inc.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: All signs are required to comply with ADA Standards for Accessible Design and ANSI/ICC A 117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.

2.03 ROOM AND DOOR SIGN TYPES

A. Sign Types “A” thru “H” are shown on drawing 4.12. The following applies to all sign types:
   1. Process: Graphic Blast raised 1/32"
   2. Material: .125" MP Plastic
   3. Material Finish: Matte
   4. Edge Treatment: Standard Bevel
   5. Corner Treatment: .5" Radius
   6. Border: N/A
   7. Copy Size: As shown on drawings
   8. Typestyle: Helvetica Bold Condensed
   9. Braille: Grade II
   10. Attachment: Silicone Adhesive & VFT
   11. Letter Color: Standard Range
   12. Background Color: Standard Range

2.04 ACCESSORIES

A. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs where indicated:
   1. Room and Door Signs: Locate on wall at latch side of door with centerline of sign at 60 inches above finished floor.
   2. If no location is indicated obtain Owner's instructions.

D. Protect from damage until Substantial Completion; repair or replace damage items.

E. When flat sign must be glass mounted, provide blank sign for other side of glass to cover tape adhesive.

END OF SECTION 10 14 00

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments.

B. Urinal screens.

1.02 RELATED REQUIREMENTS

A. Section 01 33 13 - LEED Submittals: Including Materials Reporting Form, VOC Reporting Form

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 78 39 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

D. Section 01 81 13 LEED & Sustainable Design Requirements

E. Section 01 81 19 Construction IAQ Mgmt

F. Section 06 10 00 - Rough Carpentry: Blocking and supports.

G. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

B. GREENGUARD Environmental Institute - GREENGUARD Indoor Air Quality Certified

C. GREENGUARD Environmental Institute - GREENGUARD Children and Schools™ Indoor Air Quality Certified

1.04 ADMINISTRATIVE REQUIREMENTS

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

1.05 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor supports, door swings.

C. Product Data: Provide data on panel construction, hardware, and accessories.

D. Product Certifications: Provide GREENGUARD Indoor Air Quality Certified® and GREENGUARD Children and Schools™ certificates for markerboards, as applicable.

E. Samples: Submit two samples of partition panels, 2 x 2 inch in size illustrating panel finish, color, and sheen.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.06 COORDINATION

A. Coordinate the work with placement of support framing and anchors in walls.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Plastic Toilet Compartments:
   1. Comtec Industries; Product Standard HDPE-Zero Sight Line: www.comtecindustries.com.
   2. Substitutions: Section 01 60 00 - Product Requirements.

2.02 SOLID PLASTIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), floor-mounted headrail-braced.
   1. Color: Manufacturer standard range.

B. Doors:
   1. Thickness: 1 inch.
   2. Width: 24 inch.
   3. Width for Handicapped Use: 36 inch, out-swinging.
   4. Height: 58 inch.

C. Panels:
   1. Thickness: 1 inch (25 mm).
   2. Height: 58 inch.

D. Pilasters:
   1. Thickness: 1 inch (25 mm).
   2. Width: As required to fit space; minimum 3 inches (76 mm).

2.03 COMPONENTS

A. Toilet Compartments: Solid molded plastic panels, doors, and pilasters, floor-mounted headrail-braced.

B. Door and Panel Dimensions:
   1. Thickness: 1 inch.
   2. Door Width: 24 inch.
   3. Door Width for Handicapped Use: 36 inch .
   4. Height: 58 inch.
   5. Thickness of Pilasters: 1 inch.

C. Urinal Screens: Wall mounted with continuous panel bracket anchored to wall.

2.04 ACCESSORIES

A. Pilaster Shoes: ASTM A 666, Type 304 stainless steel with No. 4 finish, 3 in high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow anodized aluminum, 1 by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.

C. Head Rails: Hollow anodized aluminum tube, 1 x 1-5/8 inch size, with anti-grip profile cast socket wall brackets.

D. Wall and Pilaster Brackets: Satin stainless steel.

E. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
   1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

F. Hardware: Satin stainless steel:
   1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
   2. Nylon bearings.
   3. Door Latch: Slide type with exterior emergency access feature.
   4. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
   5. Coat hook with rubber bumper; one per compartment, mounted on panel.
   6. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in full closed position when unlatched. Return out-swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION 10 21 13.19

SECTION 10 26 00
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Corner guards fabricated from rolled metal sections or bent plate.

B. Section 05 50 00 - Metal Fabrications: Anchors for attachment of work of this section, concealed in wall.

C. Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.

D. Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.

C. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

F. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies.

G. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

H. ICC A117.1 - Accessible and Usable Buildings and Facilities.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Shop Drawings: Include plans, elevation, sections, and attachment details.

D. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
   1. Submit two sections of corner guards, 24 inches long.

E. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Stock Materials: One package(s) of minimum 96 inches long unit of each kind of covers for corner guards.

H. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from moisture damage.

C. Protect work from UV light damage.

D. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

E. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one year period after Date of Substantial Completion.

C. Provide five year manufacturer and installer warranty for metal crash rails.
   1. Failures include, but are not limited to, the following:
      a. Structural failures, internal connection failures, and/or detachment of rail system from substrates.
      b. Deterioration of materials beyond that expected of normal use, as intended by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. Babcock-Davis; _____: www.babcockdavis.com/#sle.
   2. Inpro; _____: www.inprocorp.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE CRITERIA

A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.

B. Chemical and Stain Resistance: Unless otherwise noted, provide protection products and assemblies with chemical and stain resistance complying with applicable provisions of ASTM D543.

2.03 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Corner guards fabricated from rolled section or bent plate are specified in Section 05 50 00.
   2. Material: Type 304 stainless steel, No. 4 finish, 16 gage, 1/16" inch thick.
   3. Width of Wings: 2 inches.
   4. Corner: Square.
   5. Color: As selected from manufacturer's standard colors.
   6. Length: One piece, 48 inches.

2.04 FABRICATION

A. Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

B. Verify that field measurements are as instructed by the manufacturer.

C. Verify that substrate surfaces for adhered items are clean and smooth.
   1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer. Follow adhesive manufacturer's recommendations for remedial measures at locations and/or application conditions where adhesion test's results are unsatisfactory.

D. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

B. Position corner guard 4 inches above finished floor to 52 inches high.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

3.04 CLEANING

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION 10 26 00

SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Accessories for toilet rooms, showers, and utility rooms.

B. Grab bars.

C. Mirrors

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.

1.03 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

D. ASTM C1036 - Standard Specification for Flat Glass.

E. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.

F. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration.

1.04 ADMINISTRATIVE REQUIREMENTS

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

1.05 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Toilet Accessories:
   1. A & J Washroom Accessories Inc: www.ajwashroom.com/#sle.
   2. American Specialties, Inc: www.americanspecialties.com/#sle.
   3. Bradley Corporation: www.bradleycorp.com/#sle.
   4. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Keys: Provide 5 keys for each accessory to Owner; master key all lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269, Type 304 or 316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

G. Adhesive: Two component epoxy type, waterproof.

H. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.

I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

2.04 TOILET ROOM ACCESSORIES

A. See drawings for schedule.

B. Mirrors: Stainless steel framed, 6 mm thick float glass mirror.
   1. Size: 24"x36", 36"x48".
   2. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
   3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.

C. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by concealed opening at base, tumbler lock. Provide in the following rooms: D1T,B1T, 108, 109,113,147,148,152A, and 153A
   1. Minimum capacity: 250 seat covers, each side.

D. Grab Bars: Stainless steel, nonslip grasping surface finish.

E. Grab Bars: Stainless steel, 1-1/4 inches outside diameter, minimum 0.05 inch wall thickness, nonslip grasping surface finish, concealed flange mounting; 1-1/2 inches clearance between wall and inside of grab bar.
   1. Length and configuration: As indicated on drawings.

F. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
   1. Product: Model 4781-15 manufactured by Bradley. Provide in the following rooms: D1T,B1T, 108, 109,113,147,148,152A, and 153A

G. Coat Hook with Bumper: Chrome plated brass with black neoprene bumper, surface-mounted with 2 mounting holes to the backside of wood doors at the following locations: D1T,B1T, 108, 109,113,147,148, 152A, and 153A

2.05 SHOWER AND TUB ACCESSORIES

A. Shower Curtain Rod: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for installation with exposed fasteners.

B. Shower Curtain:
   1. Material: Opaque vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
   2. Material: Cotton, machine washable, and mildew-resistant.
   3. Size: 36 by 72 inches, hemmed edges.
   4. Grommets: Stainless steel; pierced through top hem on 6 inch centers.
   5. Color: White.

2.06 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Drying rod: Stainless steel, 1/4 inch diameter.
   2. Hooks: 2, 0.06 inch stainless steel rag hooks at shelf front.
   3. Mop/broom holders: 3 spring-loaded rubber cam holders at shelf front.
   4. Length: Manufacturer's standard length for number of holders/hooks.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

3.02 INSTALLATION

A. Install Owner supplied accessories and those inlcuded herein in accordance with manufacturers' instructions.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings

3.03 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 28 00

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 04 20 00 - Unit Masonry: Roughed-in wall openings.

C. Section 09 21 16 - Gypsum Board Assemblies: Roughed-in wall openings.

1.03 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers.

B. UL (DIR) - Online Certifications Directory.

1.04 PERFORMANCE REQUIREMENTS

A. Conform to NFPA 10 and applicable code.

B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc., or testing firm acceptable to the authority having jurisdiction, for the purpose specified and indicated.

1.05 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, and location.

C. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.06 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc: www.jlindustries.com.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   3. Larsen's Manufacturing Co: www.larsensmfg.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Dry Chemical Type Fire Extinguishers: Cast steel tank, with pressure gage.

1. Class A,B,C.
2. Size 10 lb.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinet Construction: Non-fire rated.
   1. Formed stainless steel sheet; 0.036 inch thick base metal.

B. Metal: Formed primed steel sheet; 0.036 inch thick base metal.

C. Cabinet Configuration: Recessed and Semi Recessed type.
   1. Sized to accommodate accessories.
   2. Trim: Flat at recessed cabinets.
   3. Trim: Returned to wall surface, with 3 inch projection, 1-3/4 inch wide face. Rolled edge at semi-recessed.
   4. Form cabinet enclosure with right angle inside corners and seams. Form perimeter trim and door stiles.

D. Door: 0.036 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with continuous piano hinge. Provide nylon or roller type catch.

E. Door Glazing: Plastic, clear, 1/8 inch thick acrylic. Set in resilient channel gasket glazing.

F. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.

G. Weld, fill, and grind components smooth.

H. Finish of Cabinet Exterior Trim and Door: Baked enamel, white color.

I. Finish of Cabinet Interior: White enamel.

2.04 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated.

B. Graphic Identification: "FIRE EXTINGUISHER".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level in wall openings, maximum 54 inches from finished floor to to handle.

C. Place extinguishers in cabinets.

END OF SECTION 10 44 00

SECTION 11 66 23
GYMNASIUM EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted protection pads.

1.02 REFERENCE STANDARDS

A. NFPA 101 - Life Safety Code.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data showing configuration, sizes, materials, finishes, hardware, and accessories; include:
   1. Manufacturer's installation instructions.

C. Shop Drawings: For custom fabricated equipment indicate, in large scale detail, construction methods; method of attachment or installation; type and gage of metal, hardware, and fittings; plan front elevation; elevations and dimensions; minimum one cross section; utility requirements as to types, sizes, and locations.

D. Erection Drawings: Detailed dimensional requirements for proper location of equipment.

E. Samples: Submit samples of wall pad coverings in manufacturer's available range of colors.

F. Operating and maintenance data, for each operating equipment item.

G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in manufacturer's original packaging with factory original labels attached.

B. Store products indoors and elevated above floor; prevent warping, twisting, or sagging.

C. Store products in accordance with manufacturer's instructions; protect from extremes of weather, temperature, moisture, and other damage.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gymnasium Equipment:
   1. ADP Lemco, Inc: www.adplemco.com/#sle.
   2. Draper, Inc: www.draperinc.com/#sle.
   3. Grand Slam Safety, LLC: www.grandslamsafety.com/#sle.

2.02 GENERAL REQUIREMENTS

A. See drawings for sizes and locations, unless noted otherwise.

B. Provide mounting plates, brackets, and anchors of sufficient size and strength to securely attach equipment to building structure; comply with requirements of Contract Documents.

C. Hardware: Heavy duty steel hardware, as recommended by manufacturer.

2.03 WALL PADDING

A. Wall Padding: Foam filling bonded to backing board, wrapped in covering; each panel fabricated in one piece.
   1. Covering: Vinyl-coated polyester fabric, mildew and rot resistant; stapled to back of board.
      a. Color: As selected from manufacturer's standard range.
      b. Texture: Embossed leather-look.
      c. Fabric Weight: 14 oz/sq yd, minimum.
   2. Foam: Soft, urethane or polyurethane, with 3.5 pcf nominal density.
   3. Foam Thickness: 1-1/2 inches.
   4. Backing Board: Plywood.

PART 3 EXECUTION

3.01 EXAMINATION

A. Take field measurements to ensure proper fitting of work. If taking field measurements before fabrication will delay work, allow for adjustments within recommended tolerances.

B. Inspect areas and conditions before installation, and notify Architect in writing of unsatisfactory or detrimental conditions.

C. Do not proceed with this work until conditions have been corrected; commencing installation constitutes acceptance of work site conditions.

3.02 INSTALLATION

A. Install in accordance with Contract Documents and manufacturer's instructions.

B. Install equipment rigid, straight, plumb, and level.

C. Secure equipment with manufacturer's recommended anchoring devices.

D. Install wall padding securely, with edges tight to wall and without wrinkles in fabric covering.

E. Separate dissimilar metals to prevent electrolytic corrosion.

3.03 ADJUSTING

A. Verify proper placement of equipment.

B. Verify proper placement of equipment anchors and sleeves, and use actual movable equipment to be anchored if available.

3.04 CLEANING

A. Remove masking or protective covering from finished surfaces.

B. Clean equipment in accordance with manufacturer's recommendations.

3.05 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Replace damaged products before Date of Substantial Completion.

END OF SECTION 11 66 23

SECTION 12 24 13
ROLLER SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sunscreen roller shades.

1.02 RELATED REQUIREMENTS

A. Section 01 3515 - LEED Certification Procedures.

B. Section 01 5721 - Indoor Air Quality Controls: Procedures and testing; smoking room testing; LEED requirements.

C. See Section 01 7419 - Construction Waste Management and Disposal.

1.03 REFERENCE STANDARDS

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Styules, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
   3. Storage and handling requirements and recommendations.
   4. Mounting details and installation methods.

C. Shop Drawings: Indicate Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.

D. Selection Samples: For each finished product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

E. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, and instructions for operating hardware.

F. Samples: Submit two __, 6"x6" inch in size, illustrating color.

1.05 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

B. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 reesults for fungi ATCC9642, ATCC 9644, ATCC 9645.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades to project site in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations as on Drawings.

1.07 FIELD CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.08 WARRANTY

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

B. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating twenty-five year limited warranty.

C. Standard Shadecloth: Manufacturer's standard twenty-five year warranty.

D. Roller Shade Installation: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manually Operated Roller Shates:
   1. Basis-of-Design: Mechoshade Systems, Inc.
   2. Subject to the requirements of the specification, products by the following manufacturer may be provided:
      a. Caco,, Inc, Serenity Shades.
      b. Draper, Inc.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ROLLER SHADE TYPE

A. Manually Operated Shades:
   1. Basis-of-Design: Mech/5.
   2. Mounting: Jamb Mounted.
   3. Configuration: Double Shade Clothe.
   4. Solar Shade Clothe:
      a. Fabric: MechoShade's ThermoVeil 1300, 3 percent open, 2 x 2 open basket-weave pattern (or equal)
      b. Color: Selected from manufacturer's standard colors.
   5. Blackout Shade Clothe:
      a. Fabric: MechoShade's Classic Blackout.
      b. Color: Selected from manufacturer's standard colors.
      c. Accessories: Room darkening shadeclothe guides.

2.03 SHADE CLOTH

A. Visually Transparent Shadecloth: Single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl.

2.04 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachement of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
   1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
   2. Shade Band and Shade Roller Attachment:
      a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades are not acceptable.
      b. Provide for positive mechanical engagement with drive/brake mechanism.

c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable/replaceable with a "snap-on" "snap-off" spline mounting, without having to remove shade roller from shade brackets.
d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.

2.05 SHADE FABRICATION

A. Fabricate units to completely fill existing openings from head to sill and jamb to jamb, unless specifically indicated otherwise.

2.06 COMPONENTS

A. Access and Material Requirements:
1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:
1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive and brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide positive mechanical engagement of drive mechansim to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable.
4. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
5. Drive Bracket/Brake Assembly:
a. Drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
b. The brake shall be an over-running clutch design which disengages to 90 percent during the raising and lowering of a shade. the brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
c. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly. The assembly shall be permanently lubricated. Products that require externally applied lubrication and/or not permanently lubricated are not acceptable.
d. The entire assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
e. Drive Chain: #10 qualified stainless steel chain rated to 90 lbs. (41 kg) minimum breaking strength. Nickel plate chain shall not be acceptable.
6. Include Mecho / 5 Extended and/or slimline bracket with optional Mecho SnapLoc fascia

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.

B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace demaged products before Substantial Completion.

END OF SECTION 12 24 13

SECTION 21 05 00

COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Above ground piping.

B. Pipe, fittings, valves, and connections for sprinkler, standpipe and fire hose, and combination sprinkler and standpipe systems.

C. Pipe hangers and supports.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Preparation and painting of fire protection piping systems.

B. Section 21 05 53 - Identification for Fire Supp. Piping and Equipment: Piping identification.

1.03 REFERENCE STANDARDS

A. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fuzing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications.

B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

C. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300.

D. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250.

E. ASME B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard.

F. ASME B16.9 - Factory-Made Wrought Buttwelding Fittings.

G. ASME B16.11 - Forged Fittings, Socket-welding and Threaded.

H. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

I. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

J. ASME B16.25 - Buttwelding Ends.

K. ASME B36.10M - Welded and Seamless Wrought Steel Pipe.

L. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.

M. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

N. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe.

O. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

P. ASTM A536 - Standard Specification for Ductile Iron Castings.

Q. ASTM A795/A795M - Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.

R. ASTM B32 - Standard Specification for Solder Metal.

S. ASTM B75/B75M - Standard Specification for Seamless Copper Tube.

T. ASTM B75M - Standard Specification for Seamless Copper Tube (Metric).

U. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

V. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).

W. ASTM F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40.

X. ASTM F439 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.

Y. ASTM F442/F442M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR).

Z. ASTM F493 - Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.

AA. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

AB. AWS D1.1/D1.1M - Structural Welding Code - Steel.

AC. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

AD. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings.

AE. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

AF. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast.

AG. NFPA 13 - Standard for the Installation of Sprinkler Systems.

AH. NFPA 14 - Standard for the Installation of Standpipe and Hose Systems.

AI. NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances; National Fire Protection Association; 1995.

AJ. UL (DIR) - Online Certifications Directory.

AK. UL 262 - Gate Valves for Fire-Protection Service; Underwriters Laboratories Inc..

AL. UL 312 - Check Valves for Fire-Protection Service; Underwriters Laboratories Inc..

1.04 SUBMITTALS

A. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.

B. Project Record Documents: Record actual locations of components and tag numbering.

C. Operation and Maintenance Data: Include installation instructions and spare parts lists.

1.05 QUALITY ASSURANCE

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

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years experience. approved by manufacturer.

C. Conform to UL requirements.

D. Valves: Bear UL label or marking. Provide manufacturer's name and pressure rating marked on valve body.

E. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers, with labeling in place.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

PART 2 PRODUCTS

2.01 FIRE PROTECTION SYSTEMS

A. Sprinkler Systems: Conform work to NFPA 13.
   1. Comply with NFPA 13.

B. Standpipe and Hose Systems: Conform to NFPA 14.
   1. Comply with NFPA 14.

C. Welding Materials and Procedures: Conform to ASME Code.

D. Provide system pipes, fittings, sleeves, escutcheons, seals, and other related accessories.

2.02 ABOVE GROUND PIPING

A. Steel Pipe: ASTM A795 Schedule 10 or ASTM A53 Schedule 40, black.
   1. Steel Fittings: ASME B16.9, wrought steel, buttwelded.
   2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings.
   3. Malleable Iron Fittings: ASME B16.3, threaded fittings.
   4. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.
   5. Mechanical Formed Fittings: Carbon steel housing with integral pipe stop and O-ring pocked and O-ring, uniformly compressed into permanent mechanical engagement onto pipe.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), H58 drawn.
   1. Fittings: ASME B16.18, cast copper alloy, grooved.
   2. Mechanical Grooved Couplings: Ductile iron housing with alkyd enamel paint coating clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers.

2.03 PIPE HANGERS AND SUPPORTS

A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

B. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.

C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

D. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.

E. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.

F. Vertical Support: Steel riser clamp.

G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.04 GATE VALVES

A. Up to and including 2 inches:
   1. Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.

B. Over 2 inches:
   1. Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid rubber covered bronze or cast iron wedge, flanged ends.

C. Over 4 inches:
   1. Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends, iron body indicator post assembly.

2.05 GLOBE VALVES

A. Up to and including 2 inches:
   1. Bronze body, bronze trim, rising stem and handwheel, inside screw, renewable rubber disc, threaded ends, with backseating capacity repackable under pressure.

B. Over 2 inches:
   1. Iron body, bronze trim, rising stem, handwheel, OS&Y, plug-type disc, flanged ends, renewable seat and disc.

2.06 BALL VALVES

A. Up to and including 2 inches:
   1. Bronze two piece body, brass, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends .

B. Over 2 inches:
   1. Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches and over, flanged.

2.07 BUTTERFLY VALVES

A. Bronze Body:
   1. Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.

B. Cast or Ductile Iron Body
   1. Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and internal tamper switch rated 10 amp at 115 volt AC.

2.08 CHECK VALVES

A. Up to and including 2 inches:
   1. Bronze body and swing disc, rubber seat, threaded ends.

B. Over 2 inches:
   1. Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends with automatic ball check.

C. 4 inches and Over:
   1. Iron body, bronze disc, stainless steel spring, resilient seal, threaded, wafer, or flanged ends.

2.09 DRAIN VALVES

A. Compression Stop:
   1. Bronze with hose thread nipple and cap.

B. Ball Valve:
   1. Brass with cap and chain, 3/4 inch hose thread.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and foreign material, from inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install sprinkler system and service main piping, hangers, and supports in accordance with NFPA 13.

B. Install standpipe piping, hangers, and supports in accordance with NFPA 14.

C. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.

D. Install piping to conserve building space, to not interfere with use of space and other work.

E. Group piping whenever practical at common elevations.

F. Sleeve pipes passing through partitions, walls, and floors.

G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

H. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
   4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.

I. Pipe Hangers and Supports:
   1. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   2. Place hangers within 12 inches of each horizontal elbow.
   3. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   4. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
   5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
   6. Provide copper plated hangers and supports for copper piping.
   7. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

J. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.

K. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding. Refer to Section 09 90 00.

L. Do not penetrate building structural members unless indicated.

M. Provide sleeves when penetrating footings, floors, and walls. Seal pipe and sleeve penetrations to achieve fire resistance equivalent to fire separation required.

N. Escutcheons:
   1. Install and firmly attach escutcheons at piping penetrations into finished spaces.
   2. Provide escutcheons on both sides of partitions separating finished areas through which piping passes.
   3. Use chrome plated escutcheons in occupied spaces and to conceal openings in construction.

O. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

P. Die cut threaded joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.

Q. Install valves with stems upright or horizontal, not inverted. Remove protective coatings after installation.

R. Provide gate, ball, or butterfly valves for shut-off or isolating service.

S. Provide drain valves at main shut-off valves, low points of piping and apparatus.

END OF SECTION 21 05 00

SECTION 21 05 53

IDENTIFICATION FOR FIRE SUPP. PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Pipe Markers.

D. Ceiling tacks.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.04 SUBMITTALS

A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

B. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

C. Product Data: Provide manufacturers catalog literature for each product required.

D. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

E. Project Record Documents: Record actual locations of tagged valves.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Instrumentation: Nameplates.

B. Major Control Components: Nameplates.

C. Piping: Pipe markers.

D. Small-sized Equipment: Nameplates.

E. Valves: Nameplates Tags and ceiling tacks where located above accessible ceilngs..

2.02 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Champion America, Inc: www.Champion-America.com.

C. Seton Identification Products: www.seton.com/aec.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 NAMEPLATES

A. Description: Laminated three-layer plastic with engraved letters.
   1. Letter Color: White.
   2. Letter Height: 1/4 inch.
   3. Background Color: Black.

2.04 TAGS

A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

B. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.05 PIPE MARKERS

A. Color: Conform to ASME A13.1.

B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

D. Color code as follows:
   1. Fire Quenching Fluids: Red with white letters.

2.06 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color coded head.

B. Color code as follows:
   1. Sprinkler Valves: Red.

PART 3 EXECUTION

3.01 PREPARATION

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

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Apply stencil painting in accordance with Section 09 90 00.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

F. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

G. Identify pumps and valves with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.

H. Identify control panels and major control components outside panels with plastic nameplates.

I. Identify thermostats relating to terminal boxes or valves with nameplates.

J. Identify valves in main and branch piping with tags.

K. Tag automatic controls, instruments, and relays. Key to control schematic.

L. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

M. Locate ceiling tacks to locate valves above T-bar type panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION 21 05 53

SECTION 21 13 00
FIRE SUPPRESSION SPRINKLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wet-pipe sprinkler system.

B. System design, installation, and certification.

1.02 RELATED REQUIREMENTS

A. Section 28 46 00 - Fire Detection and Alarm.

B. Section 21 05 00 - Common Work Results for Fire Suppression: Pipe, fittings, and valves.

C. Section 21 05 48 - Vibration and Seismic Controls for Fire Suppression Piping and Equipment.

D. Section 21 05 53 - Identification for Fire Supp. Piping and Equipment.

E. Section 21 30 00 - Fire Pumps.

F. Section 21 12 00 - Fire-Suppression Standpipes.

G. Section 14 91 00 - Facility Chutes: Sprinkler heads inside chutes.

H. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.

I. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

J. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. FM P7825 - Approval Guide; Factory Mutual Research Corporation.

B. ITS (DIR) - Directory of Listed Products.

C. NFPA 13 - Standard for the Installation of Sprinkler Systems.

D. UL (DIR) - Online Certifications Directory.

1.04 SUBMITTALS

A. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

B. Shop Drawings:
   1. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
   2. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
   3. Submit shop drawings and hydraulic calculations to authority having jurisdiction and Fire Marshall for approval. Submit proof of approval to Architect.

C. Samples: Submit one of each style of sprinkler specified.

D. Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.

E. Manufacturer's Certificate: Certify that system has been tested and meets or exceeds specified requirements and code requirements.

F. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Sprinklers: Type and size matching those installed, in quantity required by referenced NFPA design and installation standard.
2. Sprinkler Wrenches: For each sprinkler type.

1.05 QUALITY ASSURANCE

A. Maintain one copy of referenced design and installation standard on site.

B. Conform to UL requirements.

C. Designer Qualifications: Design system under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

D. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

E. Installer Qualifications: Company specializing in performing the work of this section with minimum three years experience approved by manufacturer.

F. Equipment and Components: Provide products that bear UL label or marking.

G. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories Inc. or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.06 MOCK-UP

A. Provide components for installation in mock-up.

B. Mock-up may not remain as part of the Work.

1.07 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this section.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.09 EXTRA MATERIALS

A. Provide extra sprinklers of type and size matching those installed, in quantity required by referenced NFPA design and installation standard.

B. Provide suitable wrenches for each sprinkler type.

C. Provide metal storage cabinet located adjacent to alarm valve.

PART 2 PRODUCTS

2.01 SPRINKLER SYSTEM

A. Sprinkler System: Provide coverage for building areas noted.

B. Occupancy: comply with NFPA 13.

C. Water Supply: Determine volume and pressure from water flow test data.
   1. Revise design when test data available prior to submittals.

D. Interface system with building fire and smoke alarm system.

E. Provide fire department connections where indicated.

F. Any valves with supervisory switch (tamper or flow) are to be connected to fire alarm control panel with new monitoring module.

G. Storage Cabinet for Spare Sprinklers and Tools: Steel, located adjacent to alarm valve.

2.02 SPRINKLERS

A. Suspended Ceiling Type: Recessed-type with push on, clamp, or screw type escutcheon plates with 36" flexible braided hose.
   1. Finish: Enamel, color to be selected by architect from standard color chart..
      a. Within Standard Acoustical Tile Ceilings: White sprinkler with white escutcheon plate.
      b. Within Hard Ceiling Surface (Gypsum or Plaster): Custom color sprinkler with custom color escutcheon plate to match ceiling finish.
   2. Fusible Link: Fusible solder link type temperature rated for specific area hazard.

B. Exposed Area Type: Standard upright type with guard.
   1. Finish: Chrome plated.
   2. Fusible Link: Fusible solder link type temperature rated for specific area hazard.

C. Sidewall Type: Standard, Semi-recessed or Recessed horizontal sidewall type with matching push on escutcheon plate and guard.
   1. Finish: Chrome plated.
   2. Escutcheon Plate Finish: Chrome plated.
   3. Fusible Link: Fusible solder link type temperature rated for specific area hazard.

D. Dry Sprinklers: Standard, Recessed or Exposed pendant type with matching push on escutcheon plate.
   1. Finish: Chrome plated.
   2. Escutcheon Plate Finish: Chrome plated.
   3. Fusible Link: Fusible solder link type temperature rated for specific area hazard.

E. Guards: Finish to match sprinkler finish.

F. Spray Nozzles: Brass with solid cone discharge, 30 degrees of arc with blow-off dust cap.

2.03 PIPING SPECIALTIES

A. Wet Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, rubber faced clapper to automatically actuate water motor alarm and electric alarm, with pressure retard chamber and variable pressure trim; with test and drain valve.

B. Flooding Deluge Valve: Gate type valve with rubber faced disc actuated manually with water motor alarm and electric alarm, with alarm testing trim.

C. Water Motor Alarm: Hydraulically operated impeller type alarm with aluminum alloy chrome plated gong and motor housing, nylon bearings, and inlet strainer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with referenced NFPA design and installation standard.

B. Install equipment in accordance with manufacturer's instructions.

C. Place pipe runs to minimize obstruction to other work.

D. Place piping in concealed spaces above finished ceilings.

E. Center sprinklers in two directions in ceiling tile and provide piping offsets as required.

F. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.

G. Install and connect to fire pump system in accordance with Section 21 30 00.

H. Flush entire piping system of foreign matter.

I. All new sprinkler heads are to be provided within the area of work.

J. Drain existing fire protection loop to extent as required to modify existing sprinkler system, and refill system(s) once work is complete. Install isolation valve(s) with monitoring module and connection to existing fire alarm control panel as needed to maintain fire protection coverage as work is to be performed.

K. Install guards on sprinklers where indicated.

L. Hydrostatically test entire system.

M. Require test be witnessed by Fire Marshal and authority having jurisdiction.

3.02 INTERFACE WITH OTHER PRODUCTS

A. Ensure required devices are installed and connected as required to fire alarm system.

END OF SECTION 21 13 00

SECTION 22 07 19
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.

