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CITY OF ROME GEORGIA – FORMS

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CERTIFICATE OF NON-DISCRIMINATION

In connection with the performance of work under this contract, the bidder agrees as follows:

The bidder agrees not to discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, ancestry or disability. The vendor shall take affirmative action to insure that employees are treated without regard to their race, creed, color, sex, national origin, ancestry or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion, transfer, recruiting or recruitment, advertising, lay-off or termination, rates of pay or other compensation and selection for training, including apprenticeship.

In the event of the bidder's non-compliance with this non-discrimination clause, the contract may be canceled or terminated by the City of Rome. The bidders may be declared, by the City of Rome, ineligible for further contracts with the City of Rome until satisfactory proof of intent to comply shall be made by the vendor.

The bidder agrees to include this non-discrimination clause in any sub-contracts connected with the performance of this agreement.

_____

BIDDER

_____

SIGNATURE

_____

TITLE

CITY OF ROME

DRUG-FREE WORKPLACE CERTIFICATE

By signature on this certificate, the Bidder certifies that the provisions of O.C.G.A. Section 50-24-1 through 50-24-6 related to the "Drug-Free Workplace Act" will be complied with in full. The Bidder further certifies that:

1. A drug-free workplace will be provided for the Bidder's employees during the performance of the contract; and

2. Each contractor who hires a subcontractor to work in a drug-free workplace shall secure from that subcontractor the following written certification: "As part of the subcontracting agreement with (contractor's name), (subcontractor's name) certifies to the contractor that a drug-free workplace will be provided for the subcontractor's employees during the performance of this contract pursuant to O.C.G.A. Section 50-24-3(b)(7)."

By signature on this certificate, the Bidder further certifies that it will not engage in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of the contract.

Bidder: _____

By: _____

Name Printed: _____

Title: _____

Date: _____

CITY OF ROME, GEORGIA

E-VERIFY COMPLIANCE AFFADAVIT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of the City of Rome, Georgia has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A, § 13-10-91 (b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____
Federal Work Authorization User Identification number
(Not Required if Less than 10 Employees)

_____
Signature (if less than 10 employees)

_____
Date of Authorization

_____
Name of Contractor/Company

_____
Name of Project

_____
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on_____,_____, 20____in_____(city)_____(state).

_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE_____DAY OF_____, 20_____

_____
NOTARY PUBLIC
My Commission Expires:

LOCAL SUB CONTRACTORS AND LOCAL MATERIAL PROVIDERS
CITY AUDITORIUM RENOVATION

The following is the list of Subcontractors/Material Suppliers referenced in the Bid Form submitted by: (Bidder)

_____

Dated _____ and which is an integral part of the Bid Form.

The following work will be performed (or provided) by Local Subcontractors/Material Suppliers:

WORK SUBJECT	**NAME**
Carpentry Contractor	_____
Concrete/Masonry Contractor	_____
Demolition Contractor	_____
Electrical Contractor	_____
Painting Contractor	_____
Other	_____

MATERIAL SUPPLIERS:

Concrete Materials	_____
Carpentry Materials	_____
Electrical Materials	_____
Other	_____
Other	_____

END OF DOCUMENT

MBE/DBE SUB CONTRACTORS AND LOCAL MATERIAL PROVIDERS
CITY AUDITORIUM RENOVATION

The following is the list of
MBE/DBE Subcontractors/Material Suppliers referenced in the Bid Form submitted by:
(Bidder)
_____

Dated _____ and which is an integral part of the Bid Form.

The following work will be performed (or provided) by Local Subcontractors/Material Suppliers:

WORK SUBJECT	**NAME**
Carpentry Contractor	_____
Concrete/Masonry Contractor	_____
Demolition Contractor	_____
Electrical Contractor	_____
Painting Contractor	_____
Other	_____

MATERIAL SUPPLIERS:

Concrete Materials	_____
Carpentry Materials	_____
Electrical Materials	_____
Other	_____
Other	_____

END OF DOCUMENT

NON-COLLUSION AFFIDAVIT

The following affidavit is to accompany the bid:

STATE OF

COUNTY OF

Owner, Partner or Officer of Firm

Company Name, Address, City and State

Being of lawful age, being first duly sworn, on oath says that he/she is the agent authorized by the bidder to submit the attached bid. Affidavit further states as bidder, that they have not been a party to any collusion among bidders in restraint of competition by agreement to bid at a fixed price or to refrain from bidding; or with any office of the City of Rome or any of their employees as to quantity, quality or price in the prospective contract; or any discussion between bidders and any official of the City of Rome or any of their employees concerning exchange of money or other things of value for special consideration in submitting a sealed bid for:

FIRM NAME _____

SIGNATURE _____

TITLE _____

Subscribed and sworn to before me this_____ day of _____ 20_____

_____

NOTARY PUBLIC

STATE OF GEORGIA,
COUNTY OF _
_____:

NOTICE OF COMMENCEMENT

TO: CLERK OF SUPERIOR COURT OF _____ COUNTY, GEORGIA

Pursuant to O.C.G.A. § 13-10-62(a), not later than fifteen (15) days after physically commencing work on the property, the undersigned gives Notice of Commencement of improvements to property including the following information:

1. The name, address and telephone number of the contractor;
   _____
   _____
   _____

2. The name and location of the public work being constructed or a general description of the improvement;
   _____
   _____
   _____

3. The name and address of the state or the agency or the authority of the state that is contracting for the public works construction;
   _____
   _____
   _____

4. The name and address of the surety for the performance and payment bonds, if any; and
   _____
   _____
   _____

5. The name and address of the holder of the security deposit provided, if any.
   _____
   _____
   _____

Contractor: ___ By:
_____ Name:
_____ Title:
_____

THIS DOCUMENT MUST BE FILED WITH THE CLERK OF THE SUPERIOR COURT FOR THE COUNTY IN WHICH THE PROJECT IS LOCATED AND A COPY OF THIS DOCUMENT MUST BE POSTED AT THE PROJECT SITE NOT LATER THAN FIFTEEN (15) DAYS AFTER THE CONTRACTOR PHYSICALLY COMMENCES WORK ON THE PROPERTY.

WITHIN TEN (10) CALENDAR DAYS OF THE RECEIPT OF A WRITTEN REQUEST, GIVE A COPY OF THIS NOTICE OF COMMENCEMENT TO ANY SUBCONTRACTOR, MATERIALMAN OR PERSON MAKING THE REQUEST.

STATE OF GEORGIA PROMPT PAY ACT AFFIDAVIT

THIS AFFIDAVIT IS TO ACCOMPANY THE BID

GEORGIA PROMPT PAY ACT: The Georgia Prompt Pay Act was enacted by the General Assembly in 1994 and took effect January 1, 1995. This act requires owners to pay contractors within 15 days of receipt of a pay request by the owner or the owner's representative. If payment is not made the owner shall pay the contractor 1% per month interest on the delayed payment. Additionally, the contractor must pay subcontractors within 15 days of receipt of payment from the owner.

This Act is Code Section 13-11-1 (Georgia Laws of 1994, p. 1398 par. 4)

Firm Name: _____

Signature: _____

Title: _____

Subscribed and Sworn to before me this_____ day of _____, 20_____

_____
Notary Public

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

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

Print or type
See **Specific Instructions** on page 2.

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

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

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:

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

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

Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.

☐ Other (see instructions) ▶

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

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

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

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

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

		–							

Part II Certification

Under penalties of perjury, I certify that:

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

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

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

General Instructions

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

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

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

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

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

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

SECTION 00 11 16 - INVITATION TO BID

Project: Rome City Auditorium Renovation and Addition Owner:
The City of Rome, Georgia
601 Broad Street
Rome, GA 30161

Architect:
CEVIAN Design lab
208 Broad Street, Suite 200
Rome, GA 30161
706.383.1043

Date: 06/16/2015

Your firm is invited to submit a Bid under seal to the Owner for renovation of a facility located at the above address. The Owner will receive Bids until ***2:00 P.M.*** **local standard time on the 16th day of July, 2015**, for the following project: Renovation and Addition of The City Auditorium.

Project Description: Demolition of existing dressing room addition to the back of the auditorium stage. Construction of new addition in the same location and footprint comprised of wood, steel and brick. The new building includes (2) floors of approximately 1,191 sq ft totaling approximately 2,382 sq ft of new construction. The new construction also consists of a loading dock and ADA ramp. In addition to the demolition of the addition, the project will consist of the demolition of the existing air handler units located on the stage mezzanine and the installation of new units and ducts that serve the auditorium space. The Contractor is also responsible for the demolition of the existing stage rigging and lighting equipment as well as the coordination of the installation of the new stage rigging and lighting equipment. The stage rigging and lighting equipment and it's installation is not included in the Scope of Work. All work shown in attached drawings and specifications is included in the Scope of Work.

Bidder shall insert Project completion time in the space provided on the Bid Form.

Bidding Documents for a Stipulated Price contract may be obtained from Green's Blueprinting, LLC, located at 169 S. Church Street, Canton, GA 30114, phone 770-479-3773. Documents can be obtained only by General Contract and Subcontract Bidders, however, Bidders will not be able to acquire select sheets or specification, only entire Bid Documents sets. Bidding Documents can also be obtained at the website www.romefloyd.com. They are to be printed on Arch D (24" x36") media. Others may view the Bid Documents at the office of the Owner.

Bidders will be required to provide Bid security according to the requirements in Document 00 21 13 - Instructions to Bidders and Document 00 31 00 - Available Project Information.
Refer to other Bidding requirements described in Document 00 21 13 - Instructions to Bidders Document 00 31 00 - Available Project Information.

Submit your Bid on the Bid Form provided.
Your Bid will be required to be submitted under a condition of irrevocability for a period of 30 days after submission.

A pre-bid meeting will be held for all Bidders at ***10:00 AM local standard time on the 30th day of June, 2015***, at 601 Broad Street, Rome, GA 30161 located at site location. General Contract Bidders are invited to attend.

Owner reserves the right to waive irregularities and to accept or reject any or all Bids.

(Owner's Corporate Name)
The City of Rome
per: (Authorized signing officer) Bill Gilliland, City Purchaser enclosures

END OF DOCUMENT

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1.1 SUMMARY

A. Document Includes:
1. Bid submission.
2. Intent.
3. Contract Time.
4. Definitions.
5. Contract Documents identification.
6. Availability of documents.
7. Examination of documents.
8. Inquiries and Addenda.
9. Product substitutions.
10. Site examination.
11. Prebid meeting.
12. Bidder qualifications.
13. Submission procedure.
14. Bid ineligibility.
15. Bid Security.
16. Performance Assurance.
17. Bid Form requirements.
18. Bid Form signature.
19. Additional Bid information.
20. Selection and award of alternates.
21. Bid opening.
22. Duration of offer.
23. Acceptance of offer.

1.2 BID SUBMISSION

A. Bids signed and sealed, executed, and dated ***will be received by Owner located at 601 Broad Street, Rome, GA 30161 until 2:00 PM local standard time on the 16th day of July, 2015.*** They will be opened and read aloud directly after the bid closes.

B. Bidders may withdraw their Bid by written request before the above time.

C. Amendments to submitted bids will be permitted when received in writing prior to bid closing and when endorsed by the same party or parties who signed and sealed the Bid.

1.3 INTENT

A. The intent of this Bid request is to obtain an offer to perform work to complete a renovation and addition located at 601 Broad Street, Rome, GA 30161 for a Stipulated Sum contract, according to Contract Documents.

1.4 CONTRACT TIME

A. Identify Contract Time in Bid Form. Completion date in Agreement shall be Contract Time added to commencement date.

B. Owner requires Work of this Contract be completed as soon as possible. Consideration will be given to time of completion when reviewing submitted Bids.

1.5 DEFINITIONS

A. Bidding Documents: Contract Documents supplemented with Advertisement for Bids, Invitation to Bid, Instructions to Bidders, Information Available to Bidders, Bid Form, Bid Form Supplements and Appendices, and Bid securities.

B. Bid: Executed Bid Form and required attachments submitted according to Instructions to Bidders.

C. Bid Sum: Monetary sum identified by the Bidder in the Bid Form.

1.6 CONTRACT DOCUMENTS IDENTIFICATION

A. Contract Documents are identified as **Bid Number #039-15** and Project number 14047 as prepared by CEVIAN Design Lab, LLC located at 208 Broad Street, Rome GA 30161 and identified in the Project Manual.

1.7 AVAILABILITY OF DOCUMENTS

A. Bidding Documents may be obtained as stated in Invitation to Bid.

B. Bidding Documents can be purchased through General Contract and Subcontract Bidders, Green's Blueprinting, LLC, located at 169 S. Church Street, Canton, GA 30114, phone 770-479-3773.

C. Bidding Documents and drawings can be obtained at the website www.romefloyd.com. They are to be printed on Arch D (24" x36") media.

D. Partial sets of Bidding Documents will not be issued.

1.8 EXAMINATION OF DOCUMENTS

A. Bidding Documents may be viewed at the office of the Owner.

B. Upon receipt of Bidding Documents, verify documents are complete, Notify Architect if documents are incomplete.

C. Immediately notify Architect/Engineer upon finding discrepancies or omissions in Bidding Documents.

1.9 INQUIRIES AND ADDENDA

A. Direct questions simultaneously via email to Bill Gilliland, bgilliland@romega.us and Jessica Bittle, jessica@ceviandesign.com.

B. Verbal answers are not binding on any party.

C. ***Submit questions not less than seven days before date set for receipt of Bids.*** Replies will be made by Addenda, which may be issued during Bidding period. Replies will be posted on the City of Rome website www.romefloyd.com. Addenda become part of Contract Documents. Include resultant costs in the Bid Sum.

1.10 PRODUCT SUBSTITUTIONS

A. Where Bidding Documents stipulate particular products, substitution requests will be considered by the Architect/Engineer up to 10 days before receipt of Bids.

B. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products. Comply with substitution request submittal requirements in Section 01 60 00 - Product Requirements including the use of the Substitution Request Form.

C. When a request to substitute a product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.

D. In submission of substitutions to products specified, Bidders shall include in their Bid changes required in the Work to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitutions will not be considered.

1.11 SITE EXAMINATION

A. Examine Project Site before submitting a Bid.

B. A visit to Project Site has been arranged for Bidders at ***10:00 AM local standard time*** ***on the 30th day of June, 2015***, at 601 Broad Street, Rome, GA 30161 located at site location.

1.12 INQUIRIES AND ADDENDA

A. Direct questions simultaneously via email to Bill Gilliland, bgilliland@romega.us and Jessica Bittle, jessica@ceviandesign.com.

B. Verbal answers are not binding on any party.

C. ***Submit questions not less than seven days before date set for receipt of Bids.*** Replies will be made by Addenda, which may be issued during Bidding period. Replies will be posted on the City of Rome website www.romefloyd.com. Addenda become part of Contract Documents. Include resultant costs in the Bid Sum.

1.13 PRODUCT SUBSTITUTIONS

A. Where Bidding Documents stipulate particular products, substitution requests will be considered by the Architect/Engineer up to 10 days before receipt of Bids.

E. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products. Comply with substitution request submittal requirements in Section 01 60 00 - Product Requirements including the use of the Substitution Request Form.

F. When a request to substitute a product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.

G. In submission of substitutions to products specified, Bidders shall include in their Bid changes required in the Work to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitutions will not be considered.

1.14 SITE EXAMINATION

A. Examine Project Site before submitting a Bid.

B. A visit to Project Site has been arranged for Bidders at ***10:00 AM local standard time*** ***on the 30th day of June, 2015***, at 601 Broad Street, Rome, GA 30161 located at site location.

1.15 PREBID MEETING

1.16 INQUIRIES AND ADDENDA

A. Direct questions simultaneously via email to Bill Gilliland, bgilliland@romega.us and Jessica Bittle, jessica@ceviandesign.com.

B. Verbal answers are not binding on any party.

C. ***Submit questions not less than seven days before date set for receipt of Bids.*** Replies will be made by Addenda, which may be issued during Bidding period. Replies will be posted on the City of Rome website www.romefloyd.com. Addenda become part of Contract Documents. Include resultant costs in the Bid Sum.

1.17 PRODUCT SUBSTITUTIONS

A. Where Bidding Documents stipulate particular products, substitution requests will be considered by the Architect/Engineer up to 10 days before receipt of Bids.

H. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products. Comply with substitution request submittal requirements in Section 01 60 00 - Product Requirements including the use of the Substitution Request Form.

I. When a request to substitute a product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.

J. In submission of substitutions to products specified, Bidders shall include in their Bid changes required in the Work to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitutions will not be considered.

1.18 SITE EXAMINATION

A. Examine Project Site before submitting a Bid.

B. A visit to Project Site has been arranged for Bidders at ***10:00 AM local standard time on the 30th day of June, 2015***, at 601 Broad Street, Rome, GA 30161 located at site location.

1.19 PREBID MEETING

A. A pre-bid meeting is scheduled for 10:00 AM local standard time on the 30th day of June, 2015, at 601 Broad Street, Rome, GA 30161 located at site location.

B. General Contract and major Subcontract Bidders are invited to attend.

1.20 INQUIRIES AND ADDENDA

A. Direct questions simultaneously via email to Bill Gilliland, bgilliland@romega.us and Jessica Bittle, jessica@ceviandesign.com.

B. Verbal answers are not binding on any party.

C. ***Submit questions not less than seven days before date set for receipt of Bids.*** Replies will be made by Addenda, which may be issued during Bidding period. Replies will be posted on the City of Rome website www.romefloyd.com. Addenda become part of Contract Documents. Include resultant costs in the Bid Sum.

1.21 PRODUCT SUBSTITUTIONS

A. Where Bidding Documents stipulate particular products, substitution requests will be considered by the Architect/Engineer up to 10 days before receipt of Bids.

K. With each substitution request, provide sufficient information for Architect/Engineer to determine acceptability of proposed products. Comply with substitution request submittal requirements in Section 01 60 00 - Product Requirements including the use of the Substitution Request Form.

L. When a request to substitute a product is made, Architect/Engineer may approve the substitution. Approved substitutions will be identified by Addenda.

M. In submission of substitutions to products specified, Bidders shall include in their Bid changes required in the Work to accommodate such approved substitutions. Later claims by the Bidder for an addition to the Contract Time or Contract Sum because of changes in Work necessitated by use of substitutions will not be considered.

1.22 SITE EXAMINATION

A. Examine Project Site before submitting a Bid.

B. A visit to Project Site has been arranged for Bidders at ***10:00 AM local standard time on the 30th day of June, 2015***, at 601 Broad Street, Rome, GA 30161 located at site location.

1.23 PREBID MEETING

A. A pre-bid meeting is scheduled for at 10:00 AM local standard time on the 30th day of June, 2015, at 601 Broad Street, Rome, GA 30161 located at site location.

B. General Contract and major Subcontract Bidders are invited to attend.

C. Representatives of the Architect/Engineer and Owner will attend.

D. Summarized minutes of this meeting will be posted on the website www.romefloyd.com. These minutes will not form part of Contract Documents.

E. Information relevant to Bidding Documents will be issued by Addenda.

1.24 BIDDER QUALIFICATIONS

A. To demonstrate qualification for performing the Work of this Contract, Bidders may be requested to submit written evidence of financial position, previous experience, current commitments, license to perform work in the State of Georgia.

1.25 SUBMISSION PROCEDURE

A. Submit one copy of executed offer on Bid Forms provided, signed and sealed with required security deposit in a closed opaque envelope, clearly identified with Bidder's name and address, Project name, Bid Number, and Owner's name on the outside.

B. Improperly completed information, including irregularities in security deposit/Bid bond, may be cause not to open the Bid Form envelope and to declare the Bid invalid or informal.

1.26 BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, and obscure, or Bids that contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at Owner's discretion.

1.27 BID SECURITY

A. Bids shall be accompanied by Bid security as follows:
   1. ***Bid bond of a sum no less than 5 percent of the Bid Sum on standard surety company form.***

B. Endorse Bid bond in name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

C. If the accepted Bidder fails to execute the Agreement and the indicated bonds within 7 days after the Notice of Award, the Notice of Award may be annulled and the Bid security of the Bidder will be forfeited.

D. After a Bid has been accepted, Bid security will be returned to the respective Bidders.

E. If no contract is awarded, Bid security will be returned.

1.28 PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide a performance and payment bond as described in Document 00 73 13 - Supplementary Conditions – AIA

B. Include the cost of performance assurance bonds in the Bid Sum.

1.29 BID FORM REQUIREMENTS

A. Complete requested information in the Bid Form and Bid Form Supplements.

1.30 BID FORM SIGNATURE

A. Sign Bid Form as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Include the words "Sole Proprietor" under the signature. Affix seal.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Include the word "Partner" under each signature. Affix seal to each signature.
   3. Corporation: Signature of at least one duly authorized signing officer. Include the officer's capacity under each signature. Affix the corporate seal. If Bid is signed by officials other than the president, secretary, or treasurer of the company, submit a copy of the bylaws or a resolution of the board of directors authorizing them to do so, with the Bid Form in the Bid envelope.
   4. Joint Venture: Signature of all parties of the joint venture under their respective seals in a manner appropriate to such party as described above, similar to requirements for Partnerships.

1.31 ADDITIONAL BID INFORMATION

A. Complete and submit Document 00 43 00 - Procurement Form Supplements with Bid.

B. Complete and submit the following Bid Form Appendices with Bid
   1. Appendix A – List of Subcontractors: Include names of all major Subcontractors and portions of the Work each Subcontractor will perform.
   2. Appendix B - List of Alternates: Include amount for the addition or subtraction of work from the contract sum.

1.32 SELECTION AND AWARD OF ALTERNATES

A. Submit variation of Bid Sum for alternates listed in Document 00 43 00 - Procurement Form Supplements. Calculate change in Bid Sum by adding to or deducting from base Bid Sum.

B. Bids will be evaluated on total of base Bid Sum with full consideration of alternates.

C.

1.33 BID OPENING

A. Include the cost of performance assurance bonds in the Bid Sum.

1.34 BID FORM REQUIREMENTS

A. Complete requested information in the Bid Form and Bid Form Supplements.

1.35 BID FORM SIGNATURE

A. Sign Bid Form as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Include the words "Sole Proprietor" under the signature. Affix seal.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Include the word "Partner" under each signature. Affix seal to each signature.
   3. Corporation: Signature of at least one duly authorized signing officer. Include the officer's capacity under each signature. Affix the corporate seal. If Bid is signed by officials other than the president, secretary, or treasurer of the company, submit a copy of the bylaws or a resolution of the board of directors authorizing them to do so, with the Bid Form in the Bid envelope.
   4. Joint Venture: Signature of all parties of the joint venture under their respective seals in a manner appropriate to such party as described above, similar to requirements for Partnerships.

1.36 ADDITIONAL BID INFORMATION

A. Complete and submit Document 00 43 00 - Procurement Form Supplements with Bid.

B. Complete and submit the following Bid Form Appendices with Bid
   1. Appendix A – List of Subcontractors: Include names of all major Subcontractors and portions of the Work each Subcontractor will perform.
   2. Appendix B - List of Alternates: Include amount for the addition or subtraction of work from the contract sum.

1.37 SELECTION AND AWARD OF ALTERNATES

A. Submit variation of Bid Sum for alternates listed in Document 00 43 00 - Procurement Form Supplements. Calculate change in Bid Sum by adding to or deducting from base Bid Sum.

B. Bids will be evaluated on total of base Bid Sum with full consideration of alternates.

1.38 BID OPENING

A. Bids will be opened publicly immediately after time for receipt of Bids. Bidders may be present

B. Include the cost of performance assurance bonds in the Bid Sum.

1.39 BID FORM REQUIREMENTS

A. Complete requested information in the Bid Form and Bid Form Supplements.

1.40 BID FORM SIGNATURE

A. Sign Bid Form as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Include the words "Sole Proprietor" under the signature. Affix seal.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Include the word "Partner" under each signature. Affix seal to each signature.
   3. Corporation: Signature of at least one duly authorized signing officer. Include the officer's capacity under each signature. Affix the corporate seal. If Bid is signed by officials other than the president, secretary, or treasurer of the company, submit a copy of the bylaws or a resolution of the board of directors authorizing them to do so, with the Bid Form in the Bid envelope.
   4. Joint Venture: Signature of all parties of the joint venture under their respective seals in a manner appropriate to such party as described above, similar to requirements for Partnerships.

1.41 ADDITIONAL BID INFORMATION

A. Complete and submit Document 00 43 00 - Procurement Form Supplements with Bid.

B. Complete and submit the following Bid Form Appendices with Bid
   1. Appendix A – List of Subcontractors: Include names of all major Subcontractors and portions of the Work each Subcontractor will perform.
   2. Appendix B - List of Alternates: Include amount for the addition or subtraction of work from the contract sum.

1.42 SELECTION AND AWARD OF ALTERNATES

A. Submit variation of Bid Sum for alternates listed in Document 00 43 00 - Procurement Form Supplements. Calculate change in Bid Sum by adding to or deducting from base Bid Sum.

B. Bids will be evaluated on total of base Bid Sum with full consideration of alternates.

1.43 BID OPENING

A. Bids will be opened publicly immediately after time for receipt of Bids. Bidders may be present.

1.44 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of 30 days after Bid closing date.

1.45 ACCEPTANCE OF OFFER

A. Owner reserves the right to waive irregularities and to accept or reject any or all offers.

B. Notwithstanding delay in the preparation and execution of the Agreement, accepted Bidder shall be prepared, upon written Notice to Proceed, to commence work within seven days following receipt of official written order of Owner to proceed, or on date stipulated in such order.

END OF DOCUMENT

Knowledge for Creating and Sustaining the Built Environment

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Phone: _____

Address: _____

Trade Name: _____ Model No.: _____

Installer: _____ Phone: _____

Address: _____

History: ☐ New product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product:

☐

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____ Address: * Add a completed project address

_____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($_____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

Form Version: June 2004
CSI Form 13.1A

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: ☐

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ Other:

Form Version: June 2004
CSI Form 13.1A

SECTION 00 31 00 - AVAILABLE PROJECT INFORMATION

1.1 SUMMARY

A. Document Includes:
   1. Subsurface investigation report.

B. Available Project information has been furnished by Owner to Architect for use in designing this Project.
   1. Each Bidder shall be fully familiar with available Project information, which has been prepared for Owner by separate consultants.
   2. Available Project information is offered solely for reference and shall not be considered part of Contract Documents. Data contained in Documents prepared by Owner's separate consultants is believed to be reliable; however, Owner and Architect do not guarantee their accuracy or completeness.
   3. In preparing their Bids, Bidders shall consider and evaluate data contained in available Project information as well as Contract Documents prepared by Architect.

1.2 SUBSURFACE INVESTIGATION REPORT

A. A copy of a geotechnical report is included as an attachment to this Document, titled Rome City Auditorium Modernization, dated September 9, 2014, and prepared by Geo Hydro Engineers.

B. The report identifies properties of below-grade conditions and offers recommendations for design of foundations, prepared primarily for use of Architect.

C. Recommendations described are not requirements of the Contract unless specifically referenced in Contract Documents.

D. The report, by its nature, cannot reveal all conditions existing on the Site. Should subsurface conditions be found to vary substantially from this report, changes in design and construction of foundations will be made, with resulting changes to Contract **S**um and/or Contract Time.

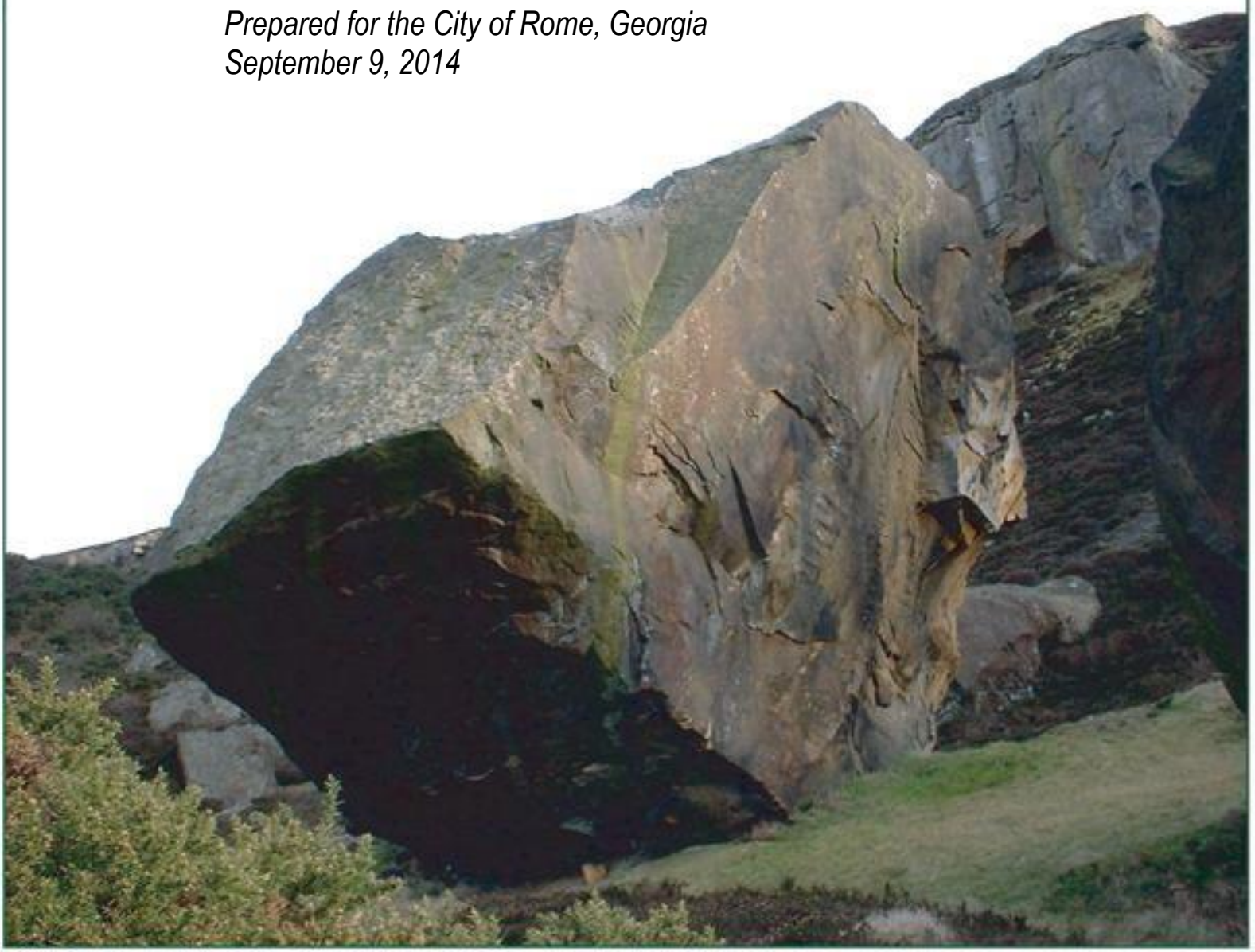
END OF DOCUMENT

GEO HYDRO ENGINEERS

Report of Subsurface Exploration and Geotechnical Engineering Evaluation

Rome City Auditorium Modernization
Rome, Georgia

Prepared for the City of Rome, Georgia
September 9, 2014



Mr. William Gilliland
City of Rome Purchasing Department
601 Broad Street
Rome, Georgia 30162

September 9, 2014

Report of Subsurface Exploration
and Geotechnical Engineering Evaluation
Rome City Auditorium Modernization
Rome, Georgia
Geo-Hydro Project Number 140455.20

Dear Mr. Gilliland:

Geo-Hydro Engineers, Inc. has completed the authorized subsurface exploration for the above referenced project. The scope of services for this project was outlined in our proposal number 17016.2 dated August 4, 2014.

PROJECT INFORMATION

The original Rome City Auditorium was completed in 1916. The existing 1-story addition behind the original structure was completed in the 1970s. Based on our conversations with you, we understand that the stage and orchestra pit areas at the north end of the original 3-story building (and immediately adjacent to the 1-story addition) were underpinned in the 1980s after the development of some settlement problems in the stage area.

The modernization work for the existing Rome City Auditorium includes the removal and subsequent replacement of the existing 1-story addition and the underlying crawl space at the north end of the original building. The new 2-story addition will be constructed within the footprint of the existing building. The new building will be underlain by a half-story crawl space. Roof loading for the new addition will include chiller units for the HVAC system.

The new addition is still being designed, and the type of construction (steel-frame or wood-frame) has not been finalized. Based on our recent conversations with Cevian Design, a steel-frame addition is currently the most likely option. Structural load information has not been developed; however, we anticipate that column loads for a steel-frame structure will not exceed 150 kips.

EXPLORATORY PROCEDURES

The subsurface exploration consisted of two machine-drilled soil test boring (B-1 and B-2) performed at the approximate locations shown on Figure 2 included in the Appendix. The test borings were located in the field by Geo-Hydro by measuring angles and distances from existing site features. In general, boring locations should be considered approximate.

Standard penetration testing, as provided for in ASTM Dl586, was performed at select intervals in the soil test borings. Soil samples obtained from the drilling operation were examined and classified in general accordance with ASTM D2488 (Visual-Manual Procedure for Description of Soils). Soil classifications include the use of the Unified Soil Classification System described in ASTM D2487 (Classification of Soils for Engineering Purposes). The soil classifications also include our evaluation of the geologic origin of the soils. Evaluations of geologic origin are based on our experience and interpretation and may be subject to some degree of error.

Descriptions of the soils encountered, groundwater conditions, penetration resistances, and other pertinent information are provided in the test boring records included in the Appendix.

REGIONAL GEOLOGY

The project site is located in the Appalachian Valley and Ridge Province of Georgia. Based on review of geologic maps, it appears that the site is underlain by a geologic unit known as the Conasauga formation and the rock types underlying the site are primarily limestone, dolomite, and shale.

The soils which form from the weathering of the parent rock are termed residual soils. The residual soils derived from limestone or shale are frequently clayey and can be highly plastic. The residual soils typically contain fragments of insoluble rock such as chert.

Solution activity within limestone units occurs in the Valley and Ridge Province particularly along joints, faults, and the bedding planes of the rock. Solution activity in the limestone and dolomite of this area often results in the development of an extremely irregular rock surface which frequently has deep slots. The transition from soil to hard rock is generally rather abrupt, with the soils encountered immediately above the rock frequently having a much lower consistency than near the ground surface.

Solutioning in the limestone and dolomite can result in the formation of caverns within the rock, and the development of sinkholes and cavities within the overburden soils. Depending upon the stage of development of sinkholes, evidence of ground subsidence may be readily observable at the ground surface, or essentially no indication of impending sinkhole development may be present at the ground surface. The size and frequency of subsurface voids is highly variable and depends on several factors related to geology, climate, and man-induced conditions. The stability of subsurface voids is related not only to the structural characteristics of the subsurface void; but also to proposed site grading, the magnitude of structural loads, significant changes in the groundwater level, drought, and any number of other factors.

Stream valleys and areas adjacent to rivers and streams may contain alluvial (water-deposited) soils, depending on ground surface topography, stream flow characteristics, and other factors. By nature, alluvial soils can be highly variable depending upon the energy regime at the time of deposition. Coarse materials such as sand or gravel are deposited in higher energy environments, while fine grained materials such as silt and clay are deposited in low energy environments. Alluvial soils may also contain significant organic materials, and are frequently encountered in a loose, saturated condition. In many cases, fine-grained alluvial soils will be highly compressible and have relatively low shear strength.

Near-surface geologic conditions at the site have been modified by previous grading and construction activities.

TEST BORING SUMMARY

Starting at the ground surface, both of the borings encountered approximately 4 to 5 inches of asphalt pavement directly over a prepared soil subgrade.

Beneath the asphalt, borings B-1 and B-2 encountered fill materials extending to a depth of approximately 12 feet. The fill was generally classified as very loose to loose silty fine sand. Standard penetration resistances recorded in the fill ranged from 0 to 6 blows per foot.

Beneath the fill, borings B-1 and B-2 encountered alluvial soils extending to a depth of approximately 17 feet. The alluvium was generally classified as silty fine sand and fine sandy silt. A standard penetration resistance of 1 blow per foot was recorded in the alluvium in both borings.

Beneath alluvial soils, both borings encountered residual soil typically of the Valley and Ridge geologic province. The residuum was generally classified as silty fine to medium sand. Standard penetration resistances in the residual soils ranged from 0 to 52 blows per foot.

Boring B-1 encountered a lens of partially weathered rock at an approximate depth of 17 to 22 feet. Partially weathered rock was also encountered in Boring B-1 at an approximate depth of 67 feet below the ground surface. Partially weathered rock is locally defined as residual material with a standard penetration resistance of 100 blows per foot or greater.

Boring B-1 was terminated at a depth of 70 feet and boring B-2 was terminated at a depth of 35 feet. Neither boring encountered auger refusal.

At the time of drilling, groundwater was encountered in boring B-2 at a depth of 23 feet. It should be noted that groundwater levels will fluctuate over time and are affected by seasonal rainfall variations, river levels, and other factors. For safety reasons, both borings were backfilled with soil cuttings immediately after drilling.

For more detailed descriptions of subsurface soil conditions please refer to the test boring records in the Appendix.

EVALUATIONS AND RECOMMENDATIONS

The following evaluations and recommendations are based on the information available on the proposed construction, the data obtained from the test borings, and our experience with soils and subsurface conditions similar to those encountered at this site. Because test borings represent a statistically small sampling of subsurface conditions, it is possible that conditions may be encountered during construction that are substantially different from those indicated by the test borings. In these instances, adjustments to the design and construction may be necessary.

The following geotechnical characteristics of the site should be taken into account for planning and design:

- Both of the borings encountered previously placed fill materials extending to a depth of about 12 feet, as well as underlying alluvial soils extending to a depths of approximately 17 feet. In our opinion, the existing fill and alluvial materials cannot be relied upon to directly support the proposed construction using conventional shallow foundations without great risk of excessive and damaging foundation settlement. Based on the subsurface conditions at the site and anticipated foundation loads, we recommend using aggregate piers to improve the stress-strain properties of the materials within the foundation influence zone and keep foundation settlement within tolerable limits. Additionally, aggregate piers must be installed in all areas where floors or ancillary structures will be supported at grade.

- Aggregate piers (Geopiers or Vibro-Piers) are a ground improvement technique by which graded aggregate base (GAB) or #57 stone is rammed or vibrated into predrilled holes. Typically, the piers will penetrate all existing fill and alluvial materials, improving the stress-strain characteristics of the treated zone. After installation of the aggregate piers, the new structure is supported on conventional shallow foundations or reinforced concrete mats. The number, depth, and configuration of aggregate piers will be determined by the design-build company (Geopier Foundation Company or Hayward Baker), as well as the allowable bearing pressure for foundation design. Based on our experience, an allowable bearing pressure of 3,000 psf should be attainable for aggregate-pier supported foundations.

The following sections provide recommendations regarding these issues and other geotechnical aspects of the project.

Existing Fill Materials

Low consistency existing fill materials were encountered in both of the soil test borings. There are several important facts that should be considered regarding existing fill materials and the limitations of subsurface exploration.

- The quality of existing fill materials can be highly variable, and test borings are often not able to detect all of the zones or layers of poor quality fill materials.

- Layers of poor quality fill materials that are less than about 2.5 to 5 feet thick may often remain undetected by soil test borings due to the discrete-interval sampling method used in this exploration.

- The interface between existing fill materials and the underlying alluvial soils may include a layer of organic material that was not properly stripped off during the original grading.
- The construction budget should include funds for management of poor quality existing fill materials.
- Subsurface exploration is simply not capable of disclosing all conditions that may require remediation.

General Site Preparation

The existing building, including all of the underlying foundations and associated utilities should be demolished, excavated, and removed from the site. Any existing underground utilities extending throughout the footprint of the addition should be excavated and removed and rerouted outside of new construction areas. All excavations resulting from rerouting of underground utilities and from demolition of below-grade structures should be backfilled in accordance with the *Structural Fill* section of this report.

It is important to note that the exposed soil subgrade will be unstable following demolition of the existing structure. However, due to the proximity of the contiguous historic auditorium and the depth of the loose existing fill and alluvial soils, remedial undercutting should not be performed within the footprint of the new addition. We recommend that areas within the new addition where fill placement is necessary to backfill demolition excavations and re-establish the existing subgrade elevation simply be free of standing water. Fill and backfill materials should be placed and compacted with reasonable effort in general accordance with the *Structural Fill* section of this report, but it is not necessary to achieve the recommended minimum degree of compaction presented in the *Structural Fill* section. The final subgrade simply needs to be firm enough to support the aggregate pier installation equipment.

During site preparation, old foundations, abandoned utilities, burn pits, or trash pits may be encountered. This is not an unusual occurrence in pre-graded or pre-developed sites. All too frequently such buried material occurs in isolated areas which are not detected by the soil test borings. Any buried foundations, utilities, debris or trash found during the construction operation should be reviewed by Geo-Hydro. Remedial recommendations will be subsequently provided if appropriate.

Excavation Characteristics

Significant excavation to depths beyond a few feet below the existing ground surface are not anticipated. The existing fill materials should be readily removable with conventional soil excavation equipment such as loaders, backhoes, etc.

Suitability of Excavated Material for Reuse as Structural Fill

Based on the results of soil classifications, the fill materials at the site appear suitable for reuse as structural fill. Routine adjustment of moisture content will be necessary to allow proper placement and compaction.

It is important to establish as part of the construction contract whether soils having elevated moisture content will be considered suitable for reuse. We often find this issue to be a point of contention and a source of delays and change orders. From a technical standpoint, soils with moisture contents wet of optimum as determined by the standard Proctor test (ASTM D698) can be reused provided that the moisture is properly adjusted to within the workable range. From a practical standpoint, wet soils can be very difficult to dry in small or congested sites and such difficulties should be considered during planning and budgeting. A clear understanding by the general contractor and grading subcontractor regarding the reuse of excavated soils will be important to avoid delays and unexpected cost overruns.

Structural Fill

We provide the following recommendations for any incidental fill outside the building addition footprint.

Materials selected for use as structural fill should be free of organic matter, waste construction debris, and other deleterious materials. The material should not contain rocks having a diameter over 4 inches. It is our opinion that the following soils represented by their USCS group symbols will typically be suitable for use as structural fill and are usually found in abundance in the Valley and Ridge Province: (SM), (ML), and (CL). The following soil types are typically suitable but are not abundant in the Valley and Ridge Province: (SW), (SP), (SP-SM), and (SP-SC). The following soil types are considered unsuitable: (OL), (OH), and (Pt).

Highly plastic silt or clay, (MH) or (CH) soils, should be used with extreme caution. Such soils will require protection against desiccation or inundation during the construction process. Soils which have a liquid limit greater than 60 and a plasticity index greater than 35 will require blending with less plastic materials to result in lower Atterberg limits.

Laboratory Proctor compaction tests and classification tests should be performed on representative samples obtained from the proposed borrow material to provide data necessary to determine acceptability and for quality control. The moisture content of suitable borrow soils should generally be no more than 3 percentage points below or above optimum at the time of compaction. Tighter moisture limits may be necessary with certain soils.

Suitable fill material should be placed in thin lifts. Lift thickness depends on the type of compaction equipment, but in general, maximum lifts of 8 inches loose measurement are recommended. The soil should be compacted by heavy compaction equipment such as a self-propelled sheepsfoot roller. Within small excavations such as in utility trenches, around manholes, or behind retaining walls, we recommend the use of “wacker packers” or “Rammax” compactors to achieve the specified compaction. Maximum loose lift thicknesses of 4 to 6 inches are recommended in small area fills.

We recommend that structural fill be compacted to at least 95 percent of the standard Proctor maximum dry density (ASTM D698). The upper 12 inches of floor slab subgrade soils should be compacted to at least 98 percent of the standard Proctor maximum dry density. Following Georgia DOT guidelines, the upper 12 inches of pavement subgrade soils should be compacted to at least 100 percent of the standard

Proctor maximum dry density. Additionally, the in-place maximum dry density of structural fill should be no less than 90 pcf. Geo-Hydro should perform density tests during fill placement.

Earth Slopes

Temporary construction slopes should be designed in strict compliance with OSHA regulations. The exploratory borings indicate that most soils at the site are Type C as defined in 29 CFR 1926.650 (1994 Edition). This dictates that temporary construction slopes for excavation depths of 20 feet or less should be no steeper than 1.5H:1V. Temporary construction slopes should be closely observed on a daily basis by the contractor's "competent person" for signs of mass movement: tension cracks near the crest, bulging at the toe of the slope, etc. The responsibility for excavation safety and stability of construction slopes should lie solely with the contractor.

We recommend that extreme caution be observed in trench excavations. Several cases of loss of life due to trench collapses in Georgia point out the lack of attention given to excavation safety on some projects. We recommend that applicable local and federal regulations regarding temporary slopes, and shoring and bracing of trench excavations be closely followed.

Formal analysis of slope stability was beyond the scope of work for this project. Based on our experience, permanent cut or fill slopes should be no steeper than 2H:1V to maintain long term stability and to provide ease of maintenance. The crest or toe of cut or fill slopes should be no closer than 10 feet to any foundation or to the edge of any pavement that will handle truck traffic. The crest or toe should be no closer than 5 feet to the edge of any pavements supporting cars or light truck traffic or parking. Erosion protection of slopes during construction and during establishment of vegetation should be considered an essential part of construction.

Earth Pressure

Three earth pressure conditions are generally considered for retaining wall design: "at rest", "active", and "passive" stress conditions. Retaining walls which are rigidly restrained at the top and will be essentially unable to rotate under the action of earth pressure (such as basement or foundation walls) should be designed for "at rest" conditions. Retaining walls which can move outward at the top as much as 0.5 percent of the wall height (such as free-standing walls) should be designed for "active" conditions. For the evaluation of the resistance of soil to lateral loads the "passive" earth pressure must be calculated. It should be noted that full development of passive pressure requires deflections toward the soil mass on the order of l.1 percent to 4.0 percent of total wall height.

Earth pressure may be evaluated using the following equation:

$$p_h = K\,(D_w Z + q_s) + W_w(Z-d)$$

where: p_h = horizontal earth pressure at any depth below the ground surface (Z).
W_w = unit weight of water
Z = depth to any point below the ground surface

d = depth to groundwater surface
D_w = wet unit weight of the soil backfill (depending on borrow sources). The wet unit weight of most residual soils may be expected to range from approximately 115 to 125 pcf. Below the groundwater level, D_w must be the buoyant weight.
q_s = uniform surcharge load (add equivalent uniform surcharge to account for construction equipment loads)
K = earth pressure coefficient as follows:

Earth Pressure Condition	Coefficient
At Rest (K_o)	0.6
Active (K_a)	0.38
Passive (K_p)	2.8

The groundwater term, $W_w(Z-d)$, should be used if no drainage system is incorporated behind retaining walls. If a drainage system is included which will not allow the development of any water pressure behind the wall, then the groundwater term may be omitted. The development of excessive water pressure is a common cause of retaining wall failures. Drainage systems should be carefully designed to insure that long term permanent drainage is accomplished.

The above design recommendations are based on the following assumptions:

- Horizontal backfill
- 95 percent standard Proctor compactive effort on backfill (ASTM D 698)
- No safety factor is included

For convenience, equivalent fluid densities are frequently used for the calculation of lateral earth pressures. For "at rest" stress conditions, an equivalent fluid density of 70 pcf may be used. For the "active" state of stress an equivalent fluid density of 46 pcf may be used. These equivalent fluid densities are based on the assumptions that drainage behind the retaining wall will allow *no* development of hydrostatic pressure; that native clayey silts or silty clays will be used as backfill; that the backfill soils will be compacted to at least 95 percent of standard Proctor maximum dry density; that backfill will be horizontal; and that no surcharge loads will be applied.

For analysis of sliding resistance of the base of a cast-in-place concrete retaining wall, the coefficient of friction may be taken as 0.35 for the soils at the project site. This is an ultimate value and an adequate factor of safety should be used in design. The force that resists base sliding is calculated by multiplying the normal force on the base by the coefficient of friction. Full development of the frictional force could require deflection of the base of roughly 0.l to 0.3 inches.

Foundation Design

Aggregate Piers

We recommend using aggregate piers to support all of the building foundations and any floors and ancillary structures supported a grade. If the final structural design includes a slab-on-grad instead of a crawl space, aggregate piers should also be used to support the slab-on-grade. The installation of aggregate piers involves drilling cylindrical shafts to a predetermined depth within foundation footprints or across the floor area of concern and compacting or vibrating crushed stone into the resulting open shafts. Aggregate piers will improve the stress-strain characteristics of the treated soil within the treated depth. This improvement will yield a reduced total settlement of foundations and reinforced concrete mats, and more uniform support conditions for foundations and floors.

In cases where the aggregate piers encounter shallow refusal within *fill materials,* it will be necessary to excavate the overburden and expose the material causing auger refusal. If the shallow obstruction cannot be removed, or if the obstruction is encountered at a depth greater than can reasonably be excavated, the pier configuration will have to be redesigned to allow additional elements to be installed. It is possible that obstructions may be encountered that may not allow practical redesign. Such cases should be evaluated individually by Geo-Hydro and the structural engineer.

Aggregate piers are proprietary systems that are procured on a design-build basis. There are two systems we recommend for this project; Geopiers®, a product of Geopier Foundation Company, and Vibro Piers®, a product of Hayward Baker. The number, depth, and configuration of aggregate piers will be determined by the design-build company, as well as the allowable bearing pressure for foundation design. Based on our experience, an allowable bearing pressure of 3,000 psf should be attainable for foundations supported by aggregate piers. The project structural engineer should work directly with the selected aggregate pier firm to ensure a suitable design for foundation support. If necessary, higher allowable bearing pressures can be achieved.

Conventional Shallow Foundations

After building pad preparation and aggregate pier installation have been completed in accordance with the recommendations of this report, it is our opinion that the planned structure can be supported using conventional shallow foundations. We recommend that footings be designed for an allowable bearing pressure of 3,000 psf or less. In addition, we recommend a minimum width of 24 inches for column footings. Continuous wall footings should also have a minimum width of 24 inches corresponding to the diameter of the aggregate piers. Footings should bear at a minimum depth of 18 inches below the prevailing exterior ground surface elevation to help avoid potential problems due to frost heave.

Foundation bearing surface evaluations should be performed in all footing excavations prior to placement of reinforcing steel. These evaluations should be performed by Geo-Hydro to confirm that the exposed surface of the aggregate piers have been properly prepared in accordance with the requirements of the aggregate pier designer. Typically, recompaction of the exposed aggregate surface is required.

Foundation Risk Associated with Limestone

Limestone is noted for the formation of sinkholes, cavities within the residual soil mass, and caverns within the rock itself. Each of these characteristics are interrelated and have serious ramifications for structures. Of considerable importance in the foundation support of relatively lightly loaded structures is the presence of voids, cavities, and solutioned soils within the overburden soil mass. Depending on the size and location of these features, they may adversely affect the support of shallow foundations, floors, pavements, rail lines, and any other structures supported at grade.

Seismic Design

The 2012 International Building Code (IBC 2012) allows three methods for determination of the *Site Class*. These methods include determining the average shear wave velocity in the upper 100 feet of overburden V_S, using standard penetration test N-values to determine the average N for the same depth, or determining the average undrained shear strength for the upper 100 feet of the soil/rock profile. Based on the N-values from the borings and following the prescribed calculation procedure in IBC 2012 (ASCE 7-10), a ***Site Class E*** should be used for design purposes.

The following table presents seismic design values interpolated from applicable seismic hazard maps from IBC 2012 for this project.

Parameter	2012 IBC with GA Amendments
S_s (%g)	0.312
S_1 (%g)	0.111
Site Class	E
F_A	2.3
F_V	3.467
S_{MS} (%g)	0.719
S_{M1} (%g)	0.385
S_{DS} (%g)	0.479
S_{D1} (%g)	0.256
Occupancy Category	III
Seismic Design Category	D

Liquefaction Potential

Based on the information obtained from the soil test borings, it is our opinion that the potential for liquefaction of the soils at the site due to earthquake activity is low to moderate.

Floor Slab Subgrade Preparation

A crawl space is currently planned for the building addition. However, if the final design includes a slab-on-grade, aggregate piers must be installed to support the slab-on-grade floor. The upper surfaces of the aggregate piers in the area of concrete slab-on-grade support are often disturbed during foundation excavation, plumbing installation, and superstructure construction. We recommend that the floor slab subgrade be evaluated by Geo-Hydro immediately prior to beginning floor slab construction to verify that that the exposed surface of the aggregate piers have been properly prepared in accordance with the requirements of the aggregate pier designer. Typically, recompaction of the exposed aggregate surface is required.

Moisture Control for Concrete Slabs

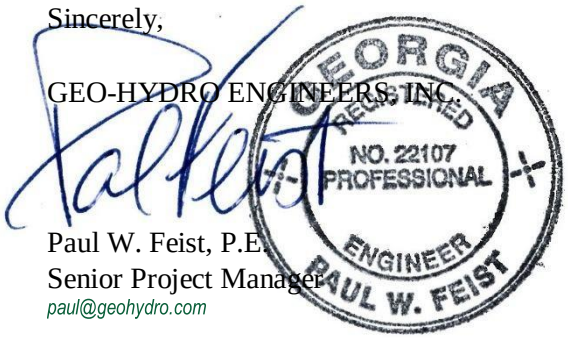
To prevent the capillary rise of groundwater from adversely affecting the concrete slab-on-grade floor, we recommend that if slab-on-grade floors are incorporated into this project, they should be underlain by a minimum of 5 inches of graded aggregate base (GAB) compacted to at least 95 percent of the modified Proctor maximum dry density (ASTM D1557). The stone must be covered by a vapor retarder. We suggest polyethylene sheeting at least 10 mils thick as a minimum vapor retarder.

* * * * * *

We appreciate the opportunity to serve as your geotechnical consultant for this project, and are prepared to provide any additional services you may require. If you have any questions concerning this report or any of our services, please call us.

Sincerely,

GEO-HYDRO ENGINEERS, INC.