B. Jackets and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 22 10 05 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

D. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

E. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement.

F. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement.

G. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

H. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.

I. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.

J. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.

K. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

L. ASTM C585 - Standard Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing.

M. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.

N. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.

O. ASTM D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

P. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

S. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

T. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.

U. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Samples: Submit two samples of any representative size illustrating each insulation type.

C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.05 QUALITY ASSURANCE

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

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience, or and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

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

2.02 GLASS FIBER

A. Manufacturers:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com.
   3. Owens Corning Corp: www.owenscorning.com.
   4. CertainTeed Corporation; : www.certainteed.com.
   5. Substitutions: See Gilbane Project Manual.

B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
   1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum service temperature: 850 degrees F; 1200 degrees F; 1600 degrees F.
   3. Maximum moisture absorption: 0.2 percent by volume.

C. Insulation: ASTM C547 ; semi-rigid, noncombustible, end grain adhered to jacket.
   1. 'K' value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum service temperature: 650 degrees F.
   3. Maximum moisture absorption: 0.2 percent by volume.

D. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.

E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

F. Vapor Barrier Lap Adhesive:
   1. Compatible with insulation.

G. Insulating Cement/Mastic:

1. ASTM C195; hydraulic setting on mineral wool.

H. Fibrous Glass Fabric:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Blanket: 1.0 lb/cu ft density.
   3. Weave: 5x5; 10x10; or 10x20.

I. Indoor Vapor Barrier Finish:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Vinyl emulsion type acrylic, compatible with insulation, black or white color.

J. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

K. Outdoor Breather Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

L. Insulating Cement:
   1. ASTM C449/C449M.

2.03 CELLULAR GLASS

A. Manufacturers:
   1. Pittsburgh Corning Corporation: www.foamglasinsulation.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulation: ASTM C552, Grade 1.
   1. 'K' value: 0.37 at 100 degrees F.
   2. Service Temperature: Up to 900 degrees F.
   3. Water Vapor Permeability: 0.005 perm inch.
   4. Water Absorption: 0.2 percent by volume, maximum.

2.04 EXPANDED POLYSTYRENE

A. Manufacturers:

B. Insulation: ASTM C578; rigid closed cell.
   1. 'K' value: 0.23 at 75 degrees F.
   2. Maximum service temperature: 165 degrees F.
   3. Maximum water vapor permeance: 5.0 perms

2.05 EXPANDED PERLITE

A. Manufacturers:
   1. Schundler Company: www.schundler.com/#sle.

B. Insulation: ASTM C610, molded.
   1. Maximum service temperature: 1200 degrees F.
   2. Maximum water vapor transmission: 0.1 perm.

2.06 POLYISOCYANURATE CELLULAR PLASTIC

A. Insulation Material: ASTM C591, rigid molded modified polyisocyanurate cellular plastic.
   1. Dimension: Comply with requirements of ASTM C585.
   2. 'K' value: 0.18 at 75 degrees F, when tested in accordance with ASTM C518.
   3. Minimum Service Temperature: -70 degrees F.
   4. Maximum Service Temperature: 300 degrees F.
   5. Water Absorption: 0.5 percent by volume, maximum, when tested in accordance with ASTM D2842..
   6. Moisture Vapor Transmission: 4.0 perm in.
   7. Connection: Waterproof vapor barrier adhesive.

2.07 POLYETHYLENE

A. Manufacturers:
   1. Armacell International: www.armacell.com/#sle.

B. Insulation: Flexible closed-cell polyethylene tubing, slit lengthwise for installation, complying with applicable requirements of ASTM D1056.
   1. 'K' value: ASTM C177; 0.25 at 75 degrees F.
   2. Maximum Service Temperature: 200 degrees F.
   3. Density: 2 lb/cu ft.
   4. Maximum Moisture Absorption: 1.0 percent by volume.
   5. Moisture Vapor Permeability: 0.05 perm inch, when tested in accordance with ASTM E96/E96M.
   6. Connection: Contact adhesive.

2.08 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturer:
   1. Armacell International: www.armacell.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C 534 Grade 3;grade 2; grade 1 use molded tubular material wherever possible.
   1. Minimum Service Temperature: -40 degrees F.
   2. Maximum Service Temperature: 220 degrees F.
   3. Connection: Waterproof vapor barrier adhesive.

C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.09 JACKETS

A. PVC Plastic.
   1. Manufacturers:
      a. Johns Manville Corporation: www.jm.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
      a. Minimum Service Temperature: 0 degrees F.
      b. Maximum Service Temperature: 150 degrees F.
      c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
      d. Thickness: 20 mil; 30 mil.
      e. Connections: Brush on welding adhesive, tacks, pressure sensitive color matching vinyl tape.
   3. Covering Adhesive Mastic:

B. ABS Plastic:
   1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
      a. Minimum Service Temperature: -40 degrees F.
      b. Maximum Service Temperature of 180 degrees F.
      c. Moisture Vapor Permeability: 0.012 perm inch, when tested in accordance with ASTM E96/E96M.
      d. Thickness: 30 mil.
      e. Connections: Brush on welding adhesive.

C. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.
   1. Lagging Adhesive:
      a. Compatible with insulation.

D. Aluminum Jacket: ASTM B209 (ASTM B209M) formed aluminum sheet.
   1. Thickness: 0.016 inch, 0.020 inch sheet.
   2. Finish: Smooth, embossed.
   3. Joining: Longitudinal slip joints and 2 inch laps.
   4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
   5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
   6. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

E. Stainless Steel Jacket: ASTM A 666, Type 304 or 316 stainless steel.
   1. Thickness: 0.010 inch.
   2. Finish: Smooth.
   3. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
   1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
   2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

H. Glass fiber insulated pipes conveying fluids above ambient temperature:
   1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
   2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

I. Inserts and Shields:
   1. Application: Piping 1-1/2 inches diameter or larger.
   2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
   3. Insert location: Between support shield and piping and under the finish jacket.
   4. Insert configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
   5. Insert material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 84 00.

K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with PVC jacket and fitting covers.

L. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

M. Buried Piping: Provide factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with one mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.

N. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

3.03 SCHEDULES

3.04 INTERIOR INSULATION APPLICATION SCHEDULE

A. Service: Domestic hot, recirculated hot water.
   1. Operating Temperature: 60 to 140 deg F.
   2. Insulation Material: Flexible elastomeric or glass fiber.
   3. Insulation Thickness: Apply the following insulation thicknesses:
      a. Pipe, All Sizes: 1.0 inch.
   4. Jacket:
      a. Exposed Spaces (mechanical rooms, closets, etc.) = PVC
      b. Concealed Spaces = None
   5. Vapor Retarder Required: No.
   6. Finish: None.

B. Service: Domestic cold water.
   1. Operating Temperature: 35 to 60 deg F.
   2. Insulation Material: Flexible elastomeric or glass fiber.
   3. Insulation Thickness: Apply the following insulation thicknesses:
      a. Pipe, 1” or less: 0.5 inch.
      b. Pipe, 1¼” to 2” : 0.5 inch.
      c. Pipe, 2-1/2” to 4”: 1.0 inch.
      d. Pipe, 5” and up : 1.0 inch.
   4. Jacket:
      a. Exposed Spaces (mechanical rooms, closets, etc.) = PVC
      b. Concealed Spaces = None
   5. Vapor Retarder Required: Yes.
   6. Finish: None.

C. Service: Sanitary waste piping where heat tracing is installed.
   1. Operating Temperature: 35 to 100 deg F.
   2. Insulation Material: Mineral fiber.
   3. Insulation Thickness: Apply the following insulation thicknesses:
      a. Pipe, 3” and up: 1.0 inch.
   4. Jacket: Aluminum.
   5. Vapor Retarder Required: Yes.
   6. Finish: None.

D. Service: Condensate drain piping.
   1. Operating Temperature: 35 to 75 deg F.
   2. Insulation Material: Flexible elastomeric.
   3. Insulation Thickness: 0.5 inch.
   4. Jacket: None.
   5. Vapor Retarder Required: Yes.
   6. Finish: None.

E. Service: Exposed sanitary drains and domestic water supplies and stops for fixtures for the disabled.
   1. Operating Temperature: 35 to 120 deg F.
   2. Insulation Material: Molded closed cell vinyl.
   3. Insulation Thickness: 3/16 inch.
   4. Vapor Retarder Required: No.
   5. Finish: None.

3.05 EXTERIOR INSULATION APPLICATION SCHEDULE

A. This application schedule is for aboveground insulation outside the building. Loose-fill insulation, for belowground piping, is specified in Division 2 piping distribution Sections.

B. Service: Domestic water.
   1. Operating Temperature: 60 to 180 deg F.
   2. Insulation Material: Cellular glass, with jacket
   3. Insulation Thickness: Apply the following insulation thicknesses:
      a. Pipe, 1” or less: 2.0 inch.
      b. Pipe, 1-1/4” and larger: 2.0 inch.
   4. Jacket: Aluminum.
   5. Vapor Retarder Required: No.
   6. Finish: None.

C. Service: Storm water.
   1. Operating Temperature: 32 to 100 deg F.
   2. Insulation Material: Flexible elastomeric.
   3. Insulation Thickness: Apply the following insulation thicknesses:
      a. Pipe, 1-1/4” to 2”: 0.5 inch.
      b. Pipe, 2-1/2” and up: 1.0 inch.
   4. Field-Applied Jacket: Aluminum.
   5. Vapor Retarder Required: Yes.
   6. Finish: None.

END OF SECTION 22 07 19

SECTION 22 10 05
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, valves, and connections for piping systems.
   1. Sanitary sewer.
   2. Domestic water.
   3. Storm water.
   4. Gas.
   5. Flanges, unions, and couplings.
   6. Pipe hangers and supports.
   7. Ball valves.
   8. Valves.
   9. Flow controls.
   10. Check valves.
   11. Water pressure reducing valves.
   12. Relief valves.
   13. Strainers.

1.02 RELATED REQUIREMENTS

A. Section 31 23 16 - Excavation.

B. Section 31 23 23 - Fill.

C. Section 31 23 16.13 - Trenching.

D. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems.

E. Section 07 84 00 - Firestopping.

F. Section 08 31 00 - Access Doors and Panels.

G. Section 09 90 00 - Painting and Coating.

H. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping.

I. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

J. Section 22 07 19 - Plumbing Piping Insulation.

K. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

L. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems.

1.03 REFERENCE STANDARDS

A. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems.

B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

C. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300.

D. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250.

E. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

F. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

G. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings - DWV.

H. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.

I. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV.

J. ASME B31.1 - Power Piping.

K. ASME B31.2 - Fuel Gas Piping; The American Society of Mechanical Engineers.

L. ASME B31.9 - Building Services Piping.

M. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers.

N. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fuzing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications.

O. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings.

P. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

Q. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

R. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.

S. ASTM B32 - Standard Specification for Solder Metal.

T. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes.

U. ASTM B43 - Standard Specification for Seamless Red Brass Pipe, Standard Sizes.

V. ASTM B68/B68M - Standard Specification for Seamless Copper Tube, Bright Annealed.

W. ASTM B68M - Standard Specification for Seamless Copper Tube, Bright Annealed (Metric).

X. ASTM B75/B75M - Standard Specification for Seamless Copper Tube.

Y. ASTM B75M - Standard Specification for Seamless Copper Tube (Metric).

Z. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

AA. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).

AB. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

AC. ASTM B302 - Standard Specification for Threadless Copper Pipe, Standard Sizes.

AD. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV).

AE. ASTM C4 - Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile.

AF. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.

AG. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, Culvert Pipe and (Metric).

AH. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

AI. ASTM C76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe (Metric).

AJ. ASTM C425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.

AK. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

AL. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).

AM. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

AN. ASTM C700 - Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.

AO. ASTM C1053 - Standard Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications.

AP. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

AQ. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.

AR. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.

AS. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

AT. ASTM D2447 - Standard Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter; 2003.

AU. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

AV. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings.

AW. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.

AX. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe.

AY. ASTM D2661 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.

AZ. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

BA. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping.

BB. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.

BC. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

BD. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

BE. ASTM D2846/D2846M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems.

BF. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

BG. ASTM D2996 - Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.

BH. ASTM D2997 - Standard Specification for Centrifugally Cast "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.

BI. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

BJ. ASTM D3262 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe.

BK. ASTM D3517 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pressure Pipe.

BL. ASTM D3754 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer and Industrial Pressure Pipe.

BM. ASTM D3840 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Fittings for Nonpressure Applications.

BN. ASTM F437 - Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.

BO. ASTM F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40.

BP. ASTM F439 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.

BQ. ASTM F441/F441M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.

BR. ASTM F442/F442M - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR).

BS. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

BT. ASTM F493 - Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.

BU. ASTM F628 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core.

BV. ASTM F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

BW. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

BX. ASTM F1281 - Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe.

BY. ASTM F1282 - Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe.

BZ. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

CA. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

CB. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings.

CC. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

CD. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast.

CE. AWWA C651 - Disinfecting Water Mains.

CF. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.

CG. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. (13 mm) Through 3 In. (76 mm), for Water Service.

CH. AWWA C950 - Fiberglass Pressure Pipe.

CI. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications.

CJ. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

CK. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

CL. MSS SP-67 - Butterfly Valves.

CM. MSS SP-69 - Pipe Hangers and Supports - Selection and Application; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..

CN. MSS SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends.

CO. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.

CP. MSS SP-78 - Cast Iron Plug Valves, Flanged and Threaded Ends.

CQ. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.

CR. MSS SP-85 - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends.

CS. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices; Manufacturers Standardization Society of the Valve and Fittings Industry, Inc..

CT. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

CU. NFPA 54 - National Fuel Gas Code; National Fire Protection Association.

CV. NFPA 58 - Liquefied Petroleum Gas Code; National Fire Protection Association.

1.04 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

B. Project Record Documents: Record actual locations of valves.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with local standards.
   1. Maintain one copy on project site.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME (BPV IX).

E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.06 REGULATORY REQUIREMENTS

A. Perform Work in accordance with local plumbing code.

B. Conform to applicable code for installation of backflow prevention devices.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.08 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

1.09 EXTRA MATERIALS

A. Provide two repacking kits for each size valve.

PART 2 PRODUCTS

2.01 SANITARY SEWER PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight.
   1. Fittings: Cast iron.
   2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

C. PVC Pipe: ASTM D1785 Schedule 40, or ASTM D2241 SDR 26 for not less than 150 psi pressure rating.
   1. Fittings: ASTM D2466, PVC.
   2. Joints: Solvent welded, with ASTM D2564 Solvent cement.

2.02 WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

2.03 STORM WATER PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74 service weight.
   1. Fittings: Cast iron.
   2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.

C. PVC Pipe: ASTM D2665 or ASTM D3034.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
   2. Joints: NFPA 54, threaded or welded to ASME B31.1 or ASME B31.9.

2.05 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 Inches and Under:
   1. Ferrous pipe: Class 150 malleable iron threaded unions.
   2. Copper tube and pipe: Class 150 bronze unions with soldered joints.

B. Flanges for Pipe Size Over 1 Inch:
   1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
   2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

C. Grooved and Shouldered Pipe End Couplings:

1. Housing: Malleable iron clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; steel bolts, nuts, and washers; galvanized for galvanized pipe.
2. Sealing gasket: "C" shape composition sealing gasket.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.06 PIPE HANGERS AND SUPPORTS

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

B. Plumbing Piping - Drain, Waste, and Vent:
1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water:
1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded supports or spacers and hanger rods, cast iron roll.
8. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
9. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe Sizes 6 Inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.

14. Floor Support for Hot Pipe Sizes 6 Inches and Over: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.07 GATE VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up To and Including 3 Inches:
1. 1, Class 125, bronze body, bronze trim, rising stem, handwheel, inside screw, solid wedge disc, solder ends.

C. 2 Inches and Larger:
1. 1, Class 125, iron body, bronze trim, outside screw and yoke, handwheel, solid wedge disc, flanged ends. Provide chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.08 GLOBE VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up To and Including 3 Inches:
1. 1, Class 125, bronze body, bronze trim, handwheel, bronze disc, solder ends.

C. 2 Inches and Larger:
1. 1, Class 125, iron body, bronze trim, handwheel, outside screw and yoke, renewable bronze plug-type disc, renewable seat, flanged ends. Provide chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.09 BALL VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

C. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder ends with union.

2.10 PLUG VALVES

A. Manufacturers:
1. Conbraco Industries: www.conbraco.com.
2. Nibco, Inc: www.nibco.com.
3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction 2-1/2 Inches and Larger: 1, 175 psi CWP, cast iron body and plug, pressure lubricated, teflon or Buna N packing, flanged or grooved ends. Provide lever operator with set screw.

2.11 BUTTERFLY VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Crane Co.: www.cranevalve.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Construction 1-1/2 Inches and Larger: MSS SP-67, 200 psi CWP, cast or ductile iron body, nickel-plated ductile iron disc, resilient replaceable EPDM, Buna N, or EPT seat, wafer, lug, or grooved ends, extended neck, 10 position lever handle.

C. Provide gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

2.12 FLOW CONTROLS

A. Manufacturers:
   1. ITT Bell & Gossett: www.bellgossett.com.
   2. Griswold Controls: www.griswoldcontrols.com.
   3. Taco, Inc: www.taco-hvac.com.

B. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.

C. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, maximum minimum pressure 3.5 psi psi.

2.13 SWING CHECK VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Nibco, Inc: www.nibco.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Up to 3 Inches:
   1. 1, Class 125, bronze body and cap, bronze swing disc with rubber seat, solder ends.

C. Over 3 Inches:
   1. 1, Class 125, iron body, bronze swing disc, renewable disc seal and seat, flanged or grooved ends.

2.14 SPRING LOADED CHECK VALVES

A. Manufacturers:
   1. Hammond Valve: www.hammondvalve.com.
   2. Crane Co.: www.cranevalve.com.
   3. Milwaukee Valve Company: www.milwaukeevalve.com.

B. Class 125, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

2.15 WATER PRESSURE REDUCING VALVES

A. Manufacturers:
   1. Amtrol Inc: www.amtrol.com/#sle.
   2. Cla-Val Co: www.cla-val.com/#sle.
   3. Watts Regulator Company: www.wattsregulator.com/#sle.

B. Up to 2 Inches:
   1. MSS SP-80, bronze body, stainless steel and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single or double union ends.

C. Over 2 Inches:

1. MSS SP-85, cast iron body, bronze fitted, elastomeric diaphragm and seat disc, flanged.

2.16 RELIEF VALVES

2.17 STRAINERS

2.18 RELIEF VALVES

A. Pressure Relief:
   1. Manufacturers:
      a. Cla-Val Co: www.cla-val.com.
      b. Henry Technologies: www.henrytech.com.
      c. Watts Regulator Company: www.wattsregulator.com.
   2. AGA Z21.22 certified, bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated.

B. Temperature and Pressure Relief:
   1. Manufacturers:
      a. Cla-Val Co: www.cla-val.com.
      b. Henry Technologies: www.henrytech.com.
      c. Watts Regulator Company: www.wattsregulator.com.
   2. AGA Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F, capacity ASME (BPV IV) certified and labelled.

2.19 STRAINERS

A. Manufacturers:
   1. Armstrong International, Inc: www.armstronginternational.com.
   2. Green Country Filter Manufacturing: www.greencountryfilter.com.
   3. WEAMCO: www.weamco.com.

B. Size 2 inch and Under:
   1. Threaded brass body for 175 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.
   2. Class 150, threaded bronze body 300 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.

C. Size 1-1/2 inch to 4 inch:
   1. Class 125, flanged iron body, Y pattern with 1/16 inch stainless steel perforated screen.

D. Size 5 inch and Larger:
   1. Class 125, flanged iron body, basket pattern with 1/8 inch stainless steel perforated screen.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. All gas piping shall be painted standard ANSI yellow.

B. Install in accordance with manufacturer's instructions.

C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

E. Install piping to maintain headroom, conserve space, and not interfere with use of space.

F. Group piping whenever practical at common elevations.

G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 05 16.

H. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 07 19.

I. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Section 08 31 00.

J. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.

K. Install vent piping penetrating roofed areas to maintain integrity of roof assembly .

L. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

M. Provide support for utility meters in accordance with requirements of utility companies.

N. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 90 00.

O. Excavate in accordance with Section 31 23 16.

P. Backfill in accordance with Section 31 23 23.

Q. Install bell and spigot pipe with bell end upstream.

R. Install valves with stems upright or horizontal, not inverted.

S. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.

T. Install water piping to ASME B31.9.

U. Install fuel oil piping to ASME B31.9.

V. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

W. Sleeve pipes passing through partitions, walls and floors.

X. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
   4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
   5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.

Y. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.9.
   2. Support horizontal piping as scheduled.
   3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   4. Place hangers within 12 inches of each horizontal elbow.
   5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
   6. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.

7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
8. Provide copper plated hangers and supports for copper piping.
9. Prime coat exposed steel hangers and supports. Refer to Section 09 90 00. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
10. Provide hangers adjacent to motor driven equipment with vibration isolation; refer to Section 22 05 48.
11. Support cast iron drainage piping at every joint.

3.04 APPLICATION

A. Use grooved mechanical couplings and fasteners only in accessible locations.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

D. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

E. Install globe valves for throttling, bypass, or manual flow control services.

F. Provide lug end butterfly valves adjacent to equipment when provided to isolate equipment.

G. Provide spring loaded check valves on discharge of water pumps.

H. Provide plug valves in natural gas systems for shut-off service.

I. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Disinfect water distribution system in accordance with Section 33 01 10.58.

B. Prior to starting work, verify system is complete, flushed and clean.

C. Ensure Ph of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

D. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.

E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.

F. Maintain disinfectant in system for 24 hours.

G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.

H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SERVICE CONNECTIONS

A. Provide new sanitary and storm sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve.

1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
2. Provide 18 gage galvanized sheet metal sleeve around service main to 6 inch above floor and 6 feet minimum below grade. Size for minimum of 2 inches of loose batt insulation stuffing.

C. Provide new gas service complete with gas meter and regulators. Gas service distribution piping to have initial minimum pressure of 7 inch wg. Provide regulators on each line serving gravity type appliances, sized in accordance with equipment.

3.08 SCHEDULES

A. Pipe Hanger Spacing:
   1. Metal Piping:
      a. Pipe size: 1/2 inches to 1-1/4 inches:
         1) Maximum hanger spacing: 6.5 ft.
         2) Hanger rod diameter: 3/8 inches.
      b. Pipe size: 1-1/2 inches to 2 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 3/8 inch.
      c. Pipe size: 2-1/2 inches to 3 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 1/2 inch.
      d. Pipe size: 4 inches to 6 inches:
         1) Maximum hanger spacing: 10 ft.
         2) Hanger rod diameter: 5/8 inch.
      e. Pipe size: 8 inches to 12 inches:
         1) Maximum hanger spacing: 14 ft.
         2) Hanger rod diameter: 7/8 inch.
      f. Pipe size: 14 inches and Over:
         1) Maximum hanger spacing: 20 ft.
         2) Hanger rod diameter: 1 inch.
   2. Plastic Piping:
      a. Pipe Size 1" to 6":
         1) Maximum hanger spacing: 6 ft.
         2) Hanger rod diameter: 3/8 inch.
      b. Pipe Size 8" and Over:
         1) Maximum hanger spacing: 6 ft.
         2) Hanger rod diameter: 7/8 inch.

END OF SECTION 22 10 05

SECTION 22 10 06
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof and floor drains.

B. Cleanouts.

C. Hydrants.

D. Backflow preventers.

E. Water hammer arrestors.

F. Interceptors.

G. Thermostatic mixing valves.

H. Catch basins and manholes.

1.02 RELATED REQUIREMENTS

A. Section 33 05 61 - Concrete Manholes.

B. Section 03 30 00 - Cast-in-Place Concrete: Manhole bottoms.

C. Section 22 10 05 - Plumbing Piping.

D. Section 22 40 00 - Plumbing Fixtures.

E. Section 22 30 00 - Plumbing Equipment.

F. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ASME A112.6.3 - Floor and Trench Drains.

B. ASME A112.6.4 - Roof, Deck, and Balcony Drains.

C. ASSE 1011 - Performance Requirements for Hose Connection Vacuum Breakers.

D. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent.

E. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers.

F. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance.

G. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.

H. ASTM C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections (Metric).

I. PDI-WH 201 - Water Hammer Arresters.

1.04 SUBMITTALS

A. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

B. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.

C. Certificates: Certify that grease or oil interceptors meet or exceed specified requirements.

D. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.

E. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors.

F. Operation Data: Indicate frequency of treatment required for interceptors.

G. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept specialties on site in original factory packaging. Inspect for damage.

1.07 EXTRA MATERIALS

A. Supply for Owner's use in maintenance of project:
   1. Two loose keys for outside hose bibbs.
   2. Two hose end vacuum breakers for hose bibbs.

PART 2 PRODUCTS

2.01 DRAINS

A. Manufacturers:
   1. Josam Company: www.josam.com/#sle.
   2. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
   3. Zurn Industries, Inc: www.zurn.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Roof Drains:
   1. Assembly: ASME A112.6.4.
   2. Body: Lacquered cast iron with sump.
   3. Strainer: Removable polyethylene, cast metal, cast bronze, or cast iron dome with vandal proof screws.
   4. Accessories: Coordinate with roofing type.
      a. Membrane flange and membrane clamp with integral gravel stop.
      b. Adjustable under deck clamp.
      c. Roof sump receiver.
      d. Waterproofing flange.
      e. Controlled flow weir.
      f. Leveling frame.
      g. Adjustable extension sleeve for roof insulation.
      h. Perforated or slotted ballast guard extension for inverted roof.
      i. Perforated stainless steel ballast guard extension.

C. Parapet Drains:
   1. Lacquered or Galvanized cast iron body with aluminum flashing clamp collar and epoxy coated or nickel bronze sloping grate.

D. Canopy and Cornice Drains:
   1. Lacquered or Galvanized cast iron body with aluminum flashing clamp collar and epoxy coated or nickel bronze flat strainer.

E. Roof Overflow Drains:
   1. Lacquered or Galvanized cast iron body and clamp collar and bottom clamp ring; pipe extended to above flood elevation.

F. Downspout Nozzles:
   1. Bronze round with straight bottom section.

G. Area Drains:
   1. Assembly: ASME A112.6.4.
   2. Body: Lacquered cast iron with sump.
   3. Strainer: Round nickel-bronze.
   4. Accessories: Membrane flange and membrane clamp with integral gravel stop, with adjustable under deck clamp, roof sump receiver, waterproofing flange, levelling frame, adjustable extension sleeve (for insulation), and perforated stainless steel ballast guard extension.

H. Floor Drain:
   1. Round, type 304 stainless steel adjustable floor drain with anchor flange and medium-duty vertically adjustable satin finish top.

2.02 CLEANOUTS

A. Manufacturers:
   1. Jay R. Smith Manufacturing Company: www.jayrsmith.com/#sle.
   2. Josam Company: www.josam.com/#sle.
   3. Zurn Industries, Inc: www.zurn.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Cleanouts at Exterior Surfaced Areas:
   1. Round cast nickel bronze access frame and non-skid cover.

C. Cleanouts at Exterior Unsurfaced Areas:
   1. Line type with lacquered cast iron body and round epoxy coated gasketed cover.

D. Cleanouts at Interior Finished Floor Areas:
   1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.

E. Cleanouts at Interior Finished Wall Areas:
   1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

F. Cleanouts at Interior Unfinished Accessible Areas: Calked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.

2.03 HYDRANTS

A. Manufacturers:
   1. Arrowhead Brass Company: www.arrowheadbrass.com/#sle.
   2. Jay R. Smith Manufacturing Company: www.jayrsmith.com/#sle.
   3. Zurn Industries, Inc: www.zurn.com/#sle.

B. Wall Hydrants: Exterior
   1. ASSE 1019; tamper-proof, freeze resistant, self-draining type with chrome plated wall plate hose thread spout, handwheel, and integral vacuum breaker.

C. Roof Hydrant:
   1. Freezeless, cast iron support components. Drain connection, EPDM Boot.

2.04 BACKFLOW PREVENTERS

A. Manufacturers:
   1. Conbraco Industries: www.conbraco.com/#sle.
   2. Watts Regulator Company: www.wattsregulator.com/#sle.
   3. Zurn Industries, Inc: www.zurn.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Reduced Pressure Backflow Preventers:
   1. ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve that opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

2.05 DOUBLE CHECK VALVE ASSEMBLIES

A. Manufacturers:
   1. Conbraco Industries: www.conbraco.com/#sle.
   2. Watts Regulator Company: www.wattsregulator.com/#sle.
   3. Zurn Industries, Inc: www.zurn.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Double Check Valve Assemblies:
   1. ASSE 1012; Bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.

2.06 WATER HAMMER ARRESTORS

A. Manufacturers:
   1. Jay R. Smith Manufacturing Company: www.jayrsmith.com/#sle.
   2. Watts Regulator Company: www.wattsregulator.com/#sle.
   3. Zurn Industries, Inc: www.zurn.com/#sle.
   4. Souix Chief Company.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Water Hammer Arrestors:
   1. Stainless steel construction, bellows or piston type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range -100 to 300 degrees F and maximum 250 psi working pressure.

2.07 MIXING VALVES

A. Thermostatic Mixing Valves:
   1. Manufacturers:
      a. ESBE: www.esbe.se/en.
      b. Leonard Valve Company: www.leonardvalve.com.
      c. Honeywell Water Controls: http://yourhome.honeywell.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Valve: Chrome plated cast brass body, stainless steel or copper alloy bellows, integral temperature adjustment.
   3. Accessories:
      a. Check valve on inlets.
      b. Volume control shut-off valve on outlet.
      c. Stem thermometer on outlet.
      d. Strainer stop checks on inlets.
   4. Cabinet: 16 gage prime coated steel, for recessed mounting with keyed lock.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.

C. Encase exterior cleanouts in concrete flush with grade.

D. Install floor cleanouts at elevation to accommodate finished floor.

E. Install approved portable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibbs.

F. Pipe relief from backflow preventer to nearest drain.

G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories, sinks, washing machines, toilets, urinal and any other quick closing valves .

END OF SECTION 22 10 06

SECTION 22 40 00
PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water closets.

B. Lavatories.

C. Sinks.

D. Service sinks.

E. Drinking fountains.

1.02 RELATED REQUIREMENTS

A. Section 07 90 05 - Joint Sealers: Seal fixtures to walls and floors.

B. Section 22 10 05 - Plumbing Piping.

C. Section 22 10 06 - Plumbing Piping Specialties.

D. Section 22 30 00 - Plumbing Equipment.

E. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ANSI Z124.1 - American National Standard for Plastic Bathtub Units; 1995.

B. ANSI Z124.2 - American National Standard for Plastic Shower Units; 1995.

C. IAPMO Z124 - Plastic Plumbing Fixtures.

D. ANSI Z358.1 - American National Standard for Emergency Eyewash and Shower Equipment.

E. ARI 1010 - Self-Contained, Mechanically-Refrigerated Drinking-Water Coolers; Air-Conditioning and Refrigeration Institute.

F. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use.