Paul W. Feist, P.E.
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Luis E. Babler, P.E.
Chief Engineer
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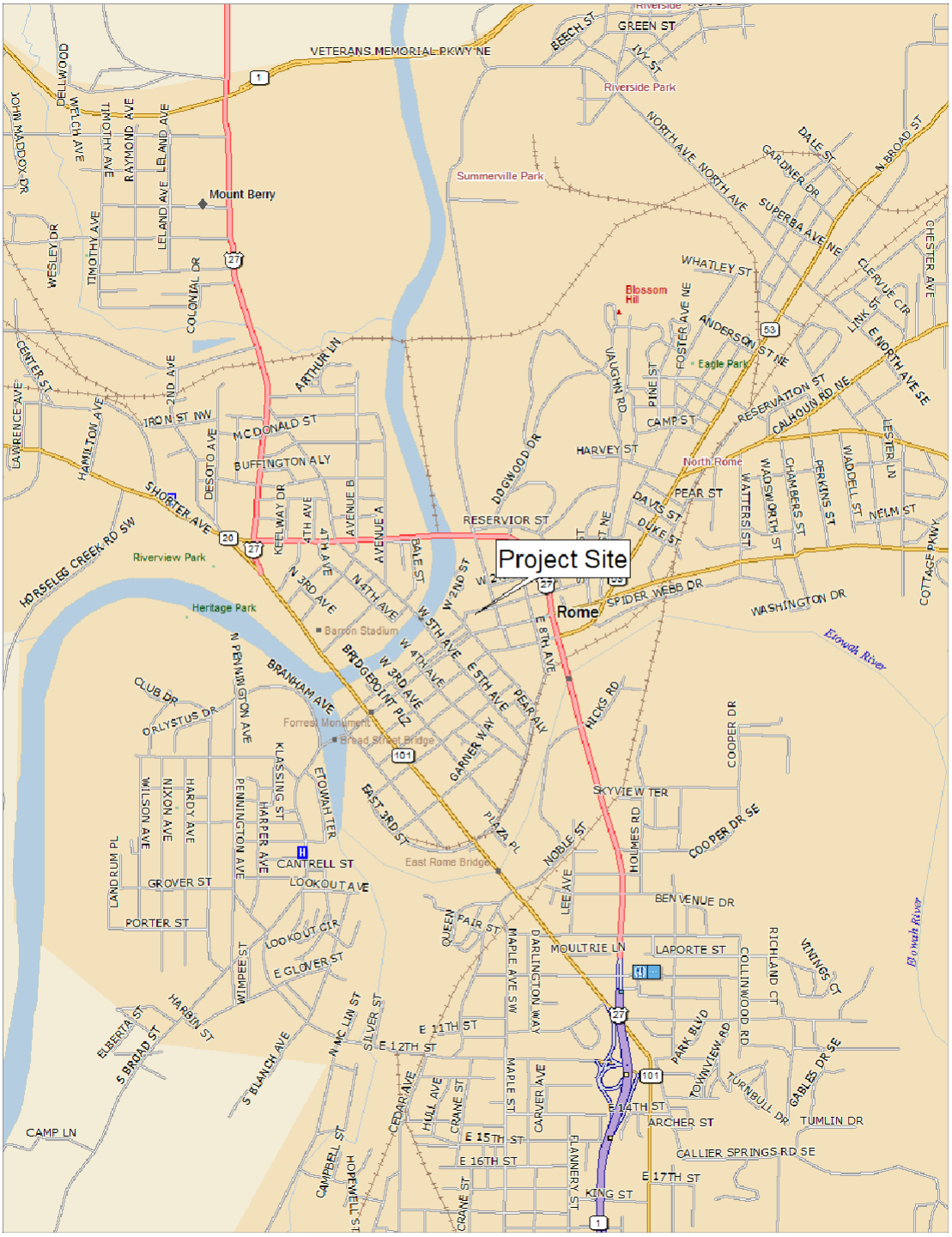
PWF/LEB/140455.20 Rome City Auditorium Modernization leb

APPENDIX

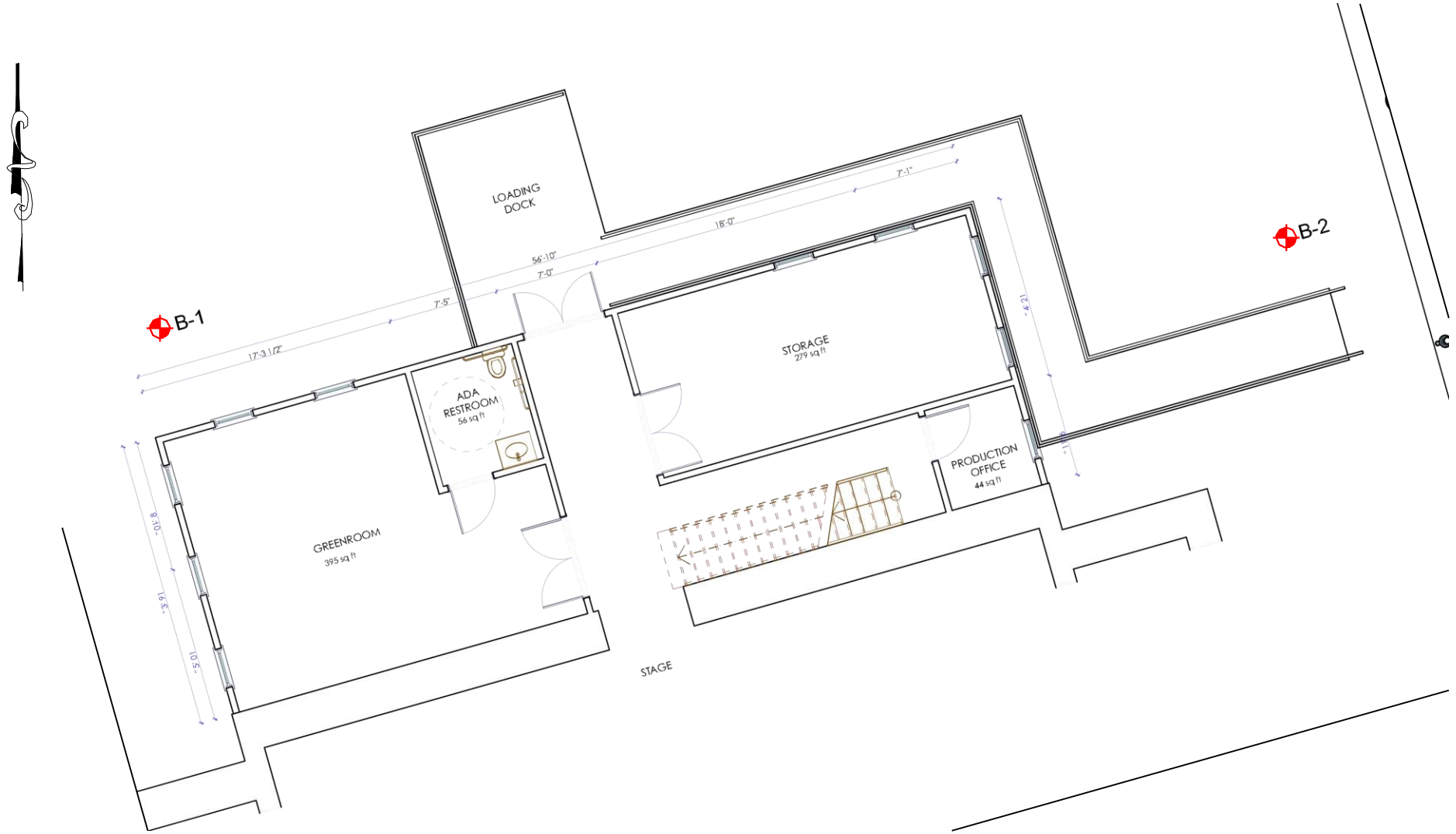


0 0.25 0.5 1 1.5

Approximate Scale, Miles

Figure 1: Site Location Plan

Rome City Auditorium
Rome, Georgia
Geo-Hydro Project Number 140455.20



Approximate Scale: 1"=10'

LEGEND: Soil Test Boring

Figure 2: Boring Location Plan

Rome City Auditorium
Rome, Georgia
Geo-Hydro Project Number 140455.20

Symbols and Nomenclature

Symbols

▌	Thin-walled tube (TWT) sample recovered
▯	Thin-walled tube (TWT) sample not recovered
●	Standard penetration resistance (ASTM D1586)
50/2”	Number of blows (50) to drive the split-spoon a number of inches (2)
65%	Percentage of rock core recovered
RQD	Rock quality designation - % of recovered core sample which is 4 or more inches long
GW	Groundwater
▼	Water level at least 24 hours after drilling
▽	Water level one hour or less after drilling
ALLUV	Alluvium
TOP	Topsoil
PM	Pavement Materials
CONC	Concrete
FILL	Fill Material
RES	Residual Soil
PWR	Partially Weathered Rock
SPT	Standard Penetration Testing

Penetration Resistance Results	Number of Blows, N	Approximate Relative Density
Sands	0-4	very loose
	5-10	loose
	11-20	firm
	21-30	very firm
	31-50	dense
	Over 50	very dense

	Number of Blows, N	Approximate Consistency
Silts and	0-1	very soft
Clays	2-4	soft
	5-8	firm
	9-15	stiff
	16-30	very stiff
	31-50	hard
	Over 50	very hard

Drilling Procedures

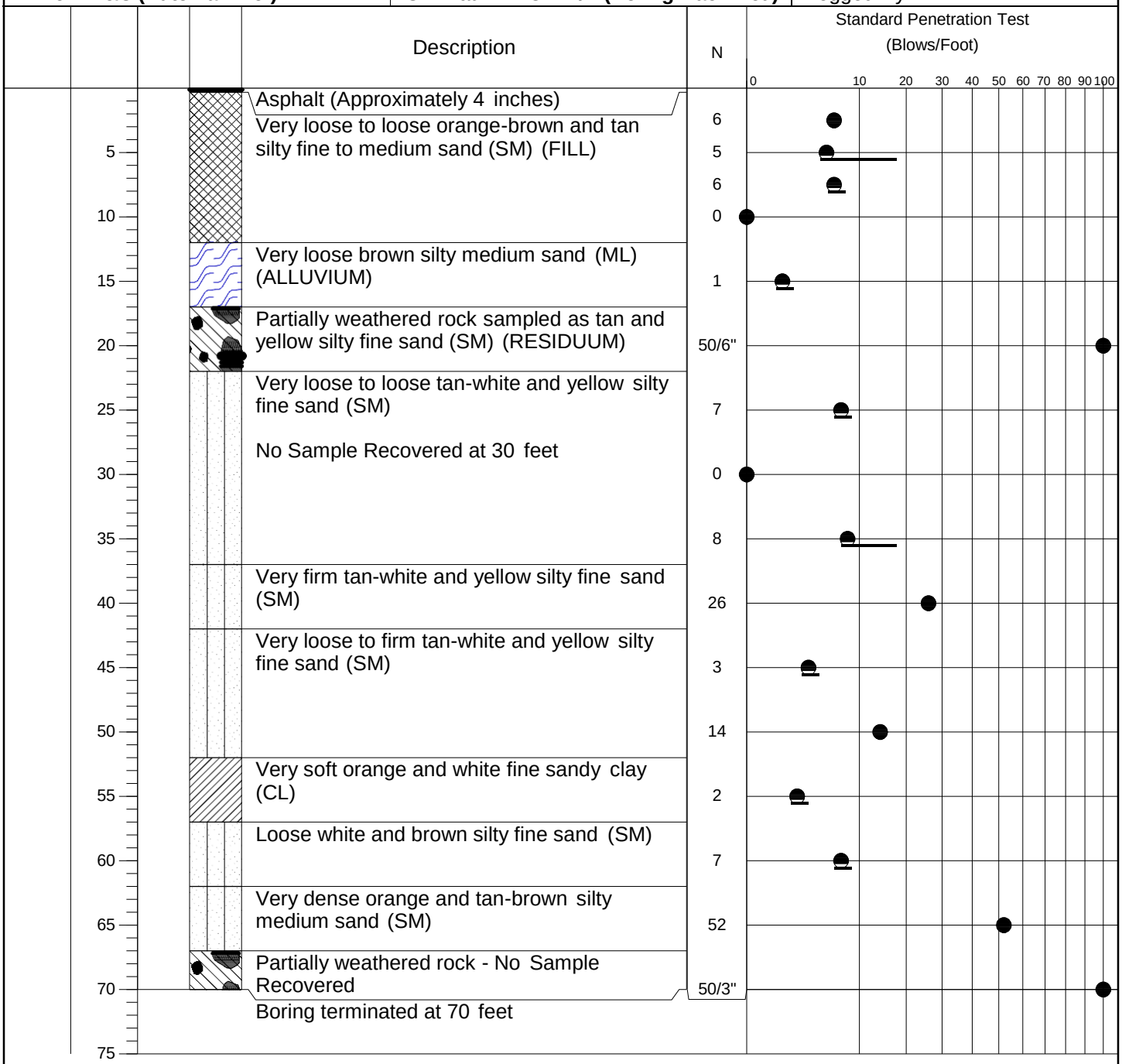
Soil sampling and standard penetration testing performed in accordance with ASTM D 1586. The standard penetration resistance is the number of blows of a 140-pound hammer falling 30 inches to drive a 2-inch O.D., 1.4-inch I.D. split-spoon sampler one foot. Rock coring is performed in accordance with ASTM D 2113. Thin-walled tube sampling is performed in accordance with ASTM D 1587.

B-1

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Rome City Auditorium**		Project No: **140455.20**
Location: **Rome, Georgia**		Date: **8/9/14**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev:
Driller: **B&C (Auto Hammer)**	GWT at 24 hrs: **N/A (Boring Backfilled)**	Logged By: **PF**



Remarks:

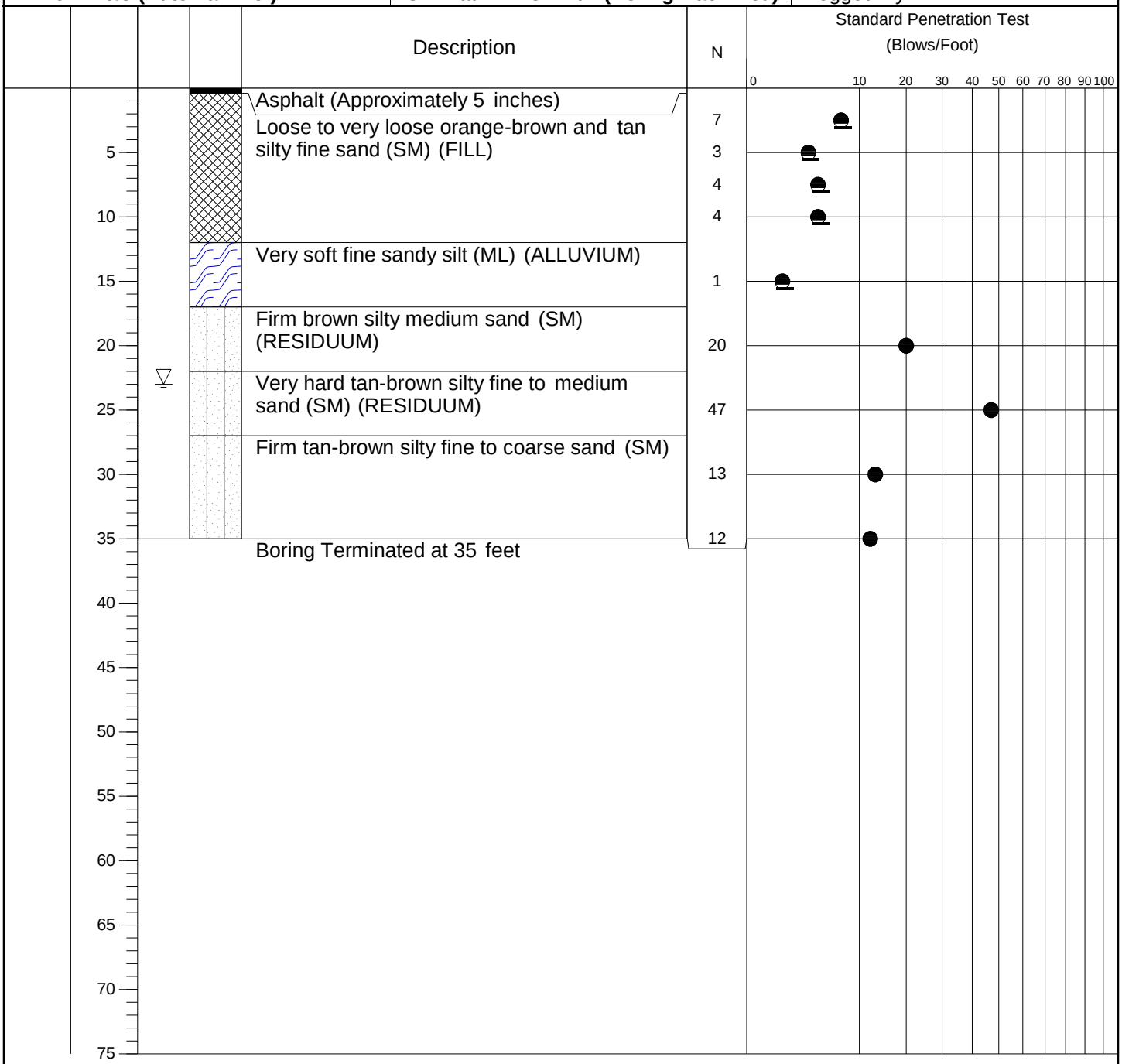
TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 9/9/14

B-2

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Rome City Auditorium**		Project No: **140455.20**
Location: **Rome, Georgia**		Date: **8/9/14**
Method: **HSA- ASTM D1586**	GWT at Drilling: **23 feet**	G.S. Elev:
Driller: **B&C (Auto Hammer)**	GWT at 24 hrs: **N/A (Boring Backfilled)**	Logged By: **PF**



Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 9/9/14

Section 03300 Cast-In-Place Concrete

PART 1 - GENERAL

1.1 REFERENCES:

Reference specifications shall be a part of these specifications the same if fully written herein and shall constitute minimum requirements for structural concrete, unless modified herein.

A. American Concrete Institute “ACI Building Code Requirements for Structural Concrete” (ACI 318-08).

B. American Concrete Institute “ACI Specifications for Structural Concrete” (ACI 301-05)

C. American Society Institute for Testing and Materials (ASTM) specifications referred to by serial designation and latest year of adoption or revision.

1.2 QUALITY ASSURANCE:

Concrete shall be designed, mixed, handled, placed, protected, cured, tested, and evaluated in accordance with these specifications and the latest ASTM standards applicable.

1.3 SUBMITTALS:

A. LEED Submittals:

1. Fully complete and submit to LEED Consultant RLMDS (Required LEED Material Data Sheets) for all materials provided.

2. Manufacturer’s written statement on the following:

a. Recycled content of the product and / or heat number.
b. Product manufacturing location.
c. Source/origin of raw materials of the product.

3. Provide MSDS (Material Safety Data Sheets) for all adhesives, sealants, paints and coatings applied on site and estimated volume of quantity required for construction based on contractor’s estimate or actual usage.

B. Submit for review: Concrete mix design for each class of concrete, grout mix design, and concrete reinforcement shop drawings.

PART 2 - PRODUCTS

2.1 CONCRETE:

Concrete shall be ready-mixed and shall have natural sand fine aggregate and normal weight coarse aggregates conforming to ASTM C33, Type I Portland Cement conforming to ASTM C150, and shall have a minimum 28 day compressive strength of 3000 psi. For concrete exposed to freezing and thawing or deicing chemicals, entrain air to produce total air content of 5% plus or minus 1%. Use normal weight concrete for all concrete unless noted otherwise.

2.2 GROUT:

Non-shrink grout specified for use under column base plates or beam bearing plates shall conform to Corps of Engineers Specification CRD-C 621. Minimum 28-day compressive strength shall be 5000 psi.

2.03 REINFORCEMENT:

A. Concrete reinforcement bars shall conform to ASTM A615, Grade 60. Bars shall not be welded or heated unless indicated on the contract documents. Detailing of reinforcement shall be in accordance with ACI 315-99. Bar development and lap splice lengths shall be in accordance with ACI 318. Prior to placing concrete, all reinforcing steel shall be free of rust scale, or any foreign material.

B. Weld Wire Fabric (WWF) shall be supplied in flat sheets and shall conform to ASTM A 185.

2.04 VAPOR BARRIER:

Provide a vapor barrier under slabs that are likely to receive an impermeable floor finish. Vapor barrier material shall be Moistop by St Regis or 6 mil polyethylene. Provide 15 mil polyethylene in certain locations if indicated on the drawings

PART 3 - EXECUTION

3.1 CONCRETE MIXES:

A. Concrete work shall conform to all requirements of ACI 301-05 Specifications for Structural Concrete for Buildings, except as modified herein. Mix designs shall be submitted for review only with acceptance being based on tests. Any of the methods of proportioning contained in ACI 301 and ACI 318 are acceptable. Concrete shall not contain calcium chloride. Concrete shall be produced to have a slump of 4” or less if consolidation is to be by vibration. Concrete shall be produced to have a slump of 5” or less if consolidation is to be by methods other than vibration. A tolerance of 1” above the maximum indicated shall be allowed for 1 in 5 consecutive batches tested. Concrete sampling and testing shall be performed according to the requirements in ACI 318.

3.2 CONCRETE MIXING & DELIVERY:

Ready-mixed concrete shall be mixed and delivered in accordance with the requirements of “Standard Specification for Ready-Mixed Concrete” (ASTM C94).

[1]3.03 HOT WEATHER CONCRETING:

Provide adequate methods of lowering temperature of concrete ingredients so that the temperature of concrete does not exceed 90 degrees F. when placed. Follow recommendations of ACI 305 “Hot Weather Concreting”.

[1]3.04 COLD WEATHER CONCRETING:

Protect fresh concrete from freezing and maintain temperatures above designated minimums to allow proper curing of the concrete. Cold weather is defined as a period when the expected daily mean temperature (degrees Fahrenheit) is below 40 degrees for more than 3 successive days. Follow recommendations of ACI 306 “Cold Weather Concreting” to ensure durable concrete.

3.5 FLATWORK FINISHES:

A. Interior floor slabs shall be screeded to proper level, floated, and troweled to a level and flat finish, level along walls and from corner to corner. Floor Flatness and Levelness shall achieve F_F = 50 and F_L=33. Apply liquid curing and hardening compound as manufactured by W. R. Grace or W. R. Meadows in all areas not to receive a finish floor material.

B. Exterior slabs, steps, walks, and other surfaces shall be screeded to the proper level or slope, floated and troweled to a level and flat finish, after troweling, exterior surfaces shall be given a light broom finish transverse with long dimension. All surfaces shall slope to drain without puddles or standing water. Use edger on all joints and edges. Floor Flatness and Levelness shall achieve F_F=25 and F_L=17

C. Floors shall receive a hard steel-troweled finish unless noted otherwise.

3.6 CONCRETE CURING:

Exposed surfaces of concrete shall be protected from premature drying and against rain. Curing may be accomplished by (1) curing compound, or (2) water ponding, continuous spray or seep hoses or (3) moisture retaining coverings. Curing procedures shall be maintained to keep the concrete moist for a least 7 days after placement.

3.7 TESTING:

A. Concrete inspection and testing services shall be made by an independent testing laboratory selected by the Owner. All tests, cylinders, and transportation shall be made by testing laboratory personnel. Single copies of all reports shall be sent to Owner, Architect, Contractor, and Concrete Producer.

B. Two slump tests shall be performed in accordance with ASTM C 143 at time of making cylinders for strength tests. Slump in excess of design slump shall be cause to reject concrete represented by slump test.

C. Concrete strength shall be evaluated and accepted in accordance with ACI 318. For each class of concrete prepare one set of 4 cylinders for each 50 cubic yards or fraction thereof. Each strength test shall be the average of the strengths of two cylinders. If 42 day test is below the required 28-day strength, concrete core tests shall be made at Contractor's expense. Test one cylinder at 7 days, 2 cylinders at 28 days and hold one cylinder in reserve in case of low strength to be tested at 42 days.

D. Results for all concrete compressive strength tests shall be available on the job site for review by the inspector.

END OF SECTION

SECTION 00 41 13 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

To: The City of Rome, Georgia
c/o Bill Gilliland
Project Title: Rome City Auditorium Renovation and Addition
Project No.: 14047
Bid Number: 039-15

Date: _____

Submitted by (full name and address): _____

_____

_____

1.1 OFFER

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Architect & Engineers for the above-referenced Project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

_____ dollars ($_____),
in lawful money of the United States of America.

We have included the Bid security as required by the Instructions to Bidders.
All applicable taxes are included the Bid Sum.
All Cash and Contingency Allowances described in Section 01 20 00 - Price and Payment Procedures are included in the Bid Sum**.**

1.2 ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for 30 days from the Bid closing date.
If this Bid is accepted by the Owner within the time period stated above, we will
- Execute the Agreement within seven days of receipt of Notice of Award.
- Furnish the required bonds within seven days of receipt of Notice of Award.
- Commence Work within seven days after written Notice to Proceed

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required bonds, the Bid security shall be forfeited as damages to the Owner by

reason of our failure, limited in amount to the lesser of the face value of the Bid security or the difference between this Bid and the Bid upon which a Contract is signed.

In the event our Bid is not accepted within the time stated above, the required Bid security will be returned to the undersigned, according to the provisions of the Instructions to Bidders,

unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.3 CONTRACT TIME

If this Bid is accepted, we will:

Complete the Work in _____ (_____) calendar weeks from Notice to Proceed.

1.4 CHANGES TO THE WORK

When the Architect establishes that the method of valuation for changes in the Work will be net cost plus a percentage fee according to General Conditions, our percentage fee shall be:

_____ percent overhead and profit on the net cost of our own Work;

_____ percent on the gross cost of work done by any Subcontractor.

On Work deleted from the Contract, our credit to the Owner shall be the Architect/Engineer-approved net cost plus _____ percent of the overhead and profit percentage noted above.

1.5 ADDENDA

The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

List any additional addenda on separate pages

1.6 APPENDICES

A. The following documents are attached to and made a condition of the Bid:
Bid security in form of _____

Document 00 43 00 - Procurement Form Supplements including
Appendix A - List of Subcontractors

1.7 BID FORM SIGNATURES

The Corporate Seal of

_____
(Bidder - print the full name of your firm)

was hereunto affixed in the presence of

_____
(Authorized signing officer and title)

(Seal)

_____
(Authorized signing officer and title)

(Seal)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF DOCUMENT

Section 04200 Unit Masonry

Part 1 General

1.1 SUBMITTALS:

LEED Requirements:

1. Fully complete and submit to LEED Consultant RLMDS (Required LEED Material Data Sheets) for all materials provided.
2. Manufacturer's written statement on the following:
   a. Recycled content of the product and / or heat number.
   b. Product manufacturing location.
   c. Source/origin of raw materials of the product.

3. Provide MSDS (Material Safety Data Sheets) for all adhesives, sealants, paints and coatings applied on site and estimated volume of quantity required for construction based on contractor's estimate or actual usage.

A. Manufacturer's data: Submit copies of manufacturer's product specifications and instructions for each manufactured product, in accordance with Contract Conditions.

B. Samples: [1]Submit five (5) actual brick and five (5) actual scored CMU in accordance with General Conditions. Samples shall indicate maximum range of color, texture, and size. Colors per Color Schedule.

C. Job Mock-up:

1. [1]Lay 6'-0" long x 6'-0" high sample wall panel of face brick, brick soldier course, scored CMU, accessories, anchors, and mortar.

2. Orient panel with brick facing south.

3. Indicate the following characteristics:

   a. Bonding

   b. Joint Tooling and Mortar Color

   c. Brick Color and Texture

   d. Workmanship

4. Prepare panel at least 14 days prior to beginning masonry work. Should panel be disapproved, prepare additional panel until approved by Architect.

5. Maintain panel throughout work as standard for masonry work. Do not destroy panel until directed by Architect.

1.2 QUALITY ASSURANCE:

A. Standard practice requirements and recommendations of the Portland Cement Association's "Concrete Masonry Handbook", current edition, and Brick Institute of

America..

1.3 JOB CONDITIONS:

A. Environmental requirements:

1. Lay no masonry when temperature of surrounding air has dropped below 45 F., unless it is rising and at no time when it has dropped below 40 F., except by written permission from Architect.

2. When masonry work is authorized during temperatures below 40 F., but above freezing, mortar shall be provided at temperature between 70 and 100 F. Maintain air temperature above 40 F. on both sides of masonry for at least 72 hours after laying.

B. Protection of work:

1. During erection, keep walls dry by covering at end of each day or shutdown period with a waterproof membrane; anchored and overhanging each side of wall at least 2'-0".

2. Remove misplaced mortar or grout immediately.

3. Exercise care to prevent embedment of mortar in exposed face of brick.

4. Protect door jambs and corners from damage during construction.

5. Protect sill, ledges and offsets from mortar droppings.

6. Protect finish of adjacent materials from staining.

7. Protect lower sections from mud splatter.

1.4 ALLOWABLE TOLERANCES:

A. Maximum variation from plumb:

1. In lines and surfaces of walls

a. 1/4" in 10'-0".

b. 1/2" in total height of wall.

B. Maximum variation from level:

1. In lines of sill, lintels, horizontal grooves or other conspicuous lines:

a. 1/4" in any bay or in 20"-0" maximum.

b. 1/2" in total course.

PART 2- PRODUCTS

2.1 MORTAR AND GROUT MATERIALS:

A. Masonry Cement: ASTM C91

B. Portland Cement: ASTM C150, Type I natural color, non-staining.

C. Hydrated Lime: ASTM C207, Type S.

D. Aggregate: ASTM C144 or ASTM C404, natural washed sand. Select sand to match characteristics and color.

E. Water Reducing and Plasticizing Admixture products:

1. Lambert Corporation, Mortartite.

2. Master Builders Company, Omicron Mortarproofing.

3. Sonneborn-Contech, Inc.., Trimix.

F. Water: Clean, potable, free from deleterious amounts of alkalies, acids and organic materials.

G. Mortar color for CMU shall be standard gray, for brick and scored CMU see color schedule.

2.2 MASONRY JOINT REINFORCEMENT:

A. Acceptable manufacturers:

1. AA Wire Products Co.

2. Dur-O-Wal, Inc.

3. Heckmann Building Products, Inc.

4. Hohmann and Barnard, Inc.

B. Masonry joint reinforcing shall be truss type.

1. Fabricate from cold drawn wire meeting ASTM-A82.

2. Longitudinal rods shall be 9 gauge deformed wires with a minimum 9 gauge cross wires welded to form triangular pattern. Wire finish shall be galvanized.

3. Width of reinforcing shall be 2" less than wall width, including any veneer.

4. Reinforcing for cavity wall construction shall be fabricated with moisture drips at 16" o.c.

5. Provide reinforcing in 10' sections, with prefabricated corners and tees as required.

C. Masonry ties: adjustable, galvanized, code approved wire size steel; size to extend to within 3/4" of face of masonry veneer. Install at a rate of one tie per 2.7 sq. ft.

of veneer.

D. Column anchors: 1/4" diameter uncoated wire for welding to steel columns, with 1/4" diameter galvanized triangular ties. Sizes as recommended by manufacturer for use with block and brick sizes indicated.

E. Dovetail Anchors and Slots:

1. Dovetail anchor characteristics:

a. Material: 16 gauge galvanized steel

b. Size: 3-1/2" long by 1" wide shank by 1-1/2" wide flared end with mortar lug.

2. Dovetail slot Characteristics:

a. Material: 22 gauge galvanized steel

b. Size: 1" wide back by 1" deep with 5/8" throat

2.3 CONCRETE MASONRY UNITS:

A. Hollow load bearing units:
1. Meeting ASTM C-90, Grade N-1.
2. Nominal face dimensions: 8" x 16".

B. Special shapes: Provide where required for lintels, corners, jambs, sash, control joints, headers, bonding, and other conditions.

2.4 SCORED CONCRETE MASONRY:

A. [1]Georgia Masonry Supply 16” x 8” x4” scored face CMU. Color as shown in Color Schedule.

2.5 BRICK UNITS:

A. Brick shall be as shown on color schedule. .

B. Special shapes: Provide where required for lintels, corners, jambs, sash, control joints, headers, bonding, and other conditions.

2.6 WEEP WICKS:

1/4" inorganic fiber rope or medium density polyethylene tubes.

2.7 MASONRY CLEANING COMPOUND:

A. Acceptable products:

1. Hallmark Chemical Corp., DC-6

2. National Chemsearch Corp., Deox.

3. Process Solvent Co., Sure-Kleen 600.

B. Type: Inorganic Acid.

2.8 FLASHING FOR MASONRY:

A. 40 mil minimum total thickness, cold applied, rubberized asphalt integrally bonded to 8 mil minimum thickness high density, cross laminated polyethylene film.

B. Black in color.

2.9 MORTAR NETTING:

Nylon, high density polyethylene (HDPE), or polyester, 90% open mesh, 2" thick.

PART 3- EXECUTION:

3.1 MORTAR AND GROUT MIXING:

A. Mixing:

1. Mix mortar and grout in power-driven, drum-type batch mixer.

2. Add mortar admix to mortar mix per manufacturer's printed instructions.

3. Mix minimum of five minutes after addition of all materials.

4. Completely empty drum before recharging for next batch.

B. Proportions:

1. Type "S" mortar: Proportion materials by volume in accord with ASTM C-270 as follows:

a. One part masonry cement to 2 part Portland DD Cement to aggregate proportioned at not less DD than 2-1/4 nor more than three (3) times the DD volumes of cement used: or

b. One part Portland Cement and 2 to 1/4 parts hydrated lime to aggregate proportioned at not less than 2-1/4 nor more than three (3) times the combined volume of cement and lime used.

2. Type "N" mortar: Proportion materials by volume in accord with ASTM C-270 as follows:

a. One part masonry cement to aggregate proportioned at not less than 2-1/4 nor more three (3) times the volume of cement used; or

b. One part Portland Cement and 2 to 1-1/4 parts hydrated lime to aggregate proportioned at not less than 2-1/4 nor more than three (3) times the combined volume of cement and lime used.

C. Placing materials:

1. Retemper mortar as necessary to keep plastic. Use no mortar after setting has begun or after 2-1/2 hours of initial mixing.

3.2 REINFORCING INSTALLATION:

A. Install masonry joint reinforcing in masonry walls at 16" o.c. vertically.

B. Lap side rods 6" minimum at splices.

3.3 INSTALLATION OF MASONRY UNITS:

A. Use Type S mortar in all below grade load bearing and concrete masonry unit walls. Type N mortar may be used in Brick veneer.

B. Workmanship: Install no cracked, broken, or chipped units exceeding ASTM allowances.

1. Use abrasive power saws to cut brick and block. Avoid slivers less than 2" wide.

2. Lay brick plumb, true to line and with level courses spaced within allowable tolerances specified.

3. Lay exposed masonry in running bond pattern and center head joints in every course.

4. Stop off horizontal run by racking back in each course; toothing is not permitted.

5. Adjust units to final position while mortar is soft and plastic.

6. If units are displaced after mortar has stiffened, remove, clean joints and units of mortar and relay with fresh mortar.

7. Cutting and patching of finish masonry to accommodate work of other trades shall be done so as not to mar appearance of finished surface.

8. Adjust shelf angles to keep work level and at proper elevation.

9. When joining fresh masonry to set or partially set masonry, remove loose brick and mortar and clean and dampen exposed surface of set masonry prior to laying fresh masonry.

10. Coordinate build-in items as work progresses. Fill in around items solidly.

11. Bond each course at corners and intersections. Bond into or anchor to adjacent construction with metal anchors spaced 2 feet apart.

12. Use solid brick units where voids in hollow brick units would be visible.

C. Mortar beds:

1. Lay brick with full mortar coverage on horizontal and vertical joints in all courses.

2. Provide mortar on ends of masonry to fill head joints.

3. Rock closures into place with head joints thrown against two adjacent bricks in place.

4. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shell.

5. Do not pound corners or jambs to fit stretcher units after setting in place.

6. Where adjustment to corners or jambs must be made after mortar has started to set, remove mortar and replace with fresh mortar.

7. If it is necessary to move a unit after it has once been set in place, the unit shall be removed form the wall, cleaned and set in fresh mortar.

8. Lintels, capping units, and all bearing plates set by the mason shall be set in full bed of mortar.

D. Joints:

1. Mortar joints shall be straight, clean and uniform in thickness except for minor variations required to maintain bond and locate returns. All exposed joints shall be [1]tooled concave brick joints made with a non-staining tool.

2. Flush cut all unexposed joints.

3. Control joints - Deep clean of all mortar and debris. Joints shall be 3/8" wide. Caulk as specified in Section 07920. Locate control joints in accord with printed recommendations in the Concrete Masonry Handbook, by the Portland Cement Association and as indicated on the drawings.

E. Flashing:

1. Clean surface of masonry smooth and free from projections which might puncture flashing material.

2. Place through-wall flashing on full bed of mortar.

3. Cover flashing with mortar.

4. Turn up corners at each end of flashing to form a dam over masonry openings.

F. Weep holes:

1. Provide weep holes at 32" o.c. horizontally at grade and at the head of masonry openings and in other locations where flashing is indicated.

2. Form weeps by placing 6" long pieces of rope wick in mortar joints, extending into cavity. Leave wicks in place and cut off flush with face of wall.

3. Keep weep holes and area above flashing free of mortar droppings.

G. Sealant Joints: Retain 1/2" deep x 1/4" wide sealant joint around outside perimeter of exterior doors, window frames, and other wall openings.

H. Pointing: Cut out defective mortar joints and holes in exposed work. Repoint with mortar.

I. Dry cleaning: Brush masonry surface with stiff bristle brush after mortar has set. Do not allow mortar droppings to harden on exposed surfaces.

3.4 JOINTS AND BOND:

A. CMU shall be laid in standard running bond with joints struck flush in concealed locations and tooled concave in exposed locations.

B. Brick shall be generally laid in common bond with 6^{th} course headers and running bond.

3.5 FINAL CLEANING:

A. At least three weeks prior to application of cleaning solution to brickwork, apply solution to half of surface of job mock-up. Should discoloration of brick or mortar joints, staining or efflorescence appear on mock-up within one week, notify Architect and await further instructions.

B. No Cleaning involving chemical solutions shall take place within 7 days of placing masonry.

C. Prior to application of cleaning solution, pre-soak brick and mortar joints using clean water and flush off loose mortar and dirt.

D. Begin cleaning process at highest point of wall, working downward. Work in areas of 10-20 sq. ft. Flush wall as cleaning progresses to prevent accumulation of scum.

E. Do not scrub mortar joints with cleaning solution.

F. Protect adjacent materials subject it corrosion from contact with cleaning solution.

G. Apply specified cleaning compound, as tested on job mock-up in accordance with Manufacturer's printed instructions. Flush with clean water.

H. Remove paint stains, welding stains, and stains caused by related work in accordance with recommendations of the Structural Clay Products Institute, Technical Notes. Apply cleaning agents only after testing on job mock-up.

END OF SECTION

SECTION 00 43 00 - PROCUREMENT FORM SUPPLEMENTS

To: The City of Rome, Georgia
c/o Bill Gilliland
Project Title: Rome City Auditorium Renovation and Addition
Project No.: 14047
Bid Number: 039-15

Date: _____

Submitted by (full name and address): _____

_____

_____

According to Document 00 21 13 - Instructions to and Document 00 41 13- Bid Form - Stipulated Sum (Single-Prime Contract), we include the Appendices to Bid Form Supplements listed below. The information provided shall be considered an integral part of the Bid Form.
The following Appendices are attached to this Document:

Appendix A - List of Subcontractors: Include names of all major Subcontractors and portions of the Work each Subcontractor will perform.

BID FORM SUPPLEMENT SIGNATURES

The Corporate Seal of

_____
(Bidder - print the full name of your firm)

was hereunto affixed in the presence of

_____
(Authorized signing officer and title)

(Seal)

_____
(Authorized signing officer and title)

(Seal)

APPENDIX A - LIST OF SUBCONTRACTORS

The list of Subcontractors submitted below or on a separate sheet is an integral part of the Bid Form and is referenced in the Bid submitted by

(Bidder)_____

Dated _____

The following work will be performed (or provided) by Subcontractors and coordinated by us:

WORK SUBJECT	NAME

APPENDIX B - LIST OF ALTERNATES

The following list of alternates is an integral part of the Bid Form and is referenced in the Bid submitted by

(Bidder)_____

Dated _____

The following amounts shall be added to or deducted from the Bid Sum. Refer to Schedule of Alternates in Section 01 20 00 - Price and Payment Procedures for description of alternates.

Alternate No. 1: Replace existing fixtures in the lobby and auditorium as indicated on E3.0.

Alternate No. 1	**Add**	$

END OF DOCUMENT

PART 1 - GENERAL

1.1 REFERENCES

Reference specifications shall be a part of these specifications the same if fully written herein and shall constitute minimum requirements for structural steel, unless modified herein.

A. Specification for Structural Steel Buildings (March 9, 2005) by The American Institute of Steel Construction, Inc. (AISC)

B. Seismic Provisions for Structural Steel Buildings (March 9, 2005) including Supplement No. 1 (November 16, 2005) (These provisions are applicable when the seismic response modification coefficient, R, is greater than 3, regardless of the seismic design category).

C. Specification for Structural Joints using ASTM A325 or A490 bolts (June 30, 2004) by Research Council on Structural Connections (RCSC)

D. Code of Standard Practice for Steel Buildings and Bridges (March 18, 2005) by The American Institute of Steel Construction, Inc. (AISC)

E. Welding: AWS D1.1-2004 Structural Welding Code-Steel by American Welding Society (AWS)

1.2 SUMMARY OF WORK: Refer to the drawings for locations and quantity of structural steel required in this project.

1.3 SUBMITTALS

A. **LEED Requirements:**

1. Fully complete and submit to LEED Consultant RLMDS (Required LEED Material Data Sheets) for all materials provided.
2. Manufacturer's written statement on the following:
    a. Recycled content of the product and / or heat number.
    b. Product manufacturing location.
    c. Source/origin of raw materials of the product.

3. Provide MSDS (Material Safety Data Sheets) for all adhesives, sealants, paints and coatings applied on site and estimated volume of quantity required for construction based on contractor's estimate or actual usage.

B. Shop Drawings:

1. Clearly show all dimensions, typical and special details. Fabrication shall not begin until after the Architect's review and approval. Shop drawings will not be reviewed prior to Contractor's review and approval.

2. All details and notes appearing on the contract drawings and giving information for the erection of structural steel shall be shown. Shop drawings will not be reviewed without such information.

3. Provide complete connection information. Fabricator shall select and complete the connection details using the LRFD method.

4. End shear connections for all structural beams shall be designed with ¾" diameter A325 bolts. Unless noted otherwise, end connections for non-composite beams shall be designed to resist 50% of the maximum total uniform loads given in tables 3-6, 3-8 and 3-9 in Part 3 of the 13th Edition of the AISC Steel Construction Manual. If a higher value is given on the drawings, end connection shall be designed for that higher load. Composite beams shall be designed for the loads shown on the drawings.

[1]5. Connection design shall be stamped by a Professional Engineer registered in the State of Georgia.

PART 2- PRODUCTS

2.1 MATERIALS

A. Structural steel rolled W Shapes shall conform to ASTM A992 Grade 50. All other structural steel rolled shapes and plates shall conform to ASTM A36 as a minimum.

B. All hollow structural sections (HSS Rectangular, Square or Round) shall conform to ASTM A 500, Grade B.

C. Anchor bolts shall conform to ASTM F1554 Grade 36, unless noted otherwise.

D. Connection bolts, nuts and washers for structural members shall conform to ASTM A 325 unless noted otherwise. Bolts specified as A 307 shall conform to ASTM A 307.

E. Welding electrodes for shop and field welds shall conform to AWS D1.1 for matching filler metal requirements, with E70XX as minimum. All weld filler metal shall be capable of producing welds that have a minimum charpy V-notch toughness of 20 ft-lb at 0 degrees F.

PART 3- EXECUTION

3.1 Installation: Structural steel shall be erected in accordance with approved shop drawings and in conformance with the referenced specifications.

3.2 Structural steel detailing shall conform to the AISC Specification, AISC Steel Construction Manual, AISC Code of Standard Practice and as applicable, The Seismic Provisions for Structural Steel Buildings (2005) including Supplement No. 1 (2005).

3.3 Welding shall conform to the Standards of the American Welding Society. All welding shall be performed by AWS Qualified Certified Welders. If a fillet weld is shown or implied, the minimum size shall be 3/16" unless noted otherwise.

3.4 Splicing of structural steel members where not detailed on the contract documents is prohibited without the prior approval of the Structural Engineer as to location, type of splice and connection to be made.

3.5 Where members are shown framing into each other but no connection is specified, the connection shall be accomplished with a 3/16" fillet weld all around. (ie: Where angle bracing is shown but no end connection specified)

3.6 If a deformed reinforcement bar is to be welded to a structural steel member or plate, the bar material shall conform to ASTM A 706 (Weldable rebar)

3.7 Deformed bar anchors (DBA) shall conform to ASTM A 496 and shall be automatically end welded with suitable welding equipment in the shop or in the field.

3.8 Headed concrete anchors (HCA) shall conform to ASTM A 108 and shall be automatically end welded with suitable welding equipment in the shop or in the field.

3.9 Steel shall be cleaned of rust, loose mill scale and other foreign materials where required for proper fabrication, fitting up or welding.

3.10 All steel that is directly exposed to the wetting effects of weather and all steel that is to be permanently exposed to view shall be shop painted with a standard rust inhibiting primer that is compatible with the final coat of paint. Surface preparation and painting shall be in accordance with the provisions in AISC Code of Standard Practice for Steel Buildings and Bridges and as specified in The Steel Structures Painting Council (SSPC) Manuals. Steel areas to be welded or to be contact surfaces of friction type connections shall not be painted until after connections have been made. Touch up all areas damaged prior to final placement. All steel that is to be fire protected with spray-applied material should not be painted.

3.11 Structural steel connections not detailed on the contract documents shall be designed and detailed in accordance with the AISC Construction Manual and AISC Detailing for Steel Construction.

3.12 All connection bolts shall be 3/4” diameter unless noted otherwise.

All beam connections shall be Snug-Tightened joints unless noted otherwise. All bracing connections shall be slip-critical joints unless noted otherwise. Use Twist-off-Type Tension-Bolt Pre-tensioning for slip-critical joints.

3.13 Shop and field testing of welded and bolted connections shall be done by an independent testing agency and the following shall be minimum testing criteria as applicable:

A. All welds shall be visually inspected.

B. Fillet welds for beam and girder shear connection plates or angles (10% at random) shall be checked by magnetic particle method for final pass only.

C. Ultrasonically test 100% of all full penetration welds.

D. Check 25% of bolts in each shear connection (2 minimum).

E. Check 25% of column splice fillet welds by magnetic particle on last layers.

F. All bolted connections shall be tested in accordance with the AISC Specification for Structural Joints using ASTM A325 or A490 Bolts.

G. The structural steel fabricator and erector shall schedule all work to allow the above testing requirements to be completed.

END OF SECTION

SECTION 00 52 14 - AGREEMENT FORM - AIA STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 AGREEMENT

A. AIA A101 - Standard Form of Agreement between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum forms the basis of Agreement between the Owner and Contractor.

END OF DOCUMENT

Section 05500 Miscellaneous Metals

Part 1 General

1.1 DEFINITION:

A. Metal fabrications include items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or other metal systems specified elsewhere.

1.2 SUBMITTALS:

A. LEED Submittals:

1. Fully complete and submit to LEED Consultant RLMDS (Required LEED Material Data Sheets) for all materials provided.

2. Manufacturer's written statement on the following:

a. Recycled content of the product and / or heat number.
b. Product manufacturing location.
c. Source/origin of raw materials of the product.

3. Provide MSDS (Material Safety Data Sheets) for all adhesives, sealants, paints and coatings applied on site and estimated volume of quantity required for construction based on contractor's estimate or actual usage.

B. Shop drawings: Indicate sizes, shapes, fabrication, and installation details for metal fabrication items.

1.3 QUALITY CRITERIA:

A. Allowable tolerances:

Machine, field, and shop assemble mechanical joints to fit with ± 1/32". Install free-standing items to ± 14" of correct position. Sizes of each element of an assembly shall be correct within 1/8"; total size of a free-standing assembly shall be correct with 1/2".

B. Industry standards:

Comply with the provisions of the following standards and specifications, except as otherwise specified:

1. American Institute of Steel Construction (AISC) "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings"; and including the "Commentary of the AISC Specifications", current edition.

2. American Welding Society (AWS) Standard D1.0, current edition.

3. Qualifications for welding work: Qualify welding processes and welding operators in accord with AWS "Standard Qualification Procedure".

Part 2 PRODUCTS

2.1 GENERAL:

A. Materials shall be free from defects impairing strength, durability or appearance; having structural properties to sustain or withstand strains and stresses to which subjected. Exposed surfaces throughout project shall have the same inherent texture and color for like locations. Fastenings shall be non-staining and concealed, except as indicated on approved shop drawings.

B. Fastenings which must be exposed shall be of same materials, color, and finish as material to which applied, shall be countersunk and finished flush. Exposed welds shall be ground smooth to form a neat uniform fillet without weakening base metal. Unexposed welds shall have slag removed before applying shop coating. Molded, bent, or shaped members shall be formed with clean, shape arises, without dents, scratches, cracks, and other defects. Provide anchors, bolts, shims, and accessory items for building into and fastening to adjacent work.

2.2 STRUCTURAL MATERIALS:

A. Wide flange structural members: Meeting ASTM A992.

B. Structural steel angles, channels, plates, and bars: ASTM A36.

C. Other steel: Mild steel.

2.3 LOOSE STEEL LINTELS:

A. Provide loose structural steel lintels for openings and recesses in masonry walls and partitions as shown.

B. Galvanize loose lintels to be installed in exterior walls.

2.4 MISCELLANEOUS STEEL:

A. Provide miscellaneous steel framing and supports which are not a part of a structural steel framework, as required to complete work.

2.5 PAINTING AND PROTECTIVE COATING:

A. Ferrous metal, except galvanized surfaces, shall be cleaned and given one shop coat of lead and chromate-free primer. Anchors that are built into masonry shall be coated with asphalt paint unless specified or noted otherwise. Where hot-dip galvanized or zinc-coated metal is specified or shown, it shall not be shop primed unless specifically required.

B. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to produce a bond for the paint. Except for bolts and nuts, all galvanizing shall be done after fabrication.

2.6 FABRICATION:

A. Fabricate work in shops with adequate machinery to produce the items as described herein.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Secure items in accord with approved shop drawings, plumb, level and true to line within 1/8" in 10'-0". Touch-up primer on ferrous metal prior to installation; isolate non-ferrous metals from dissimilar materials with coating of heavy-bodied asphaltic paint.

B. Leave miscellaneous metal items ready to receive finish, where applicable, in accord with Painting Section.

C. Set safety tread nosings in position as an embed item, prior to pouring concrete, in accordance with manufacturer's written instructions.

END OF SECTION

Section 06010 Lumber

Part 1 General

1.1 QUALITY ASSURANCE:

A. Materials required for work under this section shall be suitable for intent and purpose specified. Sizes shown are nominal, actual sizes shall conform to PS 20-70. All lumber shall be S4S unless otherwise specified. [1]Materials shall contain no added urea formaldehyde resins.

B. Standards: All materials of this Section shall comply with pertinent provisions of the following:

1. Southern Pine: "Standard Grading Rules for Southern Pine Lumber", 2002 edition, by Southern Pine Inspection Bureau; and Southern Forest Products Association. Comply with Doc PS 20

2. Spruce Pine Fir: Applicable standards West Coast Lumber Inspection Bureau, Standard Grading Rules for Canadian Lumber, a related agency, Certified by Board of Review of the American Lumber Standards Committee.

3. Plywood: Standards of the American Plywood Association and U.S. Product Standard Doc PS-1) for construction and industrial plywood.

4. Rough Hardware: Specification for "Structural Steel Buildings" by American Institute of Steel Construction, 2005.

5. Building Paper: Federal Specification UU-B-790a.

6. Wood Preservative: Standard P-5 of the American Wood Preservers Institute.

7. Fire Retardant Treated Wood(FRT): Shall meet requirements of SBCC and FHA MPS #2600 with FR-S rating less than 25 in accord with ASTM E-84, NFPA 255 or UL723.

8. Composite Wood Products: Including decking and sheathing to be free of added urea formaldehyde.

9. Particle Board: Shall meet requirements of ANSI A20, mat-formed standard for wood particle board, and the National Particleboard Association, Type 2, Density A (high density) and Class 2. Particleboard to be free of added urea formaldehyde.

10. Steel Connectors: Simpson Strong-Tie

1.2 PRODUCT HANDLING:

Lumber

Protect lumber materials before, during, and after delivery to the job site, and protect the installed work and materials of all other trades. Deliver the materials to the job site and store all in a safe area, out of the way of traffic, and shored up off the ground surface. Identify all framing lumber as to grades and store all grades separately from their grades. Protect all metal products with adequate weatherproof outer wrappings. Use extreme care in the off loading of lumber to prevent damage, splitting, and breaking of materials.

1.3 SUBMITTALS

A. LEED Submittals:

1. Fully complete and submit to LEED Consultant RLMDS (Required LEED Material Data Sheets) for all materials provided.

2. Manufacturer's written statement on the following:

a. Recycled content of the product and / or heat number.
b. Product manufacturing location.
c. Source/origin of raw materials of the product.

3. Provide MSDS (Material Safety Data Sheets) for all adhesives, sealants, paints and coatings applied on site and estimated volume of quantity required for construction based on contractor's estimate or actual usage.

4 All composite wood and agrifiber products shall contain no added urea formaldehyde.

PART 2- PRODUCTS

2.1 GRADE STAMPS:

A. Plywood: Identify all plywood as to species, grade, and glue type by the stamp of the American Plywood Association.

B. Other: Identify all other materials of this Section by the appropriate stamp of the agency listed in the reference standards, or by such other means as are approved in advance by the Architect.

2.2 MATERIALS:

All materials of this Section, unless specifically noted otherwise or approved in advance by the Architect, shall meet or exceed the following:

Item	Description
Framing members not pressure treated	Southern Pine No. 2, 19% max moisture content
Members noted to be pressure treated unless noted:	Southern Pine No.2, Pressure Treated
Members noted to be	

fire retardant treated:	Southern Pine No. 2, Fire Retardant Treated
Wood nailers attached to steel beams	Southern Pine No. 2, 19% max moisture content
Blocking	Southern Pine, No.2
Other Plywood Exterior Use:	APA A-C Exterior, 11/32" soffits (or as noted on drawings), seal all edges.
Interior Shelving and Other Interior Use:	APA B-C Interior, 3/4" except APA A-B Interior 3/4" at shelving and exposed locations, or as noted.
Finish and Trim:	White Pine, C & Better or equal Fir, finger jointed if opaque coating is used.
Wood Preservatives: (Pressure Treated)	Water born preservatives in accord with AWPI-LP- 2. KD to 15%, all surfaces clean and paintable.
Wood Preservatives: (Open Tank Method)	In accordance with Fed. Spec. TT-W-572, all surfaces clean and paintable.
Insulating Sheathing:	See insulation specifications.
Steel Hardware:	ASTM-7 or A-36 (Use galvanized at exterior locations).
Machine Hardware:	ASTM A-307
Lag Bolts:	Federal Specifications FF-B-561.
Nails:	Common and finish (except as noted), Federal Specification FF-N-1-1 (Use hot dipped galvanized at exterior locations).
Steel Connectors:	All connectors for wood construction shall be by Simpson Strong Tie Company, Inc. unless noted otherwise. The following shall be standard practice unless noted otherwise: joist hangers, beam hangers, post bases, post caps, strap tie holdowns, strap ties between floors, seismic and hurricane ties at roof, girder tiedowns.

PART 3- EXECUTION:

3.1 DELIVERIES:

Stockpile all materials sufficiently in advance of need to ensure their availability in a timely manner for this Work. Make as many trips to the factory or job site as are necessary to deliver all materials of this Section in a timely manner to ensure orderly progress of the total Work.

3.2 COMPLIANCE:

Do not permit materials not complying with the provisions of this Section of these Specifications

to be brought onto or to be stored at the job site; immediately remove from the job site all non-complying materials and replace them with materials meeting the requirements of this Section.

END OF SECTION

SECTION 00 72 14 - GENERAL CONDITIONS - AIA STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 GENERAL CONDITIONS

A. AIA A201 - General Conditions of the Contract for Construction is the General Conditions of the Contract.

B. A copy of the AIA Document A201-2007 is available for viewing at the office of the Architect during normal business hours.

1.2 SUPPLEMENTARY CONDITIONS

A. Refer to Document 00 73 13 - Supplementary Conditions - AIA for modifications to General Conditions.
   1. Insurance Requirements:
      a. Two- million ($2,000,000) liability coverage along with all other coverage.
      b. Workers compensation insurance.
      c. An insurance certificate must be provided showing the City of Rome as the certificate holder and the additionally insured.

END OF DOCUMENT

Rome City Auditorium Upgrades and Addition, Rome, GA
Project No. 14047 General Conditions - AIA (Single-Prime Contract)

SECTION 00 73 13 - SUPPLEMENTARY CONDITIONS - AIA

1.1 SUPPLEMENTARY CONDITIONS

A. These Supplementary Conditions modify AIA A201 - General Conditions of the Contract for Construction and other provisions of the Contract Documents as indicated below. All provisions not modified remain in full force.

ARTICLE 1 - GENERAL PROVISIONS
1.1 - BASIC DEFINITIONS
Add the following Subparagraphs:

1.1.8	Products: New material, machinery, components, equipment, fixtures, and systems forming the Work, not including machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components required for reuse.
1.1.9	Furnish: To supply, deliver, unload, and inspect for damage.
1.1.10	Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
1.1.11	Provide: To furnish and install.

1.2 - CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS
Add the following Subparagraph:

1.2.4	Sections of Division 01 govern the execution of the Work of all Sections of the Specifications.

ARTICLE 3 - CONTRACTOR
3.6 - TAXES
Add the following Subparagraph:

3.6.2	Owner will obtain an exemption certificate for Contractor for taxes on certain products or items, for purchasing products or items for the Work.

ARTICLE 7 - CHANGES IN THE WORK
7.3 - CONSTRUCTION CHANGE DIRECTIVES

7.1.4	The Agreement identifies the overhead and profit fees applicable to changes in the Work, whether additions to or deductions from the Work on which the Contract Sum is based, and it identifies the fees for subcontract work for changes (both additions and deductions) in the Work. Contractor shall apply fees, as noted, to Subcontractor's gross (net value fee) costs on additional work.

ARTICLE 8 - TIME

Add the following Subparagraph:

8.1.5	Contract Time is identified Document 00 41 13 - Bid Form - Stipulated Sum (Single-Prime Contract).

ARTICLE 9 - PAYMENTS AND COMPLETION
9.3 - APPLICATIONS FOR PAYMENT

9.3.1.3	Until Substantial Completion, Owner shall pay 90 percent of the amount due Contractor on account of progress payments.

Add the following Paragraph and Subparagraph:

9.11	Liquidated Damages
9.11.1	Liquidated damages in the amount of $300 per calendar day shall accrue to Owner for late completion of the Work.

ARTICLE 11 - INSURANCE AND BONDS
11.1 - CONTRACTOR'S LIABILITY INSURANCE

INSURANCE EXPECTATIONS

11.5 - PERFORMANCE BOND AND PAYMENT BOND
Add the following Subparagraphs:

11.5.3	Contractor shall furnish bonds to Owner in the following amounts:
11.5.3.1	Furnish a 100 percent performance bond on standard surety bond form.
11.5.3.2	Furnish a 100 percent payment bond on standard surety bond form.

END OF DOCUMENT

SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Contract description.
2. Work by Owner or other Work at the Site.
3. Owner-furnished products.
4. Contractor's use of Site and premises.
5. Work sequence.
6. Owner occupancy.
7. Permits.
8. Specification conventions.

1.2 CONTRACT DESCRIPTION

A. Work of the Project includes upgrades and an addition of the Rome City Auditorium.

B. Perform Work of Contract under stipulated sum Contract with Owner according to Conditions of Contract.

C. Work of each separate Contract is identified in the following paragraph and on Drawings:

1.3 WORK BY OWNER OR OTHERS

A. Owner has awarded a contract for supply and installation of the stage rigging and lighting beginning on August 8th, 2015. It is the Contractor’s responsibility to coordinate the work with the stage-rigging consultant. Contractor is still responsible for demolition of existing stage-rigging and infrastructure and must prepare area for new rigging and equipment. Contractor is responsible for electrical associated with stage rigging and equipment. Scope of Work is outlined in the Construction Documents.

B. Work under the work by others Contract includes:
1. Stage rigging and equipment as indicated on Drawings. All other work is the responsibility of the bidding Contractor.

1.4 OWNER-FURNISHED PRODUCTS

A. Owner's Responsibilities:
1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and

Samples to Contractor.

2. Arrange and pay for delivery to Site.
3. Upon delivery, inspect products jointly with Contractor.

4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
1. Review Owner-reviewed Shop Drawings, Product Data, and Samples.
2. Receive and unload products at Site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install, and finish products.
4. Repair or replace items damaged after receipt.

C. Items furnished by Owner for installation by Contractor:
1. Lobby and Auditorium House Lighting Fixtures.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of Site and premises to allow:
1. Owner occupancy.
2. Work by Owner.
3. Work by Others.
4. Use of Site and premises by the public.