G. ASME A112.18.1 - Plumbing Supply Fittings.

H. ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures; The American Society of Mechanical Engineers.

I. ASME A112.19.2 - Ceramic Plumbing Fixtures.

J. ASME A112.19.3 - Stainless Steel Plumbing Fixtures.

K. ASME A112.19.4M - Porcelain Enameled Formed Steel Plumbing Fixtures.

L. ASME A112.19.5 - Flush Valves and Spuds for Water Closets, Urinals, and Tanks.

M. ASME A112.19.14 - Six Liter Water Closets Equipped with Dual Flushing Device.

1.04 SUBMITTALS

A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

B. Samples: Submit two sets of color chips for each standard color.

C. Manufacturer's Instructions: Indicate installation methods and procedures.

D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.

E. Waterless Urinals: Submit recommended frequency of maintenance and parts replacement, methods of cleaning, sources of replacement supplies and parts.

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

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

1.06 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.07 MOCK-UP

A. Provide mock-up of typical bathroom group.

B. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Accept fixtures on site in factory packaging. Inspect for damage.

B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.09 WARRANTY

A. Provide five year manufacturer warranty for electric water cooler.

1.10 EXTRA MATERIALS

A. Supply two sets of faucet washers, flush valve service kits, and lavatory supply fittings.

PART 2 PRODUCTS

2.01 FLUSH VALVE WATER CLOSETS

A. Water Closets: Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.
   1. Flush Volume: 1.28 gallon, maximum.
   2. Flush Valve: Exposed (top spud).
   3. Flush Operation: Sensor operated, push-button override.
   4. Handle Height: 44 inches or less.
   5. Manufacturers:
      a. American Standard Inc: www.americanstandard.com.
      b. Kohler.
      c. Toto USA: www.totousa.com.
      d. Zurn Industries, Inc: www.zurn.com/#sle.
      e. Substitutions: See Section 01 60 00 - Product Requirements.

B. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
   1. Sensor-Operated Type: Solenoid operator, battery powered with self-generating hydro-electric turbine, infrared sensor and over-ride push button.
   2. ASME A112.19.2; floor mounted, siphon jet or wall hung blow out vitreous china closet bowl, with elongated rim, 1-1/2 inch top spud, china bolt caps.
   3. Manufacturers:
      a. Toto USA: www.totousa.com
      b. Sloan Valve Company: www.sloanvalve.com.
      c. Zurn Industries, Inc: www.zurn.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Seats:
   1. Manufacturers:

a. Kohler
b. Bemis Manufacturing Company: www.bemismfg.com/#sle.
c. Church Seat Company: www.churchseats.com/#sle.
d. Olsonite: www.olsonite.com/#sle.
e. Substitutions: See Section 01 60 00 - Product Requirements.

2. Solid plastic, open front, extended back, brass bolts, with cover.

D. Water Closet Carriers:
1. Manufacturers:
a. JR Smith.
b. Sloan Valve Company: www.sloanvalve.com.
c. Zurn Industries, Inc: www.zurn.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.02 LAVATORIES

A. Lavatory Manufacturers:
1. American Standard Inc
2. Eljer
3. Kohler Company: www.kohler.com/#sle.
4. Zurn Industries, Inc: www.zurn.com/#sle.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Sensor Operated Faucet: Cast brass, chrome plated, deck mounted with sensor located on neck of spout.
1. Spout Style: Standard,
2. Power Supply: Self-generating, hydro-powered turbine charging rechargeable battery.
3. Mixing Valve: automatic.
4. Water Supply: 1/2 inch compression connections.
5. Aerator: Vandal resistant, 1 GPM, .
6. Automatic Shut-off: 30 seconds.
7. Sensor range: Automatically adjusts.
a. Accessory: Optional remote reprogrammer module to adjust pre-set factory functions.
8. Finish: Polished chrome.
9. Accessory: 4 inch or 8 inch deck plate.
10. Sensor Operated Faucet Manufacturers:
a. American Standard Inc: www.americanstandard.com.
b. Sloan Valve Company: www.sloanvalve.com/#sle.
c. Toto USA: www.totousa.com/#sle.
d. Zurn industries, Inc: www.zurn.com.

C. Accessories:
1. Chrome plated 17 gage brass P-trap with clean-out plug and arm with escutcheon.
2. Offset waste with perforated open strainer.
3. Screwdriver stops.
4. Rigid supplies.
5. Carrier:
a. Manufacturers:
1) JR Smith
2) Sloan Valve Company: www.sloanvalve.com.
3) Zurn Industries, Inc: www.zurn.com/#sle.

b. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, or concealed arm supports bearing plate and studs.

2.03 WATER FOUNTAINS

A. Electric Water Cooler Manufacturers:
   1. Tri Palm International/Oasis: www.tripalmint.com.
   2. Elkay Manufacturing Company: www.elkay.com/#sle.
   3. Haws Corporation: www.hawsco.com/#sle.

B. Fountain:
   1. A surface handicapped-height, fully ADA compliant mounted water fountain with stainless steel top, stainless steel; stainless steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, bottle filling station, and mounting bracket. .

2.04 SERVICE SINKS

A. Service Sink Manufacturers:
   1. Kohler
   2. Elkay Manufacturing Company: www.elkay.com/#sle.

B. Bowl:
   1. White floor mounted, with one inch wide shoulders. Vinyl bumper guard stainless steel strainer.

C. Trim:
   1. ASME A112.18.1 exposed wall type supply with cross handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges.

D. Accessories:
   1. 5 feet of 1/2 inch diameter plain end reinforced plastic or rubber hose.
   2. Hose clamp hanger.
   3. Mop hanger.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

B. Verify that electric power is available and of the correct characteristics.

C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

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

3.03 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Provide chrome plated rigid or flexible supplies to fixtures with screwdriver stops, reducers, and escutcheons.

C. Install components level and plumb.

D. Install and secure fixtures in place with wall supports or wall carriers and bolts.

E. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 90 05, color to match fixture.

F. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

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

3.05 ADJUSTING

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

3.06 CLEANING

A. Clean plumbing fixtures and equipment.

END OF SECTION 22 40 00

SECTION 23 05 13
MOTOR REQUIREMENTS FOR HVAC AND PLUMBING EQUIP

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General construction and requirements.

B. Applications.

C. Single phase electric motors.

D. Three phase electric motors.

1.02 RELATED REQUIREMENTS

A. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

B. Section 26 29 13 - Enclosed Controllers.

1.03 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators.

C. NEMA MG 1 - Motors and Generators.

D. NFPA 70 - National Electrical Code.

E. National Grid "Motor-Up" Rebate Program/Initiative.

1.04 SUBMITTALS

A. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

B. Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.

C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.

D. Operation Data: Include instructions for safe operating procedures.

E. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacture of electric motors for HVAC use, and their accessories, with minimum three years documented product development, testing, and manufacturing experience.

B. Conform to applicable electrical code, NFPA 70 and local energy code.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of high efficiency motors.

D. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc. or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.07 WARRANTY

A. Provide five year manufacturer warranty for motors larger than 1/2 horsepower.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Baldor Electric Company/ABB Group: www.baldor.com.

B. Lincoln Motors: www.lincolnmotors.com/#sle.

C. A. O. Smith Electrical Products Company: www.aosmithmotors.com/#sle.

D. Reliance Electric/Rockwell Automation: www.reliance.com.

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

A. Electrical Service: Refer to Section 26 27 17 for required electrical characteristics.

B. Electrical Service, General. See drawings for specific details:
   1. Motors 1/2 HP and Smaller: 115 volts, single phase, 60 Hz
   2. Motors Larger than 1/2 Horsepower: 460 volts, three phase, 60 Hz.

C. Construction:
   1. Open drip-proof type except where specifically noted otherwise.
   2. Design for continuous operation in 40 degrees C environment.
   3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
   4. All motors shall be premium efficiency type.
   5. All motors which require variable speed operation shall be inverter duty or ECM type.

D. Explosion-Proof Motors: UL approved and labelled for hazard classification, with over temperature protection.

E. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor.

F. Wiring Terminations:
   1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
   2. For fractional horsepower motors where connection is made directly, provide conduit connection in end frame.

2.03 APPLICATIONS

A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not conform to these specifications.

B. Single phase motors for shaft mounted fans and centrifugal pumps: Split phase type.

C. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type or electronically commutated (ECM) type. See schedules for requirements.

D. Single phase motors for fans, pumps, and blowers: Capacitor start type.

E. Single phase motors for fans, blowers, and pumps: Capacitor start, capacitor run type.

F. Motors located in outdoors and in draw through cooling towers: Totally enclosed weatherproof epoxy-treated type.

2.04 SINGLE PHASE POWER - SPLIT PHASE MOTORS

A. Starting Torque: Less than 150 percent of full load torque.

B. Starting Current: Up to seven times full load current.

C. Breakdown Torque: Approximately 200 percent of full load torque.

D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.05 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

A. Starting Torque: Exceeding one fourth of full load torque.

B. Starting Current: Up to six times full load current.

C. Multiple Speed: Through tapped windings.

D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.06 SINGLE PHASE POWER - CAPACITOR START MOTORS

A. Starting Torque: Three times full load torque.

B. Starting Current: Less than five times full load current.

C. Pull-up Torque: Up to 350 percent of full load torque.

D. Breakdown Torque: Approximately 250 percent of full load torque.

E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.

F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.

G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.07 THREE PHASE POWER - SQUIRREL CAGE MOTORS

A. Starting Torque: Between 1 and 1-1/2 times full load torque.

B. Starting Current: Six times full load current.

C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.

D. Design, Construction, Testing, and Performance: Conform to NEMA MG 1 for Design B motors.

E. Insulation System: NEMA Class B or better.

F. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.

G. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

H. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter; refer to Section 26 29 13.

I. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

J. Sound Power Levels: To NEMA MG 1.

K. Part Winding Start Above 254T Frame Size: Use part of winding to reduce locked rotor starting current to approximately 60 percent of full winding locked rotor current while providing approximately 50 percent of full winding locked rotor torque.

L. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.

M. Nominal Efficiency: As scheduled at full load and rated voltage when tested in accordance with IEEE 112.

N. Nominal Power Factor: As scheduled at full load and rated voltage when tested in accordance with IEEE 112.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.

C. Check line voltage and phase and ensure agreement with nameplate.

D. Provide detailed installation and purchase information for reimbursement by Utility for rebate program.

3.02 SCHEDULE - PREMIUM EFFICIENCY

A. NEMA Open Motor Service Factors.
   1. 1/6-1/3 hp:
      a. 3600 rpm: 1.35.
      b. 1800 rpm: 1.35.
      c. 1200 rpm: 1.35.
      d. 900 rpm: 1.35.
   2. 1/2 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.25.
      c. 1200 rpm: 1.25.
      d. 900 rpm: 1.15.
   3. 3/4 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.25.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.
   4. 1 hp:
      a. 3600 rpm: 1.25.
      b. 1800 rpm: 1.15.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.
   5. 1.5-150 hp:
      a. 3600 rpm: 1.15.
      b. 1800 rpm: 1.15.
      c. 1200 rpm: 1.15.
      d. 900 rpm: 1.15.

B. Three Phase - Premium Efficiency, Open Drip-Proof Performance:
   1. Ratings.
      a. 1 hp:

1) NEMA Frame: 145T.
2) Minimum Percent Power Factor: 72.
3) Minimum Percent Efficiency: 82.5% @ 1200 RPM, 85.5%@ 1800 RPM, 77% @ 3600 RPM

b. 1-1/2 hp:
1) NEMA Frame: 182T.
2) Minimum Percent Power Factor: 73.
3) Minimum Percent Efficiency: 86.5% @ 1200 RPM, 86.5% @ 1800 RPM, 84% @ 3600 RPM

c. 2 hp:
1) NEMA Frame: 184T.
2) Minimum Percent Power Factor: 75.
3) Minimum Percent Efficiency: 87.5% @ 1200 RPM, 86.5% @ 1800 RPM, 85.5% @ 3600 RPM

d. 3 hp:
1) NEMA Frame: 213T.
2) Minimum Percent Power Factor: 60.
3) Minimum Percent Efficiency: 88.5% @ 1200 RPM, 89.5% @ 1800 RPM, 85.5% @ 3600 RPM

e. 5 hp:
1) NEMA Frame: 215T.
2) Minimum Percent Power Factor: 65.
3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 86.5% @ 3600 RPM

f. 7-1/2 hp:
1) NEMA Frame: 254T.
2) Minimum Percent Power Factor: 73.
3) Minimum Percent Efficiency: 90.2% @ 1200 RPM, 91% @ 1800 RPM, 88.5% @ 3600 RPM

g. 10 hp:
1) NEMA Frame: 256T.
2) Minimum Percent Power Factor: 74.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 91.7% @ 1800 RPM, 89.5% @ 3600 RPM

h. 15 hp:
1) NEMA Frame: 284T.
2) Minimum Percent Power Factor: 77.
3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 93% @ 1800 RPM, 90.2% @ 3600 RPM.

i. 20 hp:
1) NEMA Frame: 286T.
2) Minimum Percent Power Factor: 78.
3) Minimum Percent Efficiency: 92.4% @ 1200 RPM, 93% @ 1800 RPM, 91% @ 3600 RPM

j. 25 hp:
1) NEMA Frame: 324T.
2) Minimum Percent Power Factor: 74.
3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM

k. 30 hp:
1) NEMA Frame: 326T.

2) Minimum Percent Power Factor: 78.
3) Minimum Percent Efficiency: 93.6% @ 1200 RPM, 94.1% @ 1800 RPM, 91.7% @ 3600 RPM

l. 40 hp:
1) NEMA Frame: 364T.
2) Minimum Percent Power Factor: 77.
3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.1 @ 1800 RPM, 92.4% @ 3600 RPM

m. 50 hp:
1) NEMA Frame: 365T.
2) Minimum Percent Power Factor: 79.
3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.5% @ 1800 RPM, 93% @ 3600 RPM

n. 60 hp:
1) NEMA Frame: 404T.
2) Minimum Percent Power Factor: 82.
3) Minimum Percent Efficiency: 93.

o. 75 hp:
1) NEMA Frame: 405T.
2) Minimum Percent Power Factor: 80.
3) Minimum Percent Efficiency: 93.

p. 100 hp:
1) NEMA Frame: 444T.
2) Minimum Percent Power Factor: 80.
3) Minimum Percent Efficiency: 93.

C. Three Phase - Premuim Efficiency, Totally Enclosed, Fan Cooled Performance:
1. 1200 rpm.
a. 1 hp:
1) NEMA Frame: 145T.
2) Minimum Percent Power Factor: 72.
3) Minimum Percent Efficiency: 82.5% @ 1200 RPM, 85.5% 2 1800 RPM, 77% @ 3600 RPM

b. 1-1/2 hp:
1) NEMA Frame: 182T.
2) Minimum Percent Power Factor: 73.
3) Minimum Percent Efficiency: 87.5% @ 1200 RPM, 86.5% @ 1800 RPM, 84% @ 3600 RPM

c. 2 hp:
1) NEMA Frame: 184T.
2) Minimum Percent Power Factor: 68.
3) Minimum Percent Efficiency: 88.5% @ 1200 RPM, 86.5% @ 1800 RPM, 85.5% @ 3600 RPM

d. 3 hp:
1) NEMA Frame: 213T.
2) Minimum Percent Power Factor: 63.
3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 86.5% @ 3600 RPM

e. 5 hp:
1) NEMA Frame: 215T.
2) Minimum Percent Power Factor: 66.

3) Minimum Percent Efficiency: 89.5% @ 1200 RPM, 89.5% @ 1800 RPM, 88.5% @ 3600 RPM

f. 7-1/2 hp:
   1) NEMA Frame: 254T.
   2) Minimum Percent Power Factor: 68.
   3) Minimum Percent Efficiency: 91% @ 1200 RPM, 91.7% @ 1800 RPM, 89.5% @ 3600 RPM

g. 10 hp:
   1) NEMA Frame: 256T.
   2) Minimum Percent Power Factor: 75.
   3) Minimum Percent Efficiency: 91% @ 1200 RPM, 91.7% @ 1800 RPM, 90.2% @ 3600 RPM

h. 15 hp:
   1) NEMA Frame: 284T.
   2) Minimum Percent Power Factor: 72.
   3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 92.4% @ 1800 RPM, 91% @ 3600 RPM

i. 20 hp:
   1) NEMA Frame: 286T.
   2) Minimum Percent Power Factor: 76.
   3) Minimum Percent Efficiency: 91.7% @ 1200 RPM, 93% @ 1800 RPM, 91% @ 3600 RPM

j. 25 hp:
   1) NEMA Frame: 324T.
   2) Minimum Percent Power Factor: 71.
   3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM

k. 30 hp:
   1) NEMA Frame: 326T.
   2) Minimum Percent Power Factor: 79.
   3) Minimum Percent Efficiency: 93% @ 1200 RPM, 93.6% @ 1800 RPM, 91.7% @ 3600 RPM.

l. 40 hp:
   1) NEMA Frame: 364T.
   2) Minimum Percent Power Factor: 78.
   3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.1% @ 1800 RPM, 92.4% @ 3600 RPM

m. 50 hp:
   1) NEMA Frame: 365T.
   2) Minimum Percent Power Factor: 81.
   3) Minimum Percent Efficiency: 94.1% @ 1200 RPM, 94.5% @ 1800 RPM, 93% @ 3600 RPM

n. Over 50 HP - Refer to National Grid "Motor Up" Energy Efficiency requirements for reimbursement.

END OF SECTION 23 05 13

SECTION 23 05 48
VIBRATION AND SEISMIC CON. FOR EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vibration isolators.

B. Seismic restraints for suspended components and equipment.

C. Roof curbs.

D. Seismic restraints.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

1.03 SUBMITTALS

A. Product Data: Provide schedule of vibration isolator type with location and load on each.

B. Shop Drawings: Indicate inertia bases and locate vibration isolators, with static and dynamic load on each. Indicate seismic control measures.

C. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Isolation Technology, Inc: www.isolationtech.com.

B. Kinetics Noise Control, Inc: www.kineticsnoise.com/#sle.

C. Mason Industries: www.mason-ind.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. General:
   1. All vibration isolators, base frames and inertia bases to conform to all uniform deflection and stability requirements under all operating loads.
   2. Steel springs to function without undue stress or overloading.

2.03 VIBRATION ISOLATORS

A. Non-Seismic Type:
   1. All Elastomeric-Fiber Glass Pads:
      a. Configuration: Flat or molded.
      b. Thickness: 0.25 inch minimum.
      c. Assembly: Single or multiple layers using bonded, galvanized sheet metal separation plate between each layer with load plate providing evenly distributed load over pad surface.
   2. Elastomeric Mounts:
      a. Material: Oil, ozone, and oxidant resistant compounds.
      b. Assembly: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
   3. Steel Springs:
      a. Assembly: Freestanding, laterally stable without housing.
      b. Leveling Device: Rigidly connected to equipment or frame.
   4. Restrained Steel Springs:
      a. Housing: Rigid blocking during rigging prevents equipment installed and operating height from changing during temporary weight reduction.

b. Equipment Wind Loading: Adequate means for fastening isolator top to equipment and isolator base plate to supporting structure.

5. Elastomeric Hangers:
   a. Housing: Steel construction containing elastomeric isolation element to prevent rod contact with housing and short-circuiting of isolating function.
   b. Incorporate steel load distribution plate sandwiching elastomeric element to housing.
6. Spring Hanger:
   a. Housing: Steel construction containing stable steel spring and integral elastomeric element preventing metal to metal contact.
   b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.
7. Combination Elastomeric-Spring Hanger:
   a. Housing: Steel construction containing stable steel spring with elastomeric element in series isolating upper connection of hanger box to building structure.
   b. Bottom Opening: Sized to allow plus/minus 15 degrees rod misalignment.
8. Thrust Restraints:
   a. Housing: Steel construction containing stable steel spring and integral elastomeric element installed in pairs to resist air pressure thrusts.
   b. Bottom Openings: Sized to allow plus/minus 15 degrees rod misalignment.

B. Seismic Type:
1. Coil Springs Consisting of Single Elements:
   a. Housing: Manufactured from cast iron material.
   b. Ductile Material: Designed and rated for seismic applications.
   c. Spring: Restrained by housing without significant degradation of vibration isolation capabilities during normal equipment operating conditions.
   d. Resilient Snubbing Grommet System: Incorporated and designed with clearances of no more than 0.25 inch in any direction preventing direct metal-to-metal contact between supported member and fixed restraint housing.
   e. Resilient Pad: Located in series with spring.
   f. Coil Springs: Color coded elements to have a lateral stiffness greater than 0.8 times the rated vertical stiffness with 50 percent overload capacity.
   g. Finish: Suitable for the application.
2. All Directional Elastomeric:
   a. Material: Molded from oil, ozone, and oxidant resistant compounds.
   b. Operating Parameters: Designed to operate within the isolator strain limits providing maximum performance and service life.
   c. Attachment Method: Encapsulated load transfer plate bolted to equipment and base plate with anchor hole bolted to supporting structure.
   d. Rating: Cast iron and aluminum housings rated for seismic restraint applications.
   e. Minimum Operating Static Deflections: Deflections indicated in project documents are not to exceed published load capacities.

2.04 SEISMIC RESTRAINTS FOR SUSPENDED COMPONENTS AND EQUIPMENT

A. Comply with:
1. ASHRAE (HVACA) Handbook - HVAC Applications.
2. FEMA 412.
3. FEMA 413.
4. FEMA 414.
5. FEMA E-74.
6. SMACNA (SRM).

B. Cable Restraints:
1. Wire Rope: Steel wire strand cables sized to resist seismic loads in all lateral directions.

2. Protective Thimbles: Eliminates potential for dynamic cable wear and strand breakage.
3. Size: Based on the lesser of cable capacity or anchor load taking into account bracket geometry.
4. Connections:
    a. Use overlapping wire rope U clips, cable clamping bolts, swaged sleeves or seismically rated tool-less wedge insert lock connectors.
    b. Internally brace clevis hanger bracket cross bolt to prevent deformation.
5. Vertical Suspension Rods: Attach required bracing of sufficient strength to prevent rod buckling from vertical compression forces utilizing series of attachment clips.

C. Rigid Restraints:
1. Structural Element: Sized to resist seismic loads in all lateral directions and carry both compressive and tensile loading.
2. Size: Based on the lesser of cable capacity or anchor load taking into account bracket geometry.
3. Connections: Internally brace clevis hanger bracket cross bolt to prevent deformation.
4. Static Support System: Anchorage capable of carrying additional tension loads generated by the vertical component of the rigid brace compression which is additive to any static load requirements on the system.
5. Vertical Suspension Rods: Attached required bracing of sufficient strength to prevent rod buckling from vertical compression forces utilizing series of attachment clips.

2.05 ROOF CURBS

A. Vibration Isolation Curbs:
1. Non-Seismic Curb Rail:
    a. Location: Between existing roof curb and rooftop equipment.
    b. Construction: Aluminum.
    c. Integral vibration isolation to conform to requirements of this section.
    d. Weather exposed components consist of corrosion resistant materials.
2. Non-Seismic Curb:
    a. Location: Between structure and rooftop equipment.
    b. Construction: Aluminum.
    c. Integral vibration isolation to conform to requirements of this section.
    d. Weather exposed components consist of corrosion resistant materials.
3. Seismic Curb:
    a. Location: Between structure and rooftop equipment.
    b. Construction: Steel.
    c. Integral vibration isolation to conform to requirements of this section.
    d. Snubbers consist of minimum 0.25 inch thick resilient pads to avoid metal-to-metal contact without compromising vibration isolating capabilities.
    e. Weather exposed components consist of corrosion resistant materials.

B. Seismic Type Non-Isolated Curb and Fabricated Equipment Piers:
1. Location: Between structure and rooftop equipment.
2. Construction: Steel.
3. Weather exposed components consist of corrosion resistant materials.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's instructions.

B. Bases:
1. Set steel bases for one inch clearance between housekeeping pad and base.
2. Set concrete inertia bases for 2 inches clearance between housekeeping pad and base.

3. Adjust equipment level.

C. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.

D. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.

E. Provide pairs of horizontal limit springs on fans with more than 6.0 inches WC static pressure, and on hanger supported, horizontally mounted axial fans.

F. Provide seismic snubbers for all equipment, piping, and ductwork mounted on isolators. Each inertia base shall have minimum of four seismic snubbers located close to isolators. Snub equipment designated for post-disaster use to 0.05 inch maximum clearance. Other snubbers shall have clearance between 0.15 inch and 0.25 inch.

G. Support piping connections to equipment mounted on isolators using isolators or resilient hangers as follows:
   1. Up to 4 Inches Pipe Size: First three points of support.
   2. 5 to 8 Inches Pipe Size: First four points of support.
   3. 10 inches Pipe Size and Over: First six points of support.
   4. Select three hangers closest to vibration source for minimum 1.0 inch static deflection or static deflection of isolated equipment. Select remaining isolators for minimum 1.0 inch static deflection or 1/2 static deflection of isolated equipment.

3.02 FIELD QUALITY CONTROL

A. Inspect isolated equipment after installation and submit report. Include static deflections.

3.03 SCHEDULE

A. Pipe Isolation Schedule.
   1. 1 Inch Pipe Size: Isolate 120 diameters from equipment.
   2. 2 Inch Pipe Size: Isolate 90 diameters from equipment.
   3. 3 Inch Pipe Size: Isolate 80 diameters from equipment.
   4. 4 Inch Pipe Size: Isolate 75 diameters from equipment.
   5. 6 Inch Pipe Size: Isolate 60 diameters from equipment.
   6. 8 Inch Pipe Size: Isolate 60 diameters from equipment.
   7. 10 Inch Pipe Size: Isolate 54 diameters from equipment.
   8. 12 Inch Pipe Size: Isolate 50 diameters from equipment.
   9. 16 Inch Pipe Size: Isolate 45 diameters from equipment.
   10. 24 Inch Pipe Size: Isolate 38 diameters from equipment.
   11. Over 24 Inch Pipe Size: As indicated.

END OF SECTION 23 05 48

SECTION 23 05 53
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Stencils.

D. Pipe Markers.

E. Ceiling tacks.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.04 SUBMITTALS

A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

B. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

C. Product Data: Provide manufacturers catalog literature for each product required.

D. Samples: Submit two labels or tags 1/2 x 4 inch in size.

E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

F. Project Record Documents: Record actual locations of tagged valves.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Air Handling Units: Nameplates.

B. Air Terminal Units: Tags.

C. Automatic Controls: Tags. Key to control schematic.

D. Control Panels: Nameplates.

E. Dampers: Ceiling tacks, where located above lay-in ceiling.

F. Heat Transfer Equipment: Nameplates.

G. Instrumentation: Tags.

H. Major Control Components: Nameplates.

I. Piping: Tags.

J. Pumps: Nameplates.

K. Relays: Tags.

L. Small-sized Equipment: Tags.

M. Tanks: Nameplates.

N. Thermostats: Nameplates.

O. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Champion America, Inc: www.Champion-America.com.

C. Seton Identification Products: www.seton.com/aec.

2.03 NAMEPLATES

A. Description: Laminated three-layer plastic with engraved letters.
   1. Letter Color: White.
   2. Letter Height: 1/2 inch.
   3. Background Color: Black.

2.04 TAGS

A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.

B. Metal Tags: Aluminum with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

C. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.05 STENCILS

A. Stencils: With clean cut symbols and letters of following size:
   1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
   2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
   3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
   4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
   5. Over 10 inch Outside Diameter of Insulation or Pipe: 32 inch long color field, 3-1/2 inch high letters.
   6. Ductwork and Equipment: 2-1/2 inch high letters.

B. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors conforming to ASME A13.1.

2.06 PIPE MARKERS

A. Color: Conform to ASME A13.1.

B. For refrigerant piping, provide pipe markers to identify the following:
   1. Refrigerant state (high pressure gas, low pressure gas, or liquid)
   2. Connected equipment, HP or FC.
   3. Connected room number(s), where applicable.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

F. Color code as follows:
   1. Coordinate with owner.

2.07 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color coded head.

B. Color code as follows:
   1. Coordinate with owner.

PART 3 EXECUTION

3.01 PREPARATION

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

B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Refrigerant piping shall be labeled with the refrigerant state (high pressure gas, low pressure gas, or liquid) as well as the connected fan coil and associated room served.

D. Apply stencil painting in accordance with Section 09 90 00.

E. Install plastic pipe markers in accordance with manufacturer's instructions.

F. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

G. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

H. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.

I. Identify control panels and major control components outside panels with plastic nameplates.

J. Identify thermostats relating to terminal boxes or valves with nameplates.

K. Identify valves in main and branch piping with tags.

L. Identify air terminal units and radiator valves with numbered tags.

M. Tag automatic controls, instruments, and relays. Key to control schematic.

N. Identify piping, concealed or exposed, with plastic pipe markers, plastic tape pipe markers or stencilled painting. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

O. Identify ductwork with plastic nameplates or stencilled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

P. Locate ceiling tacks to locate valves, units, or dampers above lay-in panel ceilings. Locate in corner of panel closest to equipment.

END OF SECTION 23 05 53

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Testing, adjustment, and balancing of refrigerating systems.

C. Measurement of final operating condition of HVAC systems.

D. Sound measurement of equipment operating conditions.

E. Vibration measurement of equipment operating conditions.

1.02 RELATED REQUIREMENTS

A. Section 01 91 10 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.

B. Section 01 91 10 - Functional Testing Procedures

C. Section 23 08 00 - Mechanical Systems Commissioning

D. Section 23 08 10 - Control Systems Commissioning

1.03 REFERENCE STANDARDS

A. AABC MN-1 - AABC National Standards for Total System Balance; Associated Air Balance Council.

B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems.

C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems.

D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing.

1.04 SUBMITTALS

A. Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.

B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
   1. Submit to Architect.
   2. Submit to the Commissioning Authority, Construction Manager, and HVAC controls contractor.
   3. Submit six weeks prior to starting the testing, adjusting, and balancing work.
   4. Include certification that the plan developer has reviewed the contract documents, the equipment and systems, and the control system with the Architect and other installers to sufficiently understand the design intent for each system.
   5. Include at least the following in the plan:
      a. Preface: An explanation of the intended use of the control system.
      b. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
      c. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
      d. Identification and types of measurement instruments to be used and their most recent calibration date.

e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
f. Final test report forms to be used.
g. Detailed step-by-step procedures for TAB work for each system and issue, including:
    1) Terminal flow calibration (for each terminal type).
    2) Diffuser proportioning.
    3) Branch/submain proportioning.
    4) Total flow calculations.
    5) Rechecking.
    6) Diversity issues.
h. Expected problems and solutions, etc.
i. Criteria for using air flow straighteners or relocating flow stations and sensors .
j. Details of how TOTAL flow will be determined; for example:
    1) Air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
    2) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
k. Specific procedures that will ensure that both air and water side are operating at the lowest possible pressures and methods to verify this.
l. Confirmation of understanding of the outside air ventilation criteria under all conditions.
m. Method of verifying and setting minimum outside air flow rate will be verified and set and for what level (total building, zone, etc.).
n. Method of checking building static and exhaust fan and/or relief damper capacity.
o. Proposed selection points for sound measurements and sound measurement methods.
p. Methods for making coil or other system plant capacity measurements, if specified.
q. Time schedule for TAB work to be done in phases (by floor, etc.).
r. Description of TAB work for areas to be built out later, if any.
s. Time schedule for deferred or seasonal TAB work, if specified.
t. False loading of systems to complete TAB work, if specified.
u. Exhaust fan balancing and capacity verifications, including any required room pressure differentials.
v. Interstitial cavity differential pressure measurements and calculations, if specified.
w. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
x. Procedures for formal progress reports, including scope and frequency.
y. Procedures for formal deficiency reports, including scope, frequency and distribution.