B. Emergency Building Exits during Construction: Must remain in place

C. Construction Operations: Limited to areas indicated on Drawings.
1. Noisy and Disruptive Operations (such as Use of Jack Hammers and Other Noisy Equipment): Coordinate and schedule such operations with Owner to minimize disruptions.

D. Time Restrictions for Performing Interior Work: ***All work to be done in the existing stage and existing mezzanine must be complete between August 10th, 2015 and October 8th, 2015. This includes the coordination and installation of the new stage rigging and equipment and associated electrical. By October 8th, 2015 the stage must be complete and all new equipment in working order. Due to the removal of the existing HVAC units that cool the auditorium, temporary heat and air must be provided until the new units are functional.***

E. Utility Outages and Shutdown:
1. Coordinate and schedule electrical and other utility outages with Owner.
2. Outages: Allowed only at previously agreed upon times.
3. At least one week before scheduled outage, submit Outage Request Plan to Architect itemizing the dates, times, and duration of each requested outage.

F. Construction Plan: Before start of construction, submit electronic file to Architect at jessica@ceviandesign.com and City Purchaser BGilliland@romega.us of construction plan regarding access to Work, use of Site, and utility outages for acceptance by Owner.

After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.

1.6 WORK SEQUENCE

A. Construct Work in order to accommodate Owner's occupancy requirements during construction period. Coordinate construction schedule and operations with Architect and Owner:
   1. Stage 1: Stage including: rigging, equipment, electrical, infrastructure, ect.
   2. Stage 2: Addition and all other work.

B. Sequencing of Construction Plan: Before start of construction, submit electronic file to Architect at jessica@ceviandesign.com and City Purchaser BGilliland@romega.us of construction plan regarding phasing of demolition, renovation, addition, and new Work for acceptance by Owner. After acceptance of plan, construction sequencing shall comply with accepted plan unless deviations are accepted by Owner in writing.

1.7 OWNER OCCUPANCY

A. Schedule and substantially complete designated portions of the Work for occupancy before Substantial Completion of the entire Work.
   1. Owner intends to occupy the Stage portion of the Project by October 8th, 2015.
   2. Owner's use and occupancy of designated areas before Substantial Completion of the entire Project do not relieve Contractor of responsibility to maintain specified insurance coverages on a 100 percent basis until date of final payment.

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

1.8 PERMITS

A. Furnish all necessary permits for construction of Work including the following:
   1. Building permit.
   2. Stormwater permit.

1.9 SPECIFICATION CONVENTIONS

A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cash allowances.

B. Contingency allowances.

C. Testing and inspection allowances.

D. Schedule of Values.

E. Application for Payment.

F. Change procedures.

G. Defect assessment.

H. Alternates.

1.2 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.

B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.

C. Architect/Engineer Responsibilities:
   1. Consult with Contractor for consideration and selection of products and suppliers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Change Order.

D. Contractor Responsibilities:
   1. Assist Architect/Engineer in selection of products and suppliers.

2. Obtain proposals from suppliers and offer recommendations.
3. Upon notification of selection by Architect/Engineer and Owner, execute purchase agreement with designated supplier.
4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.

5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

F. Allowance Schedule:
1. Include the stipulated sum of $30,000 for purchase, delivery, and installation of New Audio Equipment.

1.3 CONTINGENCY ALLOWANCES

A. Include in Contract a stipulated sum/price of ***10 percent of the bid*** price for use upon Owner's instruction as a contingency allowance.

B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead, and profit will be included in Change Orders authorizing expenditure of funds from this contingency allowance.

C. Funds will be drawn from contingency allowance only by Change Order.

D. At closeout of Contract, funds remaining in contingency allowance will be credited to Owner by Change Order.

1.4 TESTING AND INSPECTION ALLOWANCES

A. Costs Included in Testing and Inspecting Allowances:
1. Cost of engaging testing and inspecting agency.
2. Execution of tests and inspecting.
3. Reporting results.

B. Costs Not Included in Testing and Inspecting Allowance but Included in Contract Sum/Price:
1. Costs of incidental labor and facilities required to assist testing or inspecting agency.
2. Costs of testing services used by Contractor separate from Contract Document requirements.
3. Costs of retesting upon failure of previous tests as determined by Architect/Engineer.

C. Testing and Inspecting Allowance Schedule:
1. Owner will appoint, employ, and pay for specified services of independent firm to perform testing and inspection. Contractor shall coordinate services of

testing agency with construction schedule and progress.

2. Re-testing required because of non-conformance to specified requirements will be charged to Contractor. Differences in cost will be adjusted by Change Order.

1.5 SCHEDULE OF VALUES

A. Submit submit electronic file to Architect at jessica@ceviandesign.com and City Purchaser BGilliland@romega.us schedule on Contractor's standard form.

B. Submit Schedule of Values as electronic file within 15 days after date established in Notice to Proceed.

C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify bonds and insurance and any other related costs.

D. Include in each line item amount of allowances as specified in this Section.

E. Include within each line item, direct proportional amount of Contractor's overhead and profit.

F. Revise schedule to list approved Change Orders with each Application for Payment.

1.6 APPLICATION FOR PAYMENT

A. Submit submit electronic file to Architect at jessica@ceviandesign.com of each Application for Payment on AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702 .

B. Content and Format: Use Schedule of Values for listing items in Application for Payment.

C. Submit updated construction schedule with each Application for Payment.

D. Submit three copies of waivers requested by Owner.

E. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
   1. Current construction photographs.
   2. Partial release of liens from major Subcontractors and vendors.
   3. Record Documents, for review by Owner, which will be returned to Contractor.
   4. Affidavits attesting to off-Site stored products.
   5. Construction Progress Schedule, revised and current.

1.7 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect/Engineer of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Architect/Engineer; establish procedures for handling queries and clarifications.
   1. Use AIA G716 - Request for Information for requesting interpretations.
   2. Architect/Engineer may respond with a direct answer on the Request for Interpretation form, Clarification Notice, AIA G710 - Architect's Supplemental Instruction, or Proposal Request.

D. Architect/Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on AIA G710.

E. Architect/Engineer may issue Proposal Request or Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with stipulation of overtime work required and with the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 5 days.

F. Contractor may propose changes by submitting a request for change to Architect/Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work by separate or other Contractors.

G. Stipulated Sum/Price Change Order: Based on Proposal Request or Notice of Change and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Architect/Engineer.

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

I. Construction Change Directive: Architect/Engineer may issue directive, on AIA G714 - Construction Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will

describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

J. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.

K. Change Order Forms: AIA G701 - Change Order.

1.8 DEFECT ASSESSMENT

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

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

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Architect/Engineer and Owner.

D. Defective Work will be partially repaired according to instructions of Architect/Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Architect/Engineer and Owner.

E. Authority of Architect/Engineer to assess defects and identify payment adjustments is final.

1.9 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.

B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated but requires that each change shall be complete for scope of Work affected.
   1. Coordinate related requirements among Specification Sections as required.
   2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.
   3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.

C. Schedule of Alternates:
   1. See 00 43 00 – Procurement Form Supplements

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality assurance.

B. Product substitution procedures.

C. Installer Substitution Proceedures.

1.2 QUALITY ASSURANCE

A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.

B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.

C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT SUBSTITUTION PROCEDURES

A. Document 00 21 13 - Instructions to Bidders specifies time restrictions for submitting requests for substitutions during Bidding period.

B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.

C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:
   1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
   2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
   3. Reference to Article and Paragraph numbers in Specification Section.
   4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.

5. Changes required in other Work.
6. Availability of maintenance service and source of replacement parts as applicable.
7. Certified test data to show compliance with performance characteristics specified.
8. Samples when applicable or requested.
9. Other information as necessary to assist Architect/Engineer's evaluation.

D. A request constitutes a representation that Bidder:
   1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
   2. Will provide same warranty for substitution as for 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.
   5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
   6. Will reimburse Owner and Architect/Engineer for review or redesign services associated with reapproval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:
   1. Submit requests for substitutions on CSI Form 13.1A Substitution Request-After the Bidding/Negotiating Stage.
   2. Submit electronic file to jessica@ceviandesign.com of Request for Substitution for consideration. Limit each request to one proposed substitution.
   3. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
   4. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

1.4 INSTALLER SUBSTITUTION PROCEDURES

A. Document 00 21 13 - Instructions to Bidders specifies time restrictions for submitting requests for substitutions during Bidding period.

B. Document each request with:
   1. Installer's qualifications.
   2. Installer's experience in work similar to that specified.
   3. Other information as necessary to assist Architect/Engineer's evaluation.

C. Substitution Submittal Procedure:
   1. Submit electronic file to jessica@ceviandesign.com of Request for Substitution for consideration. Limit each request to one proposed substitution.
   2. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and Project conditions.

B. Preconstruction meeting.

C. Site mobilization meeting.

D. Progress meetings.

E. Preinstallation meetings.

F. Closeout meeting.

G. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

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

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
   1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.

D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

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

1.3 PRECONSTRUCTION MEETING

A. Architect will schedule and preside over meeting after Notice of Award.

B. Attendance Required: Architect/Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, major Subcontractors, and Contractor.

C. Minimum 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 parties in Contract, and Architect/Engineer.
   6. Communication procedures.
   7. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
   8. Scheduling.
   9. Critical Work sequencing.
   10. Scheduling activities of Stage Rigging Consultant.

D. Contractor: Record minutes and distribute electronically to participants within two days after meeting, to Architect/Engineer, Owner, and those affected by decisions made.

1.4 SITE MOBILIZATION MEETING

A. Contractor will schedule and preside over meeting at Project Site prior to Contractor occupancy.

B. Attendance Required: Architect/Engineer, Owner, Contractor, Contractor's Superintendent, Special Consultants, major Subcontractors.

C. Minimum Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and partial occupancy.
   3. Construction facilities and controls provided by Owner.
   4. Temporary utilities provided by Owner.
   5. Security and housekeeping procedures.
   6. Schedules.
   7. Procedures for testing.

8. Procedures for maintaining record documents.
9. Requirements for startup of equipment.
10. Inspection and acceptance of equipment put into service during construction period.

D. Contractor: Record minutes and distribute electronically to participants within two days after meeting, to Architect/Engineer, Owner, and those affected by decisions made.

1.5 PROGRESS MEETINGS

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

B. Make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

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

D. Minimum Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Contractor: Record minutes and distribute electronically to participants within two days after meeting, to Architect/Engineer, Owner, and those affected by decisions made.

1.6 PREINSTALLATION MEETINGS

A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.

B. Require attendance of parties directly affecting, or affected by, Work of specific Section.

C. Notify Architect/Engineer four days in advance of meeting date.

D. Prepare agenda and preside over meeting:

1. Review conditions of installation, preparation, and installation procedures.
2. Review coordination with related Work.

E. Contractor: Record minutes and distribute electronically to participants within two days after meeting, to Architect/Engineer, Owner, and those affected by decisions made.

1.7 CLOSEOUT MEETING

A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.

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

C. Notify Architect/Engineer four days in advance of meeting date.

D. Minimum Agenda:
   1. Start-up of facilities and systems.
   2. Operations and maintenance manuals.
   3. Testing, adjusting, and balancing.
   4. System demonstration and observation.
   5. Operation and maintenance instructions for Owner's personnel.
   6. Temporary indoor-air-quality plan and procedures.
   7. Contractor's inspection of Work.
   8. Contractor's preparation of an initial "punch list."
   9. Procedure to request Architect/Engineer inspection to determine date of Substantial Completion.
   10. Completion time for correcting deficiencies.
   11. Inspections by authorities having jurisdiction.
   12. Certificate of Occupancy and transfer of insurance responsibilities.
   13. Partial release of retainage.
   14. Final cleaning.
   15. Preparation for final inspection.
   16. Closeout Submittals:
      a. Project record documents.
      b. Operating and maintenance documents.
      c. Operating and maintenance materials.
      d. Affidavits.
   17. Final Application for Payment.
   18. Contractor's demobilization of Site.
   19. Maintenance.

E. Contractor: Record minutes and distribute electronically to participants within two days after meeting, to Architect/Engineer, Owner, and those affected by decisions made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 ALTERATION PROCEDURES

A. Designated areas of existing facilities will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
   1. Perform Work not to interfere with operations of occupied areas.
   2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
   3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.

B. Materials: As specified in product Sections; match existing products with new products for patching and extending Work.

C. Employ skilled and experienced installer to perform alteration and renovation Work.

D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

F. Remove debris and abandoned items from area and from concealed spaces.

G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.

H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.

I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original or specified condition.

J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.

K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

L. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.

M. Where change of plane of ¼ inch or more occurs, submit recommendation for providing smooth transition to Architect/Engineer for review.

N. Trim existing doors to clear new floor finish. Refinish trim to specified condition.

O. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.

P. Finish surfaces as specified in individual product Sections.

END OF SECTION

SECTION 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittals.

B. Format.

C. Review and evaluation.

D. Distribution.

1.2 SUBMITTALS

A. Within 5 days after date established in Notice to Proceed, submit draft of proposed complete bar chart schedule for review. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.

B. Within 3 days after joint review, submit revised Progress Schedule.

C. Submit updated schedules with each Application for Payment.

D. Schedule Updates:
   1. Overall percent complete, projected and actual.
   2. Completion progress by listed activity and subactivity, to within five working days prior to submittal.
   3. Changes in Work scope and activities modified since submittal.
   4. Delays in submittals or resubmittals, deliveries, or Work.
   5. Adjusted or modified sequences of Work.
   6. Other identifiable changes.
   7. Revised projections of progress and completion.

E. Narrative Progress Report:
   1. Submit with each monthly submission of Progress Schedule.
   2. Summary of Work completed during the past period between reports.
   3. Work planned during the next period.
   4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
   5. Current and anticipated delaying factors and estimated impact on other activities

and completion milestones.

6. Corrective action taken or proposed.

1.3 FORMAT

A. Computer-generated bar chart schedule to include at least:

1. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:
   a. Subcontract Work.
   b. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
   c. Move-in and other preliminary activities.
   d. Equipment and equipment system test and startup activities.
   e. Project closeout and cleanup.
   f. Work sequences, constraints, and milestones.
2. Listings identified by Specification Section number.
3. Identification of the following:
   a. Horizontal time frame by year, month, and week.
   b. Duration, early start, and completion for each activity and subactivity.
   c. Critical activities and Project float.
   d. Subschedules to further define critical portions of Work.

1.4 REVIEW AND EVALUATION

A. Participate in joint review and evaluation of schedules with Architect/Engineer at each submittal.

B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

C. After review, revise schedules incorporating results of review, and resubmit within 3 days.

1.5 DISTRIBUTION

A. Following joint review, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Architect/Engineer, Owner, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Definitions.

B. Submittal procedures.

C. Proposed product list.

D. Product data.

E. Use of electronic CAD files of Project Drawings.

F. Shop Drawings.

G. Samples.

H. Design data.

I. Test reports.

J. Certificates.

K. Manufacturer's instructions.

L. Manufacturer's field reports.

M. Erection Drawings.

N. Construction photographs.

O. Contractor review.

P. Architect/Engineer review.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect/Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Architect/Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with AIA G810 - Transmittal Letter or Architect/Engineer-accepted form.

B. [Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.]

C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project, and deliver to Architect at business address or submit electronic submittals via email as PDF electronic files. Coordinate submission of related items.

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

G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect/Engineer review stamps.

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

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized nor processed.

L. Incomplete Submittals: Architect/Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

1.4 PROPOSED PRODUCT LIST

A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Architect/Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.

B. If hard copies, submit number of copies Contractor requires, plus two copies Architect/Engineer will retain.

C. If electronic submittals, submit via email as PDF electronic files.

D. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

E. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

F. After review, produce copies and distribute.

1.6 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
   1. Use of files is solely at receiver's risk. Architect/Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
   2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
   3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
   4. Receiver shall not hold Architect/Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
   5. Receiver shall understand that even though Architect/Engineer has computer virus

scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.

6. Receiver shall not hold Architect/Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

C. Costs: $200 per file, plus administrative fee of $40 per request paid in advance by certified check or money order payable to Architect/Engineer.

1.7 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
   1. Include signed and sealed calculations to support design.
   2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. If hard copies, submit number of copies Contractor requires, plus two copies Architect/Engineer will retain.

E. If electronic submittals, submit via email as PDF electronic files.

F. After review, produce copies and distribute.

1.8 SAMPLES

A. Samples: Action Submittal: Submit to Architect/Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:
   1. Submit to Architect/Engineer for aesthetic, color, and finish selection.
   2. Submit Samples of finishes, textures, and patterns for Architect/Engineer selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Architect/Engineer will retain one Sample.

F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.

G. After review, produce copies and distribute.

1.9 DESIGN DATA

A. Informational Submittal: Submit data for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.

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

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

1.12 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data.

C. Indicate special procedures, perimeter conditions requiring special attention, and special

environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit report in duplicate within 3 days of observation to Architect/Engineer for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.14 ERECTION DRAWINGS

A. Informational Submittal: Submit Drawings for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.

C. Data indicating inappropriate or unacceptable Work may be subject to action by Architect/Engineer or Owner.

1.15 CONSTRUCTION PHOTOGRAPHS

A. Provide photographs of Site and construction throughout progress of Work produced by an experienced photographer acceptable to Architect/Engineer.

B. Each month submit photographs with Application for Payment.

C. Photographs: emailed.

D. Take a minimum two Site photographs from different directions and five interior photographs of indicating relative progress of the Work, 5 days maximum before submitting.

E. Take photographs as evidence of existing Project conditions as follows:
   1. Interior views: Addition and stage
   2. Exterior views: New addition

F. Digital Images: Deliver complete set of digital image electronic files via email or file sharing to Owner with Project record documents.

1.16 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Architect/Engineer.

B. Contractor: Responsible for:

1. Determination and verification of materials including manufacturer's catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.

4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.17 ARCHITECT/ENGINEER REVIEW

A. Do not make "mass submittals" to Architect/Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Architect/Engineer's review time stated above will be extended as necessary to perform proper review. Architect/Engineer will review "mass submittals" based on priority determined by Architect/Engineer after consultation with Owner and Contractor.

B. Informational submittals and other similar data are for Architect/Engineer's information, do not require Architect/Engineer's responsive action, and will not be reviewed or returned with comment.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, Architect's Supplemental Instruction, or Construction Change Directive.

E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Labeling.

E. Mockup requirements.

F. Testing and inspection services.

G. Manufacturers' field services.

1.2 QUALITY CONTROL

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

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

C. Perform Work using persons qualified to produce required and specified quality.

D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

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

B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request

clarification from Architect/Engineer before proceeding.

1.4 REFERENCES

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

B. Conform to reference standard by date of issue current as date for receiving Bids except where specific date is established by code.

C. Obtain copies of standards and maintain on Site when required by product Specification Sections.

D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.

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

C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.

B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mockups shall be comparison standard for remaining Work.

1.7 TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.

B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Architect/Engineer, Owner and authorities having jurisdiction.
   1. Laboratory: Authorized to operate at Project location.

C. Reports shall be submitted by independent firm to Architect/Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Architect/Engineer and independent firm 24 hours before expected time for operations requiring services.
   2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

E. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

F. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Architect/Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

G. Agency Responsibilities:
   1. Test Samples of mixes submitted by Contractor.
   2. Provide qualified personnel at Site. Cooperate with Architect/Engineer and Contractor in performance of services.
   3. Perform indicated sampling and testing of products according to specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Architect/Engineer and Contractor of observed irregularities or nonconformance of Work or products.
   6. Perform additional tests required by Architect/Engineer.
   7. Attend preconstruction meetings and progress meetings.

H. Agency Reports: After each test, promptly submit electronically via email copies of report to Architect/Engineer, Contractor, and authorities having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results.

I. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURER'S 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, startup of equipment, testing, adjusting, and balancing of equipment 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 manufacturer's written instructions.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

STATEMENT OF SPECIAL INSPECTIONS

PROJECT: Rome Auditorium

LOCATION: Rome, GA

PERMIT APPLICANT: The City of Rome

APPLICANT'S ADDRESS: 601 Broad Street, Rome, GA 30161

ARCHITECT OF RECORD: Cevian Design Lab, LLC

STRUCTURAL ENGINEER OF RECORD: Jason P Baines, PE

REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE: Mark Cochran, AIA

This Statement of Special Inspections is submitted in accordance with Section 1704.3 of the 2012 International Building Code. It includes a *Schedule of Special Inspection Services* applicable to the above-referenced Project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections. If applicable, it includes *Requirements for Seismic Resistance* and/or *Requirements for Wind Resistance*.

Are *Requirements for Seismic Resistance* included in the *Statement of Special Inspections*?	☒ Yes	☐ No
Are *Requirements for Wind Resistance* included in the *Statement of Special Inspections*?	☒ Yes	☐ No

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the Building Official and to the Registered Design Professional in Responsible Charge at a frequency agreed upon by the Design Professional and the Building Official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge prior to completion of that phase of work. A *Final Report of Special Inspections* documenting required special inspections and corrections of any discrepancies noted in the inspections shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge at the conclusion of the project.

Frequency of interim report submittals to the Registered Design Professional in Responsible Charge:

_ Weekly Bi-Weekly Monthly Other; specify:_

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by:

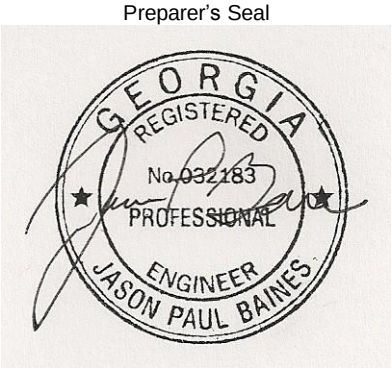
Jason P Baines

Type or print name

6-16-15

Signature Date

Preparer's Seal



Building Official's Acceptance:

Signature Date

Permit Number:

Frequency of interim report submittals to the Building Official:

_ Monthly Bi- Monthly Upon Completion Other; specify:_

Statement of Special Inspections
Requirements for Seismic Resistance

See the Schedule of Special Inspections for inspection and testing requirements

Seismic Design Category: E

Statement of Special Inspection for Seismic Resistance Required (Yes/No): YES

Description of seismic force-resisting system subject to special inspection and testing for seismic resistance:

Structural Steel Ordinary Moment Frames and Masonry Shear Walls at the Base Level

Description of designated seismic systems subject to special inspection and testing for seismic resistance:
(Required for architectural, electrical and mechanical systems and their components that require design in accordance with Chapter 13 of ASCE 7, have a component importance factor, *Ip*, greater than one and are in Seismic Design Categories C, D, E or F.)

Description of additional seismic systems and components requiring special inspections and testing:
(Required for systems noted in IBC Section 1705.11, cases 3, 4 & 5 in Seismic Design Categories C, D, E or F.)

Statement of Responsibility:
Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

Statement of Special Inspections
Requirements for Wind Resistance

See the Schedule of Special Inspections for inspection and testing requirements

Nominal Design Wind Speed, V_{asd}: 90 **m.p.h.**

Wind Exposure Category: B

Statement of Special Inspection for Wind Resistance Required (Yes/No): Yes

Description of main wind force-resisting system subject to special inspection for wind resistance:

Structural Steel Ordinary Moment Frames

Description of wind force-resisting components subject to special inspection for wind resistance:

Plywood Floor Sheathing and Metal Roof Deck

Statement of Responsibility:
Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.

FINAL REPORT OF SPECIAL INSPECTIONS

PROJECT: Rome Auditorium

LOCATION: Rome, GA

PERMIT APPLICANT: The City of Rome

APPLICANT'S ADDRESS: 601 Broad Street, Rome, GA 30161

ARCHITECT OF RECORD: Cevian Design Lab

STRUCTURAL ENGINEER OF RECORD: Jason P Baines, PE

REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE: Mark Cochran, AIA

To the best of my information, knowledge, and belief, which are based upon observations or diligent supervision of our inspection services for the above-referenced Project, I hereby state that the special inspections or testing required for this Project, and designated for this Agent in the *Schedule of Special Inspection Services*, have been completed in accordance with the Contract Documents.

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Interim reports submitted prior to this final report and numbered to form a basis for, and are to be considered an integral part of this final report. The following discrepancies that were outstanding since the last interim report dated have been corrected:

_____

_____

_____

_____

_____

(Attach 8 ½"x11" continuation sheet(s) if required to complete the description of corrections)

Prepared By:

_____
Special Inspection Agent/Firm

_____
Type or print name

_____
Signature Date

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
1704.2.5 Inspection of Fabricators					
Verify fabrication/quality control procedures	In-plant review (3)	Y	Periodic	1,2	
1705.1.1 Special Cases (work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements)	Submittal review, shop (3) and/or field inspection	N			
1705.2 Steel Construction					
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review	Y	Each submittal	1, 2	
2. Material verification of structural steel	Shop (3) and field inspection	Y	Periodic	1, 2	
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection	Y	Periodic	1, 2	
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection	Y	Periodic	1, 2	
5. Structural steel welding:					
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection	Y	Observe or Perform as noted (4)	1, 2	
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-2)	Shop (3) and field inspection	Y	Observe (4)	1, 2	
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (3) and field inspection	Y	Observe or Perform as noted (4)	1, 2	
d. Nondestructive testing (NDT) of welded joints: *see Commentary*					
1) Complete penetration groove welds 5/16" or greater in *risk category* III or IV	Shop (3) or field ultrasonic testing - 100%	Y	Periodic	1, 2	
2) Complete penetration groove welds 5/16" or greater in *risk category* II	Shop (3) or field ultrasonic testing - 10% of welds minimum	N	Periodic		
3) Thermally cut surfaces of access holes when material t > 2"	Shop (3) or field magnetic Partical or Penetrant testing	N	Periodic		
4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3.1	Shop (3) or field radiographic or Ultrasonic testing	Y	Periodic	1, 2	
5) Fabricator's NDT reports when fabricator performs NDT	Verify reports	Y	Each submittal (5)	1, 2	
6. Structural steel bolting:	Shop (3) and field inspection				
a. Inspection tasks Prior to Bolting (Observe, or perform tasks for each bolted connection, in accordance with QA tasks listed in AISC 360, Table N5.6-1)		Y	Observe or Perform as noted (4)	1, 2	

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5.6-2)		Y	Observe (4)	1, 2	
1) Pre-tensioned and slip-critical joints					
a) Turn-of-nut with matching markings		Y	Periodic	1, 2	
b) Direct tension indicator			Periodic		
c) Twist-off type tension control bolt			Periodic		
d) Turn-of-nut without matching markings			Continuous		
e) Calibrated wrench			Continuous		
2) Snug-tight joints		Y	Periodic	1, 2	
c. Inspection tasks After Bolting (Perform tasks for each bolted connection in accordance with QA tasks listed in AISC 360, Table N5.6-3)		Y	Perform (4)	1, 2	
7. Inspection of steel elements of composite construction prior to concrete placement in accordance with QA tasks listed in AISC 360, Table N6.1	Shop (3) and field inspection and testing	N	Observe or Perform as noted (4)		
1705.2.2 Steel Construction Other Than Structural Steel					
1. Material verification of cold-formed steel deck:					
a. Identification markings	Field inspection	Y	Periodic	1, 2	
b. Manufacturer's certified test reports	Submittal Review	Y	Each submittal	1, 2	
2. Connection of cold-formed steel deck to supporting structure:	Shop (3) and field inspection				
a. Welding		Y	Periodic	1, 2	
b. Other fasteners (in accordance with AISC 360, Section N6)					
1) Verify fasteners are in conformance with approved submittal		Y	Periodic	1, 2	
2) Verify fastener installation is in conformance with approved submittal and manufacturer's recommendations		Y	Periodic	1, 2	
3. Reinforcing steel	Shop (3) and field inspection				
a. Verification of weldability of steel other than ASTM A706		Y	Periodic	1, 2	
b. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, boundary elements of special concrete structural walls and shear reinforcement		Y	Continuous	1, 2	
c. Shear reinforcement		Y	Continuous	1, 2	
d. Other reinforcing steel		Y	Periodic	1, 2	
4. Cold-formed steel trusses spanning 60 feet or greater					
a. Verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package	Field inspection	Y	Periodic	1, 2	
1705.3 Concrete Construction					
1. Inspection of reinforcing steel installation (see 1705.2.2 for welding)	Shop (3) and field inspection	Y	Periodic	1, 2	
2. Inspection of prestressing steel installation	Shop (3) and field inspection	N	Periodic		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
3. Inspection of anchors cast in concrete where allowable loads have been increased per section 1908.5 or where strength design is used	Shop (3) and field inspection	Y	Periodic	1, 2	
4. Inspection of anchors and reinforcing steel post-installed in hardened concrete: Per research reports including verification of anchor type, anchor dimensions, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, concrete minimum thickness, anchor embedment and tightening torque	Field inspection	Y	Periodic or as required by the research report issued by an approved source	1, 2	
5. Verify use of approved design mix	Shop (3) and field inspection	Y	Periodic	1, 2	
6. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete	Shop (3) and field inspection	Y	Continuous	1, 2	
7. Inspection of concrete and shotcrete placement for proper application techniques	Shop (3) and field inspection	Y	Continuous	1, 2	
8. Inspection for maintenance of specified curing temperature and techniques	Shop (3) and field inspection	Y	Periodic	1, 2	
9. Inspection of prestressed concrete:	Shop (3) and field inspection				
a. Application of prestressing force		N	Continuous		
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system		N	Continuous		
10. Erection of precast concrete members					
a. Inspect in accordance with construction documents	Field inspection	N	In accordance with construction documents		
b. Perform inspections of welding and bolting in accordance with Section 1705.2	Field inspection	N	In accordance with Section 1705.2		
11. Verification of in-situ concrete strength, prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Review field testing and laboratory reports	N	Periodic		
12. Inspection of formwork for shape, lines, location and dimensions	Field inspection	Y	Periodic	1, 2	
13. Concrete strength testing and verification of compliance with construction documents	Field testing and review of laboratory reports	Y	Periodic	1, 2	
1705.4 Masonry Construction					
(A) Level A, B and C Quality Assurance:					
1. Verify compliance with approved submittals	Field Inspection	Y	Periodic	1, 2	
(B) Level B Quality Assurance:					
1. Verification of f'm and f'_{AAC} prior to construction	Testing by unit strength method or prism test method	N	Periodic		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
(C) Level C Quality Assurance:					
1. Verification of f'm and f'_{AAC} prior to construction and for every 5,000 SF during construction	Testing by unit strength method or prism test method	N	Periodic		
2. Verification of proportions of materials in premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout, as delivered to the project site	Field inspection	N	Continuous		
3. Verify placement of masonry units	Field Inspection	N	Periodic		
(D) Levels B and C Quality Assurance:					
1. Verification of Slump Flow and Visual Stability Index (VSI) of self-consolidating grout as delivered to the project	Field testing	Y	Continuous	1, 2	
2. Verify compliance with approved submittals	Field inspection	Y	Periodic	1, 2	
3. Verify proportions of site-mixed mortar, grout and prestressing grout for bonded tendons	Field Inspection	Y	Periodic	1, 2	
4. Verify grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages	Field Inspection	Y	Periodic	1, 2	
5. Verify construction of mortar joints	Field Inspection	Y	Periodic	1, 2	
6. Verify placement of reinforcement, connectors, and prestressing tendons and anchorages	Field Inspection	Y	Level B - Periodic	1, 2	
		N	Level C - Continuous		
7. Verify grout space prior to grouting	Field Inspection	Y	Level B - Periodic	1, 2	
		N	Level C - Continuous		
8. Verify placement of grout and prestressing grout for bonded tendons	Field Inspection	N	Continuous		
9. Verify size and location of structural masonry elements	Field Inspection	Y	Periodic	1, 2	
10. Verify type, size, and location of anchors, including details of anchorage of masonry to structural members, frames, or other construction.	Field inspection	Y	Level B - Periodic	1, 2	
		N	Level C - Continuous		
11. Verify welding of reinforcement (see 1705.2.2)	Field inspection	N	Continuous		
12. Verify preparation, construction, and protestion of masonry during cold weather (temperature below 40^{o}F) or hot weather (temperature above 90^{o}F)	Field inspection	Y	Periodic	1, 2	
13. Verify application and measurement of prestressing force	Field Inspection	N	Continuous		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
14. Verify placement of AAC masonry units and construction of thin-bed mortar joints (first 5000 SF of AAC masonry)	Field inspection	N	Continuous		
15. Verify placement of AAC masonry units and construction of thin-bed mortar joints (after the first 5000 SF of AAC masonry)	Field inspection	N	Level B - Periodic		
		N	Level C - Continuous		
16. Verify properties of thin-bed mortar for AAC masonry (first 5000 SF of AAC masonry)	Field inspection	N	Continuous		
17. Verify properties of thin-bed mortar for AAC masonry (after the first 5000 SF of AAC masonry)	Field inspection	N	Level B - Periodic		
		N	Level C - Continuous		
18. Prepare grout and mortar specimens	Field testing	N	Level B - Periodic		
		N	Level C - Continuous		
19. Observe preparation of prisms	Field inspection	N	Level B - Periodic		
		N	Level C - Continuous		
1705.5 Wood Construction					
1. Inspection of the fabrication process of wood structural elements and assemblies in accordance with Section 1704.2.5	In-plant review (3)	Y	Periodic	1, 2	
2. For high-load diaphragms, verify grade and thickness of structural panel sheathing agree with approved building plans	Field inspection	Y	Periodic	1, 2	
3. For high-load diaphragms, verify nominal size of framing members at adjoining panel edges, nail or staple diameter and length, number of fastener lines, and that spacing between fasteners in each line and at edge margins agree with approved building plans	Field inspection	Y	Periodic	1, 2	
4. Metal-plate-connected wood trusses spanning 60 feet or greater: verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package	Field inspection	N	Periodic		
1705.6 Soils					
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection	Y	Periodic	1, 2	
2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection	Y	Periodic	1, 2	
3. Perform classification and testing of controlled fill materials.	Field inspection	Y	Periodic	1, 2	
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill	Field inspection	Y	Continuous	1, 2	
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly	Field inspection	Y	Periodic	1, 2	

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
1705.7 Driven Deep Foundations					
1. Verify element materials, sizes and lengths comply with requirements	Field inspection	N	Continuous		
2. Determine capacities of test elements and conduct additional load tests, as required	Field inspection	N	Continuous		
3. Observe driving operations and maintain complete and accurate records for each element	Field inspection	N	Continuous		
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	Field inspection	N	Continuous		
5. For steel elements, perform additional inspections per Section 1705.2	See Section 1705.2	N	See Section 1705.2		
6. For concrete elements and concrete-filled elements, perform additional inspections per Section 1705.3	See Section 1705.3	N	See Section 1705.3		
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge	Field inspection	N	In accordance with construction documents		
8. Perform additional inspections and tests in accordance with the construction documents	Field Inspection and testing	N	In accordance with construction documents		
1705.8 Cast-in-Place Deep Foundations					
1. Observe drilling operations and maintain complete and accurate records for each element	Field inspection	N	Continuous		
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes	Field inspection	N	Continuous		
3. For concrete elements, perform additional inspections in accordance with Section 1705.3	See Section 1705.3	N	See Section 1705.3		
4. Perform additional inspections and tests in accordance with the construction documents	Field Inspection and testing	N	In accordance with construction documents		
1705.9 Helical Pile Foundations					
1. Verify installation equipment, pile dimensions, tip elevations, final depth, final installation torque and other data as required.	Field inspection	N	Continuous		
2. Perform additional inspections and tests in accordance with the construction documents	Field Inspection and testing	N	In accordance with construction documents		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
1705.10.1 Structural Wood Special Inspections For Wind Resistance					
1. Inspection of field gluing operations of elements of the main windforce-resisting system	Field inspection	N	Continuous		
2. Inspection of nailing, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection	N	Periodic		
1705.10.2 Cold-formed Steel Special Inspections For Wind Resistance					
1.Inspection during welding operations of elements of the main windforce-resisting system	Shop (3) and field inspection	Y	Periodic	1, 2	
2.Inspections for screw attachment, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection	Y	Periodic	1, 2	
1705.10.3 Wind-resisting Components					
1. Roof cladding	Shop (3) and field inspection	Y	Periodic	1, 2	
2. Wall cladding	Shop (3) and field inspection	N	Periodic		
1705.11.1 Structural Steel Special Inspections for Seismic Resistance					
Inspection of structural steel in accordance with AISC 341	Shop (3) and field inspection	Y	In accordance with AISC 341	1, 2	
1705.11.2 Structural Wood Special Inspections for Seismic Resistance					
1. Inspection of field gluing operations of elements of the seismic-force resisting system	Field inspection	Y	Continuous	1, 2	
2. Inspection of nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection	Y	Periodic	1, 2	
1705.11.3 Cold-formed Steel Light-Frame Construction Special Inspections for Seismic Resistance					
1. Inspection during welding operations of elements of the seismic-force-resisting system	Shop (3) and field inspection	Y	Periodic	1, 2	
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the seismic-force- resisting system	Shop (3) and field inspection	Y	Periodic	1, 2	
1705.11.4 Designated Seismic Systems Verification					
Inspect and verify that that the component label, anchorage or mounting conforms to the certificate of compliance in accordance with Section 1705.12.3	Field inspection	N	Periodic		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
1705.11.5 Architectural Components Special Inspections for Seismic Resistance					
1. Inspection during the erection and fastening of exterior cladding and interior and exterior veneer	Field inspection	Y	Periodic	1, 2	
2. Inspection during the erection and fastening of interior and exterior nonbearing walls	Field inspection	Y	Periodic	1, 2	
3. Inspection during anchorage of access floors	Field inspection	Y	Periodic	1, 2	
1705.11.6 Mechanical and Electrical Components Special Inspections for Seismic Resistance					
1. Inspection during the anchorage of electrical equipment for emergency or standby power systems	Field inspection	Y	Periodic	1, 2	
2. Inspection during the anchorage of other electrical equipment	Field inspection	Y	Periodic	1, 2	
3. Inspection during installation and anchorage of piping systems designed to carry hazardous materials, and their associated mechanical units	Field inspection	Y	Periodic	1, 2	
4. Inspection during the installation and anchorage of HVAC ductwork that will contain hazardous materials	Field inspection	Y	Periodic	1, 2	
5. Inspection during the installation and anchorage of vibration isolation systems	Field inspection	Y	Periodic	1, 2	
1705.11.7 Storage Racks Special Inspections for Seismic Resistance					
Inspection during the anchorage of storage racks 8 feet or greater in height	Field inspection	N	Periodic		
1705.11.8 Seismic Isolation Systems					
Inspection during the fabrication and installation of isolator units and energy dissipation devices used as part of the seismic isolation system	Shop and field inspection	N	Periodic		
1705.12.1 Concrete Reinforcement Testing and Qualification for Seismic Resistance					
1. Review certified mill test reports for each shipment of reinforcement used to resist earthquake-induced flexural and axial forces in reinforced concrete special moment frames, special structural walls, and coupling beams connecting special structural walls	Review certified mill test reports	N	Each shipment		

SCHEDULE OF SPECIAL INSPECTION SERVICES					
PROJECT	**Rome Auditorium**				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	**SERVICE**	**Y/N**	**EXTENT**	**AGENT***	**DATE COMPLETED**
2. Verify reinforcement weldability of ASTM A615 reinforcement used to resist earthquake-induced flexural and axial forces in reinforced concrete special moment frames, special structural walls, and coupling beams connecting special structural walls	Review test reports	Y	Each shipment		
1705.12.2 Structural Steel Testing and Qualification for Seismic Resistance					
Test in accordance with the quality assurance requirements of AISC 341	Shop (3) and field testing	Y	Per AISC 341		
1705.12.3 Seismic Certification of Nonstructural Components					
Review certificate of compliance for designated seismic system components.	Certificate of compliance review	N	Each submittal		
1705.12.4 Seismic Isolation Systems					
Test seismic isolation system in accordance with ASCE 7 Section 17.8	Prototype testing	N	Per ASCE 7		
1705.13 Sprayed Fire-resistant Materials					
1. Verify surface condition preparation of structural members	Field inspection	N	Periodic		
2. Verify application of sprayed fire-resistant materials	Field inspection	N	Periodic		
3. Verify average thickness of sprayed fire-resistant materials applied to structural members	Field inspection	N	Periodic		
4. Verify density of the sprayed fire-resistant material complies with approved fire-resistant design	Field inspection and testing	N	Per IBC Section 1705.13.5		
5. Verify the cohesive/adhesive bond strength of the cured sprayed fire-resistant material	Field inspection and testing	N	Per IBC Section 1705.13.6		
1705.14 Mastic and Intumescent Fire-Resistant Coatings					
Inspect mastic and intumescent fire-resistant coatings applied to structural elements and decks	Field inspection	N	Periodic		
1705.15 Exterior Insulation and Finish Systems (EIFS)					
1. Verify materials, details and installations are per the approved construction documents	Field inspection	N	Periodic		
2. Inspection of water-resistive barrier over sheathing substrate	Field inspection	N	Periodic		

SCHEDULE OF SPECIAL INSPECTION SERVICES

PROJECT	Rome Auditorium				
		APPLICABLE TO THIS PROJECT			
MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	AGENT*	DATE COMPLETED
1705.16 Fire-Resistant Penetrations and Joints					
1. Inspect penetration firestop systems	Field testing	N	Per ASTM E2174		
2. Inspect fire-resistant joint systems	Field testing	N	Per ASTM E2393		
1705.17 Smoke Control Systems					
1. Leakage testing and recording of device locations prior to concealment	Field testing	N	Periodic		
2. Prior to occupancy and after sufficient completion, pressure difference testing, flow measurements, and detection and control verification	Field testing	N	Periodic		

* INSPECTION AGENTS FIRM	ADDRESS	TELEPHONE NO.
1. Geo-Hydro Engineers	1000 Cobb Place Blvd Suite 290 Kennesaw, GA 30144	(770)-426-7100
2. Nova Engineering and Envronmental	3640 Kennesaw North Industrial Pkwy, Kennesaw, GA 30144	(770) 425-0777
3.		
4.		

Notes: 1. The inspection and testing agent(s) shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official prior to commencing work. The qualifications of the Special Inspector(s) and/or testing agencies may be subject to the approval of the Building Official and/or the Design Professional.

2. The list of Special Inspectors may be submitted as a separate document, if noted so above.

3. Special Insepctions as required by Section 1704.2.5 are not required where the fabricator is approved in accordance with IBC Section 1704.2.5.2

4. Observe on a random basis, operations need not be delayed pending these inspections. Perform these tasks for each welded joint, bolted connection, or steel element.

5. NDT of welds completed in an approved fabricator's shop may be performed by that fabricator when approved by the AHJ. Refer to AISC 360, N7.

Are *Requirements for Seismic Resistance* included in the *Statement of Special Inspections*? **Yes**

Are *Requirements for Wind Resistance* included in the *Statement of Special Inspections*? **Yes**

DATE: **6/16/2015**

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:
   1. Temporary electricity.
   2. Temporary lighting for construction purposes.
   3. Temporary heating.
   4. Temporary cooling.
   5. Temporary ventilation.
   6. Communication services.
   7. Temporary water service.
   8. Temporary sanitary facilities.

B. Construction Facilities:
   1. Field offices and sheds.
   2. Vehicular access.
   3. Parking.
   4. Progress cleaning and waste removal.
   5. Project identification.
   6. Traffic regulation.
   7. Fire-prevention facilities.

C. Temporary Controls:
   1. Barriers.
   2. Enclosures and fencing.
   3. Security.
   4. Water control.
   5. Dust control.
   6. Noise control.
   7. Pest and rodent control.
   8. Pollution control.

D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

A. Owner will pay cost of energy used. Exercise measures to conserve energy. Use Owner's existing power service.

B. Provide temporary electric feeder from existing building electrical service at location as directed by Owner. Do not disrupt Owner's use of service.

C. Provide power outlets with branch wiring and distribution boxes located at each floor as required for construction operations. Provide suitable, flexible power cords as required for portable construction tools and equipment.

D. Permanent convenience receptacles may be used during construction.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations to achieve minimum lighting level of 2 watts/sq ft.

B. Provide and maintain 0.25 watt/sq ft HID lighting to interior work areas after dark for security purposes.

C. Permanent building lighting may be used during construction. Repair, clean, and replace lamps at end of construction

1.4 TEMPORARY HEATING

A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.

B. Coordinate with owner temporary heat for auditorium until the permanent HVAC units have been installed on the roof of the new addition and connected into the existing ducts.

C. Enclose building before activating temporary heat.

D. Before operating permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts. Replace filters at Substantial Completion.

E. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress unless indicated otherwise in individual product Sections.

1.5 TEMPORARY COOLING

A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations

B. Coordinate with owner temporary cooling for auditorium until the permanent HVAC units

have been installed on the roof of the new addition and connected into the existing ducts.

C. Enclose building before activating temporary cooling.

D. Before operating permanent equipment for temporary cooling purposes, verify installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts. Replace filters at Substantial Completion.

E. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress unless indicated otherwise in individual product Sections.

1.6 TEMPORARY VENTILATION

A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.7 COMMUNICATION SERVICES

A. Telephone Service: Provide, maintain, and pay for telephone service to field office at time of Project mobilization and until completion of Work. Cellular service is adequate.

1.8 TEMPORARY WATER SERVICE

A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Use Owner's existing water system, extended and supplemented with temporary devices as needed to maintain specified conditions for construction operations.

B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation and heat tape to prevent freezing if temperature falls.

1.9 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

B. Maintain in clean and sanitary condition

1.10 FIELD OFFICES AND SHEDS

A. Do not use existing facilities for field offices or for storage.

B. Field Office: Weathertight, with lighting, electrical outlets, heating and cooling equipment, and equipped with sturdy furniture and drawing display table.

C. Locate field offices and sheds as directed by the owner.

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

E. Construction: Portable or mobile buildings, or buildings constructed with floors raised aboveground, securely fixed to foundations with steps and landings at entrance doors.
   1. Construction: Structurally sound, secure, weathertight enclosures for office and storage spaces. Maintain during progress of Work; remove enclosures when no longer needed.
   2. Thermal Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.

F. Environmental Control:
   1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions.

G. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

H. Field office is not required if official Contractor's Company office is located within 15 miles of project site. Home office does not apply.

1.11 VEHICULAR ACCESS

A. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.

B. Locate as approved by Owner.

C. Provide and maintain access to fire hydrants and control valves free of obstructions.

D. Use designated existing on-Site roads for construction traffic. Coordinate with the Owner.

1.12 PARKING

A. Locate as approved by Owner.

B. If Site space is not adequate, provide additional off-Site parking.

C. Use of existing on-Site streets and driveways used for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.

D. Use of designated areas of existing parking facilities used by construction personnel is permitted. Coordinate with the Owner.

E. Maintenance:

1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.

2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.

F. Removal, Repair:
1. Remove temporary materials and construction before Substantial Completion.
2. Repair existing and permanent facilities damaged by use, to original condition.

1.13 PROGRESS CLEANING AND WASTE REMOVAL

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

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from Site periodically and dispose of off-Site. Comply with Section 01 74 19 - Construction Waste Management and Disposal.

1.14 PROJECT IDENTIFICATION

A. Project Identification Sign:
1. Sign to hold both Contractor and Architect signage. Signage to be (2) 4 ft x 8 ft sheets mounted one on top of the other. Top sign to be the Architects, bottom sign to be the Contractors.
2. Sign to be double sided or V-shaped depending on site layout
3. Contractor to provide own signs, to be 4ft x 8ft, landscape orientation
4. Contractor to provide structure and framing for sign.
5. Architect will provide own sign, contractor to install.
6. No other signs are allowed without Owner's permission except those required by law.

B. Project Informational Signs:
1. SPLOST Sign to be provided by the owner and installed by the contractor
2. No other signs are allowed without Owner's permission except those required by law.

C. Design structure to withstand 60 mph wind velocity.

D. Installation:

1. Install Project identification sign within 15 days after date established by Notice to Proceed.

2. Erect at designated location.
3. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
4. Install sign surface plumb and level, with butt joints. Anchor securely.
5. Paint exposed surfaces of sign, supports, and framing.

E. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.15 TRAFFIC REGULATION

A. Signs, Signals, and Devices:
1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
2. Traffic Control Signals: As approved by local jurisdictions.
3. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
4. Flag Person Equipment: As required by authorities having jurisdiction.

B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

D. Haul Routes:
1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.

E. Traffic Signs and Signals:
1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
3. Relocate signs and signals as Work progresses, to maintain effective traffic control.

F. Removal:
1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

1.16 FIRE-PREVENTION FACILITIES

A. Prohibit smoking within buildings under construction and demolition. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.

B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
   1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.
   2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
   3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

1.17 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations [and demolition].

B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
   1. Barricade Construction: As necessary to prevent access

C. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.18 ENCLOSURES AND FENCING

A. Construction: Commercial-grade chain-link fence or Solid wood fence.

B. Provide 6 foot-high fence around construction Site; equip with vehicular and pedestrian gates with locks.

C. Exterior Enclosures:
   1. Provide temporary weathertight 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.

D. Interior Enclosures:
   1. Provide temporary partitions as indicated on Drawings 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.

2. Construction: Framing and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces.
3. Paint surfaces exposed to view from Owner-occupied areas.

1.19 SECURITY

A. Security Program:
   1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
   2. Initiate program in coordination with Owner's existing security system at Project mobilization.
   3. Maintain program throughout construction period until Owner occupancy.

B. Restrictions: Do not work during performances

1.20 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.

B. Protect Site from puddles or running water. Provide water barriers as required to protect from construction runoff into sewer.

1.21 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

1.22 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.23 PEST AND RODENT CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work and entering facility.

B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.24 POLLUTION CONTROL

A. 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.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.25 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before Final Application for Payment inspection.

B. Remove underground installations to minimum depth of 2 feet.

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

D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

1.2 PRODUCTS

A. At minimum, comply with specified requirements and reference standards.

B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.

C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

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

E. Furnish interchangeable components from same manufacturer for components being replaced, unless otherwise noted.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Comply with delivery requirements in Section 01 74 19 - Construction Waste Management and Disposal.

B. Transport and handle products according to manufacturer's instructions.

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

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

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

B. Store products with seals and labels intact and legible.

C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.

D. For exterior storage of fabricated products, place products on sloped supports aboveground.

E. Provide **bonded** off-Site storage and protection when Site does not permit on-Site storage or protection.

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

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 01 25 00 - Substitution Procedures.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Field engineering.

B. Closeout procedures.

C. Starting of systems.

D. Demonstration and instructions.

E. Testing, adjusting, and balancing.

F. Project record documents.

G. Operation and maintenance data.

H. Manual for materials and finishes.

I. Manual for equipment and systems.

J. Spare parts and maintenance products.

K. Product warranties and product bonds.

L. Examination.

M. Preparation.

N. Execution.

O. Cutting and patching.

P. Protecting installed construction.

Q. Final cleaning.

1.2 FIELD ENGINEERING

A. ***Prior to beginning Work, verify and establish floor elevations of existing facilities to ensure that new Work will meet existing elevations in smooth and level alignment except where specifically detailed or indicated otherwise.***

B. Verify setbacks and easements; confirm Drawing dimensions and elevations.

C. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.

1.3 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
   1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
   2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
   3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
   4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
   5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
   6. Make final change-over of locks eliminating construction master-key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
   7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
   8. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:
   1. When Contractor considers Work to be substantially complete, submit to Architect:
      a. Written certificate that Work, or designated portion, is substantially complete.
      b. List of items to be completed or corrected (initial punch list).
   2. Within seven days after receipt of request for Substantial Completion, Architect will make inspection to determine whether Work or designated portion is substantially complete.
   3. Should Architect determine that Work is not substantially complete:
      a. Architect will promptly notify Contractor in writing, stating reasons for its opinion.

b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Architect.
c. Architect will reinspect Work.

d. Redo and Inspection of Deficient Work: Repeated until Work passes Architect inspection.

4. When Architect finds that Work is substantially complete, Architect will:
   a. Prepare Certificate of Substantial Completion on AIA G704 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Architect/Engineer and Owner (final punch list).
   b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
5. After Work is substantially complete, Contractor shall:
   a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
   b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
   a. Contract Documents have been reviewed.
   b. Work has been examined for compliance with Contract Documents.
   c. Work has been completed according to Contract Documents.
   d. Work is completed and ready for final inspection.
2. Submittals: Submit following:
   a. Final punch list indicating all items have been completed or corrected.
   b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
   c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
   d. Accounting statement for final changes to Contract Sum.
   e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
   f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
   g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.
3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:
1. Within seven days after receipt of request for final inspection, Architect will make inspection to determine whether Work or designated portion is complete.
2. Should Architect consider Work to be incomplete or defective:
   a. Architect will promptly notify Contractor in writing, listing incomplete or defective

Work.

b. Contractor shall remedy stated deficiencies and send second written request to Architect that Work is complete.

c. Architect will reinspect Work.
d. Redo and Inspection of Deficient Work: Repeated until Work passes Architect inspection.

1.4 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Notify Architect and Owner seven days prior to startup of each item.

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

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

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

F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

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

1.5 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of final inspection.

B. Demonstrate Project equipment and instructed by qualified representative who is knowledgeable about the Project.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Use operation and maintenance manuals as basis for instruction. Review contents of

manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

E. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.6 TESTING, ADJUSTING, AND BALANCING

A. Owner will appoint and employ services of independent firm to perform testing, adjusting, and balancing. Contractor shall pay for services from cash allowance.

B. Independent firm will perform services specified in Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC

C. Reports will be submitted by independent firm to Architect/Engineer indicating observations and results of tests and indicating compliance or noncompliance with requirements of Contract Documents.

1.7 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, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates used.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.

2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured depths of foundations in relation to finish first floor datum.
7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
9. Field changes of dimension and detail.
10. Details not on original Drawings.

G. Submit PDF electronic files of marked-up documents to Architect/Engineer with claim for final Application for Payment.

1.8 OPERATION AND MAINTENANCE DATA

A. Submit in PDF composite electronic indexed file.

B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.

C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.

D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
   a. Significant design criteria.

b. List of equipment.
c. Parts list for each component.
d. Operating instructions.
e. Maintenance instructions for equipment and systems.

f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
g. Safety precautions to be taken when operating and maintaining or working near equipment.

3. Part 3: Project documents and certificates, including the following:
   a. Shop Drawings and product data.
   b. Air and water balance reports.
   c. Certificates.
   d. Originals of warranties and bonds.

1.9 MANUAL FOR MATERIALS AND FINISHES

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.

D. Submit two sets of revised final volumes within ten days after final inspection.

E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.

F. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.

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

H. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

I. Additional Requirements: As specified in individual product Specification Sections.

J. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.10 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.

D. Submit two sets of revised final volumes within ten days after final inspection.

E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.

F. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

G. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

H. Include color-coded wiring diagrams as installed.

I. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

J. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

K. Include servicing and lubrication schedule and list of lubricants required.

L. Include manufacturer's printed operation and maintenance instructions.

M. Include sequence of operation by controls manufacturer.

N. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

O. Include control diagrams by controls manufacturer as installed.

P. Include Contractor's coordination drawings with color-coded piping diagrams as installed.

Q. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

R. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

S. Include test and balancing reports.

T. Additional Requirements: As specified in individual product Specification Sections.

U. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.11 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.12 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in three D side ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new 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. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

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 new material or substance in contact or bond.

3.3 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

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

1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Architect/Engineer for final decision.

E. Allow for expansion of materials and building movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
1. Refer questionable mounting heights choices to Architect/Engineer for final decision.
2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.

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

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

A. Employ original installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight-exposed elements.
5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and nonconforming Work.
4. Remove samples of installed Work for testing.

5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products according to requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

J. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

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

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

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

F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.
   1. Employ experienced personnel or professional cleaning firm.

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

C. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

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 and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Construction waste management plan.
   2. Construction waste recycling.
   3. Construction waste adaptive reuse.

1.2 PLAN REQUIREMENTS

A. Develop and implement construction waste management plan as approved by Architect.

B. Intent:
   1. Divert construction, demolition, and land-clearing debris from landfill disposal.
   2. Redirect recyclable material back to manufacturing process.
   3. Generate cost savings or increase minimal additional cost to Project for waste disposal.

1.3 SUBMITTALS

A. Construction Waste Management Plan: Submit construction waste management plan describing methods and procedures for implementation and monitoring compliance including the following:
   1. Transportation company hauling construction waste to waste processing facilities.
   2. Recycling and adaptive reuse processing facilities and waste type each facility will accept.
   3. Construction waste materials anticipated for recycling and adaptive reuse.
   4. On-Site sorting and Site storage methods.

B. Submit documentation prior to Substantial Completion substantiating construction waste management plan was maintained and goals were achieved.
   1. Trash: Quantity by weight deposited in landfills. Include associated fees, transportation costs, container rentals, and taxes for total cost of disposal.
   2. Salvaged Material: Quantity by weight with destination for each type of material salvaged for resale, recycling, or adaptive reuse. Include associated fees, transportation costs, container rentals, taxes for total cost of disposal, and reimbursements due to salvage resale.
   3. Total Cost: Indicate total cost or savings for implementation of construction waste

management plan.

1.4 CONSTRUCTION WASTE MANAGEMENT PLAN

A. Implement construction waste management plan at start of construction.

B. Review construction waste management plan at preconstruction meeting and progress meetings.

C. Distribute approved construction waste management plan to Subcontractors and others affected by plan requirements.

D. Oversee plan implementation, instruct construction personnel for plan compliance, and document plan results.

E. Purchase products to prevent waste by:
   1. Ensuring correct quantity of each material is delivered to Site.
   2. Choosing products with minimal or no packaging.
   3. Requiring suppliers to use returnable pallets or containers.
   4. Requiring suppliers to take or buy back rejected or unused items.

1.5 CONSTRUCTION WASTE RECYCLING

A. Use source separation method or comingling method suitable to sorting and processing method of selected recycling center. Dispose nonrecyclable trash separately into landfill.

B. Source Separation Method: Recyclable materials separated from trash and sorted into separate bins or containers, identified by waste type, prior to transportation to recycling center.