C. Field Logs: Submit at least once a week to Commissioning Authority and Construction Manager.

D. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB that affect, or could affect, the control system setup and operation.

E. Progress Reports.

F. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
1. Submit to the Commissioning Authority, Construction Manager, and HVAC controls contractor within two weeks after completion of testing, adjusting, and balancing.
2. Revise TAB plan to reflect actual procedures and submit as part of final report.

3. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
4. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.
5. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
6. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
7. Units of Measure: Report data in I-P (inch-pound) units only.
8. Include the following on the title page of each report:
    a. Name of Testing, Adjusting, and Balancing Agency.
    b. Address of Testing, Adjusting, and Balancing Agency.
    c. Telephone number of Testing, Adjusting, and Balancing Agency.
    d. Project name.
    e. Project location.
    f. Project Architect.
    g. Project Engineer.
    h. Project Contractor.
    i. Project altitude.
    j. Report date.

G. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

1.05 QUALITY ASSURANCE (MOVED TO PART 3)

1.06 PRE-BALANCING MEETING (MOVED TO PART 3)

1.07 SEQUENCING AND SCHEDULING (MOVED TO PART 3)

1.08 WARRANTY (MOVED TO PART 3)

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
1. AABC MN-1, AABC National Standards for Total System Balance.
2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
3. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
4. SMACNA HVAC Systems Testing, Adjusting, and Balancing.
5. Maintain at least one copy of the standard to be used at project site at all times.

B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.

D. TAB Agency Qualifications:
1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
2. Having minimum of three years documented experience.
3. Certified by one of the following:

a. AABC, Associated Air Balance Council: www.aabchq.com; upon completion submit AABC National Performance Guaranty.
b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.

E. TAB Supervisor Qualifications: Certified by same organization as TAB agency.

F. TAB Supervisor Qualifications: Professional Engineer licensed in the State in which the Project is located.

3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
2. Temperature control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.
12. Service and balance valves are open.

B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

C. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
1. Require attendance by all installers whose work will be tested, adjusted, or balanced.

B. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Architect to facilitate spot checks during testing.

C. Provide additional balancing devices as required.

3.04 ADJUSTMENT TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 10 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
2. Discrepancies, deficient or uncompleted work by others.
3. Contract interpretation requests.
4. Lists of completed tests.

B. Ensure recorded data represents actual measured or observed conditions.

C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

D. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.

E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

G. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by the Owner.

H. Check and adjust systems approximately six months after final acceptance and submit report.

3.06 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities .

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive and sheave changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.

M. Check multi-zone units for motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.

N. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

O. On fan powered VAV boxes, adjust air flow switches for proper operation.

P. For laboratories, lab classrooms, and prep rooms, offset CFM values (differential between exhaust/return and supply airflows) shall be required to maintain a plus 10% minus 5% offset.

3.07 COMMISSIONING

A. Perform prerequisites prior to starting commissioning activities.

B. Fill out Prefunctional Checklists for:
   1. Air side systems.
   2. Packaged rooftop units.
   3. Exhaust fans.

C. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.

D. Re-check minimum outdoor air intake flows and maximum and intermediate total airflow rates for 10 percent of the air handlers plus a random sample equivalent to 5 percent of the final TAB report data as directed by Commissioning Authority.
   1. Original TAB agency shall execute the re-checks, witnessed by the Commissioning Authority.
   2. Use the same test instruments as used in the original TAB work.
   3. Failure of more than 10 percent of the re-checked items of a given system shall result in the rejection of the system TAB report; rebalance the system, provide a new system TAB report, and repeat random re-checks.
   4. For purposes of re-check, failure is defined as follows:
      a. Air Flow of Supply and Return: Deviation of more than 10 percent of instrument reading.
      b. Minimum Outside Air Flow: Deviation of more than 20 percent of instrument reading; for inlet vane or VFD OSA compensation system using linear proportional control, deviation of more than 30 percent at intermediate supply flow.
      c. Temperatures: Deviation of more than one degree F.
      d. Air and Water Pressures: Deviation of more than 10 percent of full scale of test instrument reading.
      e. Sound Pressures: Deviation of more than 3 decibels, with consideration for variations in background noise.
   5. For purposes of re-check, a whole system is defined as one in which inaccuracies will have little or no impact on connected systems; for example, the air distribution system served by one air handler or the hydronic chilled water supply system served by a chiller or the condenser water system.

E. In the presence of the Commissioning Authority, verify that:
   1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
   2. The air system is being controlled to the lowest possible static pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from fan to diffuser having all balancing dampers wide open and that during full cooling of all terminal units taking off downstream of the static pressure sensor, the terminal unit on the critical leg has its damper 90 percent or more open.

3.08 SCOPE

A. Test, adjust, and balance the following:
   1. Plumbing Pumps
   2. Packaged Roof Top Heating/Cooling Units.
   3. Fans
   4. Air Inlets and Outlets

3.09 MINIMUM DATA TO BE REPORTED

A. Electric Motors:

1. Manufacturer
2. Model/Frame
3. HP/BHP
4. Phase, voltage, amperage; nameplate, actual, no load
5. RPM
6. Service factor
7. Starter size, rating, heater elements
8. Sheave Make/Size/Bore

B. V-Belt Drives:
1. Identification/location
2. Required driven RPM
3. Driven sheave, diameter and RPM
4. Belt, size and quantity
5. Motor sheave diameter and RPM
6. Center to center distance, maximum, minimum, and actual

C. Cooling Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Entering air DB temperature, design and actual
7. Entering air WB temperature, design and actual
8. Leaving air DB temperature, design and actual
9. Leaving air WB temperature, design and actual
10. Water flow, design and actual
11. Water pressure drop, design and actual
12. Entering water temperature, design and actual
13. Leaving water temperature, design and actual
14. Saturated suction temperature, design and actual
15. Air pressure drop, design and actual

D. Heating Coils:
1. Identification/number
2. Location
3. Service
4. Manufacturer
5. Air flow, design and actual
6. Gas flow rate
7. Entering air temperature, design and actual
8. Leaving air temperature, design and actual
9. Air pressure drop, design and actual

E. Air Moving Equipment:
1. Location
2. Manufacturer
3. Model number
4. Serial number
5. Arrangement/Class/Discharge
6. Air flow, specified and actual
7. Return air flow, specified and actual
8. Outside air flow, specified and actual

9. Total static pressure (total external), specified and actual
10. Inlet pressure
11. Discharge pressure
12. Sheave Make/Size/Bore
13. Number of Belts/Make/Size
14. Fan RPM

F. Return Air/Outside Air:
1. Identification/location
2. Design air flow
3. Actual air flow
4. Design return air flow
5. Actual return air flow
6. Design outside air flow
7. Actual outside air flow
8. Return air temperature
9. Outside air temperature
10. Required mixed air temperature
11. Actual mixed air temperature
12. Design outside/return air ratio
13. Actual outside/return air ratio

G. Exhaust Fans:
1. Location
2. Manufacturer
3. Model number
4. Serial number
5. Air flow, specified and actual
6. Total static pressure (total external), specified and actual
7. Inlet pressure
8. Discharge pressure
9. Sheave Make/Size/Bore
10. Number of Belts/Make/Size
11. Fan RPM
12. Associated with Fume Hoods, Include:
    a. Face velocity test at max/min sash position.

H. Duct Traverses:
1. System zone/branch
2. Duct size
3. Area
4. Design velocity
5. Design air flow
6. Test velocity
7. Test air flow
8. Duct static pressure
9. Air temperature
10. Air correction factor

I. Duct Leak Tests:
1. Description of ductwork under test
2. Duct design operating pressure
3. Duct design test static pressure
4. Duct capacity, air flow

5. Maximum allowable leakage duct capacity times leak factor
6. Test apparatus
    a. Blower
    b. Orifice, tube size
    c. Orifice size
    d. Calibrated
7. Test static pressure
8. Test orifice differential pressure
9. Leakage

J. Air Distribution Tests:
1. Air terminal number
2. Room number/location
3. Terminal type
4. Terminal size
5. Area factor
6. Design velocity
7. Design air flow
8. Test (final) velocity
9. Test (final) air flow
10. Percent of design air flow

K. Sound Level Reports:
1. Location
2. Octave bands - equipment off
3. Octave bands - equipment on

END OF SECTION 23 05 93

SECTION 23 07 13
DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct Lagging.

C. Insulation jackets.

1.02 RELATED REQUIREMENTS

A. Section 09 90 00 - Painting and Coating: Painting insulation jackets.

B. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

C. Section 23 05 53 - Identification for HVAC Piping and Equipment.

D. Section 23 31 00 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

F. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation.

G. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material).

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

K. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association.

L. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

M. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

B. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

1.05 QUALITY ASSURANCE

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

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of experienceand approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REQUIREMENTS FOR ALL PRODUCTS OF THIS SECTION

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

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com/#sle.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. Minimum "R" Value: Minimum R value of (6) is required for interior installations and a minimum R value of (8) is required for exterior installations.
   2. Maximum Service Temperature: 450 degrees F.
   3. Maximum Water Vapor Sorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
   1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   2. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Tie Wire: Annealed steel, 16 gage.

2.03 GLASS FIBER, RIGID

A. Manufacturer:
   1. Knauf Insulation: www.knaufusa.com.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Owens Corning Corp: www.owenscorning.com.
   4. CertainTeed Corporation: www.certainteed.com/#sle.

B. Insulation: ASTM C612; rigid, noncombustible blanket.
   1. Minimum "R" Value: Minimum R value of (6) is required for interior installations and a minimum R value of (8) is required for exterior installations.
   2. Maximum service temperature: 450 degrees F.
   3. Maximum Water Vapor Sorption: 5.0 percent.

C. Vapor Barrier Jacket:
   1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   2. Secure with pressure sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.

E. Indoor Vapor Barrier Finish:
   1. Cloth: Untreated; 9 oz/sq yd weight, glass fabric.
   2. Vinyl emulsion type acrylic, compatible with insulation, black color.

2.04 JACKETS

A. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire retardant lagging adhesive.
   1. Lagging Adhesive:
      a. Compatible with insulation.

B. Aluminum Jacket: ASTM B209 (ASTM B209M).
   1. Thickness: 0.016 inch sheet.
   2. Finish: Smooth.
   3. Joining: Longitudinal slip joints and 2 inch laps.
   4. Fittings: 0.016 inch thick die shaped fitting covers with factory attached protective liner.
   5. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.
   6. Metal Jacket Bands: 3/8 inch wide; 0.010 inch thick stainless steel.

2.05 DUCT LAGGING

A. Manufacturers:
   1. Sound Seal: www.soundseal.com
   2. Kinetics Noise Control: www.kineticsnoise.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Lagging: Loaded vinyl noise barrier with a scrim reinforced aluminum foil facing on one side with a 1" thick fiberglass decoupler.
   1. Apparent Thermal Conductivity: Maximum of.25 at 75 degrees F
   2. Service Temperature: Up to 350 degrees F.

C. Adhesive: Waterproof, fire-retardant type, ASTM C916.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that ducts have been tested before applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Insulated ducts conveying air below ambient temperature:
   1. Provide insulation with vapor barrier jackets.
   2. Finish with tape and vapor barrier jacket.
   3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
   4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

D. Insulated ducts conveying air above ambient temperature:
   1. Provide with or without standard vapor barrier jacket.
   2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with canvas jacket sized for finish painting unless noted otherwise.

F. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section. Provide tapered caps on all horizontal ducts for shedding water.

G. External Duct Insulation Application:
   1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
   2. Secure insulation without vapor barrier with staples, tape, or wires.
   3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
   4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
   5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

3.03 SCHEDULES

A. INDOOR DUCT AND PLENUM APPLICATION SCHEDULE
   1. NOTE: Apply duct lagging where indicated on drawings.
   2. Service: Round, supply-air ducts, concealed.
      a. Material: Mineral-fiber blanket.
      b. Thickness: 2 inches.
      c. Minimum "R" value: 6.
      d. Jacket: Foil and paper.
      e. Vapor Retarder Required: Yes.
   3. Service: Round, return-air ducts, concealed.
      a. Material: Mineral-fiber blanket.
      b. Thickness: 2 inches.
      c. Minimum "R" value: 6.
      d. Jacket: Foil and paper.
      e. Vapor Retarder Required: No.
   4. Service: Round, outside-air ducts, concealed.
      a. Material: Mineral-fiber blanket
      b. Thickness: 2 inches.
      c. Minimum "R" value: 6.
      d. Jacket: Foil and paper.
      e. Vapor Retarder Required: Yes.
   5. Service: Rectangular, supply-air ducts, concealed.
      a. Material: Mineral-fiber blanket
      b. Thickness: 2 inches.
      c. Minimum "R" value: 6.
      d. Jacket: Foil and paper.
      e. Vapor Retarder Required: Yes.
   6. Service: Rectangular, return-air ducts, concealed.
      a. Material: Mineral-fiber blanket
      b. Thickness: 2 inches.
      c. Minimum "R" value: 6.

d. Jacket: Foil and paper.
e. Vapor Retarder Required: No.

7. Service: Rectangular, outside-air ducts, concealed.
   a. Material: Mineral-fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 6.
   d. Jacket: Foil and paper.
   e. Vapor Retarder Required: Yes.
8. Service: Round, supply-air ducts, exposed.
   a. Material: Mineral-fiber blanket
   b. Thickness: 2 inches.
   c. Minimum "R" value: 6.
   d. Jacket: Spiral-wound steel, paintable.
   e. Vapor Retarder Required: Yes.
   f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
9. Service: Round, return-air ducts, exposed.
   a. Material: Mineral-fiber blanket.
   b. Thickness: 2 inches.
   c. Minimum "R" value: 6.
   d. Jacket: Spiral-wound steel, paintable.
   e. Vapor Retarder Required: No.
   f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
10. Service: Round, outside-air ducts, exposed.
    a. Material: Mineral-fiber blanket.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 6.
    d. Jacket: Spiral-wound steel, paintable.
    e. Vapor Retarder Required: Yes.
    f. NOTE: Provide double-walled spiral ductwork in areas not concealed above ceilings. and where noted.
11. Service: Rectangular, supply-air ducts, exposed.
    a. Material: Mineral-fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 6.
    d. Jacket: Canvas, painted to architects specifications.
    e. Vapor Retarder Required: Yes.
12. Service: Rectangular, return-air ducts, exposed.
    a. Material: Mineral-fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 6.
    d. Jacket: Canvas, painted to architects specifications.
    e. Vapor Retarder Required: No.
13. Service: Rectangular, outside-air ducts, exposed.
    a. Material: Mineral-fiber board.
    b. Thickness: 2 inches.
    c. Minimum "R" value: 6.
    d. Jacket: Canvas, painted to architects specifications.
    e. Vapor Retarder Required: Yes.
14. Service: Rectangular, range-hood exhaust ducts, concealed.

a. Material: Calcium silicate.
b. Thickness: 2 inches.
c. Field-Applied Jacket: Glass cloth.
d. Vapor Retarder Required: No.

15. Service: Rectangular, range-hood exhaust ducts, exposed.
    a. Material: Calcium silicate.
    b. Thickness: 2 inches.
    c. Field Applied Jacket: Stainless steel.
    d. Vapor Retarder Required: No.

B. OUTDOOR DUCT AND PLENUM APPLICATION SCHEDULE
1. Service: Round, supply-air ducts.
    a. Material: Mineral-fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 8.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
2. Service: Round, return-air ducts.
    a. Material: Mineral-fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 8.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
3. Service: Rectangular, supply-air ducts.
    a. Material: Mineral-fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 8.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.
4. Service: Rectangular, return-air ducts.
    a. Material: Mineral-fiber board.
    b. Thickness: 3 inches.
    c. Minimum "R" value: 8.
    d. Field-Applied Jacket: aluminum
        1) Aluminum Thickness: 0.032 inch
    e. Vapor Retarder Required: Yes.

END OF SECTION 23 07 13

SECTION 23 09 13

INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermostats, Temperature Sensors.

B. Carbon Dioxide Sensors.

C. Automatic dampers.

D. Damper operators.

E. Time clocks.

F. Miscellaneous accessories.

1.02 RELATED REQUIREMENTS

A. Section 23 21 13 - Hydronic Piping: Installation of control valves, flow switches, temperature sensor sockets, gage taps.

B. Section 23 33 00 - Air Duct Accessories: Installation of automatic dampers.

C. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

D. Section 23 09 23 - Direct-Digital Control System for HVAC.

E. Section 23 09 93 - Sequence of Operations for HVAC Controls.

1.03 REFERENCE STANDARDS

A. Input/Output Sensors:

B. AMCA 500-D - Laboratory Methods of Testing Dampers for Rating.

C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

D. ASTM B32 - Standard Specification for Solder Metal.

E. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

F. ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.

G. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association.

I. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

J. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.

1.04 ADMINISTRATIVE REQUIREMENTS

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

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

D. Manufacturer's Instructions: Provide for all manufactured components.

E. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

F. Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.

G. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

H. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design system under direct supervision of a Professional Engineer experienced in design of this work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 EQUIPMENT - GENERAL

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

2.02 CONTROL PANELS

A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.

B. NEMA 250, general purpose utility enclosures with enamelled finished face panel.

C. Provide common keying for all panels.

2.03 DAMPERS

A. Performance: Test in accordance with AMCA 500-D.

B. Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gage.

C. Blades: Galvanized steel, maximum blade size 8 inches wide, 48 inches long, minimum 22 gage, attached to minimum 1/2 inch shafts with set screws.

D. Blade Seals: Synthetic elastomeric inflatable mechanically attached, field replaceable.

E. Jamb Seals: Spring stainless steel.

F. Shaft Bearings: Oil impregnated sintered bronze.

G. Linkage Bearings: Oil impregnated sintered bronze.

H. Leakage: Less than one percent based on approach velocity of 2000 ft/min and 4 inches wg.

I. Maximum Pressure Differential: 6 inches wg.

J. Temperature Limits: -40 to 200 degrees F.

2.04 DAMPER OPERATORS

A. General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.
   1. Provide sufficient number of operators to achieve unrestricted movement throughout damper range.
   2. Provide one operator for maximum 36 sq ft damper section.

B. Electric Operators:
   1. Spring return, adjustable stroke motor having oil immersed gear train, with auxiliary end switch.

2.05 INPUT/OUTPUT SENSORS

A. Temperature Sensors:
   1. Single point duct temperature sensor shall consist of sensing element, junction box for wiring connections and gasket to prevent air leakage or vibration noise. Temperature range as required for resolution indicated in paragraph A. Sensor probe shall be 316 stainless steel.
      a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
   2. Averaging duct temperature sensor shall consist of an averaging element, junction box for wiring connections and gasket to prevent air leakage. Provide enough sensors to give one lineal foot of sensing element for each square foot of cooling coil face area. Temperature range as required for resolution indicated in paragraph A.
      a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
   3. Room SensorsCovers: Locking with slide-bar set point adjustment, and concealed setpoint, without thermometer.

B. Damper Position Indication: Potentiometer mounted in enclosure with adjustable crank arm assembly connected to damper to transmit 0 - 100 percent damper travel.

C. Carbon Monoxide Detectors:
   1. General: Provide non-dispersive infrared (NDIR), diffusion sampling CO sensors with integral transducers and linear output.

D. Carbon Dioxide Sensors:
   1. General: Provide non-dispersive infrared (NDIR), diffusion sampling CO2 sensors with integral transducers and linear output.
      a. Linear, CO2 Concentration Range Display: 0 to 2000 / 5000 ppm, programmable.
      b. Accuracy: Plus/minus 30 ppm or plus/minus 2 percent of measured value, measured at NTP.
      c. Repeatability: Plus/minus 20 ppm or plus/minus 2 percent of measured value.
      d. Response Time: Less than 60 seconds for 90 percent step change.
      e. Communication Protocol: Modbus or BACnet.
   2. Air Temperature: Range of 32 to 122 degrees F.
   3. Relative Humidity: Range of 0 to 95 percent (non-condensing).
   4. Power Input: Class 2; 12 to 30VDC or 24VAC 50/60 Hz; 100mA max.
   5. Calibration Characteristics:
      a. Automatically compensating algorithm for sensor drift due to sensor degradation.
      b. Maximum Drift: 2 percent.
      c. User calibratable with a minimum calibration interval of 5 years.

6. Construction:
    a. Sensor Chamber: Non-corrosive material for neutral effect on carbon dioxide sample.
    b. Provide duct mounted sensors with duct probe designed to protect sensing element from dust accumulation and mechanical damage.
    c. Housing: High impact plastic, UL 94 VO.

E. Equipment Operation Sensors:
1. Status Inputs for Fans: Differential pressure switch with adjustable range of 0 to 5 inches wg.
2. Status Inputs for Pumps: Differential pressure switch piped across pump with adjustable pressure differential range of 8 to 60 psi.
3. Status Inputs for Electric Motors: Current sensing relay with current transformers, adjustable and set to 175 percent of rated motor current.

2.06 THERMOSTATS

A. Outdoor Reset Thermostat:
1. Remote bulb or bimetal rod and tube type, proportioning action with adjustable throttling range, adjustable setpoint.
2. Scale range: -10 to 70 degrees F.

B. Airstream Thermostats:
1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint in middle of range and adjustable throttling range.
2. Averaging service remote bulb element: 7.5 feet.

C. Electric High Limit Duct Thermostat:
1. Snap acting, single pole, single throw, manual reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or above setpoint,
2. Bulb length: Minimum 20 feet.
3. Provide one thermostat for every 20 sq ft of coil surface.

D. Fire Thermostats:
1. UL labeled, factory set in accordance with NFPA 90A.
2. Normally closed contacts, manual reset.

E. Heating/Cooling Valve Top Thermostats:
1. Proportional acting for proportional flow, molded rubber diaphragm, remote bulb liquid filled element, direct and reverse acting at differential pressure to 25 psig, cast housing with position indicator and adjusting knob.

2.07 TRANSMITTERS

A. Pressure Transmitters:
1. One pipe direct acting indicating type for gas, liquid, or steam service, range suitable for system, proportional electronic output.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that systems are ready to receive work.

C. Beginning of installation means installer accepts existing conditions.

D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

F. Ensure installation of components is complementary to installation of similar components.

G. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of thermostats with plans and room details before installation. Locate 48 inches above floor. Align with lighting switches, CO2 sensors, and humidistats. Refer to Section 26 27 26.

C. Mount freeze protection thermostats using flanges and element holders.

D. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.

E. Provide separable sockets for liquids and flanges for air bulb elements.

F. Provide thermostats in aspirating boxes in front entrances, gymnasiums, high security areas, and where indicated.

G. Provide guards on thermostats in entrance vestibules, gymnasiums, and corridors..

H. Provide mixing dampers of opposed blade construction arranged to mix streams. Provide separate minimum outside air damper section adjacent to return air dampers with separate damper motor.

I. Provide isolation (two position) dampers of parallel blade construction.

J. Install damper motors on outside of duct in warm areas. Do not install motors in locations at outdoor temperatures.

K. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.

L. Install "hand/off/auto" selector switches to override automatic interlock controls when switch is in "hand" position.

M. Provide conduit and electrical wiring in accordance with Section 26 27 17.

3.03 MAINTENANCE

A. See Section 01 70 00 - Execution Requirements, for additional requirements relating to maintenance service.

B. Provide service and maintenance of control system for two years from Date of Substantial Completion.

C. Provide complete service of controls systems, including call backs, and submit written report of each service call.

END OF SECTION 23 09 13

SECTION 23 09 58

SEQUENCE OF OPERATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Air Handling Units

1.02 RELATED DOCUMENTS:

A. Section 23 09 13 - Instrumentation and Control Devices for HVAC

1.03 SYSTEM DESCRIPTION

A. The systems to be controlled under work of this section basically comprise (describe the scope of the project). The systems being controlled are (describe the configuration of and the type of systems included in the project).

B. This Section defines the manner and method by which controls function.

1.04 SUBMITTALS

A. Refer to Section 23 09 23 and Division 1 for requirements for control shop drawings, product data, User Manual, etc.

B. Programming Manual: Provide BAS system programming manual as well as documentation of site-specific programming prior to the start of Acceptance Phase.

1.05 PROJECT RECORD DOCUMENTS

A. Within two weeks of the completion of commissioning, provide record documents to represent the final control configuration with actual setpoints and tuning parameters as existed at acceptance.

B. Record documents shall be modified control drawings with the actual installed information. Drawings shall be delivered in both reproducible hard copy and electronic format in AutoCAD (current version) drawing files. Provide all supporting files, blocks, fonts, etc. required by the drawings.

C. Provide final points list as described above.

D. Provide final detailed wiring diagrams with all wire numbers and termination points indicated.

E. Accurately record final sequences and control logic made after submission of shop drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Sequences specified herein indicate the functional intent of the systems operation and may not fully detail every aspect of the programming that may be required to obtain the indicated operation. Contractor shall provide all programming necessary to obtain the sequences/system operation indicated.

B. Except as specified otherwise, throttling ranges, proportional bands, and cycle differentials shall be centered on the associated setpoint. All modulating feedback control loops shall include the capability of having proportional, integral, and derivative action. Unless the loop is specified “proportional only” or “P+I”, Contractor shall apply appropriate elements of integral and derivative gain to each control loop which shall result in stable operation, minimum settling time, and shall maintain the primary variable within the specified maximum allowable variance.

C. Scheduling Terminology: When air handlers are scheduled throughout the day, the following defines the terminology used (Designer coordinate with The State regarding actual occupancy schedules and initial setpoints):

1. OCCUPIED PERIOD: PERIOD OF TIME WHEN THE BUILDING IS IN USE AND OCCUPIED. UNLESS INDICATED OTHERWISE, THIS PERIOD IS DEFINED AS 7:30 AM - 9:00 PM, USER ADJUSTABLE, WEEKDAYS AND 7:30 AM TO 10:00PM SATURDAYS AND SUNDAYS. EXCLUDE ALL NATIONAL HOLIDAYS. GENERALLY SYSTEMS WILL BE FULLY OPERATIONAL THROUGHOUT THIS PERIOD AND VENTILATION AIR SHALL BE CONTINUOUSLY INTRODUCED. SPACE TEMPERATURE SETPOINTS WILL GENERALLY BE IN THE "NORMAL" RANGE OF 69-77°F.
2. Unoccupied period: Period of time when the building or zone is not in use and unoccupied. Ventilation air shall not be introduced.
3. Preoccupancy Period: Time prior to the Occupied period when the systems are returning the space temperatures from setback to "normal" or occupied setpoints (warm-up and cool-down). Ventilation air shall not be introduced unless outside air conditions permit free-cooling. Time period shall be determined by an optimum start strategy unless otherwise specified.
4. Setback Period: Setback will typically coincide start with the end of the occupied period and end with the start of the preoccupancy period, however it shall be provided with its own schedule. Generally systems will be off except to maintain a "setback" temperature.
    a. Where any sequence or occupancy schedule calls for more than one motorized unit to start simultaneously, the BAS start commands shall be staggered by 5 second (adj.) intervals to minimize inrush current.

D. Alarm messages specified throughout the sequences are assigned to discrete priority levels.

E. Wherever a value is indicated as adjustable (adj.), it shall be modifiable, with the proper privilege level, from the operator interface or via a function block menu. For these points, it is unacceptable to have to modify programming statements to change the setpoint.

F. When a power failure is detected in any phase, the BAS start commands shall be retracted immediately from all electrically powered units served by the failed power source. If the associated primary control unit (PCU) is powered by normal or emergency power, it may monitor its own power source as an indication of power status. If the PCU is powered by uninterruptable power supply (UPS), or if PCU is not capable of monitoring its own power for use in sequences, Contractor shall provide at least one voltage monitor (three phase when applicable) per building. When the BAS detects that power has been restored, all equipment for which the BAS start command had been retracted shall be automatically restarted on staggered 5 second intervals to minimize inrush current. When loss of equipment status coincides with a power failure, system shall not alarm individual equipment failures. Instead, only a single Level 2 alarm shall be enunciated as follows:
    1. BUILDING XXXX POWER FAILURE: Notify electric shop. Acknowledge alarm when power is restored.

G. Where reset action is specified in a sequence of operation, but a reset schedule is not indicated on the drawings, one of the following methods shall be employed:
    1. Contractor shall determine a fixed reset schedule which shall result in stable operation and shall maintain the primary variable within the specified maximum allowable variance.
    2. A floating reset algorithm shall be used which increments the secondary variable setpoint (setpoint of control loop being reset) on a periodic basis to maintain primary variable setpoint. The recalculation time and reset increment shall be chosen to maintain the primary variable within the specified maximum allowable variance.
    3. Primary variable shall control the devices directly using a PID feedback control loop without resetting the secondary variable. However, the control devices shall still modulate as necessary to maintain upper and lower limits on the secondary variable. Proportional band, integral gain, and derivative term shall be selected to maintain the primary variable

within the specified maximum allowable tolerance while minimizing overshoot and settling time. Contractor shall gain prior approval for implementing this method of reset.

H. Where a supply air temperature or duct pressure setpoint is specified to be reset by the space temperature of the zones calling for the most cooling/heating, the following method shall be employed:
   1. A floating reset algorithm shall be used which increments the secondary variable (e.g., supply air temperature or duct pressure) setpoint on a periodic basis to maintain primary variable (e.g. space temperature) setpoint. The reset increment shall be determined by the quantity of “need heat” or “need cool” requests from individual SCU's. A SCU's “need heat” virtual point shall activate whenever the zone's space temperature falls below the currently applicable (occupied or unoccupied) heating setpoint throttling range. A SCU's “need cool” virtual point shall activate whenever the zone's space temperature rises above the currently applicable (occupied, unoccupied, or economy) cooling setpoint throttling range. The recalculation time and reset increment shall be chosen to maintain the primary variable within the specified maximum allowable variance while minimizing overshoot and settling time. Reset range maximum and minimum values shall limit the setpoint range.

I. Where “prove operation” of a device (generally controlled by a digital output) is indicated in the sequence, it shall require that the BAS shall, after an adjustable time delay after the device is commanded to operate (feedback delay) , confirm that the device is operational via the status input. If the status point does not confirm operation after the time delay or anytime thereafter for an adjustable time delay (debounce delay) while the device is commanded to run, an alarm shall be enunciated audibly and via an alarm message at the operator interface and print at the alarm printers. A descriptive message shall be attached to the alarm message indicating the nature of the alarm and actions to be taken. Contractor shall provide messages to meet this intent. [Upon failure of equipment with redundant backup, run command shall be removed from equipment and the device shall be locked out until the alarm is manually acknowledged. Upon failure of equipment without redundant backup, run command shall remain energized and the alarm shall be latched until reset by an operator. BAS shall provide for adjustable maximum rates of change for increasing and decreasing output from the following analog output points:

J. Wherever a value is indicated to be dependent on another value (i.e.: setpoint plus 5°F) BAS shall use that equation to determine the value. Simply providing a virtual point that the operator must set is unacceptable. In this case three virtual points shall be provided. One to store the parameter (5°F), one to store the setpoint, and one to store the value which is the result of the equation.