C. Comingling Method: Recyclable materials separated from trash and placed in unsorted bins or container for sorting at recycling center.

1.6 CONSTRUCTION WASTE ADAPTIVE REUSE

A. Arrange with processing facility for salvage of construction material and processing for reuse. Do not reuse construction materials on-Site except as allowed by Architect.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 CONSTRUCTION WASTE COLLECTION

A. Collect construction waste materials in marked bins or containers and arrange for transportation to recycling centers or adaptive salvage and reuse processing facilities.

B. Maintain recycling and adaptive reuse storage and collection area in orderly arrangement with materials separated to eliminate co-mingling of materials required to be delivered separately to waste processing facility.

3.2 CONSTRUCTION WASTE DISPOSAL

A. Deliver construction waste to waste processing facilities. Obtain receipt for deliveries.

B. Dispose of construction waste not capable of being recycled or adaptively reused by delivery to landfill, incinerator, or other legal disposal facility. Obtain receipt for deliveries.

END OF SECTION

SECTION 02 41 16 - STRUCTURE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Demolishing designated structures.
2. Demolishing designated foundations.
3. Disconnecting and capping designated utilities.
4. Removing designated items for Owner's retention.
5. Protecting items designated to remain.
6. Removing demolished materials.

1.2 SUBMITTALS

A. Shop Drawings: Indicate:
1. Demolition and removal sequence.
2. Location and construction of barricades, fences, and temporary Work.

B. Delegated Design Submittals: Signed and sealed Shop Drawings with design calculations and assumptions for bracing, shoring, and underpinning.

C. Permits: Copies of permits required by regulatory agencies for demolition and sidewalk and street closings.

D. Qualifications Statements:
1. Qualifications for demolition firm and licensed professional.

1.3 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of capped utilities, and subsurface obstructions.

1.4 QUALITY ASSURANCE

A. Perform Work according to applicable standards.

B. Conform to applicable state and local code for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal.

C. Conform to applicable local, state, and federal code for procedures when hazardous or

contaminated materials are discovered.

D. Permits: Obtain required permits from authorities having jurisdiction.

E. Demolition Firm: Company specializing in performing Work of this Section [with minimum 5 years' documented experience.

F. Licensed Professional: Design shoring, bracing, underpinning, under direct supervision of professional engineer experienced in design of this Work and licensed in State of Georgia.

1.5 EXISTING CONDITIONS

A. Buildings indicated to be demolished will be vacated before start of Work.

B. Owner assumes no responsibility for actual condition of buildings to be demolished.

C. Notify Architect/Engineer upon discovery of hazardous materials.

D. Do not sell demolished materials on-Site.

E. Maintain existing sidewalks to greatest extent possible.

F. Give great consideration and care to the adjacent building. Do not disturb the foundation, footings, masonry, roof, or structure of building to remain.

PART 2 PRODUCTS

2.1 FILL MATERIALS

A. Fill Material: Type fill, as specified on Structural Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine existing buildings indicated to be demolished before demolition.

3.2 PREPARATION

A. Notify affected utility companies before starting Work, and comply with utility's requirements.

B. Erect and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of public, Owner and existing improvements

indicated to remain.

C. Adjacent Surfaces: Protect existing appurtenances and structures indicated to remain.

D. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

E. Test soils around underground tanks (if found) for contamination.

3.3 DEMOLITION

A. Use of explosives is not permitted.

B. Conduct demolition to minimize interference with adjacent structures and occupancies.

C. Cease operations immediately when adjacent structures appear to be in danger. Notify authority having jurisdiction and Architect. Do not resume operations until directed.

D. Conduct operations with minimum interference to public or private accesses to occupied adjacent structures. Maintain protected continuous egress and access from adjacent structures.

E. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.

F. Sprinkling: Sprinkle Work with water to minimize dust. Provide hoses and water connections as required for this purpose.

G. Capped Utilities:
   1. Disconnect and cap designated utilities to.
   2. Identify utilities at termination of demolition.
   3. Record termination or capped location on Record Documents.

H. Remove foundation walls and footings in their entirety within area of new construction.

I. Remove concrete slabs-on-grade.

J. Remove underground tanks (if found), components, and piping from Site.

K. Remove materials to be re-installed or retained in manner to prevent damage; store and protect.

L. Backfill areas excavated resulting from demolition according to Structural Drawings. As necessary to complete new structure.

M. Continuously clean up and remove demolished materials from Site. Do not allow

materials to accumulate in building or on-Site.

N. Do not burn or bury materials on-Site; leave Site in clean condition.

3.4 SCHEDULES

A. Relics and Antiques:
   1. Relics, antiques, and similar objects remain property of Owner.
   2. Obtain direction from Owner regarding method of removal.

B. Items to be removed and delivered to Owner:
   1. Any furniture in the existing addition structure.

C. Items to be protected:
   1. Structure of existing auditorium to remain in place.
   2. Historic pin-rail on mezzanine

END OF SECTION

SECTION 03 60 00 - GROUTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Portland cement grout.
   2. Rapid curing epoxy grout.
   3. Non-shrink cementitious grout.

1.2 SUBMITTALS

A. Product Data: Grout.

B. Manufacturer's Installation Instructions: Mixing, handling, surface preparation and placing epoxy type and non-shrink type grouts.

C. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Perform Work according to state and local standards.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not perform grouting if temperatures exceed 90 degrees.

B. Maintain minimum temperature of 50 degrees F before, during, and after grouting, until grout has set.

PART 2 PRODUCTS

2.1 PORTLAND CEMENT GROUT MATERIALS

A. Portland Cement: ASTM C150, Type I and II.

B. Water:
   1. Potable; containing no impurities, suspended particles, algae or dissolved natural salts in quantities capable of causing:
      a. Corrosion of steel.

b. Volume change increasing shrinkage cracking.
c. Efflorescence.
d. Excess air entraining.

C. Fine Aggregate:

1. Washed natural sand.
2. Gradation in accordance with ASTM C33 and represented by smooth granulometric curve within required limits.
3. Free from injurious amounts of organic impurities as determined by ASTM C40.

D. Mix:
1. Portland cement, sand and water. Do not use ferrous aggregate or staining ingredients in grout mixes.

2.2 RAPID CURING EPOXY GROUT

A. Manufacturers:
1. Sika Corporation
2. L&M Construction Chemicals
3. W.R. Meadows, Inc.
4. Substitutions: Permitted

B. Furnish materials according to local standards.

C. Rapid-Curing Epoxy Grout: High strength, three-component epoxy grout formulated with thermosetting resins and inert fillers. Rapid-curing, high adhesion, and resistant to ordinary chemicals, acids and alkalis.

Property	Test	Result
Compressive Strength	ASTM C579	12,000 psi at 7 days
Tensile Strength	ASTM C307	2,000 psi minimum
Coefficient of Expansion	ASTM C531	0.000030 in per degree F
Shrinkage	ASTM C827	none

2.3 NON-SHRINK CEMENTITIOUS GROUT

A. Manufacturers:
1. Quickrete
2. Sika Corporation
3. L&M Construction Chemicals
4. Substitutions: Permitted.

B. Furnish materials according to local standards.

C. Non-shrink Cementitious Grout: Pre-mixed ready for use formulation requiring only addition of water; non-corrosive, non-metallic, non-gas-forming, no chlorides.

D. Properties: Certified to maintain initial placement volume or expand after set and meet

following minimum properties when tested according to CRD-C621, for Type D non-shrink grout:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (approx.)

		Final	3 hours (approx.)
Expansion			0.10% - 0.4% Maximum
Compressiv e Strength	CRD-C621	1 day	4,000 psi
		7 days	7,000 psi
		28 days	10,000 psi to 10,800 psi

2.4 FORMWORK

A. Refer to Section 03 30 00.

2.5 CURING

A. Prevent rapid loss of water from grout during first 48 hours by using approved membrane curing compound or with by using wet burlap method.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces until sound, clean concrete surface achieved.

B. Rough concrete lightly, but not enough to interfere with placement of grout.

C. Remove foreign materials from metal surfaces in contact with grout.

D. Align, level, and maintain final positioning of components to be grouted.

E. Saturate concrete surfaces with clean water; remove excess water, leaving none standing.

3.2 INSTALLATION - FORMWORK

A. Construct leakproof forms anchored and shored to withstand grout pressures.

B. Install formwork with clearances to permit proper placement of grout.

3.3 MIXING

A. Portland Cement Grout:
   1. Use proportions of two parts sand to one part cement, measured by volume.
   2. Prepare grout with water to obtain consistency to permit placing and packing.

3. Mixing Water and Grout: Pre-mix using approximately 2/3 of water; after partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing 2 to 3 minutes.
4. Mix only quantities of grout capable of being placed within 30 minutes after mixing.

5. Do not add additional water after grout has been mixed.
6. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.

B. Mix grout components in proximity to Work area and transport mixture quickly and in manner not permitting segregation of materials.

3.4 PLACING GROUT

A. Do not use pneumatic-pressure or dry-packing methods; do not vibrate placed grout.

B. Thoroughly compact final installation and eliminate air pockets.

3.5 CURING

A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. After grout has attained its initial set, keep damp for minimum of three days.

3.6 FIELD QUALITY CONTROL

A. Perform field testing according to ACI standards.

B. Submit proposed mix design to testing firm for review prior to commencement of Work.

C. Tests of grout components may be performed to ensure conformance with specified requirements.

END OF SECTION

SECTION 05 52 00 - METAL RAILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Steel tube railings, balusters, and fittings.
   2. Handrail

1.2 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

B. Samples: Submit two 8 inch-long samples of handrail. Submit two samples of elbow, wall bracket and end stop.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

E. Qualifications Statements:
   1. Submit qualifications for fabricator and erector.
   2. Submit manufacturer's approval of fabricator and erector.

1.3 QUALITY ASSURANCE

A. Perform Work for structural aluminum according to AA ADM 1.

B. Perform Work of this Section according to ASTM E985.

C. Finish joints according to NOMMA Guideline 1.

D. Perform Work according to local standards.

E. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' documented experience and approved by manufacturer.

F. Erector: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.4 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design handrail, guardrail, and attachments to resist forces as required by applicable code. Apply loads non-simultaneously to produce maximum stresses.
   1. Guard Top Rail and Handrail Concentrated Load: 200 lb. applied at any point in any direction.

2.2 HANDRAILS AND RAILINGS

A. Manufacturer List:
   1. Manufactured locally, preferred
   2. Substitutions: Permitted

2.3 MATERIALS

A. Steel Railing System:
   1. Pipe: ASTM A53 , Grade B, Schedule 40
   2. Posts: 4-inch square steel tubing; welded joints.
   3. Fittings: Elbows, T-shapes, wall brackets, escutcheons; machined steel.
   4. Mounting: brackets and flanges, Prepare backing plate for mounting in brick veneer wall construction.
   5. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
   6. Splice Connectors: Steel concealed spigots.
   7. Shop Prefinishing: Epoxy coated color as selected.

2.4 FABRICATION

A. Fit and shop-assemble components in largest practical sizes for delivery to Site.

B. Fabricate components with joints tightly fitted and secured. Furnish spigots and sleeves to accommodate Site assembly and installation.

C. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

F. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations not encouraging water intrusion.

G. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.

H. 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.

I. Accurately form components to suit stairs, ramps and landings, to each other and to building structure.

J. Accommodate expansion and contraction of members and building movement without damage to connections or members.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive Work.

B. Verify that concealed blocking and reinforcement are installed and correctly located to receive wall-mounted handrails.

3.2 PREPARATION

A. Supply items required to be cast into concrete and embedded in masonry with setting templates to appropriate Sections.

3.3 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Anchor railings to structure with anchors, plates.

C. Field-weld anchors as indicated on Shop Drawings. Touch up welds with primer. Grind

welds smooth.

D. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

E. Assemble with spigots and sleeves to accommodate tight joints and secure installation.

3.4 TOLERANCES

A. Maximum Variation from Plumb: 1/8 inch per story, noncumulative.

B. Maximum Offset from Alignment: 1/8 inch.

C. Maximum Out-of-Position: 1/8 inch.

3.5 ATTACHMENTS

A. Illustrations: See Drawings.

END OF SECTION

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Roof curbs perimeter nailers.
2. Blocking in wall openings.
3. Wood furring and grounds.
4. Concealed wood blocking for support of toilet and bath accessories wall cabinets.
5. Electrical panel backboards.
6. Preservative treatment of wood.

1.2 SUBMITTALS

A. Product Data: Submit technical data and application instructions on wood-preservative and fire-retardant treatment materials.

1.3 QUALITY ASSURANCE

A. Perform Work according to following:
1. Lumber Grading Agency: Certified by DOC PS 20.
2. Wood Structural Panel Grading Agency: Certified by APA - The Engineered Wood Association
3. Lumber: DOC PS 20.
4. Wood Structural Panels: DOC PS 1 or DOC PS 2.

B. Surface-Burning Characteristics:
1. Fire-Retardant-Treated Materials: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

C. Apply label from agency approved by authority having jurisdiction to identify each preservative-treated material.

D. Perform Work according to local standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Lumber Grading Rules: SPIB.

B. Miscellaneous Framing: Stress Group A, SYP species, grade 2; 19 percent maximum moisture content.

C. Plywood: APA-rated sheathing Grade C-

2.2 FACTORY WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): using waterborne preservative.

B. Wood Preservative (Surface Application): Clear

C. Moisture Content after Treatment: Kiln dried KDAT.
   1. Lumber: Maximum 19 percent.
   2. Structural Panels: Maximum 15 percent.

2.3 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: ASTM A153, hot-dip galvanized steel for high-humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and Staples: ASTM F1667.
   3. Anchors: Bolt or ballistic fastener for anchorages to steel.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate conditions are ready to receive blocking, curbing, and framing.

3.2 PREPARATION

A. Coordinate placement of blocking, curbing, and framing items.

3.3 INSTALLATION

A. Set members level and plumb, in correct position.

B. Place horizontal members, crown side up.

C. Secure sheathing to framing members with ends over firm bearing and staggered.

D. Install electrical panel backboards with plywood sheathing material where required. Size backboards 12 inches beyond size of electrical panel.

3.4 SITE-APPLIED WOOD TREATMENT

A. Brush-apply two coats of preservative treatment on wood in contact with cementitious materials.

B. Treat Site-sawn cuts. Apply preservative to Site-sawn cuts according to AWPA M4

C. Allow preservative to dry prior to erecting members.

3.5 ATTACHMENTS

END OF SECTION

SECTION 06 41 00 - ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Custom casework.
      a. Plastic-laminate-finished casework.
   2. Interior finish carpentry.
      a. Stairs, handrail.
      b. Shelving.
      c. Clothes rods.
      d. Door frames.
   3. Prefinish Work of this Section.

1.2 SUBMITTALS

A. Product Data:
   1. High-pressure decorative laminates.

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, schedule of finishes, and Certified Compliance Label on each set.

C. Samples:
   1. Two 8 x 10 in samples, illustrating cabinet finish.
   2. Two 8 x 10 in samples, illustrating counter top finish.

D. Delegated Design Submittals: Signed and sealed Shop Drawings with design calculations and assumptions for stairs, under direct supervision of licensed professional.

E. Qualification Statements:
   1. Qualifications for fabricator and licensed professional.

1.3 QUALITY ASSURANCE

A. Perform Work according to AWS, Section 6, Section 10, Section 11; economy grade

B. Surface Burning Characteristics: Comply with following when tested according to NFPA 286.
   1. During 40 kW Exposure: No flame spread to ceiling.
   2. During 160 kW Exposure: No flame spread to perimeter of tested sample and no flashover.

3. Total Smoke Release: Maximum 1 000 cu m.

C. Apply label from agency approved by authority having jurisdiction to identify each fire-retardant-treated and preservative-treated material.

D. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' documented production experience similar to this Project.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.5 AMBIENT CONDITIONS

A. Maintain storage space relative humidity within ranges indicated in AWS Section 2.

B. Subsequent Conditions: Maintain same temperature and humidity conditions in building spaces as will occur after occupancy during and after installation of Work of this Section.

1.6 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 CUSTOM CASEWORK

A. Plastic-Laminate-Finished Custom Casework:
1. Frameless construction.
2. Style: Flush overlay
3. AWS Section 10.
4. Custom grade
5. Exterior Exposed Surfaces: High-pressure decorative laminate over particleboard
6. Semi-Exposed Surfaces: High-pressure decorative laminate over particleboard

2.2 INTERIOR FINISH CARPENTRY

A. Interior Stairs: Hardwood lumber treads and risers.
1. Stringers and Carriages: Hardwood lumber.
2. Transparent-Finished Stairs: AWS Section 7; custom grade.

B. Shelving: Softwood plywood
   1. Wood Cleats: 3/4 by 3-1/2 in where clothes rods are indicated.
   2. Laminate Finished Shelving: AWS economy grade melamine.

C. Clothes Rods: Hardwood lumber 1-3/8 in diameter.

1. Rod Mounting Flanges: Wood to match clothes rod.

D. Performance and Design Criteria:
   1. Stair Design Criteria:
      a. Uniform Live Load: 100 psf with deflection of stringer or landing framing not to exceed 1/360 of span.
      b. Concentrated Load: 300 lb at any location on treads and landings.
      c. Maximum Deflection: 1/360 of span for stringers, treads, and landings.

2.3 CASEWORK MATERIALS

A. Particleboard: ANSI A208.1 Grade M2 or better; composed of wood chips or sawdust, medium density.
   1. Fire-Retardant Particleboard: ASTM E84; 25 maximum flame-spread index and 450 maximum smoke-developed index.

B. High-Pressure Decorative Laminate (HPDL): NEMA LD 3; color, pattern, and surface texture as selected.
   1. Horizontal Surfaces: HGL; 0.039 in thick.
   2. Vertical Surfaces: VGL; 0.020 in thick.
   3. Post-Formed Surfaces: HGP; 0.039 in thick.
   4. Fire-Resistant Surfaces: HGF; 0.048 in thick.
   5. Cabinet Liner: CLS; 0.020 in thick.
   6. Backing Sheet: BKL; 0.020 in thick.

2.4 INTERIOR FINISH CARPENTRY MATERIALS

A. Interior Hardwood Lumber: pine species.
   1. Cut: Plain sawn
   2. Finger Jointing: Not permitted.

B. Lumber Moisture Content Range: 5 to 10 percent.

2.5 WOOD TREATMENT

A. Fire-Retardant Treatment: Chemically treated and pressure impregnated, having flame spread of 25 or less when tested according to ASTM E 84 and showing no evidence of significant progressive combustion when test is continued for an additional 20-minute period, interior type.

B. Provide identification on fire-retardant-treated material.

C. Deliver fire-retardant-treated materials cut to required sizes. Minimize field cutting.

D. Moisture Content after Treatment: Kiln dried (KDAT).
   1. Lumber: As specified for interior lumber.
   2. Plywood: Maximum 15 percent.

2.6 FABRICATION

A. Fabricate stair work and railings to AWS Section 7 custom grade.

B. Fabricate casework to AWS Section 10 custom grade.

C. Shop-assemble casework for delivery to Site in units easily handled and to permit passage through building openings.

D. Fit exposed plywood edges with matching veneer edging. Use one piece for full length only.

E. Cap exposed high-pressure decorative laminate finish edges with material of same finish and pattern.

F. When necessary to cut and fit on-Site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and Site cutting.

G. Apply high-pressure decorative laminate finish in full, uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises, Locate plastic laminate joints minimum 18 in from sink cutout.

H. Apply laminate backing sheet to reverse side of plastic laminate-finished surfaces where required by AWS for specified grade.

I. Fabricate cabinets and counter tops with cutouts for plumbing fixtures, outlet boxes fixtures and fittings. Verify locations of cutouts from on-Site dimensions. Seal cut edges.

J. Stairs:
   1. Shop-fabricate stair assemblies including carriage, stringers, treads, and risers.
   2. Closed Stringers: Rout stair treads and risers into stringers and wedge tight.
   3. Open Stringers:
      a. Treads: Bored or cut to receive balustrade, fabricated with mitered and returned nosing at open edges.
      b. Risers: Mitered to stringer.
   4. Risers: Rabbeted to receive tread.
   5. Closed end treads and risers do not require tongue and groove machining.

2.7 FINISHES

A. Sand Work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler matching surrounding surfaces and types recommended for applied finishes.

D. Stain/Seal and varnish exposed-to-view surfaces.

E. Seal[, stain,] and varnish internal exposed-to-view [and semi-concealed] surfaces.

F. Seal]surfaces in contact with cementitious materials.

G. Finish according to Section 09 90 00 - Painting and Coating.

2.8 ACCESSORIES

A. Adhesive for High-Pressure Decorative Laminates: Type recommended by laminate manufacturer to suit application.

B. Fasteners and Anchors:
   1. Fasteners: ASTM A153, hot-dip galvanized steel for high-humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and Staples: ASTM F1667.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application.

D. Concealed Joint Fasteners: Threaded steel.

E. Veneer Edge Band: AWS; standard wood veneer edge band matching face veneer.

F. Shelf Brackets: Formed steel brackets, formed for attachment with lugs; satin finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with Work of this Section.

3.2 PREPARATION

A. Prime paint surfaces of woodwork items and assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

A. Install stair work and railings according to AWS Section 7 custom grade.

B. Install casework according to AWS Section 10 custom grade.

C. Install counter tops according to AWS Section 11 custom grade.

D. Set and secure casework, interior finish carpentry, and counter tops in place; rigid, plumb, and level.

E. Use fixture attachments in concealed locations for wall-mounted components.

F. Use concealed joint fasteners to align and secure adjoining counter tops.

G. Carefully scribe casework abutting other components, with maximum gaps of 1/32 in

H. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.4 TOLERANCES

A. Conform to AWS Sections 6 and 10 requirements for following:
   1. Smoothness.
   2. Gaps.
   3. Flushness.
   4. Flatness.
   5. Alignment

3.5 ADJUSTING

A. Adjust moving or operating parts to function smoothly and correctly.

3.6 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

3.7 ATTACHMENTS

END OF SECTION

SECTION 06 61 19 - QUARTZ AND RESIN FABRICATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Quartz and cast resin fabrications, vanity tops, countertops as indicated.

1.2 SUBMITTALS

A. Product Data: Submit data on specified component products.

B. Shop Drawings: Indicate dimensions, thicknesses, required clearances, tolerances, materials, colors, finishes, fabrication details, field jointing, adjacent construction, design load parameters, methods of support, integration of plumbing and electrical components, and anchorages.

C. Samples: Submit two samples representative of vanity top/countertop by 8x8 inch, illustrating color, texture, and finish.

D. Manufacturer's Instructions: Submit preparation of opening required, rough-in sizes, tolerances for item placement, temporary bracing of components.

E. Qualifications Statements:
   1. Submit qualifications for manufacturer and fabricator.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Materials: Two containers of 16oz. of polishing cream.

1.5 QUALITY ASSURANCE

A. Perform Work according to local standards.

B. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' production experience similar to this Project.

1.6 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design items with sufficient strength for handling and placement stresses.

B. Products Requiring Electrical Connection: Listed and classified by UL as suitable for purpose specified and indicated.

2.2 QUARTZ AND RESIN FABRICATIONS

A. Manufacturers:
   1. VT Industries
   2. Substitutions: Permitted

2.3 COMPONENTS

A. Composition: 93 percent crushed quartz, proprietary resin, and integral coloring. Scratch resistant and high stain resistance. Thickness as indicated.
   1. Absorption: Less than 0.04 percent according to ASTM C97.
   2. Flexural Strength: 5,600 psi and higher according to ASTM C880.

B. Adhesive: type, cartridge dispensed.

C. Color: as selected

2.4 FABRICATION

A. Fabricate components by mold to achieve shape and configuration.

B. Finish surfaces smooth and polish to gloss sheen.

C. Radius corners and edges.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions under provisions of Section 26 05 03 - Equipment Wiring Connections.

B. Verify that joint preparation and affected dimensions are acceptable.

3.2 PREPARATION

A. Provide anchoring devices for installation.

B. Provide templates and rough-in measurements.

3.3 INSTALLATION

A. Install according to manufacturer's instructions.

B. Rigidly anchor to substrate to prevent misalignment.

C. Seal to adjacent construction as specified in Section 07 90 00 - Joint Protection.

3.4 TOLERANCES

A. Maximum Variation from Indicated Dimension: 1/8 inch.

B. Maximum Offset from Indicated Position: 1/8 inch.

3.5 CLEANING

A. Clean and polish fabrication surfaces.

3.6 ATTACHMENTS

END OF SECTION

SECTION 07 11 00 - DAMPPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cold-applied asphalt bituminous dampproofing.
   2. Flexible flashing.

1.2 SUBMITTALS

A. Product Data: Submit properties of primer, bitumen, and mastics.

B. Manufacturer's Certificate: Products meet or exceed specified requirements.

C. Qualifications Statements:
   1. Qualifications for manufacturer and applicator.
   2. Manufacturer's approval of applicator.

1.3 QUALITY ASSURANCE

A. Perform Work according to local standards.

B. Manufacturer: Company specializing in manufacturing products specified in this Section with three years' experience.

C. Applicator: Company specializing in performing Work of this Section with three years' experience and approved by manufacturer.

1.4 AMBIENT CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24-48 hours before and during application until membrane has cured.

PART 2 PRODUCTS

2.1 BITUMINOUS DAMPPROOFING

A. Manufacturers:

1. BASF MasterSeal
2. Substitutions: Permitted.

B. Description: cold-applied water-based emulsified-asphalt dampproofing and vapor-retarding coatings for use on “green” or slightly damp surfaces.

2.2 MATERIALS

A. Cold Asphaltic Materials:
   1. Emulsified Asphalt:
      a. Comply with ASTM D1187, Type 1 and ASTM D1227.
      b. Type II, Class 1.

2.3 ACCESSORIES

A. Flexible Flashings: Basis of Design, Grace Vycor Plus Flashing
   1. Material: 0.5 mm of a black colored rubberized asphalt adhesive integrally bonded to 0.1 mm of cross-laminated polyethylene film to provide a min. 0.6 mm (25 mil) thick membrane. Membrane shall be interleaved with silicone-coated release paper until installed.
   2. Thickness: 25 mils

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are durable and free of matter detrimental to adhesion or application of dampproofing system.

B. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.2 PREPARATION

A. Clean and prepare surfaces to receive dampproofing.

B. Apply mastic to seal penetrations, small cracks, or minor honeycombs in substrate.

3.3 APPLICATION

A. Do not apply dampproofing to surfaces unacceptable to manufacturer or applicator.

B. Prime surfaces according to NRCA Roofing Manual.

C. Bitumen:
   1. Apply cold bitumen with brush or by spray application.
   2. Apply bitumen at temperature limited by equiviscous temperature plus or minus 25 degrees F not exceeding finish blowing temperature for four hours.
   3. Apply bitumen in two coats, continuous and uniform, at rate of 4 hours per coat.

D. Apply dampproofing from 2 inches below finish grade elevation to top of footings.

E. Provide watertight seal with mastic on items projecting through dampproofing surface.

F. Place drainage panel directly against membrane and butt joints to encourage drainage downward.

G. Immediately backfill to protect from damage.

3.4 PROTECTION

A. Protect adjacent surfaces not designated to receive dampproofing.

3.5 ATTACHMENTS

END OF SECTION

SECTION 07 13 00 - SHEETWATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sheet membrane waterproofing.

1.2 SUBMITTALS

A. Product Data: Submit data for flexible flashings, joint cover sheet, and joint and crack sealants, with temperature range for application of waterproofing membrane.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Manufacturer's Instructions: Submit special procedures and perimeter conditions requiring attention.

D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

E. Qualifications Statements:
   1. Submit qualifications for membrane manufacturer and installer.
   2. Submit membrane manufacturer's approval of installer.

1.3 QUALITY ASSURANCE

A. Perform Work according to NRCA Waterproofing Manual.

B. Membrane Manufacturer: Company specializing in manufacturing products specified in this Section with minimum documented experience no less than longest warranty offered.

C. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by membrane manufacturer.

1.4 AMBIENT CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24-48 hours before and during application and until liquid or mastic accessories have cured.

1.5 EXISTING CONDITIONS

A. Field Measurements: Verify field measurements of surfaces scheduled for waterproofing prior to installation. Indicate field measurements on Shop Drawings.

1.6 WARRANTY

A. Furnish two-year installer's warranty for waterproofing failing to resist penetration of water.

B. Furnish 15-year manufacturer's warranty for waterproofing failing to resist penetration of water.

C. For warranty repair work, remove and replace materials concealing waterproofing.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Performance Characteristics:
1. Air Penetration: 0.001 cfm/ft^2 at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft^2 at 75 Pa, when tested in accordance with ASTM E2357.
2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
3. Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127.
4. Basis Weight: Minimum 2.7 oz/yd^2, when tested in accordance with TAPPI Test Method T-410.
5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
6. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10.