3.02 AIR HANDLING UNITS - GENERAL

A. Logic Strategies: The factory-provided controller shall fully control the air handlers. Generally, it shall energize the AH (start the fans and activate control loops) as dictated for each air handle. The following indicates when and how the controls shall energize the AHs and control various common aspects of them. The following “logic strategies” shall be included by reference with each air handler with any specific clarifications required:
   1. Scheduled Occupancy: The programmable controller shall determine the occupancy periods (occupied, unoccupied, preoccupancy, and setback) as defined above. The following details the common control aspects related to the scheduled occupancy.
   2. Cooling Mode:
      a. Direct expansion refrigeration: upon a rise in space temperature above the programmed cooling setpoint, the unit shall energize the first compressor in the associated condensing unit. The hot gas bypass valve shall be modulated by the factory provided capacity controls to provide part-load capacity. On a continued rise in space temperature (and where so equipped), subsequent compressors shall be energized. Upon a fall in space temperature the compressor(s) shall de-energize in stages as they were energized.

3. Heating Mode:
    a. On a call for heating, the gas-fired burner module shall be energized and shall modulate to the lowest stage. Upon a continued fall in space temperature the gas burner shall modulate as required to meet the load in the space. Upon reaching setpoint in the space the reverse shall occur. The DAT sensor shall limit the leaving air heating temperature to a maximum of 105°F.
4. CO2 OA Control: when in occupied mode, the outdoor air damper shall modulate to maintain the outdoor airflow at setpoint. The bas shall calculate and reset the outdoor airflow setpoint based on the ventilation requirements as read by the space-mounted CO2 sensors and the outside air CO2 sensor. The amount of outside air will be increased above the minimum setting on a rise in CO2 above the delta setpoint between indoor space CO2 and outdoor CO2 of 450 ppm (adj). On a return to setpoint, the reverse occurs. Upon a rise in indoor space CO2 level above 1200 ppm, a high CO2 level will be displayed at the control panel. The exhaust fan (where equipped) shall automatically adjust its speed to track the OA damper. The associated relief hood damper (where exhaust fans are not equipped or the unit does not provide full integrated relief) shall interlock and open with the OA damper.
5. Airside Economizer: BAS shall modulate the mixing dampers to provide “free cooling” when conditions merit. The free cooling shall generally be staged before any mechanical cooling. While conditions merit, dampers shall be modulated in a DA PID loop to maintain mixed air temperature at a setpoint as specified for the individual unit. Economizer logic shall remain enabled during setback cooling where applicable. One of the following strategies shall be used to enable the economizer mode:
    a. Enthalpy Comparison: Economizer mode shall be active while the unit is energized AND when outside air enthalpy falls below return air enthalpy (with 2btu/# cycle differential). Economizer mode shall be inactive when outside air enthalpy rises above return air enthalpy, dampers shall return to their scheduled minimum positions as specified above.
6. HIGH OR LOW PRESSURE SAFETY: UPON ACTIVATION OF A HIGH OR LOW PRESSURE SAFETY SWITCH, AH SHALL BE DEENERGIZED, FANS SHALL BE DEENERGIZED VIA A HARD WIRED INTERLOCK [, AND AN INDICATION OF THE OPERATION SHALL BE SENSED BY THE CONTROLS. THE CONTROLS SHALL ENUNCIATE APPROPRIATE ALARM AND REMOVE AND LOCK OUT THE START COMMAND], [WHICH SHALL INITIATE "FAN FAILURE" ALARMS].

END OF SECTION 23 09 58

SECTION 23 31 00
HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal ductwork.

B. Casing and plenums.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 09 90 00 - Painting and Coating: Weld priming, weather resistant, paint or coating.

C. Section 11 40 00 - Foodservice Equipment: Supply of kitchen range hoods for placement by this Section.

D. Section 23 07 13 - Duct Insulation: External insulation and duct liner.

E. Section 23 33 00 - Air Duct Accessories.

F. Section 23 36 00 - Air Terminal Units.

G. Section 23 37 00 - Air Outlets and Inlets.

H. Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

E. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

F. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

G. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

H. ASTM C14 - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.

I. ASTM C14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, Culvert Pipe and (Metric).

J. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

K. ASTM C443M - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).

L. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

M. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

N. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

O. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; Sheet Metal and Air Conditioning Contractors' National Association.

P. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

Q. SMACNA (FGD) - Fibrous Glass Duct Construction Standards.

R. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors.

S. IECC 2012 - International Energy Conservation Code - Duct construciton standards, leakage testing

1.04 PERFORMANCE REQUIREMENTS

A. No variation of duct configuration or sizes permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for duct materials and duct connections.

C. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for all systems.

D. MANDATORY Test Reports: Pressure test all ductwork. Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual.

1. Utilize standard equation CL=FP^0.65 where F= Measured leakage rate in CFM per 100 square feet of duct surface, and P = Static Pressure of the test. Leakage rate shall not exceed 4.0 in that equation.

E. Manufacturer's Certificate: Certify that installation of glass fiber ductwork meet or exceed recommended fabrication and installation requirements.

F. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.06 QUALITY ASSURANCE

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

B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

1.07 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A, NFPA 90B, and NFPA 96 standards.

1.08 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

2.02 MATERIALS

A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.

B. Aluminum for Ducts: ASTM B209 (ASTM B209M); aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength.

C. Stainless Steel for Ducts: ASTM A 240/A 240M, Type 304.

D. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

E. Flexible Ducts:
   1. Two ply vinyl film supported by helically wound spring steel wire.
      a. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
      b. Maximum Velocity: 4000 fpm.
      c. Temperature Range: -10 degrees F to 160 degrees F.

F. Insulated Flexible Ducts:
   1. Two ply vinyl film supported by helically wound spring steel wire; fiberglass insulation; polyethylene vapor barrier film.
      a. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
      b. Maximum Velocity: 4000 fpm.
      c. Temperature Range: -10 degrees F to 160 degrees F.

G. All Ducts: Galvanized steel, unless otherwise indicated.

H. Low Pressure Supply (Heating Systems): 1 inch w.g. pressure class, galvanized steel.

I. Low Pressure Supply (System with Cooling Coils): 1 inch w.g. pressure class, galvanized steel.

J. Medium and High Pressure Supply (All VAV Primary Supply Duct between AHU and VAV Terminal Unit): 2 inch w.g. pressure class, galvanized steel.

K. Return and Relief: 1 inch w.g. pressure class, galvanized steel.

L. General Exhaust: 1 inch w.g. pressure class, galvanized steel.

M. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
   1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
   2. VOC Content: Not more than 250 g/L, excluding water.

2.03 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards and as indicated.

B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide turning vanes. .

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

E. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA HVAC Duct Construction Standards.

F. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Joints shall be minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.

G. Provide standard 45 degree lateral wye takeoffs unless otherwise indicated where 90 degree conical tee connections may be used.

H. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.04 MANUFACTURED DUCTWORK AND FITTINGS

A. Manufacture in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages,reinforcing, and sealing for operating pressures indicated.

B. Transverse Duct Connection System: SMACNA "J" rated rigidly class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips.
   1. Manufacturers:

2.05 CASINGS

A. Fabricate casings in accordance with SMACNA HVAC Duct Construction Standards and construct for operating pressures indicated.

B. Mount floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, provide liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

C. Mount floor mounted casings on 4 inch high concrete curbs. At floor, rivet panels on 8 inch centers to angles. Where floors are acoustically insulated, provide liner of 18 gage galvanized expanded metal mesh supported at 12 inch centers, turned up 12 inches at sides with sheet metal shields.

D. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.
   1. Provide clear wire glass observation ports, minimum 6 X 6 inch size.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide flexible duct connectors at all motorized equipment.

B. Install, support, and seal ducts in accordance with SMACNA HVAC Duct Construction Standards.

C. Install in accordance with manufacturer's instructions.

D. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.

E. Install and seal metal and flexible ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.

G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

H. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of air flow.

I. Use double nuts and lock washers on threaded rod supports.

J. Tape joints of PVC coated metal ductwork with PVC tape.

K. Connect terminal units to supply ducts with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

L. Connect diffusers or light troffer boots to low pressure ducts with 5 feet maximum length of flexible duct held in place with strap or clamp.

M. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.

N. Set plenum doors 6 to 12 inches above floor. Arrange door swings so that fan static pressure holds door in closed position.

O. Use stainless steel for ductwork exposed to view and stainless steel or carbon steel for ducts where concealed.

P. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

Q. At exterior wall louvers, seal duct to louver frame and install blank-out panels as required.

3.02 CLEANING AND TESTING

A. Conduct required duct-leakage testing for all ductwork as defined within this specification and otherwise noted in the contract documents.

3.03 SCHEDULES

A. Ductwork Material:
   1. Low Pressure Supply (Heating Systems): Steel, Aluminum.
   2. Low Pressure Supply (System with Cooling Coils): Steel, Aluminum.
   3. Return and Relief: Steel, Aluminum.
   4. General Exhaust: Steel, Aluminum.
   5. Outside Air Intake: Steel.
   6. Exposed round ductwork: Double-walled spiral.

B. Ductwork Pressure Class:
   1. Supply (Heating Systems): 1 inch
   2. Supply (System with Cooling Coils): 2 inch.
   3. Return and Relief: 1 inch.
   4. General Exhaust: 1 inch.
   5. Outside Air Intake: 2 inch.

END OF SECTION 23 31 00

SECTION 23 33 00

AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air turning devices/extractors.

B. Backdraft dampers - metal.

C. Backdraft dampers.

D. Combination fire and smoke dampers.

E. Duct access doors.

F. Duct test holes.

G. Fire dampers.

H. Flexible duct connections.

I. Smoke dampers.

J. Volume control dampers.

1.02 RELATED REQUIREMENTS

A. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.

B. Section 23 31 00 - HVAC Ducts and Casings.

C. Section 23 36 00 - Air Terminal Units: Pressure regulating damper assemblies.

D. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

B. NFPA 92 - Standard for Smoke Control Systems.

C. NFPA 92A - Standard for Smoke-Control Systems Utilizing Barriers and Pressure Differences.

D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible.

E. UL 33 - Safety Heat Responsive Links for Fire-Protection Service.

F. UL 555 - Standard for Fire Dampers.

G. UL 555S - Standard for Smoke Dampers.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide for shop fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.

C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers, duct access doors, and duct test holes.

D. Manufacturer's Installation Instructions: Provide instructions for fire dampers and combination fire and smoke dampers.

1.05 PROJECT RECORD DOCUMENTS

A. Record actual locations of access doors and test holes.

1.06 QUALITY ASSURANCE

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

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect dampers from damage to operating linkages and blades.

1.08 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Provide two of each size and type of fusible link.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

A. Manufacturers:
   1. Krueger: www.krueger-hvac.com/#sle.
   2. Ruskin Company: www.ruskin.com/#sle.
   3. Titus: www.titus-hvac.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

2.02 BACKDRAFT DAMPERS - METAL

2.03 BACKDRAFT DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Gravity Backdraft Dampers, Size 18 x 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

2.04 BACKDRAFT DAMPERS - FABRIC

A. Fabric Backdraft Dampers: Factory-fabricated, 18 gage, galvanized steel frame.
   1. Blades: Neoprene coated fabric material.
   2. Birdscreen: 1/2 inch nominal mesh of galvanized steel or aluminum.
   3. Maximum Velocity: 1000 fpm (5 m/sec) face velocity.

B. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: galvanized steel or extruded aluminum, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.05 COMBINATION FIRE AND SMOKE DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

C. Provide factory sleeve and collar for each damper.

D. Multiple Blade Dampers: Fabricate with 16 gage galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, stainless steel

jamb seals, 1/8 x 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock, and 1/2 inch actuator shaft.

E. Operators: UL listed and labelled spring return electric type suitable for 120 volts, single phase, 60 Hz. Provide end switches to indicate damper position. Locate damper operator on interior of duct and link to damper operating shaft.

F. Normally Closed Smoke Responsive Fire Dampers: Curtain type, opening by gravity upon actuation of electro thermal link, flexible stainless steel blade edge seals to provide constant sealing pressure.

G. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.06 DUCT ACCESS DOORS

A. Manufacturers:
   1. Nailor Industries Inc: www.nailor.com/#sle.
   2. Ruskin Company: www.ruskin.com/#sle.
   3. SEMCO Incorporated: www.semcoinc.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards and as indicated.

C. Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 1 inch thick insulation with sheet metal cover.
   1. Less Than 12 inches Square: Secure with sash locks.
   2. Up to 18 inches Square: Provide two hinges and two sash locks.
   3. Up to 24 x 48 inches: Three hinges and two compression latches with outside and inside handles.
   4. Larger Sizes: Provide an additional hinge.

D. Access doors with sheet metal screw fasteners are not acceptable.

2.07 DUCT TEST HOLES

A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

2.08 FIRE DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.

C. Ceiling Dampers: Galvanized steel, 22 gage frame and 16 gage flap, two layers 0.125 inch ceramic fiber on top side and one layer on bottom side for round flaps, with locking clip.

D. Horizontal Dampers: Galvanized steel, 22 gage frame, stainless steel closure spring, and lightweight, heat retardant non-asbestos fabric blanket.

E. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations or closure under air flow conditions. Configure with blades out of air stream except for 1.0 inch pressure class ducts up to 12 inches in height.

F. Multiple Blade Dampers: 16 gage galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, 1/8 x 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock.

G. Fusible Links: UL 33, separate at 160 degrees F with adjustable link straps for combination fire/balancing dampers.

2.09 FLEXIBLE DUCT CONNECTIONS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards and as indicated.

B. Flexible Duct Connections: Fabric crimped into metal edging strip.
   1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
      a. Net Fabric Width: Approximately 6 inches wide.
   2. Metal: 3 inches wide, 24 gage thick galvanized steel.

C. Leaded Vinyl Sheet: Minimum 0.55 inch thick, 0.87 lbs per sq ft, 10 dB attenuation in 10 to 10,000 Hz range.

2.10 SMOKE DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with NFPA 90A and UL 555S, and as indicated.

C. Dampers: UL Class 1 multiple blade type fire damper, normally closed automatically operated by 120V electric actuator.

2.11 VOLUME CONTROL DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com/#sle.
   2. Nailor Industries Inc: www.nailor.com/#sle.
   3. Ruskin Company: www.ruskin.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards and as indicated.

C. Splitter Dampers:
   1. Material: Same gage as duct to 24 inches size in either direction, and two gages heavier for sizes over 24 inches.
   2. Blade: Fabricate of double thickness sheet metal to streamline shape, secured with continuous hinge or rod.
   3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw .

D. Single Blade Dampers: Fabricate for duct sizes up to 6 x 30 inch.

E. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

F. End Bearings: Except in round ducts 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon or sintered bronze bearings.

G. Quadrants:
   1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.

2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA HVAC Duct Construction Standards. Refer to Section 23 31 00 for duct construction and pressure class.

B. Provide access doors at any location where dampers are concealed above inaccessible ceilings.

C. Provide flexible duct connectors at expansion joints and at all connections to motorized equipment.

D. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.

E. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96. Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated. Provide 4 x 4 inch for balancing dampers only. Review locations prior to fabrication.

F. Provide duct test holes where indicated and required for testing and balancing purposes.

G. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by authorities having jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.

H. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
   1. Smoke dampers shall be integrated into the "smoke purge control system". Dampers in the return ductwork shall be overridden to the open position when the smoke purge is activated.

I. Demonstrate re-setting of fire dampers to Owner's representative.

J. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

K. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment; see Section 22 05 48.

L. For fans developing static pressures of 5.0 inches and over, cover flexible connections with leaded vinyl sheet, held in place with metal straps.

M. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.

N. Use splitter dampers only where indicated.

O. Provide balancing dampers on high velocity systems where indicated. Refer to Section 23 36 00 - Air Terminal Units.

P. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 23 33 00

SECTION 23 34 23
HVAC POWER VENTILATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ceiling exhaust fans.

1.02 RELATED REQUIREMENTS

A. Section 23 05 13 - Common Motor Requirements for HVAC Equipment.

B. Section 23 05 48 - Vibration and Seismic Controls for HVAC Piping Equipment.

C. Section 23 33 00 - Air Duct Accessories: Backdraft dampers.

D. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. AMCA 99 - Standards Handbook.

B. AMCA 204 - Balance Quality and Vibration Levels for Fans.

C. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating.

D. AMCA (DIR) - [Directory of] Products Licensed Under AMCA International Certified Ratings Program; Air Movement and Control Association International, Inc..

E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans.

F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

G. NEMA MG 1 - Motors and Generators.

H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

I. UL 705 - Power Ventilators.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.

C. Manufacturer's Instructions: Indicate installation instructions.

D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum 5 years of documented experience.

B. Kitchen Range Hood Exhaust Fans: Comply with requirements of NFPA 96.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 FIELD CONDITIONS

A. Permanent ventilators may be used for ventilation during construction only after ductwork is clean, filters are in place, bearings have been lubricated, and fan has been test run under observation.

1.07 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Supply two sets of belts for each fan.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Greenheck: www.greenheck.com/#sle.

B. Broan.

C. American Coolair/ILG: www.coolair.com

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 POWER VENTILATORS - GENERAL

A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.

B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.

C. Sound Ratings: AMCA 301, tested to AMCA 300, and bearing AMCA Certified Sound Rating Seal.

D. Fabrication: Conform to AMCA 99.

E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.03 CABINET AND CEILING EXHAUST FANS

A. Manufacturers:
   1. Broan-NuTone, LLC: www.broan-nutone.com/#sle.
   2. Greenheck Fan Corporation: www.greenheck.com/#sle.
   3. Panasonic Corporation of North America: www.panasonic.com/#sle.
   4. American Coolair.

B. Performance: As Indicated on drawings.
   1. Motor: Refer to Section 23 05 13.

C. Centrifugal Fan Unit: V-belt or direct driven with galvanized steel housing lined with acoustic insulation, resilient mounted motor, motorized backdraft damper with junction box and wire whip to open upon activation of exhaust fan.

D. Disconnect Switch: Cord and plug in housing for thermal overload protected motor .

E. Grille: Molded white plastic or Aluminum with baked white enamel finish.

F. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure roof or wall exhausters with aluminum lag screws to roof curb or structure.

C. Extend ducts to roof or wall exhausters into roof curb or structure. Counterflash duct to roof or wall opening.

D. Hung Cabinet Fans:
   1. Install fans with resilient mountings and flexible electrical leads. Refer to Section 23 05 48.

2. Install flexible connections specified in Section 23 33 00 between fan and ductwork. Ensure metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

E. Provide sheaves required for final air balance.

F. Install backdraft dampers on inlet to roof and wall exhausters.

G. Provide backdraft dampers on outlet from cabinet and ceiling exhauster fans and as indicated.

END OF SECTION 23 34 23

SECTION 23 74 13

PACKAGED OUTDOOR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Packaged roof top unit.

B. Unit controls.

C. Remote panel.

D. Mounting curb and base.

E. Maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 07 62 00 - Sheet Metal Flashing and Trim.

B. Section 23 05 13 - Common motor requirements for HVAC Equipment.

C. Section 23 05 48 - Vibration and Seismic Con. for Equipment.

D. Section 23 40 00 - HVAC Air Cleaning Devices.

E. Section 23 09 13 - Instrumentation and Control Devices for HVAC: Control components, time clocks.

F. Section 23 09 13 - Instrumentation and Control Devices for HVAC: Installation of thermostats and other controls components.

G. Section 26 27 17 - Equipment Wiring: Installation and wiring of thermostats and other controls components; wiring from unit terminal strip to remote panel.

H. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment.

B. AHRI 270 - Sound Performance Rating of Outdoor Unitary Equipment.

C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

1.04 SUBMITTALS

A. See Section 01 33 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.

C. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.

D. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.

E. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.

F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

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

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from physical damage by storing off site until roof mounting curbs are in place, ready for immediate installation of units.

1.07 WARRANTY

A. Provide a five year warranty to include coverage for refrigeration compressors and heat exchangers.

1.08 MAINTENANCE SERVICE

A. Furnish service and maintenance of packaged roof top units for one year from Date of Substantial Completion.

B. Provide maintenance service with a two month interval as maximum time period between calls. Provide 24-hour emergency service on breakdowns and malfunctions.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. Submit copy of service call work order or report, and include description of work performed.

1.09 EXTRA MATERIALS

A. Provide two sets of filters.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. York / JCI

B. Trane

C. McQuay

D. Carrier

2.02 AIR CONDITIONING UNITS

A. General: Roof or ground mounted packaged units having gas burner rated for natural gas or LP/propane as scheduled and electric refrigeration.

B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, return fan, heat exchanger and burner, , energy recovery wheel (where noted in the schedule), factory-mounted controls, air filters, hot water heating coil, refrigerant cooling coil and variable-speed compressors and hot-gas reheat circuits, condenser coil and condenser fan as scheduled.

C. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Section 26 27 17.

2.03 FABRICATION

A. Cabinet: Galvanized steel with baked enamel finish, including access doors with piano hinges and locking handle. Structural members shall be minimum 18 gage, with access doors or panels of minimum 20 gage.

B. Insulation: two inch thick minimum glass fiber or injected foam, double-walled unit construction.

C. Supply and Return and Exhaust Fan as scheduled: Backward inclined, forward curved, or airfoil type, resiliently mounted with V-belt drive and adjustable variable pitch motor pulley, and rubber isolated hinge mounted high efficiency motor or direct drive as indicated. Isolate complete fan assembly. Provide factory-mounted variable-frequency drives for all fan motors.

D. Air Filters: Minimum efficiency reporting value (MERV) of at least 13.

2.04 BURNER

A. Gas Burner: Forced draft type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shut-off, intermittent spark or glow coil ignition, flame sensing device, and automatic 100 percent shut-off pilot. Provide turndown ratio as indicated in the schedule. Provide condensing burners as indicated in schedule.

B. Gas Burner Safety Controls: Energize ignition, limit time for establishment of flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, energize blower motor, and after air flow proven and slight delay, allow gas valve to open.

C. High Limit Control: Temperature sensor with fixed stop at maximum permissible setting, de-energize burner on excessive bonnet temperature and energize burner when temperature drops to lower safe value.

D. Supply Fan Control: Temperature sensor sensing bonnet temperatures and independent of burner controls, with provisions for continuous fan operation.

E. Where condensing burners are supplied, provide internally-mounted acid neutralization tank and all associated condensate removal piping.

2.05 EVAPORATOR OR INDOOR COILS

A. Provide copper tube aluminum fin coil assembly with galvanized drain pan and connection for cooling coils.

B. Provide thermostatic expansion valves for units of 6 tons capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons cooling capacity and larger.

2.06 COMPRESSOR

A. Provide hermetic compressors, 3600 rpm maximum, resiliently mounted with positive lubrication, crankcase heater, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gage ports, and filter drier.

B. Five minute timed off circuit to delay compressor start.

C. Outdoor thermostat to energize compressor above 35 degrees F ambient.

D. Provide step capacity control by variable-speed scroll technology and/or adjusting variable-speed compressors.

E. Provide hot-gas reheat coil for humidity control.

2.07 CONDENSER OR OUTDOOR COIL

A. Provide copper tube aluminum or copper fin coil assembly with subcooling rows and coil guard.

B. Provide direct drive propeller fans, resiliently mounted with fan guard, motor overload protection, wired to operate with compressor. Provide high efficiency fan motors.

C. Provide refrigerant pressure switches to cycle condenser fans.

2.08 MIXED AIR CASING

A. Dampers: Provide outside, return, and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fall to closed position.

B. Gaskets: Provide tight fitting dampers with edge gaskets.

C. Damper Operator, Units 7.5 Ton Cooling Capacity and Larger: 24 volt with gear train sealed in oil with spring return on.

D. Outdoor airflow monitoring station: Provided at intake of the unit.

E. Mixed Air Controls: Maintain selected supply air temperature and return dampers to minimum position on call for heating and above 70 degrees (F) ambient, or when ambient air enthalpy exceeds return air enthalpy.

2.09 OPERATING CONTROLS - GENERAL

A. Provide factory controller and all necessary sensors and components for operation of refrigerant system, fan VFDs based on static-pressure feedback, energy recovery wheel, humidity control function, and economizer function. The humidity control (dehumidification sequence) shall be capable of being enabled when the unit is in both heating and cooling modes. The humidistat setpoint shall govern control of this sequence.

B. See Specification Section 230993 - Sequence Of Operations, paragraphs 3.08 and 3.11 for required operatiing capabilities of the units.

C. Provide night control energized by central time clock to maintain lower thermostat setting, lock out refrigeration, close outside air damper and open return air damper, stop supply air fan, for night and unoccupied operation. Provide time delay to maintain outside air damper closed and return air damper open after switching to day and occupied operation.

2.10 OPERATING CONTROLS - SINGLE ZONE UNITS

A. Electric solid state microcomputer based room thermostat, located as indicated in service area with remote sensor located as indicated.

B. Room thermostat shall incorporate:
   1. Automatic switching from heating to cooling.
   2. Preferential rate control to minimize overshoot and deviation from set point.
   3. Set-up for four separate temperatures per day.
   4. CO2 level and OA damper control
   5. Economizer control and indicator
   6. Instant override of set point for continuous or timed period from one hour to 31 days.
   7. Short cycle protection.
   8. Programming based on weekdays, Saturday and Sunday.
   9. Switch selection features including imperial or metric display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
   10. Night setback function, including OA damper lockout.

C. Room thermostat display shall include:
   1. Time of day.
   2. Actual room temperature.
   3. Programmed temperature.
   4. Programmed time.
   5. Duration of timed override.
   6. Day of week.
   7. System model indication: heating, cooling, auto, off, fan auto, fan on.
   8. Stage (heating or cooling) operation.

D. Provide low limit thermostat in supply air to close outside air dampers and stop supply fan.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings.or illustrated by the manufacturer.

B. Verify that proper power supply is available.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NFPA 90A.

C. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

D. Locate remote panels where identified in field coordination meeting.

E. Tie unit into BAS as specified.

F. Pipe condensate to nearest roof drain.
   1. Where condensate is provided for a condensing burner applicaiton, provide heat tracing powered from the same power source as the convenience outlet associated with the RTU.

3.03 SYSTEM STARTUP

A. Prepare and start equipment. Adjust for proper operation.

3.04 CLOSEOUT ACTIVITIES

A. Demonstrate operation to Owner's maintenance personnel.

3.05 MAINTENANCE

A. Provide service and maintenance of packaged roof top units for one year year from Date of Substantial Completion.

B. Provide routine maintenance service with a three month interval as maximum time period between calls.

C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

D. After each service call, submit copy of service call work order or report that includes description of work performed.

END OF SECTION 23 74 13

SECTION 26 05 01
MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Execution and Closeout Requirements: Additional requirements for alterations work.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation and existing record documents.

D. Report discrepancies to Owner before disturbing existing installation.

E. Report discrepancies to Architect before disturbing existing installation.

F. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Obtain permission from Owner at least 24 hours before partially or completely disabling system.
   2. Make temporary connections to maintain service in areas adjacent to work area.

E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner before partially or completely disabling system.
   2. Notify local fire service.
   3. Make notifications at least 24 hours in advance.
   4. Make temporary connections to maintain service in areas adjacent to work area.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
   1. PCB- and DEHP-containing lighting ballasts.

2. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.

B. Remove, relocate, and extend existing installations to accommodate new construction.

C. Remove abandoned wiring to source of supply.

D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that remain or that are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

END OF SECTION 26 05 01

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single conductor building wire.

B. Underground feeder and branch-circuit cable.

C. Armored cable.

D. Metal-clad cable.

E. Wiring connectors.

F. Electrical tape.

G. Heat shrink tubing.

H. Oxide inhibiting compound.

I. Wire pulling lubricant.

J. Cable ties.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 01 - Minor Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.

C. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

E. Section 28 46 00 - Fire Detection and Alarm: Fire alarm system conductors and cables.

1.03 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire.

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation.

D. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape.

E. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes.

F. NECA 1 - Standard for Good Workmanship in Electrical Construction.

G. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC).

H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.

I. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems.

J. NFPA 70 - National Electrical Code.

K. UL 4 - Armored Cable.

L. UL 44 - Thermoset-Insulated Wires and Cables.

M. UL 83 - Thermoplastic-Insulated Wires and Cables.

N. UL 486A-486B - Wire Connectors.

O. UL 486C - Splicing Wire Connectors.

P. UL 486D - Sealed Wire Connector Systems.

Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape.

R. UL 1569 - Metal-Clad Cables.

1.04 ADMINISTRATIVE REQUIREMENTS

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

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

C. Sustainable Design Documentation: Submit manufacturer's product data on conductor and cable showing compliance with specified lead content requirements.

D. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

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

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation

below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.

H. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.

I. Conductor Material:
   1. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.

J. Minimum Conductor Size:
   1. Branch Circuits: 12 AWG.
      a. Exceptions:
         1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
         2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
         3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
   2. Control Circuits: 14 AWG.

K. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
      a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
   3. Color Code:
      a. 240/120 V High-Leg Delta, 3 Phase, 4 Wire System:
         1) Phase A: Black.
         2) Phase B (High-Leg): Orange.
         3) Phase C: Blue.
         4) Neutral/Grounded: White.
      b. 240/120 V, 1 Phase, 3 Wire System:
         1) Phase A: Black.
         2) Phase B: Red.

3) Neutral/Grounded: White.
c. Equipment Ground, All Systems: Green.
d. Isolated Ground, All Systems: Green with yellow stripe.
e. Travelers for 3-Way and 4-Way Switching: Pink.
f. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
1. Copper Building Wire:
a. Cerro Wire LLC: www.cerrowire.com/#sle.
b. Southwire Company: www.southwire.com/#sle.
c. Houston Wire & Cable co.
d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
1. Feeders and Branch Circuits:
a. Size 10 AWG and Smaller: Solid.
b. Size 8 AWG and Larger: Stranded.
2. Control Circuits: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
a. Size 4 AWG and Larger: Type XHHW-2.
b. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 ARMORED CABLE

A. Manufacturers:
1. AFC Cable Systems Inc: www.afcweb.com/#sle.
2. Encore Wire Corporation: www.encorewire.com/#sle.
3. Southwire Company: www.southwire.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type AC cable listed and labeled as complying with UL 4, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
1. Size 10 AWG and Smaller: Solid.
2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN.

F. Grounding: Combination of interlocking armor and integral bonding wire.
1. Provide additional full-size integral insulated equipment grounding conductor for redundant grounding, suitable for general purpose, non-essential electrical systems in non-hazardous patient care areas of health care facilities.

G. Armor: Steel, interlocked tape.

2.05 METAL-CLAD CABLE

A. Manufacturers:
1. AFC Cable Systems Inc: www.afcweb.com/#sle.

2. Encore Wire Corporation: www.encorewire.com/#sle.
3. Southwire Company: www.southwire.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
1. Size 10 AWG and Smaller: Solid.
2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

F. Provide dedicated neutral conductor for each phase conductor where indicated or required.

G. Grounding: Full-size integral equipment grounding conductor.
1. Provide additional isolated/insulated grounding conductor where indicated or required.