2.2 SHEET MEMBRANE WATERPROOFING

A. Manufacturers:
1. DuPont™ Tyvek® CommercialWrap®.
2. Substitutions: Permitted

2.3 MATERIALS

A. Basis of Design: spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® and related assembly components.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Flexible Flashings: Basis of Design, Grace Vycor Plus Flashing
   1. Material: 0.5 mm of a black colored rubberized asphalt adhesive integrally bonded to 0.1 mm of cross-laminated polyethylene film to provide a min. 0.6 mm (25 mil) thick membrane. Membrane shall be interleaved with silicone-coated release paper until installed.
   2. Thickness: 25 mils

2.4 ACCESSORIES

A. Adhesives: As recommended by membrane manufacturer.

B. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

C. Mechanically Attached Membrane:
   1. 1-5/8 inch rust resistant screw with 2-inch diameter plastic cap or manufacturer approved 1-1/4” or 2” metal gasketed washer

D. Sealant: As specified in Section 07 90 00 - Joint Protection and As supplied or recommended by membrane manufacturer.

E. Protection Board: Rigid insulation as specified in Section 07 21 13 - Board Insulation.

F. Cant Strips: Premolded composition material.

G. Flexible Flashings: at openings and window penetrations recommended by manufacturer

H. Counterflashings: as specified in Section 07 62 00 - Sheet Metal Flashing and Trim.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are durable and free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.

B. Verify that items penetrating surfaces to receive waterproofing are securely installed.

C. Verify that substrate surface slopes to drain for horizontal waterproofing applications.

3.2 PREPARATION

A. Protect adjacent surfaces not designated to receive waterproofing.

B. Ensure that cast-in-place concrete has achieved minimum cure time required by waterproofing manufacturer.

C. Clean and prepare surfaces to receive waterproofing. Vacuum substrate clean.

D. Do not apply waterproofing to surfaces unacceptable to manufacturer.

E. Seal cracks and joints with sealant materials using depth to width ratio as specified in Section 07 90 00 - Joint Protection.

3.3 INSTALLATION

A. Mechanically Attached Membrane Waterproofing:
   1. Roll out membrane. Minimize wrinkles and bubbles.
   2. Install mechanical fasteners according to manufacturer recommendations.
   3. Bond sheet to membrane disc.
   4. Overlap edges and ends, and seal by contact tape, minimum 6 inches Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
   5. Weather-lap joints on sloped substrate in direction of drainage. Seal joints and seams.
   6. Install flexible flashings. Seal watertight to membrane.
   7. Seal membrane and flashings to adjoining surfaces.
   8. Extend membrane over cants and up intersecting surfaces at membrane perimeter minimum 12 inches above horizontal surface for first ply and 6 inches at subsequent plies laid in shingle fashion.
   9. Seal items protruding to or penetrating through membrane and install counterflashing membrane material.

B. Installation Standards: Install Work according to local standards.

3.4 FIELD QUALITY CONTROL

A. On completion of horizontal membrane installation, dam installation area in preparation for flood testing.

B. Comply with flood test procedures for horizontal membranes according to ASTM D5957.

C. If leakage is found, remove water and repair leaking areas with new waterproofing materials as directed by Architect/Engineer; repeat flood test. Repair damage to building.

D. When area is proven watertight, drain water and remove dam.

3.5 PROTECTION

A. Do not permit traffic over unprotected or uncovered membrane.

B. Protect membrane and from damage.

END OF SECTION

SECTION 07 21 16 - BLANKET INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Batt insulation in exterior wall and construction.
   2. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior walls and roofs.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer data on product characteristics, performance criteria, limitations.

B. Manufacturer's Certificate: Products meet or exceed specified requirements.

C. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

D. Qualifications Statement:
   1. Qualifications for manufacturer.

1.3 QUALITY ASSURANCE

A. Surface Burning Characteristics of Insulation Installed in Concealed Locations:
   1. Batt Insulation: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

B. Surface Burning Characteristics of Insulation Installed in Exposed Locations:
   1. Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

C. Perform Work according to local standards.

D. Manufacturer: Company specializing in manufacturing products specified in this Section with three years' experience.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials according to manufacturer instructions.

B. Protection:
   1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Remove insulation that becomes wet or damp.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Continuity of Thermal Barrier at Building Enclosure Elements: In conjunction with thermal insulating materials as specified in Section 09 21 16 – Gypsum Board Assemblies.

B. Manufacturers:
1. Owens Corning
2. CeertainTeed Corporation
3. Johns Manville
4. Knauf Insulation
5. Substitutions: Permitted.

C. Vapor Retarder Permeance: Maximum 1 perm when tested according to ASTM E96.

2.2 MATERIALS

A. Batt Insulation:
1. Description: Preformed glass-fiber batt, with friction fit.
2. Comply with ASTM C665, Type III, Class A
3. Thermal Resistance: R-value of 19 h-sq. ft.-degree F/Btu

B. r Retarder:
1. Description: polyethylene film for above-grade applications As specified in 07 13 - Sheet Waterproofing

C. Tape:
1. Type: Self-adhering, mesh reinforced.

D. Insulation Fasteners:
1. Description: Steel impaling spindle and clip on flat metal base.
2. Adhesive: Manufacture approved adhesive.
3. Length: To suit insulation thickness.
4. Capable of securely and rigidly fastening insulation in place.
5. Recommended by manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation and/or adhesive.

3.2 INSTALLATION

A. Install insulation in exterior wall and crawl spaces without gaps or voids.

B. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.

C. Facing Flanges:
   1. Tape in place.

D. Tape-seal butt ends, lapped flanges, and tears or cuts in membrane.

E. Attachment:
   1. Tape-seal tears or cuts in vapor retarder.

F. Installation Standards: Install Work according to local standards.

END OF SECTION

SECTION 07 24 00 - EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes exterior composite wall cladding system of rigid insulation and synthetic plaster finish.

1.2 SYSTEM DESCRIPTION

A. Exterior Insulation and Finish System: EIMA Class PB system.

1.3 SUBMITTALS

A. Shop Drawings: Indicate cornice joint pattern and joint details.

B. Product Data: Submit data on system materials, product characteristics, performance criteria, and limitations.

C. Samples: Submit one sample panel, 12x12 inches, illustrating each coating and texture range for selection.

1.4 QUALITY ASSURANCE

A. Fire Performance:
   1. Potential Heat of Foam Insulation: Determined in accordance with NFPA 259.
   2. Potential Heat of Foam Insulation in Wall Assembly: Maximum not to exceed potential heat of foam insulation within assembly when tested in accordance with NFPA 285.
   3. Ignition: No sustained flaming when tested in accordance with NFPA 268.

B. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

C. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

D. Perform Work in accordance with local standards.

E. Maintain one copy of each document on site.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install finish when ambient temperature is below 40 degrees F .

B. Maintain this temperature during and 48 hours after installation of finish.

PART 2 PRODUCTS

2.1 EXTERIOR INSULATION AND FINISH SYSTEMS

A. Manufacturers: Basis of Design: Dryvit
   1. Finestone
   2. Senergy
   3. Sto Corporation
   4. Substitutions: Permitted

2.2 COMPONENTS

A. Molded or Extruded Polystyrene Board Insulation: [ASTM C578, Type I, conforming to the following:
   1. Thickness: Thickness indicated.
   2. Thickness Tolerance: 1/32 maximum.
   3. Board Size: Per Manufacture.
   4. Board Size Tolerance: 1/16 from square and dimension.
   5. Edges: Square edges.

B. Insulation Adhesive: Recommended by manufacturer.

C. Primer/Adhesive & Base Coat: Recommended by manufacturer.

D. Coating Reinforcement: Standard glass fiber mesh type, non-woven, treated for improved bond with coating.

E. Coating: Elastomeric DPR (Dirt Pickup Resistance): Water-based elastomeric acrylic coating with integral color and texture and formulated with DPR chemistry:.
   1. Texture: Weatherlastic Smooth
   2. Color: To be determined by architect.

2.3 ACCESSORIES

A. Insulation Fastening: Fastenings with washers.

B. Sealant Materials: Recommended by coating manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate and adjacent materials are dry.

3.2 INSTALLATION

A. Insulation:
   1. Install boards on wall surface. As indicated on drawings.
   2. Place boards in method to maximize tight joints. Butt edges and ends tight to adjacent board and to protrusions.
   3. Secure boards to substrate by mechanical attachment to achieve continuous flush insulation surface.
   4. Shape insulation to required profile.

B. Coatings:
   1. Install Install EIFS system in accordance with manufacturer’s requirements as specified in Dryvit Publication DS218 “Outsulation Plus MD System Application Instructions.”
      a. Install reinforcing mesh in accordance with manufacturer's published instructions.
   2. Apply base coat to thickness to fully embed reinforcement, wrinkle free. Apply base cost using two pass method.
   3. Lap reinforcement edges and ends 2 inches.
   4. Install trim and control joints.
   5. Apply sealant at finish perimeter and control joints in accordance with Section 07 90 00.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect Work during progress of the Work to verify conformance to Contract Documents.

END OF SECTION

SECTION 07 54 05 - SHEET MEMBRANE ROOFING - MECHANICALLY ATTACHED

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Insulation over metal deck surface and vapor retarder.
   2. Base flashings.
   3. Roofing membrane expansion joints.
   4. Mechanically attached membrane roofing.
   5. Cant strips.
   6. Counterflashing.

1.2 SUBMITTALS

A. Product Data: Submit characteristics on membrane materials, fasteners, seaming materials, flashing materials, insulation, vapor retarders.

B. Shop Drawings:
   1. Indicate setting plan for tapered insulation, joint and termination detail conditions, and conditions of interface with other materials.
   2. Indicate membrane layout and seam locations.

C. Samples:
   1. Two samples of insulations, fasteners, membrane materials and accessories for verification of quality.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Instructions: Submit special precautions required for seaming membrane.

F. Manufacturer Reports: Indicate procedures followed, including ambient temperatures, humidity, wind velocity during application.

G. Qualifications Statements:
   1. Submit qualifications for manufacturer and applicator.
   2. Submit manufacturer's approval of applicator.

1.3 QUALITY ASSURANCE

A. Perform Work according to NRCA Roofing and Waterproofing Manual.

B. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 75/450 flame-spread/smoke-developed index when tested according to ASTM E84.

C. Apply label from agency approved by authority having jurisdiction to identify each roof assembly component.

D. Manufacturer's Inspections: Request manufacturer's presence before start of Work of this Section to verify substrate acceptability and review installation procedures and completed work, so that specified warranty can be issued.
   1. Promptly and satisfactorily repair unsatisfactory conditions disclosed by manufacturer's Site visits.

E. Perform Work according to local standards.

F. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

G. Applicator: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in weather protected environment, clear of ground and moisture.

B. Protect foam insulation from direct exposure to sunlight.

1.5 AMBIENT CONDITIONS

A. Do not apply roofing membrane during inclement weather without proper weather protection.

B. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.6 WARRANTY

A. Furnish 25-year manufacturer's warranty, including coverage of materials and installation and resulting damage resulting from failure to resist penetration of moisture.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. Sheet Membrane Roofing System: One-ply sheet membrane system with sheathing, vapor retarder, insulation, mechanically-attached membrane.

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Low Slope Membrane Roof Edge Securement: Conform to SPRI ES-1 for wind speeds determined from applicable code.

2.3 SINGLE PLY ROOFING - MECHANICALLY ATTACHED

A. Manufacturer List: Basis of Design, Duro-Last® Mechanically Fastened Roofing System
   1. Substitutions: Section 01 60 00 - Product Requirements

B. Sheet Vapor Retarder:
   1. Materials: Plastic sheet.
   2. Adhesive: Fire retardant.
   3. Comply with manufacture compatible surface substrates.

C. Separation Sheet: Reinforced kraft paper

D. Flexible Flashings:
   1. Material: Same as membrane.
   2. Color: White.

E. Membrane:
   1. Material:
      a. PVC:
   2. Reinforcement: [Reinforced.
   3. Color: white
   4. Comply with following criteria:

F. Seaming Materials: As recommended by membrane manufacturer

G. Protective Coating:
   1. Material: Neoprene/hypalon, with aluminum powder concentrate.
   2. Finish Coat Color: As selected.

H. Manufactured Roof Specialties: As specified in Section 07 71 00 - Roof Specialties.

2.4 ACCESSORIES

A. Fiber Cant and Tapered Edge Strips:
   1. Material: Insulation or Wood.
   2. Configuration: Preformed to 45-degree angle.

B. Insulation Adhesive: As recommended by insulation manufacturer.

C. Roofing Nails:
   1. Type: Galvanized, hot dipped, or non-ferrous type.
   2. Size and Configuration: As required to suit application.

D. Insulation Fasteners:
   1. Appropriate for purpose intended.
   2. Approved by FM and system manufacturer.
   3. Length: As required for thickness of material plus metal washers.

E. Sealants: As recommended by membrane manufacturer.

F. Strip Reglet Devices:
   1. Material: Galvanized steel
   2. Maximum possible lengths per location.
   3. Furnish attachment flanges.

G. Stack Boots: Flexible boot and collar with clamps for pipe stacks through membrane.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and Site conditions are ready to receive Work.

B. Verify that deck is supported and secure.

C. Verify that deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains, valleys, or eaves, and suitable for installation of roof system.

D. Verify that substrate is acceptable to manufacturer.

E. Verify that deck surfaces are dry and free of snow or ice.

F. Verify that roof openings, curbs, pipes, sleeves, ducts, and vents are solidly set and that wood cant strips wood nailing strips and reglets are in place.

3.2 PREPARATION

A. Metal Deck:
   1. Mechanically fasten sheathing to roof deck according to manufactures recommendations.

3.3 APPLICATION

A. Insulation Application:
   1. Mechanically fasten insulation to deck.

2. Place second layer of insulation with joints staggered.
3. Place constant thickness first layer and tapered thickness insulation second layer to required slope pattern.
4. Minimum Total Insulation Thickness: 3 inch.

5. Place boards perpendicular to deck flutes, with edges over flute surface for bearing support.
6. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
7. Lay tapered boards for distance of 12 inches back from roof drains for positive drainage.

B. Membrane Application:
1. Install according to manufacturer's printed instructions.

C. Flashings and Accessories:
1. Apply flexible flashings to seal membrane to vertical elements.
2. Secure per manufacturers recommendations.
3. Coordinate installation of roof drains and related flashings.
4. Seal flashings and flanges of items penetrating membrane.
5. Pads:
a. Install walkway pads around perimeter of HVAC units and to egress/access door.

3.4 CLEANING

A. Repair or replace defaced or disfigured finishes caused by Work of this Section.

3.5 PROTECTION

A. Protect building surfaces against damage from roofing Work.

B. Do not permit traffic over unprotected floor surfaces.

END OF SECTION

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SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes flashings and counterflashings, gutters and downspouts and fabricated sheet metal items.

1.2 SYSTEM DESCRIPTION

A. Sheet Metal System: Conform to criteria of SMACNA "Architectural Sheet Metal Manual" and Copper Development Association "Copper in Architecture - Handbook."

B. Gutters and Downspouts: Size components for rainfall intensity determined by storm occurrence of 1 in 10 years in accordance with CDA recommendations.

1.3 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.

B. Samples: Submit two samples, 2x2 inch in size of each type of formed metal flashing illustrating typical seam, material, color, and finish.

1.4 WARRANTY

A. Furnish five-year manufacturer warranty for finishes.

PART 2 PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM

A. Product Description: Flashing and sheet metal; unfinished or prefinished, including downspouts and accessories.

2.2 COMPONENTS

A. Pre-Finished Aluminum Sheet: ASTM B209; manufacturer’s standard alloy and temper as required for application and finish; 0.032 inch thick; stucco embossed finish shop pre-coated with PVDF (polyvinylidene fluoride) coating; color as selected from

manufacturer's standard color.

B. Copper (scuppers and downspouts only): ASTM B370; H00 temper, 16 oz/sq ft; natural finish.

2.3 ACCESSORIES

A. Fasteners: Aluminum with soft neoprene washers.

B. Gutter and Downspout Anchorage Devices: Type recommended by fabricator.

C. Downspout Supports: Straps.

D. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07 90 00.

E. Plastic Cement: ASTM D4586, Type I.

F. Reglets: rigid extruded PVC face and ends covered with plastic tape.

G. Primer and Solvent for Polyvinyl Chloride (PVC): As recommended by manufacturer.

2.4 FABRICATION

A. Downspout Boots; Cast iron.

B. Form components to shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.

C. Fabricate cleats and starter strips same material as sheet, to interlock with sheet.

D. Hem exposed edges on underside 1/2 inch; miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

E. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

F. Form material with standing seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

G. Fabricate corners in one piece, 18 inch long legs; seam for rigidity, seal with sealant.

H. Form sheet metal pans with upstand, and flanges.

2.5 SHOP FINISHING

A. PVDF (Polyvinylidene Fluoride) Coating: Multiple coat as specified for sheet metal system, thermally cured.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION

A. Install starter and edge strips, and cleats.

B. Install surface mounted reglets. Seal top of reglets with sealant. Insert flashings to form tight fit. Seal flashings into reglets with sealant.

C. Secure flashings, scuppers and downspouts in place using concealed fasteners.

D. Apply plastic cement compound between metal work and felt flashings.

E. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Install sheet metal pans surrounding roof penetrations. Fill pans watertight with plastic cement.

G. Connect downspouts to [downspout boots to storm sewer system. Seal connection watertight.

H. Seal joints watertight.

END OF SECTION

SECTION 07 71 00 - ROOF SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Copings, Fascia's, Gravel stops.

1.2 SUBMITTALS

A. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

B. Product Data: Shape of components, materials and finishes, anchor types and locations.

C. Samples:
   1. Two 2x2 inch illustrating component shape, finish, and color.
   2. One component sample of coping, gravel stop.

D. Manufacturer's Installation Instructions: Special procedures and perimeter conditions requiring special attention.

1.3 QUALITY ASSURANCE

A. Perform Work according to SMACNA details.

B. Perform Work according to local standards.

1.4 WARRANTY

A. Furnish five-year manufacturer warranty for roof finish.

PART 2 PRODUCTS

2.1 MANUFACTURED ROOF SPECIALTIES

A. Manufacturers:
   1. Duro-Last
   2. Substitutions: Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

A. Copings and Gravel Stops: shaped as indicated in Duro Last standard details. Include cover plates to conceal and weather seal joints and attachment flanges.

2.3 ACCESSORIES

A. Sealant: Manufacturer's standard type suitable for use with installation of system; Non-staining, Non-shrinking, and Non-sagging; ultra-violet and ozone resistant; color as selected.

B. Roofing Cement: ASTM D4586, Type I, cutback asphalt type.

2.4 FINISHES

A. Aluminum: Manufacturer’s standard finish as selected.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify deck, curbs, roof membrane, base flashing, and other items affecting Work of this Section are in place and positioned correctly.

3.2 INSTALLATION

A. Conform to SMACNA - Architectural Sheet Metal Manual] [NRCA - Waterproofing Manual drawing details as noted:

B. Coordinate installation of components of this Section with installation of roofing membrane and base flashings.

C. Coordinate installation of sealants and roofing cement with Work of this Section to ensure water tightness.

D. Coordinate installation of flashing flanges into reglets.

3.3 SCHEDULES

A. All flashing and copings are per Duro-Last standard Details.

END OF SECTION

SECTION 07 90 00 - JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes sealants and joint backing.

1.2 SUBMITTALS

A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance local standards.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.1 JOINT SEALERS

A. Manufacturers:
   1. Bondaflex
   2. Dow Corning Corp.
   3. GE Silicones
   4. Sika Corp.
   5. Substitutions: Permitted with approval of Architect

B. Product Description:
   1. High Performance General Purpose Exterior (Nontraffic) Sealant Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A.
      a. Color: Standard colors matching finished surfaces.
      b. Applications: Use for:
         1) Control, expansion, and soft joints in masonry.
         2) Joints between concrete and other materials.
         3) Joints between metal frames and other materials.
         4) Other exterior nontraffic joints for which no other sealant is indicated.

2. General Purpose Traffic Bearing Sealant Sealant: Polyurethane; ASTM C920, Grade P, Class 25, Use T; single or multi- component.
   a. Color: Standard colors matching finished surfaces.

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b. Applications: Use for exterior and interior pedestrian and vehicular traffic bearing joints.

3. Exterior Foam Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent; product recommended by manufacturer for traffic-bearing use.
   a. Color: Face color as selected.
   b. Size: As required to provide watertight seal when installed.
   c. Applications: Use for exterior wall expansion joints and parking deck expansion joints.

4. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, non-drying, non-skinning, non-curing.
   a. Applications: Use for concealed sealant bead in sheet metal work and concealed sealant bead in siding overlaps.

5. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
   a. Color: Standard colors matching finished surfaces.
   b. Applications: Use for interior wall and ceiling control joints, joints between door and window frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.

6. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses M and A; single component, mildew resistant.
   a. Applications: Use for joints between plumbing fixtures and floor and wall surfaces, and joints between kitchen and bathroom toilet room counter tops and wall surfaces.

7. Acoustical Sealant: Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   a. Applications: Use for concealed locations only at acoustically rated construction.
      1) Provide sealant bead between top stud runner and structure and between bottom stud track and floor.

8. Sealant - Acrylic Emulsion Latex: ASTM C834, single component, non-staining, non-bleeding, non-sagging.
   a. Color: Standard colors matching finished surfaces.
   b. Movement Capability: 2 to 5 percent.
   c. Service Temperature Range: 2 to 160 degrees F.
   d. Shore A Hardness Range: 15 to 40.

9. Sealant - Acrylic Sealant: ASTM C920, Grade NS, Class 12-1/2, Uses NT, M, A , O; single component, solvent curing, non-staining, non-bleeding, non-sagging.
   a. Color: Standard colors matching finished surfaces.
   b. Movement Capability: Plus and minus 12-1/2 percent.

c. Service Temperature Range: -13 to 180 degrees F.
d. Shore A Hardness Range: 25 to 50.

10. Sealant - Butyl Sealant: ASTM C920, Grade NS, Class 12-1/2, Use NT; single component, solvent release, non-skinning, non-sagging.
    a. Color: Black.
    b. Movement Capability: Plus and minus 12-1/2 percent.
    c. Service Temperature Range: -13 to 180 degrees F.
    d. Shore A Hardness Range: 10 to 30.

11. Sealant - Non-sag Polysulfide Sealant: ASTM C920, Grade NS, Class 25, Uses NT, M, A; two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type.
    a. Color: Standard colors matching finished surfaces.
    b. Movement Capability: Plus and minus 25 percent.
    c. Service Temperature Range: -40 to 180 degrees F.
    d. Shore A Hardness Range: 20 to 35.

12. Sealant - Self-Leveling Polysulfide Sealant: ASTM C920, Grade P, Class 25, Uses T, M; two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, self-leveling type.
    a. Color: Standard colors matching finished surfaces.
    b. Movement Capability: Plus and minus 25 percent.
    c. Service Temperature Range: -40 to 180 degrees F.
    d. Shore A Hardness Range: 20 to 35.

13. Sealant - Non-sag Polyurethane Sealant: ASTM C920, Grade NS, Class 25, Uses NT, M; single or multi-component, chemical curing, non-staining, non- bleeding, non-sagging type.
    a. Color: Standard colors matching finished surfaces.
    b. Movement Capability: Plus and minus 25 percent.
    c. Service Temperature Range: -40 to 180 degrees F.
    d. Shore A Hardness Range: 20 to 35.

14. Sealant - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Class 25, Uses T, M, A; single or multi-component, chemical curing, non-staining, non-bleeding, self-leveling type.
    a. Color: Standard color matching finished surfaces.
    b. Movement Capability: Plus and minus 25 percent.
    c. Service Temperature Range: -40 to 180 degrees F.
    d. Shore A Hardness Range: 20 to 35.

15. Sealant - Silicone Sealant: ASTM C920, Grade NS, Class 25, Uses NT, A; single

component, neutral curing, non-sagging, non-staining, fungus resistant, non-bleeding, non organic.

a. Color: Clear.

b. Movement Capability: Plus and minus 25 percent.

c. Service Temperature Range: -65 to 180 degrees F.
d. Shore A Hardness Range: 15 to 35.

2.2 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 D1056, sponge or expanded rubber; 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

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.

B. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter impairing adhesion of sealant.

B. Clean and prime joints.

C. Perform preparation in accordance with ASTM C1193.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Perform acoustical sealant application work in accordance with ASTM C919.

C. 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.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

3.4 SCHEDULE

A. Exterior Joints for Which No Other Sealant Type is Indicated: Type Non-sag Polyurethane Sealant.

B. Control and Expansion Joints in Paving: Type Self-Leveling Polyurethane Sealant.

C. Control, Expansion, and Soft Joints in Masonry, and Between Masonry and Adjacent Work: Type Non-sag Polyurethane Sealant.

D. Lap Joints in Exterior Sheet Metal Work: Type Butyl Sealant.

E. Butt Joints in Exterior Metal Work and Siding: Type Silicone Sealant.

F. Joints Between Exterior Metal Frames and Adjacent Work (except masonry): Type Non-sag Polyurethane Sealant .

G. Under Exterior Door Thresholds: Type Butyl Sealant.

H. Interior Joints for Which No Other Sealant is Indicated: Type Acrylic Sealant.

I. Control and Expansion Joints in Interior Concrete Slabs and Floors: Sika-Flex C1-SL

J. Joints Between Plumbing Fixtures and Walls and Floors, and Between Counter tops and Walls: Type Silicone Sealant.

K. In STC-Rated Walls, Between Metal Stud Track/Runner and Adjacent Construction , Between Outlet Boxes and Gypsum Board; Type Acrylic Sealant.

END OF SECTION

SECTION 08 11 00 - STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes steel doors and frames; non-rated and fire rated.

1.2 SUBMITTALS

A. Shop Drawings: Indicate door and frame elevations, internal reinforcement, cut-outs for glazing, louvers, and finishes.

B. Product Data: Submit door and frame configurations, location of cut-outs for hardware reinforcement.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. ANSI 250.8 - Recommended Specifications for Standard Steel Doors and Frames.
   2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
   3. Fire Rated Doors , Panels and Frames:
      a. Product Construction: NFPA 252.
      b. Product Installation: NFPA 80.

B. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 STEEL DOORS AND FRAMES

A. Manufacturers:
   1. Amweld Building Products, Inc.
   2. Ceco Door Products
   3. Steelcraft Model
   4. Substitutions: May be permitted with prior approval of Architect.

B. Product Description: Standard shop fabricated steel doors, and frames; fire rated and non-rated types; flush face or stile and rail design, and door louvers.

2.2 COMPONENTS

A. Exterior Doors (Insulated): ANSI A250.8, 1-3/4 inch thick.
   1. Level 2 - Heavy Duty, Model 1, full flush design.

B. Interior Doors (Non-Rated): ANSI A250.8, 1-3/4 inch thick.
   1. Level 2 - Heavy Duty, Model 1, full flush design.

C. Interior Doors (Fire Rated): ANSI A250.8, 1-3/4 inch thick.
   1. Level 2 - Heavy Duty, Model 1, full flush design.

D. Interior Doors (Non-Rated): ANSI A250.8 1-3/4 inch thick.
   1. Level 1 - Standard Duty, Model 1, full flush design.

E. Exterior Frames:
   1. Level 2 for Door Models 1, nominal 16 gage/0.053 inch thick material, base metal thickness.

F. Interior Frames:
   1. Level 2 for Door Models 1, nominal 16 gage/0.053 inch thick material, base metal thickness.

G. Door Core: polystyrene foam.

H. End Closure: Channel, 0.04 inch thick, flush.

I. Thermal Insulated Door: Total insulation R-Value of 4, measured in accordance with ASTM C1363.

J. Sound Rated Door: STC of 32, measured in accordance with ASTM E413.

2.3 ACCESSORIES

A. Door Louvers: Roll formed aluminum material; Inverted V slat blade, sight proof; shop painted finish to color as selected.

B. Silencers: Resilient rubber fitted into drilled hole.

C. Removable Stops: Rolled steel channel shape.

D. Bituminous Coating: Fibered asphalt emulsion.

E. Primer: ANSI A250.10 rust inhibitive type.

F. Weatherstripping: Resilient rubber set in steel retainer.

2.4 FABRICATION

A. Fabricate doors and frames with hardware reinforcement welded in place. Protect frame hardware preparations with mortar guard boxes.

B. Configure exterior frames and doors with profile to receive recessed weatherstripping.

C. Fabricate frames as slip-on units for gypsum board partitions.

D. Fabricate frames to suit masonry wall coursing with 4 inches head member.

E. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

F. Prepare interior frames for silencers and install.

G. Frame Transom Bars: Fixed type, with profile matching jamb and head.

H. Attach fire rating label to each fire rated door and frame. Indicate temperature rise rating for stair doors.

2.5 SHOP FINISHING

A. Steel Sheet: Galvanized to ASTM A653/A653M A40.

B. Primer: Baked.

C. Shop Finish: Baked enamel of color as selected.

D. Coat inside of frame profile with bituminous coating.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install doors and frames in accordance with ANSI A250.8.

B. Coordinate installation of doors and frames with installation of hardware specified in Section 08710.

C. Coordinate