H. Armor: Steel, interlocked tape.

I. Provide PVC jacket applied over cable armor where indicated or required for environment of installed location.

2.06 WIRING CONNECTORS

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

B. Connectors for Grounding and Bonding: Comply with Section 26 05 26.

C. Wiring Connectors for Splices and Taps:
1. Copper Conductors Sizes 10 and under: Use twist-on insulated spring connectors.
2. Copper Conductors Sizes 8 and larger: Use mechanical connectors.

D. Wiring Connectors for Terminations:
1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
4. Conductors for Control Circuits: Use crimped terminals for all connections.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
1. Manufacturers:
a. 3M: www.3m.com/#sle.
b. Ideal Industries, Inc: www.idealindustries.com/#sle.
c. NSI Industries LLC: www.nsiindustries.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

H. Mechanical Connectors: Provide bolted type or set-screw type.
1. Manufacturers:

a. Burndy: www.burndy.com.
b. Ilsco: www.ilsco.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
1. Manufacturers:
a. Burndy: www.burndy.com.
b. Ilsco: www.ilsco.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 WIRING ACCESSORIES

A. Electrical Tape:
1. Manufacturers:
a. 3M: www.3m.com/#sle.
b. Plymouth Rubber Europa: www.plymouthrubber.com/#sle.
c. Substitutions: See Section 01 60 00 - Product Requirements.
2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
a. Product: 3 M.
b. Substitutions: See Section 01 60 00 - Product Requirements.
3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
a. Product: 3 M.
b. Substitutions: See Section 01 60 00 - Product Requirements.
4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
5. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
1. Manufacturers:
a. 3M: www.3m.com/#sle.
b. Burndy: www.burndy.com.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
1. Manufacturers:
a. Burndy: www.burndy.com.
b. Ideal Industries, Inc: www.idealindustries.com/#sle.
c. Ilsco: www.ilsco.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

D. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.

1. Manufacturers:
    a. 3M: www.3m.com/#sle.
    b. American Polywater Corporation: www.polywater.com/#sle.
    c. Ideal Industries, Inc: www.idealindustries.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as shown on the drawings.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

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

3.03 INSTALLATION

A. Circuiting Requirements:
1. Unless dimensioned, circuit routing indicated is diagrammatic.
2. When circuit destination is indicated and routing is not shown, determine exact routing required.
3. Arrange circuiting to minimize splices.
4. Include circuit lengths required to install connected devices within 10 ft of location shown.
5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is not permitted.

B. Install products in accordance with manufacturer's instructions.

C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

D. Install armored cable (Type AC) in accordance with NECA 120.

E. Install metal-clad cable (Type MC) in accordance with NECA 120.

F. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
2. Pull all conductors and cables together into raceway at same time.
3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

G. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

H. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

I. Terminate cables using suitable fittings.
   1. Armored Cable (Type AC):
      a. Use listed fittings and anti-short, insulating bushings.
      b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
   2. Metal-Clad Cable (Type MC):
      a. Use listed fittings.
      b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

J. Install conductors with a minimum of 12 inches of slack at each outlet.

K. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.

L. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

M. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

N. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

O. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
      b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
   3. Wet Locations: Use heat shrink tubing.

P. Insulate ends of spare conductors using vinyl insulating electrical tape.

Q. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

R. Identify conductors and cables in accordance with Section 26 05 53.

S. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

T. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

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

C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION 26 05 19

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Grounding and bonding components.

E. Provide all components necessary to complete the grounding system(s) consisting of:
   1. Existing metal underground water pipe.
   2. Metal frame of the building.
   3. Existing metal underground gas piping system.
   4. Metal underground gas piping system.

1.02 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction.

C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems.

D. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association.

E. NFPA 70 - National Electrical Code.

F. UL 467 - Grounding and Bonding Equipment.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 25 ohms.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Shop Drawings:

D. Product Data: Provide for grounding electrodes and connections.

E. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

G. Project Record Documents: Record actual locations of grounding electrode system components and connections.

H. Project Record Documents: Record actual locations of components and grounding electrodes.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

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

D. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.

E. Grounding Electrode System:
   1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
      a. Provide continuous grounding electrode conductors without splice or joint.
      b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
   2. Metal Underground Water Pipe(s):
      a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet

at an accessible location not more than 5 feet from the point of entrance to the building.
        b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
        c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
    3. Metal Building or Structure Frame:
        a. Provide connection to metal building or structure frame effectively grounded in accordance with NFPA 70 at nearest accessible location.

F. Service-Supplied System Grounding:
    1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
    2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.

G. Bonding and Equipment Grounding:
    1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
    2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
    3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
    4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
    5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
    6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
    7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
        a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
        b. Metal gas piping.
    8. Provide bonding for interior metal air ducts.
    9. Provide bonding for metal building frame where not used as a grounding electrode.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
    1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
    2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 05 19:
    1. Use insulated copper conductors unless otherwise indicated.
        a. Exceptions:
            1) Use bare copper conductors where installed underground in direct contact with earth.

2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
a. Exceptions:
1) Use mechanical connectors for connections to electrodes at ground access wells.
3. Unless otherwise indicated, use exothermic welded connections for accessible connections.
a. Exceptions:
1) Use exothermic welded connections for connections to metal building frame.
4. Manufacturers - Mechanical and Compression Connectors:
a. Advanced Lightning Technology (ALT): www.altfab.com/#sle.
b. Burndy: www.burndy.com.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
5. Manufacturers - Exothermic Welded Connections:
a. Burndy: www.burndy.com.
b. Cadweld, a brand of Erico International Corporation: www.erico.com/#sle.
c. ThermOweld, a brand of Continental Industries, Inc: www.thermoweld.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 MANUFACTURERS

A. Cooper Power Systems: www.cooperpower.com.

B. Framatome Connectors International: www.fciconnect.com.

C. Lightning Master Corporation: www.lightningmaster.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 CONNECTORS AND ACCESSORIES

A. Mechanical Connectors: Bronze.
1. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wire: Stranded copper.

C. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as shown on the drawings.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify existing conditions prior to beginning work.

E. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

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

B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.

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

D. Identify grounding and bonding system components in accordance with Section 26 05 53.

E. Provide bonding to meet requirements described in Quality Assurance.

F. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing. Each of branch circuits and feeder circuits shall have dedicated equipment grounding conductor, sharing this conductor with other grounding conductors is not permitted.

3.03 FIELD QUALITY CONTROL

A. Perform inspection in accordance with Section 01 40 00.

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

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

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

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

END OF SECTION 26 05 26

SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete equipment pads.

B. Section 05 50 00 - Metal Fabrications: Materials and requirements for fabricated metal supports.

C. Section 26 05 34 - Conduit: Additional support and attachment requirements for conduits.

D. Section 26 05 37 - Boxes: Additional support and attachment requirements for boxes.

E. Section 26 51 00 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

D. MFMA-4 - Metal Framing Standards Publication.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction.

F. NFPA 70 - National Electrical Code.

G. UL 5B - Strut-Type Channel Raceways and Fittings.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

D. Installer's Qualifications: Include evidence of compliance with specified requirements.

E. Product Data: Provide manufacturer’s catalog data for fastening systems.

F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with applicable building code.

C. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

D. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

E. Installer Qualifications for Field-Welding: As specified in Section 05 50 00.

F. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   2. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 1.5. Include consideration for vibration, equipment operation, and shock loads where applicable.
   4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
      a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
      c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Materials for Metal Fabricated Supports: Comply with Section 05 50 00.

C. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.

1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
2. Conduit Clamps: Bolted type unless otherwise indicated.
3. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Erico International Corporation: www.erico.com/#sle.
    c. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
    d. Thomas & Betts Corporation: www.tnb.com/#sle.
    e. Substitutions: See Section 01 60 00 - Product Requirements.

D. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
1. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Erico International Corporation: www.erico.com/#sle.
    c. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
    d. Thomas & Betts Corporation: www.tnb.com/#sle.
    e. Substitutions: See Section 01 60 00 - Product Requirements.

E. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
1. Comply with MFMA-4.
2. Channel (Strut) Used as Raceway (only where specifically indicated): Listed and labeled as complying with UL 5B.
3. Channel Material:
    a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
    b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
4. Minimum Channel Thickness: Steel sheet, 12 gage, 0.1046 inch.
5. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
6. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Thomas & Betts Corporation: www.tnb.com/#sle.
    c. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.
    e. Source Limitations: Furnish channels (struts) and associated fittings, accessories, and hardware produced by a single manufacturer.

F. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
    a. Equipment Supports: 1/2 inch diameter.
    b. Single Conduit up to 1 inch (27mm) trade size: 1/4 inch diameter.
    c. Single Conduit larger than 1 inch (27mm) trade size: 3/8 inch diameter.
    d. Trapeze Support for Multiple Conduits: 3/8 inch diameter.
    e. Outlet Boxes: 1/4 inch diameter.
    f. Luminaires: 1/4 inch diameter.

G. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.

4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Powder-actuated fasteners are not permitted.
9. Hammer-driven anchors and fasteners are not permitted.
10. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    a. Comply with MFMA-4.
    b. Channel Material: Use galvanized steel.
    c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

2.02 MANUFACTURERS

A. Thomas & Betts Corporation: www.tnb.com.

B. Threaded Rod Company: www.threadedrod.com.

C. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 MATERIALS

A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.

B. Supports: Fabricated of structural steel or formed steel members; galvanized.

C. Anchors and Fasteners:
1. Do not use powder-actuated anchors.
2. Obtain permission from Architect before using powder-actuated anchors.
3. Concrete Structural Elements: Use precast inserts.
4. Steel Structural Elements: Use beam clamps.
5. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
6. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use hollow wall fasteners.
7. Solid Masonry Walls: Use expansion anchors.
8. Sheet Metal: Use sheet metal screws.
9. Wood Elements: Use wood screws.

D. Formed Steel Channel:
1. Product: manufactured by [B-Line.
2. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

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

B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Equipment Support and Attachment:
   1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
   2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Conduit Support and Attachment: Also comply with Section 26 05 34.

I. Box Support and Attachment: Also comply with Section 26 05 37.

J. Interior Luminaire Support and Attachment: Also comply with Section 26 51 00.

K. Exterior Luminaire Support and Attachment: Also comply with Section 26 56 00.

L. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

M. Secure fasteners according to manufacturer's recommended torque settings.

N. Remove temporary supports.

O. Identify independent electrical component support wires above accessible ceilings (only where specifically indicated or permitted) with color distinguishable from ceiling support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION 26 05 29

SECTION 26 05 34

CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Flexible metal conduit (FMC).

C. Liquidtight flexible metal conduit (LFMC).

D. Electrical metallic tubing (EMT).

E. Conduit fittings.

F. Accessories.

G. Conduit, fittings and conduit bodies.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC), armored cable (Type AC), and manufactured wiring systems, including uses permitted.

C. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

D. Section 26 05 29 - Hangers and Supports for Electrical Systems.

E. Section 26 05 37 - Boxes.

F. Section 26 0553 - Identification for Electrical Systems.

G. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

H. Section 31 23 16 - Excavation.

I. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

1.03 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC).

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S).

C. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit -- Aluminum (ERMC-A).

D. NECA 1 - Standard for Good Workmanship in Electrical Construction.

E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT).

F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

G. NFPA 70 - National Electrical Code.

H. UL 1 - Flexible Metal Conduit.

I. UL 6 - Electrical Rigid Metal Conduit-Steel.

J. UL 360 - Liquid-Tight Flexible Steel Conduit.

K. UL 514B - Conduit, Tubing, and Cable Fittings.

L. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings.

M. UL 797 - Electrical Metallic Tubing-Steel.

1.04 ADMINISTRATIVE REQUIREMENTS

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

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

C. Shop Drawings:
   1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
   2. Include proposed locations of roof penetrations and proposed methods for sealing.

D. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2 inch (53 mm) trade size and larger.

E. Product Data: Provide for metallic conduit and flexible metal conduit.

F. Samples of Materials Actually Delivered to Site:
   1. Two pieces each of conduit, 2 feet long.

G. Project Record Documents: Accurately record actual routing of conduits larger than 2 inches.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

D. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

B. Accept conduit on site. Inspect for damage.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

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

B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.

C. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit.

D. Concealed Within Hollow Stud Walls: Use electrical metallic tubing (EMT).

E. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).

F. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit.

G. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit.

H. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
   1. Locations subject to physical damage include, but are not limited to:
      a. Where exposed below 8 feet, except within electrical and communication rooms or closets.

I. Exposed, Exterior: Use galvanized steel rigid metal conduit.

J. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.

K. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
   1. Maximum Length: 6 feet.

L. Connections to Vibrating Equipment:
   1. Dry Locations: Use flexible metal conduit.
   2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
   3. Maximum Length: 6 feet unless otherwise indicated.
   4. Vibrating equipment includes, but is not limited to:
      a. Motors.
      b. HVAC equipment.

M. Fished in Existing Walls, Where Necessary: Use flexible metal conduit.

2.02 CONDUIT REQUIREMENTS

A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.

B. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.

C. Minimum Conduit Size, Unless Otherwise Indicated:
   1. Branch Circuits: 3/4 inch (21 mm) trade size.
   2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
   3. Control Circuits: 1/2 inch (16 mm) trade size.
   4. Flexible Connections to Luminaires: 1/2 inch (16 mm) trade size.
   5. Underground, Interior: 3/4 inch (21 mm) trade size.

D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com/#sle.

2. Republic Conduit: www.republic-conduit.com/#sle.
3. Wheatland Tube Company: www.wheatland.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 METAL CONDUIT

A. Manufacturers:
1. Allied Tube & Conduit: www.alliedtube.com.
2. Beck Manufacturing, Inc: www.beckmfg.com.
3. Wheatland Tube Company: www.wheatland.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Rigid Steel Conduit: ANSI C80.1.

C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.05 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
1. AFC Cable Systems, Inc: www.afcweb.com/#sle.
2. Electri-Flex Company: www.electriflex.com/#sle.
3. International Metal Hose: www.metalhose.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Description: Fittings with insulated bushing complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.

D. Description: Interlocked steel construction.

E. Fittings: NEMA FB 1.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:

1. AFC Cable Systems, Inc: www.afcweb.com.
2. Electri-Flex Company: www.electriflex.com.
3. International Metal Hose: www.metalhose.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Description: Fittings with insulated bushing complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.

2.07 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
1. Allied Tube & Conduit: www.alliedeg.com.
2. Republic Conduit: www.republic-conduit.com/#sle.
3. Wheatland Tube Company: www.wheatland.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
c. Thomas & Betts Corporation: www.tnb.com/#sle.
d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Description: Fittings with insulated bushings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Connectors and Couplings: Use compression (gland) or set-screw type.
a. Do not use indenter type connectors and couplings.
5. Damp or Wet Locations (where permitted): Use fittings listed for use in wet locations.
6. Embedded Within Concrete (where permitted): Use fittings listed as concrete-tight. Fittings that require taping to be concrete-tight are acceptable.

2.08 ACCESSORIES

A. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.

B. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.

C. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

D. Modular Seals for Conduit Penetrations: Rated for minimum of 40 psig; Suitable for the conduits to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify routing and termination locations of conduit prior to rough-in.

E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

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

B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated and routing is not shown, determine exact routing required.
   3. Conceal all conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Arrange conduit to maintain adequate headroom, clearances, and access.
   6. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
   7. Arrange conduit to provide no more than 150 feet between pull points.
   8. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
   9. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
   10. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
      a. Heaters.
      b. Hot water piping.
      c. Flues.
   11. Group parallel conduits in the same area together on a common rack.

E. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
   4. Use conduit strap to support single surface-mounted conduit.
      a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
   5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
   6. Use conduit clamp to support single conduit from beam clamp or threaded rod.

7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
8. Use of spring steel conduit clips for support of conduits is not permitted.
9. Use of wire for support of conduits is not permitted.
    a. For securing conduits to studs in hollow stud walls.
    b. For suspending conduits supported by spring steel conduit clips (only where specifically indicated or permitted).

F. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

H. Hazardous (Classified) Locations: Where conduits cross boundaries of hazardous (classified) locations, provide sealing fittings located as indicated or in accordance with NFPA 70.

I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where conduits are subject to earth movement by settlement or frost.

J. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.

2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

K. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

L. Provide grounding and bonding in accordance with Section 26 05 26.

M. Identify conduits in accordance with Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

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

3.05 PROTECTION

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

3.06 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

B. Route conduit through roof openings for piping and ductwork wherever possible. Where separate roofing penetration is required, coordinate location and installation method with roofing installation specified in Section roofing section.

END OF SECTION 26 05 34

SECTION 26 05 37

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Wall and ceiling outlet boxes.

D. Pull and junction boxes.

1.02 RELATED REQUIREMENTS

A. Section 07 84 00 - Firestopping.

B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

C. Section 26 05 29 - Hangers and Supports for Electrical Systems.

D. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

E. Section 26 27 26 - Wiring Devices:
   1. Wall plates.

F. Section 26 2716 - Electrical Cabinets and Enclosures.

G. Section 26 2726 - Wiring Devices: Wall plates in finished areas, floor box service fittings, fire-rated poke-through fittings, and access floor boxes.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices.

C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

G. NFPA 70 - National Electrical Code.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

J. UL 508A - UL Standard for Safety Industrial Control Panels.

K. UL 514A - Metallic Outlet Boxes.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.

4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.

C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Keys for Lockable Enclosures: Two of each different key.

D. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use suitable concrete type boxes where flush-mounted in concrete.
4. Use suitable masonry type boxes where flush-mounted in masonry walls.
5. Use raised covers suitable for the type of wall construction and device configuration where required.
6. Use shallow boxes where required by the type of wall construction.
7. Do not use "through-wall" boxes designed for access from both sides of wall.

8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
12. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
13. Wall Plates: Comply with Section 26 27 26.
14. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hubbell Incorporated; Bell Products; _____: www.hubbell-rtb.com/#sle.
    c. Thomas & Betts Corporation: www.tnb.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
3. Junction and Pull Boxes Larger Than 100 cubic inches:
    a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
    a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
    b. Back Panels: Painted steel, removable.
    c. Terminal Blocks: Provide voltage/current ratings and terminal quantity suitable for purpose indicated, with 25 percent spare terminal capacity.
5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
6. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
    c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MANUFACTURERS

A. Appleton Electric: www.appletonelec.com.

B. Steel City

C. Substitutions: Reco, Inc. See Section 01 60 00 - Product Requirements.

2.03 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
2. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.

D. Wall Plates for Finished Areas: As specified in Section 26 2726.

2.04 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Hinged Enclosures: As specified in Section 26 2716.

C. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
   1. Material: Galvanized cast iron; Cast Aluminum.
   2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

D. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
   1. Material: Galvanized cast iron; Cast Aluminum.
   2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
   3. Cover Legend: "ELECTRIC".

PART 3 EXECUTION

3.01 EXAMINATION

3.02

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

3.03 INSTALLATION

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

B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Box Supports:
   1. Secure and support boxes in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

E. Install boxes plumb and level.

F. Flush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
   3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

G. Install boxes as required to preserve insulation integrity.

H. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

I. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.

J. Close unused box openings.

K. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

L. Provide grounding and bonding in accordance with Section 26 05 26.

M. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.

N. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.

O. Coordinate installation of outlet boxes for equipment connected under Section 26 2717.

P. Set wall mounted boxes at elevations to accommodate mounting heights indicated.

Q. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
   1. Adjust box locations up to 10 feet if required to accommodate intended purpose.

R. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.

S. Maintain headroom and present neat mechanical appearance.

T. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

U. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

V. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

W. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

X. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

Y. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

Z. Use flush mounting outlet box in finished areas.

AA. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

AB. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.

AC. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

AD. Use stamped steel bridges to fasten flush mounting outlet box between studs.

AE. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

AF. Use adjustable steel channel fasteners for hung ceiling outlet box.

AG. Do not fasten boxes to ceiling support wires.

AH. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.

AI. Use gang box where more than one device is mounted together. Do not use sectional box.

AJ. Use gang box with plaster ring for single device outlets.

AK. Use cast outlet box in exterior locations exposed to the weather and wet locations.

AL. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.04 ADJUSTING

A. Adjust floor boxes flush with finish flooring material.

B. Adjust flush-mounting outlets to make front flush with finished wall material.

C. Install knockout closures in unused box openings.

3.05 CLEANING

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

3.06 PROTECTION

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

END OF SECTION 26 05 37

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical identification requirements.

B. Identification nameplates and labels.

C. Wire and cable markers.

D. Voltage markers.

E. Warning signs and labels.

F. Field-painted identification of conduit.

1.02 RELATED REQUIREMENTS

A. Section 09 91 13 - Exterior Painting.

B. Section 09 90 00 - Painting and Coating.

C. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

D. Section 26 27 26 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.

1.03 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs.

B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels.

C. NFPA 70 - National Electrical Code.

D. UL 969 - Marking and Labeling Systems.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Shop Drawings: Provide schedule of items to be identified indicating proposed designations, materials, legends, and formats.

D. Product Data: Provide catalog data for nameplates, labels, and markers.

E. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.07 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

1.08 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements for additional requirements.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.

B. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Panelboards:
         1) Identify power source and circuit number. Include location when not within sight of equipment.
         2) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
         3) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
      b. Enclosed switches, circuit breakers, and motor controllers:
   2. Service Equipment:
      a. Use identification nameplate to identify each service disconnecting means.

C. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
   3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:

D. Identification for Raceways:
   1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet.
   2. Use voltage markers or color-coded bands to identify systems other than normal power system for accessible conduits at maximum intervals of 20 feet.
      a. Color-Coded Bands: Use field-painting or vinyl color coding electrical tape to mark bands 3 inches wide.
         1) Color Code:
         2) Field-Painting: Comply with Section 09 91 23 and 09 91 13.
         3) Vinyl Color Coding Electrical Tape: Comply with Section 26 05 19.
   3. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify circuits enclosed for accessible conduits at wall penetrations, at floor penetrations, at roof penetrations, and at equipment terminations when source is not within sight.
   4. Use identification labels, handwritten text using indelible marker, or plastic marker tags to identify spare conduits at each end. Identify purpose and termination location.
   5. Use voltage markers to identify highest voltage present for wireways at maximum intervals of 20 feet.

E. Identification for Boxes:

1. Use voltage markers to identify highest voltage present.
2. Use voltage markers or color coded boxes to identify systems other than normal power system.
    a. Color-Coded Boxes: Field-painted in accordance with Section 09 91 23 and 09 91 13 per the same color code used for raceways.

F. Identification for Devices:
1. Wiring Device and Wallplate Finishes: Comply with Section 26 27 26.
2. Use identification label to identify fire alarm system devices.
3. Use identification label to identify receptacles protected by upstream GFI protection, where permitted.

G. Identification for Luminaires:
1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

2.02 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Seton Identification Products: www.seton.com/aec.

C. HellermannTyton: www.hellermanntyton.com.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Manufacturers:
    a. Brimar Industries, Inc: www.brimar.com/#sle.
    b. Kolbi Pipe Marker Co; _____: www.kolbipipemarkers.com/#sle.
    c. Seton Identification Products; _____: www.seton.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Materials:
    a. Indoor Clean, Dry Locations: Use plastic nameplates.
    b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Manufacturers:
    a. Brady Corporation: www.bradyid.com/#sle.
    b. Brother International Corporation: www.brother-usa.com/#sle.
    c. Panduit Corp: www.panduit.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
   1. Minimum Size: 1 inch by 2.5 inches.
   2. Legend:
      a. System designation where applicable:
         1) Emergency Power System: Identify with text "EMERGENCY".
         2) Fire Alarm System: Identify with text "FIRE ALARM".
      b. Equipment designation or other approved description.
   3. Text: All capitalized unless otherwise indicated.
   4. Minimum Text Height:
      a. System Designation: 1 inch.
      b. Equipment Designation: 1/2 inch.
   5. Color:
      a. Normal Power System: White text on black background.

D. Nameplates: Engraved three-layer laminated plastic, black letters on white background.

E. Locations:
   1. Each electrical distribution and control equipment enclosure.
   2. Communication cabinets.
   3. Disconnect switches, and starters.

F. Letter Size:
   1. Use 1/8 inch letters for identifying individual equipment and loads.
   2. Use 1/4 inch letters for identifying grouped equipment and loads.

2.04 WIRE AND CABLE MARKERS

A. Manufacturers:
   1. Brady Corporation: www.bradyid.com/#sle.
   2. HellermannTyton: www.hellermanntyton.com/#sle.
   3. Panduit Corp: www.panduit.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.

F. Minimum Text Height: 1/8 inch.

G. Color: Black text on white background unless otherwise indicated.

H. Description: split sleeve type wire markers.

I. Locations: Each conductor at panelboard gutters, pull boxes, outlet boxes, and junction boxes each load connection.

J. Legend:
   1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
   2. Control Circuits: Control wire number indicated on shop drawings.

2.05 VOLTAGE MARKERS

A. Manufacturers: Panduit Corp
   1. Brady Corporation; _____: www.bradyid.com/#sle.
   2. Brimar Industries, Inc: www.brimar.com/#sle.

3. Panduit Corp.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.

C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.

D. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches.
2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches.
4. Markers for Junction Boxes: 1/2 by 2 1/4 inches.

E. Legend:
1. Markers for Voltage Identification: Highest voltage present.
2. Markers for System Identification:
   a. Emergency Power System: Text "EMERGENCY".
   b. Other Systems: Type of service.

F. Color: Black text on orange background unless otherwise indicated.

G. Location: Furnish markers for each conduit longer than 6 feet.

H. Spacing: 20 feet on center.

I. Color:
1. 208 Volt System: Yellow.
2. Fire Alarm System: Red.

J. Legend:
1. 208 Volt System: yellow.
2. Fire Alarm System: red.

2.06 WARNING SIGNS AND LABELS

A. Manufacturers:
1. Brimar Industries, Inc: www.brimar.com/#sle.
2. Clarion Safety Systems, LLC; _____: www.clarionsafety.com/#sle.
3. Seton Identification Products; _____: www.seton.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

C. Warning Signs:
1. Materials:
   a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
   b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
3. Minimum Size: 7 by 10 inches unless otherwise indicated.

D. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

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

B. Degrease and clean surfaces to receive nameplates and labels.

3.02 INSTALLATION

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

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   1. Surface-Mounted Equipment: Enclosure front.
   2. Flush-Mounted Equipment: Inside of equipment door.
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Branch Devices: Adjacent to device.
   6. Interior Components: Legible from the point of access.
   7. Conduits: Legible from the floor.
   8. Boxes: Outside face of cover.
   9. Conductors and Cables: Legible from the point of access.
   10. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Secure rigid signs using stainless steel screws.

G. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION 26 05 53

SECTION 26 24 16
PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Power distribution panelboards.

B. Lighting and appliance panelboards.

C. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

D. Section 26 05 73 - Power System Studies: Additional criteria for the selection and adjustment of equipment and associated protective devices specified in this section.

E. Section 26 28 13 - Fuses: Fuses for fusible switches and spare fuse cabinets.

F. Section 26 43 00 - Surge Protective Devices.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NECA 407 - Standard for Installing and Maintaining Panelboards.

C. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

D. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).

E. NEMA PB 1 - Panelboards.

F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems.

H. NFPA 70 - National Electrical Code.

I. UL 67 - Panelboards.

J. UL 98 - Enclosed and Dead-Front Switches.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
   1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.

C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Include wiring diagrams showing all factory and field connections.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

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

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

PART 2 PRODUCTS

2.01 POWER DISTRIBUTION PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Products:
   1. SQ D .
   2. General Electric.
   3. Eaton Cutler Hammer.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Circuit Breakers:

1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.
2. Provide thermal magnetic circuit breakers unless otherwise indicated.
3. Provide electronic trip circuit breakers where indicated.

D. Description: NEMA PB 1, circuit breaker type.

E. Circuit Breaker Accessories: Trip units and auxiliary switches as indicated.

2.02 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Products:
1. SQD.
2. General Electric.
3. Eaton Cutler Hammer.
4. Substitutions: See Section 01 60 00 - Product Requirements.

C. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

D. Manufacturers:
1. SQ.D or Equal.
2. Substitutions: See Section 01 60 00 - Product Requirements.

E. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

2.03 LOAD CENTERS

A. Description: Circuit breaker type load centers listed and labeled as complying with UL 67; ratings, configurations, and features as indicated on the drawings.

B. Bussing:
1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
2. Bus Material: Aluminum or copper.

C. Circuit Breakers: Thermal magnetic plug-in type.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Fusible Switches:
1. Description: Quick-make, quick-break, dead-front fusible switch units complying with NEMA KS 1, and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
2. Fuse Clips: As required to accept indicated fuses.
3. Provide externally operable handle with means for locking in the OFF position. Provide means for locking switch cover in the closed position. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

2.05 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive panelboards.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

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

B. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1 (general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required supports in accordance with Section 26 05 29.

E. Install panelboards plumb.

F. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.

G. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.

H. Mount floor-mounted power distribution panelboards on properly sized 4 inch high concrete pad constructed in accordance with Section 03 30 00.

I. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.

J. Provide grounding and bonding in accordance with Section 26 05 26.

K. Install all field-installed branch devices, components, and accessories.

L. Provide fuses complying with Section 26 28 13 for fusible switches as indicated.

M. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed according to Section 26 05 73.

N. Install panelboards in accordance with NEMA PB 1.1 and NECA 1.

O. Install panelboards plumb. Install recessed panelboards flush with wall finishes, where installed surface mounted secure or anchor panelboard to brick or cinder block wall.

P. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.

Q. Provide filler plates to cover unused spaces in panelboards.

R. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
   1. Emergency and night lighting circuits.
   2. Fire detection and alarm circuits.
   3. Communications equipment circuits.
   4. Intrusion detection and access control system circuits.
   5. Video surveillance system circuits.

S. Identify panelboards in accordance with Section 26 05 53.

T. Provide computer-generated circuit directory for each lighting and appliance panelboard and each power distribution panelboard provided with a door, clearly and specifically indicating the loads served. Identify spares and spaces.

U. Provide identification nameplate for each panelboard in accordance with Section 26 0553.

V. Provide arc flash warning labels in accordance with NFPA 70.

W. Provide spare conduits out of each recessed panelboard to an accessible location above ceiling. Identify each as SPARE.

1. Minimum spare conduits: 5 empty 1 inch.

X. Ground and bond panelboard enclosure according to Section 26 0526.

3.03 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01 40 00.

B. Perform field inspection and testing in accordance with Section 01 4000.

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

D. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

E. Test GFCI circuit breakers to verify proper operation.

F. Test shunt trips to verify proper operation.

G. Procure services of a qualified manufacturer's representative to observe installation and assist in inspection, testing, and adjusting. Include manufacturer's reports with field quality control submittals.

H. Correct deficiencies and replace damaged or defective panelboards or associated components.

I. Perform inspections and tests listed in NETA STD ATS, Section 7.5 for switches, Section 7.6 for circuit breakers.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust alignment of panelboard fronts.

C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 26 24 16

SECTION 26 27 17
EQUIPMENT WIRING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

A. Section 26 05 34 - Conduit.

B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables (600 V and Less).

C. Section 26 05 37 - Boxes.

D. Section 26 27 26 - Wiring Devices.

1.03 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices.

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications.

C. NFPA 70 - National Electrical Code.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 COORDINATION

A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.

B. Determine connection locations and requirements.

C. Sequence rough-in of electrical connections to coordinate with installation of equipment.

D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Conform to NEMA WD 1.
   2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
   4. Product:
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Disconnect Switches: As specified in Section and in individual equipment sections.

C. Wiring Devices: As specified in Section 26 27 26.

D. Flexible Conduit: As specified in Section 26 05 34.

E. Wire and Cable: As specified in Section 26 05 19.

F. Boxes: As specified in Section 26 05 37.

2.02 EQUIPMENT CONNECTIONS

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

END OF SECTION 26 27 17

SECTION 26 27 26

WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Wall plates.

1.02 RELATED REQUIREMENTS

A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Manufactured wiring systems for use with access floor boxes with compatible pre-wired connectors.

B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

C. Section 26 05 33.23 - Surface Raceways: Surface raceway systems, including multioutlet assemblies.

D. Section 26 05 37 - Boxes.

E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

F. Section 26 09 23 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors, in-wall time switches, and in-wall interval timers.

G. Section 26 27 17 - Equipment Wiring: Cords and plugs for equipment.

H. Section 26 29 13 - Enclosed Controllers: Manual motor starters and horsepower rated motor-starting switches without overload protection.

I. Section 27 10 05 - Structured Cabling for Voice and Data - Inside-Plant: Voice and data jacks.

1.03 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for.

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification).

C. NECA 1 - Standard for Good Workmanship in Electrical Construction.

D. NECA 130 - Standard for Installing and Maintaining Wiring Devices.

E. NEMA WD 1 - General Color Requirements for Wiring Devices.

F. NEMA WD 6 - Wiring Devices - Dimensional Specifications.

G. NFPA 70 - National Electrical Code.

H. UL 20 - General-Use Snap Switches.

I. UL 498 - Attachment Plugs and Receptacles.

J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices.

K. UL 943 - Ground-Fault Circuit-Interrupters.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.

4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
5. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
6. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

B. Sequencing:
1. Do not install wiring devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Operation and Maintenance Data:
1. GFCI Receptacles: Include information on status indicators.

E. Project Record Documents: Record actual installed locations of wiring devices.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Wall Plates: One of each style, size, and finish.
3. Extra Flush Floor Service Fittings: Two of each type.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

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

D. Products: Listed, classified, and labeled as suitable for the purpose intended.

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

1.08 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Furnish two of each style, size, and finish wall plate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hubbell Incorporated: www.hubbell-wiring.com.

B. Leviton Manufacturing Company, Inc: www.leviton.com.

C. Lutron Electronics Company, Inc: www.lutron.com.

D. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us

E. Cooper Wiring Devices: www.cooperwiringdevices.com.

F. Leviton Manufacturing, Inc: www.leviton.com.

G. Substitutions: See Section 01 60 00 - Product Requirements.

H. Source Limitations: Where possible, for each type of wiring device furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

C. Provide weather resistant GFI receptacles with specified weatherproof covers for all receptacles installed outdoors or in damp or wet locations.

D. Provide GFI protection for all receptacles installed within 6 feet of sinks.

E. Provide GFCI protection for receptacles serving electric drinking fountains.

F. Unless noted otherwise, do not use combination switch/receptacle devices.

G. For flush floor service fittings, use carpet flanges for installations in carpeted floors.

2.03 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.04 WALL SWITCHES

A. All Wall Switches: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

B. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

C. Wall Switches: Heavy Duty, AC only general-use snap switch, complying with NEMA WD 6 and WD 1.
   1. Body and Handle: Black plastic with toggle handle.
   2. Ratings:
      a. Voltage: 120 - 277 volts, AC.
      b. Current: 20 amperes.
   3. Ratings: Match branch circuit and load characteristics.

D. Switch Types: Single pole, double pole, 3-way, and 4-way.

2.05 RECEPTACLES

A. Manufacturers:
   1. Hubbell Incorporated; : www.hubbell-wiring.com.
   2. Leviton Manufacturing Company, Inc; : www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. All Receptacles: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.

2. NEMA configurations specified are according to NEMA WD 6.

C. Convenience Receptacles:
   1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
      a. Products:
         1) Hubbell Wiring Devices.
         2) Leviton.
         3) Pass & Saymore.
         4) Substitutions: See Section 01 60 00 - Product Requirements.

D. GFI Receptacles:
   1. All GFI Receptacles: Provide with feed-through protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
   2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.

E. Receptacles: Heavy duty, complying with NEMA WD 6 and WD 1.
   1. Device Body: Black plastic.
   2. Configuration: NEMA WD 6, type as specified and indicated.

F. Convenience Receptacles: Type 5 - 20.

G. Single Convenience Receptacles.

H. Duplex Convenience Receptacles.

I. GFCI Receptacles: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.06 WALL PLATES

A. All Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard; .
   3. Screws: Metal with slotted heads finished to match wall plate finish.

B. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

C. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

D. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.

E. Decorative Cover Plates: stainless steel.

F. Jumbo Cover Plates: stainless steel.

G. Weatherproof Cover Plates: Gasketed cast metal with hinged cover.

2.07 POKE-THROUGH ASSEMBLIES

A. Description: Assembly comprising floor service fitting, poke-through component, fire stops and smoke barriers, and junction box for conduit termination; fire rating listed to match fire rating of floor and suitable for floor thickness where installed.

B. Flush Floor Service Fittings:
   1. Dual Service Flush Combination Outlets:
      a. Cover: Hinged door(s).
      b. Configuration:

1) Power: One standard convenience duplex receptacle(s).
2) Communications: Two data drops..
3) Voice and Data Jacks: As specified in Section 27 10 00.

2. Accessories:
   a. Closure Plugs: Size and fire rating as required to seal unused core hole and maintain fire rating of floor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that floor boxes are adjusted properly.

F. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

G. Verify that openings in access floor are in proper locations.

H. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1, including mounting heights specified in that standard unless otherwise indicated.

C. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of wiring devices provided under this section.
   1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
   2. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.

D. Install wiring devices in accordance with manufacturer's instructions.

E. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

F. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

G. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

H. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

I. For isolated ground receptacles, connect wiring device grounding terminal only to identified branch circuit isolated equipment grounding conductor. Do not connect grounding terminal to outlet box or normal branch circuit equipment grounding conductor.

J. Unless otherwise indicated, GFCI receptacles may be connected to provide feed-through protection to downstream devices. Label such devices to indicate they are protected by upstream GFCI protection.

K. Install securely, in a neat and workmanlike manner, as specified in NECA 1.

L. Install wiring devices plumb and level with mounting yoke held rigidly in place.

M. Install wall switches with OFF position down.

N. Do not share neutral conductor on branch circuits utilizing wall dimmers.

O. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

P. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

Q. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

R. Install poke-through closure plugs in each unused core holes to maintain fire rating of floor.

S. Install receptacles with grounding pole on top.

T. Connect wiring device grounding terminal to outlet box with bonding jumper.

U. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

V. Connect wiring devices by wrapping conductor around screw terminal.

W. Use jumbo size plates for outlets installed in masonry walls.

X. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.04 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under Section 26 05 37 to obtain mounting heights.

B. Install wall switch 48 inches above finished floor.

C. Install convenience receptacle 18 inches above finished floor.

D. Install convenience receptacle 6 inches above backsplash of counter.

E. Install telephone jack 18 inches above finished floor.

F. Install telephone jack for side-reach wall telephone to position top of telephone at 54 inches above finished floor.

G. Install telephone jack for forward-reach wall telephone to position top of telephone at 48 inches above finished floor.

H. Coordinate installation of access floor boxes with access floor system provided under Section 09 6900.

I. Coordinate the installation of wiring devices with underfloor duct service fittings provided under Section 26 0540.

3.05 FIELD QUALITY CONTROL

A. Perform field inspection, testing, adjusting, and balancing in accordance with Section 01 40 00.

B. Inspect each wiring device for damage and defects.

C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.

D. Operate each wall switch with circuit energized and verify proper operation.

E. Verify that each receptacle device is energized.

F. Test each receptacle to verify operation and proper polarity.

G. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

H. Correct wiring deficiencies and replace damaged or defective wiring devices.

I. Verify that each telephone jack is properly connected and circuit is operational.

3.06 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.07 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION 26 27 26

SECTION 26 28 13
FUSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fuses.

1.02 RELATED REQUIREMENTS

A. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

B. Section 26 05 73 - Power System Studies: Additional criteria for the selection of protective devices specified in this section.

C. Section 26 28 18 - Enclosed Switches: Fusible switches.

D. Section 26 29 13 - Enclosed Controllers: Fusible switches.

1.03 REFERENCE STANDARDS

A. NEMA FU 1 - Low Voltage Cartridge Fuses.

B. NFPA 70 - National Electrical Code.

C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements.

D. UL 248-4 - Low-Voltage Fuses - Part 4: Class CC Fuses.

E. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
      a. Fusible Enclosed Switches: See Section 26 28 18.
      b. Fusible Switches for Enclosed Motor Controllers: See Section 26 29 13.
   2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
   3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.

C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Fuses: One set(s) of three for each type and size installed.
   3. Fuse Pullers: One set(s) compatible with each type and size installed.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

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

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

D. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

E. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 MAINTENANCE MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Furnish two fuse pullers.

C. Furnish three of each size and type fuse installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cooper Bussmann, a division of Cooper Industries: www.cooperindustries.com/#sle.

B. Mersen (formerly Ferraz Shawmut): ferrazshawmut.mersen.com.

C. Littelfuse, Inc: www.littelfuse.com/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 APPLICATIONS

A. Service Entrance:
   1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.

B. General Purpose Branch Circuits: Class RK1, time-delay.

C. Primary Protection for Control Transformers: Class CC, time-delay.

2.03 FUSES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.

B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.

C. Provide fuses of the same type, rating, and manufacturer within the same switch.

D. Comply with UL 248-1.

E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.

F. Voltage Rating: Suitable for circuit voltage.

G. Class R Fuses: Comply with UL 248-12.

H. Class CC Fuses: Comply with UL 248-4.

I. Power Load Feeder Switches: Class RK1 (time delay).

J. Motor Load Feeder Switches: Class RK1 (time delay).

K. Other Feeder Switches: Class RK1 (time delay).

L. General Purpose Branch Circuits: Class RK1 (time delay).

M. Motor Branch Circuits: Class L time delay.

N. Lighting Branch Circuits: Class G.

2.04 CLASS RK1 (TIME DELAY) FUSES

A. Manufacturers:
   1. Bussman Corp.

2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Construction: Current limiting, dual-element fuse, 10 seconds minimum at 500% rated amps, with copper fuse element.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.

B. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Do not install fuses until circuits are ready to be energized.

B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION 26 28 13

SECTION 26 28 17
ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed circuit breakers.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

D. Section 26 05 73 - Power System Studies: Additional criteria for the selection and adjustment of equipment and associated protective devices specified in this section.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems.

D. NFPA 70 - National Electrical Code.

E. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

F. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

G. UL 869A - Reference Standard for Service Equipment.

H. UL 1053 - Ground-Fault Sensing and Relaying Equipment.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
2. Include documentation of listed series ratings.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Maintain one copy of each document on site.

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

E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed circuit breaker internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature between 23 degrees F and 104 degrees F during and after installation of enclosed circuit breakers.

1.09 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eaton Corporation; Cutler-Hammer Products: www.eaton.com/#sle.

B. General Electric Company: www.geindustrial.com/#sle.

C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

E. Source Limitations: Furnish enclosed circuit breakers and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 ENCLOSED CIRCUIT BREAKERS

A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.

B. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose indicated.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between 23 degrees F and 104 degrees F.

D. Short Circuit Current Rating:
   1. Provide enclosed circuit breakers with listed short circuit current rating not less than the available fault current at the installed location indicated on the drawings.

2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
3. Label equipment utilizing series ratings as required by NFPA 70.

E. Enclosed Circuit Breakers Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.

F. Conductor Terminations: Suitable for use with the conductors to be installed.

G. Provide thermal magnetic circuit breakers unless otherwise indicated.

H. Provide electronic trip circuit breakers where indicated.

I. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.

J. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.

K. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
   a. Indoor Clean, Dry Locations: Type 1.
   b. Outdoor Locations: Type 3R.
2. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
3. Provide surface-mounted enclosures unless otherwise indicated.

L. Provide externally operable handle with means for locking in the OFF position.

M. Ground Fault Protection: Where ground-fault protection is indicated, provide system listed and labeled as complying with UL 1053.
1. Where electronic circuit breakers equipped with integral ground fault protection are used, provide separate neutral current sensor where applicable.
2. Where accessory ground fault sensing and relaying equipment is used, equip companion circuit breakers with ground-fault shunt trips.
   a. Use zero sequence ground fault detection method unless otherwise indicated.
   b. Provide test panel and field-adjustable ground fault pick-up and delay settings.

2.03 TRIP UNITS

A. Field-Adjustable Trip Circuit Breakers: Provide circuit breakers with frame sizes 200 amperes and larger with mechanism for adjusting long time continuous current, short time pickup current setting for automatic operation. Range of Adjustment: amperes.

B. Field-Changeable Ampere Rating Circuit Breaker: Provide circuit breakers with frame sizes 250 amperes and larger with changeable trip units.

C. Current Limiting Circuit Breaker: Provide circuit breaker as indicated with automatically-resetting current limiting elements in each pole. Let-through Current and Energy: Less than permitted for same size Class RK-5 fuse.

D. Solid-State Circuit Breaker: Provide circuit breaker as scheduled with electronic sensing, timing and tripping circuits for adjustable current settings; ground fault trip with zero sequence type ground fault sensor; instantaneous trip.

2.04 ACCESSORIES

A. Enclosures:
1. Fabricate enclosures from steel.
2. Finish: Manufacturer's standard enamel finish, gray color.

B. Provide accessories as scheduled.

C. Handle Lock: Include provisions for padlocking.

D. Provide mechanical trip device.

E. Provide grounding lug in each enclosure.

F. Provide products suitable for use as service entrance equipment where so applied.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.

B. Install enclosed circuit breakers securely, in a neat and workmanlike manner in accordance with NECA 1.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required supports in accordance with Section 26 05 29.

E. Install enclosed circuit breakers plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 05 26.

H. Set field-adjustable ground fault protection pickup and time delay settings as indicated.

I. Height: 5 feet to operating handle.

J. Provide identification nameplates for each enclosed circuit breaker in accordance with Section 26 0553.

K. Provide arc flash warning labels in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01 40 00.

B. Inspect and test in accordance with manufacturer's instructions and NETA STD ATS, except Section 4.

C. Perform inspections and tests listed in NETA STD ATS, Section 7.6.1.1 for circuit breakers used for service entrance and for circuit breakers larger than 400 amperes. Tests listed as optional are not required.

D. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.

E. Correct deficiencies and replace damaged or defective enclosed circuit breakers.

F. Perform field inspection and testing in accordance with Section 01 4000.

G. Inspect and test each circuit breaker.

H. Inspect each circuit breaker visually.

I. Perform several mechanical ON-OFF operations on each circuit breaker.

J. Verify circuit continuity on each pole in closed position.

K. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements.

L. Include description of testing and results in test report.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from circuit breaker enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 26 28 17

SECTION 26 28 18
ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed safety switches.

B. Fusible switches.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

D. Section 26 28 13 - Fuses.

E. Section 26 29 13 - Enclosed Controllers: Manual motor controllers.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NEMA FU 1 - Low Voltage Cartridge Fuses; National Electrical Manufacturers Association.

D. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum).

E. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems.

F. NFPA 70 - National Electrical Code.

G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations.

H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations.

I. UL 98 - Enclosed and Dead-Front Switches.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

E. Project Record Documents: Record actual locations of enclosed switches.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature between -22 degrees F and 104 degrees F during and after installation of enclosed switches.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eaton Corporation; Cutler-Hammer Products: www.eaton.com/#sle.

B. General Electric Company: www.geindustrial.com/#sle.

C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

D. Substitutions: See Section 01 60 00 - Product Requirements.

E. Source Limitations: Furnish enclosed switches and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between -22 degrees F and 104 degrees F.

D. Horsepower Rating: Suitable for connected load.

E. Voltage Rating: Suitable for circuit voltage.

F. Short Circuit Current Rating:

G. Provide with switch blade contact position that is visible when the cover is open.

H. Fuse Clips for Fusible Switches: As required to accept fuses indicated.

I. Conductor Terminations: Suitable for use with the conductors to be installed.

J. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

K. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.

1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
    a. Indoor Clean, Dry Locations: Type 1.
    b. Outdoor Locations: Type 3R.

L. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

M. Heavy Duty Switches:
1. Products:
    a. Schneider Electric.
    b. General Electric Co.
    c. Cutler Hammer.
    d. Substitutions: See Section 01 60 00 - Product Requirements.
2. Comply with NEMA KS 1.
3. Conductor Terminations:
    a. Provide mechanical lugs unless otherwise indicated.
    b. Provide compression lugs where indicated.
    c. Lug Material: Copper, suitable for terminating copper conductors only.
4. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

2.03 COMPONENTS

A. Fusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
2. Handle lockable in OFF position.
3. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses.

B. Enclosures: NEMA KS 1.
1. Interior Dry Locations: Type 1.
2. Exterior Locations: Type 3R.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed safety switches.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install enclosed switches in accordance with manufacturer's instructions.

B. Install enclosed switches securely, in a neat and workmanlike manner in accordance with NECA 1.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required supports in accordance with Section 26 05 29.

E. Install enclosed switches plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 05 26.

H. Provide fuses complying with Section 26 28 13 for fusible switches as indicated or as required by equipment manufacturer's recommendations.

I. Provide identification nameplate for each enclosed switch in accordance with Section 26 0553.

J. Provide arc flash warning labels in accordance with NFPA 70.

K. Install fuses in fusible disconnect switches.

L. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 01 40 00.

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

C. Perform inspections and tests listed in NETA STD ATS, Section 7.5.1.1.

D. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 26 28 18

SECTION 26 51 00

INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior luminaires.

B. Emergency lighting units.

C. Exit signs.

D. Luminaire accessories.

1.02 RELATED REQUIREMENTS

A. Section 26 05 37 - Boxes.

B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

C. Section 26 27 26 - Wiring Devices: Manual wall switches and wall dimmers.

D. Section 26 56 00 - Exterior Lighting.

1.03 REFERENCE STANDARDS

A. ANSI C78.379 - American National Standard for Electric Lamps -- Reflector Lamps -- Classification of Beam Patterns.

B. ANSI C82.4 - American National Standard for Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type).

C. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; Illuminating Engineering Society.

D. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction.

F. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems.

G. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems.

H. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association.

I. NFPA 70 - National Electrical Code.

J. NFPA 101 - Life Safety Code.

K. UL 924 - Emergency Lighting and Power Equipment.

L. UL 935 - Fluorescent-Lamp Ballasts.

M. UL 1598 - Luminaires.

N. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.

3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
2. Provide photometric calculations where luminaires are proposed for substitution upon request.

C. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

D. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
1. LED Luminaires:
a. Include estimated useful life, calculated based on IES LM-80 test data.
b. Include IES LM-79 test report upon request.

E. Sustainable Design Documentation: Submit manufacturer's product data on lamp mercury content and rated lamp life, showing compliance with specified requirements.

F. Field Quality Control Reports.

G. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

H. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Lenses and Louvers: Two percent of total quantity installed for each type, but not less than one of each type.
3. Extra Lamps: Ten percent of total quantity installed for each type, but not less than two of each type.
4. Extra Ballasts: Two percent of total quantity installed for each type, but not less than one of each type.

J. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Conform to requirements of NFPA 70 and NFPA 101.

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

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

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

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide ten year manufacturer warranty for LED luminaires, including drivers.

1.10 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Furnish two of each plastic lens type.

C. Furnish one replacement lamps for each lamp type.

D. Furnish two of each ballast type.

PART 2 PRODUCTS

2.01 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.

F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

G. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 200,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

H. LED Luminaires: Listed and labeled as complying with UL 8750.

I. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.

J. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.02 EMERGENCY LIGHTING UNITS

A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924. Emergency and Exit light combination unit with (2) unit mounted lamps and LED exit light with battery backup. This combination unit shall have spare capacity to power remote emergency lamp heads.

B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

C. Battery:
   1. Sealed maintenance-free nickel cadmium unless otherwise indicated.
   2. Size battery to supply all connected lamps, including emergency remote heads where indicated.

D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.

E. Provide low-voltage disconnect to prevent battery damage from deep discharge.

F. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.

G. Accessories:
   1. Provide compatible accessory mounting brackets where indicated or required to complete installation.
   2. Provide compatible accessory high impact polycarbonate vandal shields where indicated.
   3. Provide compatible accessory wire guards where indicated.
   4. Where indicated, provide emergency remote heads that are compatible with the emergency lighting unit they are connected to and suitable for the installed location.

2.03 LUMINAIRES

A. Furnish products as indicated in Schedule attached to this section.

B. Substitutions: See Section 01 60 00 - Product Requirements.
   1. Input Voltage: 120 or 277 volts.

2.04 EXIT SIGNS

A. All Exit Signs: Internally illuminated with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single or double as indicated or as required for the installed location.
   2. Directional Arrows: As indicated or as required for the installed location.

B. Self-Powered Exit Signs:
   1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
   2. Battery: Sealed maintenance-free nickel cadmium unless otherwise indicated.
   3. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
   4. Provide low-voltage disconnect to prevent battery damage from deep discharge.
   5. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.

C. Accessories:
   1. Provide compatible accessory high impact polycarbonate vandal shields where indicated.
   2. Provide compatible accessory wire guards where indicated.

D. Manufacturers: As indicated on lighting fixture schedule.
   1. Substitutions: See Section 01 60 00 - Product Requirements.

E. Exit Signs: Exit sign fixture .
   1. Housing: Plastic.
   2. Face: Translucent glass face with red letters on white background.
   3. Face: Aluminum stencil face with red letters.
   4. Directional Arrows: Universal type for field adjustment.
   5. Mounting: Universal, for field selection.
   6. Battery: 12 volt, nickel-cadmium type, with 1.5 hour capacity.
   7. Battery Charger: Dual-rate type, with sufficient capacity to recharge discharged battery to full charge within twelve hours.
   8. Lamps: Manufacturer's standard.
   9. Input Voltage: 120/277 volts.

2.05 ACCESSORIES

A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.

B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.

C. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

D. Tube Guards for Linear Fluorescent Lamps: Provide clear virgin polycarbonate sleeves with endcaps where indicated.

E. Product: As indicated in lighting fixture schedule.
   1. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of luminaires provided under this section.

B. Install products according to manufacturer's instructions.

C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).

D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

E. Suspended Ceiling Mounted Luminaires:
   1. Do not use ceiling tiles to bear weight of luminaires.
   2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
   3. Secure pendant-mounted luminaires to building structure.
   4. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
   5. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gage, connected from opposing corners of each recessed luminaire to building structure.
   6. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.

F. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

G. Suspended Luminaires:
   1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   2. Install canopies tight to mounting surface.

H. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.

I. Install fixtures securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting).

J. Install suspended luminaires and exit signs using pendants supported from swivel hangers. Provide pendant length required to suspend luminaire at indicated height.

K. Support luminaires independent of ceiling framing.

L. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.

M. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.

N. Exposed Grid Ceilings: Support surface mounted luminaires in grid ceiling directly from building structure.

O. Exposed Grid Ceilings: Provide auxiliary members spanning ceiling grid members to support surface mounted luminaires.

P. Exposed Grid Ceilings: Fasten surface mounted luminaires to ceiling grid members using bolts, screws, rivets, or suitable clips.

Q. Install recessed luminaires to permit removal from below.

R. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.

S. Install clips to secure recessed grid-supported luminaires in place.

T. Install wall mounted luminaires, emergency lighting units, and exit signs at height as scheduled.

U. Install accessories furnished with each luminaire.

V. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

W. Bond products and metal accessories to branch circuit equipment grounding conductor.

X. Install specified lamps in each emergency lighting unit, exit sign, and luminaire.

Y. Air Handling Luminaires: Interface with air handling accessories furnished and installed under Section 23 36 00.

Z. Emergency Lighting Units:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

AA. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

AB. Install lamps in each luminaire.

AC. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

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

D. Operate each luminaire after installation and connection to verify proper operation.

E. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.

F. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

D. Aim and adjust luminaires as indicated.

E. Position exit sign directional arrows as indicated.

3.06 CLEANING

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

B. Clean electrical parts to remove conductive and deleterious materials.

C. Remove dirt and debris from enclosures.

D. Clean photometric control surfaces as recommended by manufacturer.

E. Clean finishes and touch up damage.

3.07 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

3.09 PROTECTION

A. Relamp luminaires that have failed lamps at Substantial Completion.

3.10 SCHEDULE - SEE DRAWINGS

END OF SECTION 26 51 00

SECTION 31 22 00

GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site for site structures.

1.02 RELATED REQUIREMENTS

A. Section 31 23 16 - Excavation.

B. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.

C. Section 31 23 23 - Fill: Filling and compaction.

D. Section 32 92 19 - Seeding: Finish ground cover.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: See Section 31 23 23 - Fill.

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

D. Protect site features to remain, including but not limited to existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

3.02 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. See Section 31 23 23 - Fill, for filling procedures.

G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.03 SOIL REMOVAL

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.04 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

3.05 FIELD QUALITY CONTROL

A. See Section 31 23 23 - Fill, for compaction density testing.

3.06 CLEANING

A. Remove unused stockpiled topsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION 31 22 00

SECTION 31 22 00

FINISH GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish grading.

1.02 RELATED REQUIREMENTS

A. Section 31 20 00 - Earth Moving.

B. Section 31 23 16 - Excavation.

C. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.

D. Section 31 23 23 - Fill: Filling and compaction.

E. Section 32 92 19 - Seeding: Finish ground cover.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with State of Delaware, Highway Department standards.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: DelDOT Specification 911.05.5 Soil Mix

1. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand.
2. Topsoil shall be free of subsoil, heavy clay, hard clods, weeds, roots, sticks, toxic substances, or any other extraneous material. The topsoil shall have a pH range from 5.5 to 6.8 and contain not less than 2 percent nor more than 10 percent organic matter. The topsoil shall exhibit the following grading analysis:

Sieve size	Minimum Percent Passing
2"	100 percent
No.4	90 percent
No. 10	80 percent

3. Ensure that the topsoil meets the sieve analysis, acidity, and organic matter requirements. Provide a certificate of analysis of soil samples to the Engineer and approved prior to delivery of topsoil to the Project site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Verify the absence of standing or ponding water.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage above- and below-grade utilities to remain.

D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

F. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

G. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A. Refer to section 31 22 00 - Grading.

3.04 FINISH GRADING

A. Before Finish Grading:
   1. Verify building and trench backfilling have been inspected.
   2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to depth of 6 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 6 inches.

E. Place topsoil in areas where seeding, sodding, and planting are indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil to the following compacted thicknesses:
   1. Areas to be Seeded with Grass: 6 inches.
   2. Areas to be Sodded: 4 inches.
   3. Shrub Beds: 18 inches.
   4. Flower Beds: 12 inches.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Near plants spread topsoil manually to prevent damage.

K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

L. Lightly compact placed topsoil.

M. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.05 TOLERANCES

A. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

3.06 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.07 CLEANING

A. Remove unused stockpiled topsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION 31 22 00

SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for footings, slabs-on-grade, paving, site structures, and utilities within the building.

B. Trenching for utilities outside the building to utility main connections.

C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Grading.

B. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

C. Section 31 23 23 - Fill: Fill materials, backfilling, and compacting.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bedding and Fill to Correct Over-Excavation:
   1. See Section 31 23 23- Fill, for bedding and corrective fill materials at general excavations.
   2. See Section 31 23 16.13 - Trenching, for bedding and corrective fill materials at utility trenches.

B. Underground Warning Tapes:

PART 3 EXECUTION

3.01 EXAMINATION

A. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 22 00 -Grading, for topsoil removal.

C. Locate, identify, and protect utilities that remain and protect from damage.

D. Protect existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A. Excavation Safety: Comply with OSHA92s Excavation Standard, 29 CFR 1926, Subpart P.

3.04 EXCAVATING

A. Excavate to accommodate new structures and construction operations.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 SUBGRADE PREPARATION

A. See Section 31 23 23 - Fill, for subgrade preparation at general excavations.

B. See Section 31 23 16.13 - Trenching, for subgrade preparation at utility trenches.

3.06 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

B. Install underground warning tape at buried utilities.

C. See Section 31 23 23 - Fill, for fill, backfill, and compaction requirements at general excavations.

D. See Section 31 23 16.13 - Trenching, for fill, backfill, and compaction requirements at utility trenches.

E. See Section 31 22 00 - Grading, for rough and final grading and topsoil replacement requirements.

3.07 REPAIR

A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 23 - Fill.

3.08 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.

B. Provide for visual inspection of load-bearing excavated surfaces by Authority having jurisdiction before placement of foundations.

3.09 CLEANING

A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 22 00 - Grading.

B. Remove excavated material that is unsuitable for re-use from site.

C. Remove excess excavated material from site.

3.10 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION 31 23 16

SECTION 31 23 16.13
TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Site grading.

B. Section 31 23 16 - Excavation: Building and foundation excavating.

C. Section 31 23 23 - Fill: Backfilling at building and foundations.

1.03 REFERENCE STANDARDS

A. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.
   1. Graded.
   2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
   3. Conforming to ASTM D2487 Group Symbol CL.

B. Structural Fill: Subsoil excavated on-site.
   1. Graded.
   2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
   3. Conforming to ASTM D2487 Group Symbol CL.

C. Granular Fill: Coarse aggregate, conforming to State of Delaware Highway Department standard.

D. Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Topsoil: See Section 31 22 00.

2.02 ACCESSORIES

A. Geotextile Fabric: Non-biodegradable, woven fabric for sub-surface drainage. Class 2 (AASHTO M288-06 (2011))

B. Detectable Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 TRENCHING

A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Cut trenches wide enough to allow inspection of installed utilities.

E. Hand trim excavations. Remove loose matter.

F. Remove excavated material that is unsuitable for re-use from site.

G. Remove excess excavated material from site.

H. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

I. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect.

3.03 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.04 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

F. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

G. Compaction Density Unless Otherwise Specified or Indicated:

H. Reshape and re-compact fills subjected to vehicular traffic.

3.05 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Utility Piping:
   1. Bedding: Use general fill.
   2. Cover with general fill.
   3. Fill up to subgrade with general fill. Fill with topsoil at top 6 inches..
   4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

3.06 DETECTABLE PIPE MARKERS

A. Install detectable underground plastic pipe marker tape above HDPE, PVC and concrete pipe at a depth of 14" to 24" below surface.

3.07 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.08 CLEANING

A. Leave unused materials in a neat, compact stockpile.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 31 23 16.13

SECTION 31 23 23

FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Removal and handling of soil to be re-used.

B. Section 31 23 16 - Excavation: Removal and handling of soil to be re-used.

C. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

1.03 DEFINITIONS

A. Finish Grade Elevations: Match existing.

1.04 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop.

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

C. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.

D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).

E. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

F. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

G. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.
   1. Graded.
   2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

B. Granular Fill: Coarse aggregate, conforming to State of Delaware Highway Department standard.

C. Sand: Conforming to State of Delaware Highway Department standard.

D. Topsoil: See Section 31 22 00 - Grading.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 22 00 - Grading for additional requirements.

C. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

F. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

G. Compaction Density Unless Otherwise Specified or Indicated:

H. Reshape and re-compact fills subjected to vehicular traffic.

I. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches :
   1. Cover with general fill.
   2. Fill up to subgrade elevation.
   3. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

B. Under Pavers Set on Sand Leveling Bed:
   1. Use granular fill.
   2. Fill up to bottom of sand leveling bed.
   3. Compact to 95 percent of maximum dry density.
   4. See unit pavers section for leveling bed placement.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.06 CLEANING

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 31 23 23

SECTION 31 31 16
TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chemical soil treatment.

1.02 REFERENCE STANDARDS

A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.

C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Having minimum of three (3) years documented experience.
   2. Approved by manufacturer of treatment materials.
   3. Licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

C. Manufacturers:
   1. Bayer Environmental Science Corp: www.backedbybayer.com/pest-management/#sle.
   2. FMC Professional Solutions: www.fmcprosolutions.com/#sle.
   3. Syngenta Professional Products: www.syngentaprofessionalproducts.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Spray apply toxicant in accordance with manufacturer's instructions.

C. Apply toxicant at following locations:
   1. Under Slabs-on-Grade.
   2. At Both Sides of Foundation Surface.

D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.

E. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.

F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

G. Re-treat disturbed treated soil with same toxicant as original treatment.

H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION

A. Do not permit soil grading over treated work.

END OF SECTION 31 31 16

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Preparation of site for base course.

B. Section 31 23 23 - Fill: Compacted fill under base course.

C. Section 32 13 13 - Concrete Paving: Finish concrete surface course.

1.03 REFERENCE STANDARDS

A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Materials Sources: Submit name of imported materials source.

1.05 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When aggregate materials need to be stored on site, locate where directed by Owner.

C. Aggregate Storage, General:
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Coarse Aggregate : Pit run washed stone; free of shale, clay, friable material and debris.
   1. Graded in accordance with ASTM C136, within the following limits:
      a. 3/4 inch sieve: 95 to 100 percent passing.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of aggregate materials.

B. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

A. Under Portland Cement Concrete Paving:

1. Place coarse aggregate to a total compacted thickness of 4 inches.
2. Compact to 95 percent of maximum dry density.

B. Level and contour surfaces to elevations and gradients indicated.

C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.

B. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade.

3.06 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION 32 11 23

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 07 90 05 - Joint Sealers: Sealant for joints.

D. Section 31 22 00 - Grading: Preparation of site for paving.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

B. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

D. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.

F. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

G. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

H. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on joint filler, admixtures, and curing compound.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Concrete Sidewalks: 4,000 psi 28 day concrete, 4 inches thick.

2.02 FORM MATERIALS

A. Wood form material, profiled to suit conditions.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
   1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

A. Reinforcing Steel and Welded Wire Reinforcement: Types specified in Section 03 20 00.

2.04 CONCRETE MATERIALS

A. Obtain cementitious materials from same source throughout.

B. Concrete Materials: As specified in Section 03 30 00.

C. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2 inch length.

2.05 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

A. See Section 32 11 23 - Aggregate Base Courses, for construction of base course for work of this Section.

3.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

3.04 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

A. Place reinforcement at top of slabs-on-grade.

B. Interrupt reinforcement at contraction joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

3.06 PLACING CONCRETE

A. Do not place concrete when base surface is wet.

B. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

C. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.07 JOINTS

A. Align sidewalk joints.

B. Place 1/2 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components.
   1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
   2. Secure to resist movement by wet concrete.

C. Provide scored joints:
   1. At 3 feet intervals.
   2. Between new sidewalk and existing sidewalk.

3.08 FINISHING

A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

3.09 JOINT SEALING

A. See Section for joint sealer requirements.

3.10 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

A. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.

B. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement until 75 percent design strength of concrete has been achieved.

END OF SECTION 32 13 13

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chain link fencing for exterior and interior application.

B. Posts, rails, and frames.

C. Wire fabric.

D. Barbed wire.

E. Concrete.

F. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM A121 - Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

E. ASTM F567 - Standard Practice for Installation of Chain-Link Fence.

F. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.

G. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

H. CLFMI CLF-FIG0111 - Field Inspection Guide.

I. CLFMI CLF-PM0610 - Product Manual.

J. CLFMI CLF-SFR0111 - Security Fencing Recommendations.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.

C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.

1.04 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Chain Link Fences and Gates:
   1. Master-Halco, Inc: www.masterhalco.com/#sle.
   2. Merchants Metals: www.merchantsmetals.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 COMPONENTS

A. Line Posts: 1.9 inch diameter.

B. Corner and Terminal Posts: 2.38 inch diameter.

C. Fabric with Pre-Inserted Slats: 2 inch diamond mesh interwoven wire, 6 gage, 0.1920 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.
   1. Privacy Slats: High-density polyethylene (HDPE), woven into fabric.

2.03 MATERIALS

A. Posts, Rails, and Frames:
   1. ASTM A1011/A1011M, Designation SS; hot-rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; zinc coating complying with ASTM F1043 and ASTM F1083.
   2. Line Posts: Type I round.
   3. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.
   4. Comply with CLFMI CLF-PM0610.

B. Wire Fabric:
   1. ASTM A392 zinc coated steel chain link fabric.
   2. Comply with CLFMI CLF-PM0610.

C. Barbed Wire:
   1. Zinc-coated steel, complying with ASTM A121 Type Z Coating Class 1; 2 strands of 0.099 inch diameter wire, with 2-pointed barbs at 4 inches on center.

D. Concrete:
   1. Ready-mixed, complying with ASTM C94/C94M; normal Portland cement; 2,500 psi strength at 28 days, 3 inch slump; aggregate.

2.04 COMPONENTS

A. Line Posts: 1.9 inch diameter.

B. Corner and Terminal Posts: 2.38 inch diameter.

C. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.

D. Bottom Rail: 1.66 inch diameter, plain end, sleeve coupled.

E. Fabric: 2 inch diamond mesh interwoven wire, 6 gage, 0.1920 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.

F. Tie Wire: Aluminum alloy steel wire.

2.05 ACCESSORIES

A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

2.06 FINISHES

A. Components (Other than Fabric): Galvanized in accordance with ASTM A123/A123M, at 1.7 ounces per square foot.

B. Accessories: Same finish as framing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that areas are clear of obstructions or debris.

3.02 INSTALLATION - EXTERIOR APPLICATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Place fabric on outside of posts and rails.

C. Set intermediate, terminal, and gate posts plumb, in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.

D. Line Post Footing Depth Below Finish Grade: ASTM F567.

E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.

F. Brace each gate and corner post to adjacent line post with horizontal center brace rail. Install brace rail one bay from end and gate posts.

G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

H. Install a 7 gage, 0.1770 inch coil spring wire in place of top rail.

I. Do not stretch fabric until concrete foundation has cured 28 days.

J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

K. Position bottom of fabric 2 inches above finished grade.

L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

N. Install bottom tension wire stretched taut between terminal posts.

O. Install support arms sloped outward and attach barbed wire; tension and secure.

P. Peen all bolts upon installation.

Q. Perform three random field inspections confirming proper installation.

3.03 INSTALLATION - INTERIOR APPLICATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Set intermediate posts plumb, on anchor plate and collar with four bolts secured to concrete slab.

C. Brace each post by extending to roof structure. Provide lateral bracing rail to bridge between roof framing members

D. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

E. Position bottom of fabric 1 inches above concrete slab.

F. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

G. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

H. Install bottom tension wire stretched taut between terminal posts.

I. Peen all bolts upon installation.

J. Perform three random field inspections confirming proper installation.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From True Position: 1 inch.

C. Do not infringe on adjacent property lines.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.

C. Workmanship: Verify neat installation free of defects. See CLFMI CLF-FIG0111 for field inspection guidance.

3.06 CLEANING

A. Leave immediate work area neat at end of each work day.

B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.

C. Clean fence with mild household detergent and clean water rinse well.

D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.

E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

F. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

3.07 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

END OF SECTION 32 31 13

SECTION 32 92 19
SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil.

B. Placing topsoil.

C. Seeding.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.

B. Section 31 23 23 - Fill: Topsoil material.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

PART 2 PRODUCTS

2.01 SEED MIXTURE

A. Seed Mixture:
   1. Kentucky Blue Grass: 50 percent.
   2. Creeping Red Fescue Grass: 10 percent.
   3. Norlea Perennial Rye: 40 percent.

2.02 ACCESSORIES

A. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

B. Erosion Fabric: Jute matting, open weave.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare subgrade in accordance with Section 31 22 00 - Earth Moving.

B. Place topsoil in accordance with Section 31 22 00 - Earth Moving.

3.02 SEEDING

A. Apply seed at a rate of 2 to 3 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods.

D. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

E. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

F. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.03 PROTECTION

A. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

B. Secure outside edges and overlaps at 36 inch intervals with stakes.

C. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

3.04 MAINTENANCE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

B. Water to prevent grass and soil from drying out.

C. Roll surface to remove minor depressions or irregularities.

D. Immediately reseed areas that show bare spots.

END OF SECTION 32 92 19

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

REQUEST FOR PROPOSALS

Item Description: ELMWOOD COMMUNITY CENTER BUILDING RENOVATIONS

Date to be opened: March 29, 2021

Issuing Department: **Department of Public Property**

QUESTIONS

- Please direct questions relative to the bidding process, how to fill out forms, and how to submit a bid (Pages 1-8) to Purchasing Agent Patti Jordan.
  - Phone: (401) 680-5264
  - Email: pjordan@providenceri.gov
    - Please use the subject line "**RFP Question**"
- Please direct questions relative to the Minority and Women's Business Enterprise Program and the corresponding forms (Pages 9-13) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
  - Phone: (401) 680-5766
  - Email: gdiaz@providenceri.gov
    - Please use subject line "**MBE WBE Forms**"
- Please direct questions **relative to the specifications** outlined to the issuing department's subject matter expert:
  - **Mr. Demo Roberts**
  - **401 573 9584 (Cell Phone)**
  - **Droberts@providenceri.gov**

Pre-bid Conference
PRE-BID CONFERENCE IS MANDATORY:
DATE: MARCH 8, 2021 at 12:00PM
LOCATION: 85 ATLANTIC AVENUE PROVIDENCE, RI 02907

******A Scope Review Meeting may be conducted in order to ensure your bid is a qualified and meets all the requirements laid out in this RFP. Also, a retainage of 5% shall be kept from payments to contractor until successful completion of the project.******

INSTRUCTIONS FOR SUBMISSION

Bids may be submitted up to **2:15 P.M.** on the above meeting date at the **Department of the City Clerk. Room 311, City Hall. 25 Dorrance Street, Providence.** At 2:15 P.M. all bids will be publicly opened and read at the

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

Board of Contract Meeting in the City Council Chambers, on the 3rd floor of City Hall.

- Bidders must submit **3 copies** of their bid in sealed envelopes or packages labeled with the captioned **Item Description** and the **City Department to which the RFP and bid are related and must include the company name and address on the envelope as well**. (On page 1).
- If required by the Department, please keep the original bid bond and check in only one of the envelopes.
- Communications to the Board of Contract and Supply that are not competitive sealed bids (i.e. product information/samples) should have "**NOT A BID**" written on the envelope or wrapper.
- Only use form versions and templates included in this RFP. If you have an old version of a form do not recycle it for use in this bid.
- The bid envelope and information relative to the bid must be addressed to:

Board of Contract and Supply
Department of the City Clerk – City Hall, Room 311
25 Dorrance Street
Providence, RI 02903

****PLEASE NOTE: This bid may include details regarding information that you will need to provide (such as proof of licenses) to the issuing department before the formalization of an award.**

This information is NOT requested to be provided in your initial bid by design.

All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record. The City has made a conscious effort to avoid the posting of sensitive information on the City's Open Meetings Portal, by requesting that such sensitive information be submitted to the issuing department only at their request.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID PACKAGE CHECKLIST

Digital forms are available in the City of Providence Purchasing Department Office or online at **http://www.providenceri.gov/purchasing/how-to-submit-a-bid/**

The bid package **MUST** include the following, in this order:

- Bid Form 1: Bidder's Blank as the cover page/ 1st page (s*ee page **6** of this document*)
- Bid Form 2: Certification of Bidder as 2nd page (s*ee page **7** of this document*)
- Bid Form 3: Certificate Regarding Public Records (s*ee page **8** of this document)*
- Forms from the Minority and Women Business Enterprise Program: Based on Bidder Category. S*ee forms and instructions enclosed (pages **9-13**) or on: https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/*

***Please note: MBE/WBE forms must be completed for EVERY bid submitted and must be inclusive of ALL required signatures. Forms without all required signatures will be considered incomplete.**

- Bidder's Proposal/Packet: Formal response to the specifications outlined in this RFP, including pricing information and details related to the good(s) or service(s) being provided. Please be mindful of formatting responses as requested to ensure clarity.
- Financial Assurance, *if requested* (a*s indicated on page 5 of this document under "Bid Terms")*

All of the above listed documents are REQUIRED. (With the exception of financial assurances, which are only required if specified on page 5.)

******Failure to meet specified deadlines, follow specific submission instructions, or enclose all required documents with all applicable signatures will result in disqualification, or in an inability to appropriately evaluate bids.******

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

NOTICE TO VENDORS

1. The Board of Contract and Supply will make the award to the lowest qualified and responsible bidder.
2. In determining the lowest responsible bidder, cash discounts based on preferable payment terms will not be considered.
3. Where prices are the same, the Board of Contract and Supply reserves the right to award to one bidder, or to split the award.
4. No proposal will be accepted if the bid is made in collusion with any other bidder.
5. Bids may be submitted on an "equal in quality" basis. The City reserves the right to decide equality. Bidders must indicate brand or the make being offered and submit detailed specifications if other than brand requested.
6. A bidder who is an out-of-state corporation shall qualify or register to transact business in this State, in accordance with the Rhode Island Business Corporation Act, RIGL Sec. 7-1.2-1401, et seq.
7. The Board of Contract and Supply reserves the right to reject any and all bids.
8. Competing bids may be viewed in person at the Department of the City Clerk, City Hall, Providence, immediately upon the conclusion of the formal Board of Contract and Supply meeting during which the bids were unsealed/opened. Bids may also be accessed electronically on the internet via the City's Open Meetings Portal.
9. As the City of Providence is exempt from the payment of Federal Excise Taxes and Rhode Island Sales Tax, prices quoted are not to include these taxes.
10. In case of error in the extension of prices quoted, the unit price will govern.
11. The contractor will **NOT** be permitted to: a) assign or underlet the contract, or b) assign either legally or equitably any monies or any claim thereto without the previous written consent of the City Purchasing Director.
12. Delivery dates must be shown in the bid. If no delivery date is specified, it will be assumed that an immediate delivery from stock will be made.
13. A certificate of insurance will normally be required of a successful vendor.
14. For many contracts involving construction, alteration and/or repair work, State law provisions concerning payment of prevailing wage rates apply (RIGL Sec. 37-13-1 et seq.)
15. No goods should be delivered or work started without a Purchase Order.
16. **Submit 3 copies of the bid to the City Clerk, unless the specification section of this document indicates otherwise.**
17. Bidder must certify that it does not unlawfully discriminate on the basis of race, color, national origin, gender, gender identity or expression, sexual orientation and/or religion in its business and hiring practices and that all of its employees are lawfully employed under all applicable federal, state and local laws, rules and regulations. (See Bid Form 2.)
18. The Contractor is required to provide all necessary sub-contractors to execute the scope of work as indicated on the drawings and specifications.
19. Payment terms are net 30, upon receipt and approval of an invoice by the Providence Public Building Authority
20. During the evaluation process, the City reserves the right where it may serve in the City's best interest to request additional information or clarifications for the proposers, contractors submitting proposals may be required to participate in an interview with the Owner's representatives.
21. Please be advised all submittals are subject to approval by the City. Missing submittals may result in disqualification of bid.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID TERMS

1. Financial assurances may be required in order to be a successful bidder for Commodity or Construction and Service contracts. If either of the first two checkboxes below is checked, the specified assurance **must accompany** a bid, or the bid will not be considered by the Board of Contract and Supply. The third checkbox indicates the lowest responsible bidder will be contacted and required to post a bond to be awarded the contract.

   a) ☐ A certified check for **$**must be deposited with the City Clerk as a guarantee that the Contract will be signed and delivered by the bidder.

   b) ☒ A bid bond in the amount of **5** per centum (%) of the proposed total price, must be deposited with the City Clerk as a guarantee that the contract will be signed and delivered by the bidder; and the amount of such bid bond shall be retained for the use of the City as liquidated damages in case of default.

   c) ☒ A performance and payment bond with a satisfactory surety company will be posted by the bidder in a sum equal to one hundred per centum (100%) of the awarded contract.

   d) ☐ No financial assurance is necessary for this item.

2. Awards will be made within **sixty (60) days of bid opening**. All bid prices will be considered firm, unless qualified otherwise. Requests for price increases will not be honored.
3. Failure to deliver within the time quoted or failure to meet specifications may result in default in accordance with the general specifications. It is agreed that deliveries and/or completion are subject to strikes, lockouts, accidents and Acts of God.

The following entry applies only for COMMODITY BID TERMS:

4. Payment for partial delivery will not be allowed except when provided for in blanket or term contracts.

The following entries apply only for CONSTRUCTION AND SERVICE BID TERMS:

5. Only one shipping charge will be applied in the event of partial deliveries for blanket or term contracts.
6. Prior to commencing performance under the contract, the successful bidder shall attest to compliance with the provisions of the Rhode Island Worker's Compensation Act, RIGL 28-29-1, et seq. If exempt from compliance, the successful bidder shall submit a sworn Affidavit by a corporate officer to that effect, which shall accompany the signed contract.
7. Prior to commencing performance under the contract, the successful bidder shall, submit a certificate of insurance, in a form and in an amount satisfactory to the City.

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BID FORM 1: Bidders Blank

1. Bids must meet the attached specifications. Any exceptions or modifications must be noted and fully explained.
2. Bidder's responses must be in ink or typewritten, and all blanks on the bid form should be completed.
3. The price or prices proposed should be stated both in **WRITING** and in **FIGURES**, and any proposal not so stated may be rejected. **Contracts exceeding twelve months must specify annual costs for each year.**
4. Bids **SHOULD BE TOTALED** so that the final cost is clearly stated (unless submitting a unit price bid), however **each item should be priced individually**. Do not group items. Awards may be made on the basis of ***total*** bid or by ***individual items***.
5. All bids **MUST BE SIGNED IN INK.**

Name of Bidder (Firm or Individual): _____

Contact Name: _____

Business Address: _____

Business Phone #: _____

Contact Email Address: _____

Agrees to bid on (Write the "Item Description" here): _____

If the bidder's company is based in a state *other than Rhode Island*, list name and contact information for a local agent for service of process that ***is located within Rhode Island*** _____

Completion Date (if applicable): _____

Name of Surety Company (if applicable): _____

Completion Date: _____

Name of Surety Company (if applicable): _____

Base Bid

Total Amount in Writing*: _____

Total Amount in Figures*: _____

Use additional pages if necessary for additional bidding details.

_____

Signature of Representation

_____

Title

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BID FORM 2: Certification of Bidder

(Non-Discrimination/Hiring)

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify that:

1. Bidder does not unlawfully discriminate on the basis of race, color, national origin, gender, sexual orientation and/or religion in its business and hiring practices.
2. All of Bidder's employees have been hired in compliance with all applicable federal, state and local laws, rules and regulations.

I affirm by signing below that I am duly authorized on behalf of Bidder, on this_____day of_____20____.

_____

Signature of Representation

_____

Printed Name

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BID FORM 3: Certificate Regarding Public Records

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify an

understanding that:

1. All bids submitted in response to Requests for Proposals (RFP's) and Requests for Qualification (RFQ's), documents contained within, and the details outlined on those documents become public record upon receipt by the City Clerk's office and opening at the corresponding Board of Contract and Supply (BOCS) meeting.
2. The Purchasing Department and the issuing department for this RFP/RFQ have made a conscious effort to request that sensitive/personal information be submitted directly to the issuing department and only at request if verification of specific details is critical the evaluation of a vendor's bid.
3. The requested supplemental information may be crucial to evaluating bids. Failure to provide such details may result in disqualification, or an inability to appropriately evaluate bids.
4. If sensitive information that has not been requested is enclosed or if a bidder opts to enclose the defined supplemental information prior to the issuing department's request in the bidding packet submitted to the City Clerk, the City of Providence has no obligation to redact those details and bears no liability associated with the information becoming public record.
5. The City of Providence observes a public and transparent bidding process. Information required in the bidding packet may not be submitted directly to the issuing department at the discretion of the bidder in order to protect other information, such as pricing terms, from becoming public. Bidders who make such an attempt will be disqualified.

I affirm by signing below that I am duly authorized on behalf of Bidder, on

this_____day of_____20____.

_____

Signature of Representation

_____

Printed Name

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WBE/MBE Form Instructions

The City of Providence actively seeks Minority and Women business enterprises to participate in bids to meet the City's procurement needs. Pursuant to the City of Providence Code of Ordinances, Chapter 21, Article II, Sec. 21-52 (Minority and Women's Business Enterprise) and Rhode Island General Laws (as amended), Chapter 31-14, et seq. (Minority Business Enterprise), Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is **10%** of the total bid value.
The goal for Women's Business Enterprise (WBE) participation is **10%** of the total bid value.
The goal for combined MBE/WBE participation is **20%** of the total bid value.

Only businesses certified with the State of Rhode Island as minority and/or women business enterprises are counted towards the City's goals. Eligible minority or women-owned businesses are encouraged to seek certification from the State of Rhode Island Minority Business Enterprise Compliance Office at: http://odeo.ri.gov/offices/mbeco/

Note: MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.

Bid Requirements:

All Bidders: All bidders must complete and submit the ***MBE/WBE Participation Affidavit*** indicating whether or not they are a state-certified MBE/WBE and acknowledging the City's participation goals. Submission of this form is required with **every bid**. Your bid will not be accepted without an affidavit.

Bidders who will be subcontracting: Bidders who will be subcontracting must submit the ***Subcontractor Disclosure Form*** as part of their bid submission. All subcontractors, regardless of MBE/WBE status, must be listed on this form. Business NAICS codes can be found at https://www.naics.com/search/. Awarded bidders are required to submit ***Subcontractor Utilization and Payment Reports*** with each invoice.

Waiver Requests:

If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F on the Subcontractor Disclosure Form) and the prime contractor is not a Rhode Island State-certified MBE or WBE, the Bidder must complete the *MBE/WBE Waiver Request Form* for review. Waivers will be considered on a case by case basis.

No waiver will be granted unless the waiver request includes documentation that demonstrates that the Bidder has made good faith efforts to achieve the City's stated participation goals. Waivers must be reviewed and signed by the City of Providence's MBE/WBE Outreach Director, Grace Diaz, or her designee. Department Directors cannot recommend a bidder for award if this form is applicable and absent. If the bid does not meet the participation goals of the City of Providence and a waiver is not filed with the signature of the MBE/WBE Outreach Director or her designee, the bid will not be accepted.

Verifying MBE/WBE Certification

It is the responsibility of the bidder to confirm that every MBE/WBE named in a proposal and included in a contract is certified by the Rhode Island Minority Business Enterprise Compliance office. The current MBE/WBE directory is available at the State of RI MBE Office, One Capitol Hill, 2nd Floor, Providence, RI, or online at http://odeo.ri.gov/offices/mbeco/mbe-wbe.php. You can also call (401) 574-8670 to verify certification, expiration dates, and services that the MBE/WBE is certified to provide. Note: MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.

Form Instructions:

Access all bid forms from http://www.providenceri.gov/oeo/ or http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/. **Download** the forms as blank PDFs. Once saved on your computer, fill them out using the Adobe program. The fillable PDFs must be completed in Adobe in order to be saved property. Google Chrome and similar

platforms do not allow for the forms to be saved as filled PDFs. Therefore, please download the blank forms to your computer, then fill them out and save.

Assistance with Form Requirements

Examples of completed forms can be found on the City of Providence website at http://www.providenceri.gov/oeo/ or http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/.

Contract Requirements:

Prime contractors engaging subcontractors must submit the ***Subcontractor Utilization and Payment Report*** to the City Department's Fiscal Agent with every invoice and with request for final payment. This form is not submitted as a part of the initial bid package.

For contracts with duration of less than 3 months, this form must be submitted along with the contractor's request for final payment. The form must include all subcontractors utilized on the contract, both MBE/WBE and non- MBE/WBE, the total amount paid to each subcontractor for the given period and to date. During the term of the contract, any unjustified failure to comply with the MBE/WBE participation requirements is a material breach of contract.

Questions?

For more information or for assistance with MBE/WBE Forms, contact the City of Providence MBE/WBE Outreach Director, Grace Diaz, at mbe-wbe@providenceri.com or (401) 680-5766.

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MBE/WBE PARTICIPATION AFFIDAVIT
Item Discussion (as seen on RFP):

_____
_____
_____

Prime Bidder: _____
Prime Bidder (Company) Phone Number:_____

Which one of the following describes your business' status in terms of Minority and/or Woman-Owned Business Enterprise certification with the State of Rhode Island? _____MBE _____WBE _____Neither MBE nor WBE

By initialing the following sections and signing the bottom of this document in my capacity as the contractor or an authorized representative of contractor, I make this Affidavit:
It is the policy of the City of Providence that minority business enterprises (MBEs) and women business enterprises (WBEs) should have the maximum opportunity to participate in procurements and projects as prime contractors and vendors. Pursuant to Sec. 21-52 of the Providence Code of Ordinances and Chapter 31-14 *et seq*. of the Rhode Island General Laws (as amended), MBE and WBE participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is 10% of the total bid value.
The goal for Women's Business Enterprise (WBE) participation is 10% of the total bid value.
The goal for combined MBE/WBE participation is 20% of the total bid value.

I acknowledge the City of Providence's goals of supporting MBE/WBE certified businesses. Initial _____
If awarded the contract, I understand that my company must submit to the Minority and Women's Business Coordinator at the City of Providence (MBE/WBE Office), copies of all executed agreements with the subcontractor(s) being utilized to achieve the participation goals and other requirements of the RI General Laws. **I understand that these documents must be submitted prior to the issuance of a notice to proceed**. Initial _____

I understand that, if awarded the contract, my firm must submit to the MBE/WBE Office canceled checks and reports required by the MBE/WBE Office on a quarterly basis verifying payments to the subcontractors(s) utilized on the contract. Initial _____

If I am awarded this contract and find that I am unable to utilize the subcontractor(s) identified in my Statement of Intent, I understand that I must substitute another certified MBE and WBE firm(s) to meet the participation goals. **I understand that I may not make a substitution until I have obtained the written approval of the MBE/WBE Office**.
Initial _____
If awarded this contract, I understand that authorized representatives of the City of Providence may examine the books, records and files of my firm from time to time, to the extent that such material is relevant to a determination of whether my firm is complying with the City's MBE/WBE participation requirements.
Initial _____
I do solemnly declare and affirm under the penalty of perjury that the contents of the foregoing Affidavit are true and correct to the best of my knowledge, information and belief.

_____ _____
Signature of Bidder Printed Name

_____ _____
Company Name Date

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SUBCONTRACTOR DISCLOSURE FORM

Fill out this form only if you WILL SUBCONTRACT with other parties. If you will not subcontract any portion of the proposed bid, do not fill out this form.

Prime Bidder: _____ Primary NAICS_____
Code:_____

Item Description (as seen on RFP):_____

_____

Please list all Subcontractors below. Include the total dollar value that you propose to share with each subcontractor and the dollar amount to be subcontracted. Please check off MBE and WBE where applicable. The directory of all state-certified MBE/WBE firms is located at www.mbe.ri.gov. Business NAICS codes can be found at https://www.naics.com/search/

Proposed Subcontractor	**MBE**	**WBE**	**Primary NAICS Code**	**Date of Mobilization**	**$ Value of Subcontract**
					$
					$
					$
					$
					$
					$
A. MBE SUBCONTRACTED AMOUNT:					**$**
B. WBE SUBCONTRACTED AMOUNT:					**$**
C. NON MBE WBE SUBCONTRACTED AMOUNT:					**$**
D. DOLLAR AMOUNT OF WORK DONE BY THE PRIME CONTRACTOR:					**$**
E. TOTAL AMOUNT OF BID (SUM OF A, B, C, & D):					**$**
F. PERCENTAGE OF BID SUBCONTRACTED TO MBEs AND WBEs. (Divide the sum of A and B by E and multiply result by 100).					**%**

Please read and initial the following statement acknowledging you understand. If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F) and the prime contractor is NOT a Rhode Island State-certified MBE or WBE, **you must fill out the MBE/WBE WAIVER REQUEST FORM for consideration by City of Providence MBE/WBE Outreach Director**. Initial _____

_____ _____
Signature of Bidder Printed Name

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MBE/WBE Waiver Request Form
Fill out this form only if you are subcontracting and did not meet the 20% MBE/WBE participation goal.
State-certified MBE or WBE Prime Bidders are NOT REQUIRED to fill out this form.

Submit this form to the City of Providence MBE/WBE Outreach Director, Grace Diaz, at mbe-wbe@providenceri.gov, for review **prior to bid submission.** This waiver applies only to the current bid which you are submitting to the City of Providence and does not apply to other bids your company may submit in the future.

Prime Bidder: _____
Company Trade: _____
Item Discussion (as seen on RFP):
_____
_____

To receive a waiver, you must list the certified MBE and/or WBE companies you contacted, the name of the primary individual with whom you interacted, and the reason the MBE/WBE company could not participate on this project.

MBE/WBE Company Name	Individual's Name	Company Trade	Why did you choose not to work with this company?

I acknowledge the City of Providence's goal of a combined MBE/WBE participation is 20% of the total bid value. I am requesting a waiver of _____ % MBE/WBE (20% minus the value of **Box F** on the Subcontractor Disclosure Form). If an opportunity is identified to subcontract any task associated with the fulfillment of this contract, a good faith effort will be made to select MBE/WBE certified businesses as partners.

_____	_____	_____
Signature of Prime Contractor	Printed Name	Date Signed
_____	_____	_____
Signature of City of Providence MBE/WBE Outreach Director	Printed Name of City of Providence MBE/WBE Outreach Director	Date Signed

BOARD OF CONTRACT AND SUPPLY
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SUPPLEMENTAL INFORMATION

If the issuing department for this RFP determines that your firm's bid is best suited to accommodate their need, you will be asked to provide proof of the following prior to formalizing an award.

An inability to provide the outlined items at the request of the department may lead to the disqualification of your bid.

This information is NOT requested to be provided in your initial bid that you will submit to the City Clerk's office by the "date to be opened" noted on page 1. This list only serves as a list of items that your firm should be ready to provide on request.

All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record.

You must be able to provide:

- Business Tax ID will be requested after an award is approved by the Board of Contract and Supply.
- Proof of Insurance
- Payment and Performance Bond
- 3-5 Professional References
- 3-5 Examples of Similar Projects Your Firm Has Successfully Completed

BOARD OF CONTRACT AND SUPPLY
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BID PACKAGE SPECIFICATIONS

SEE ATTACHMENT: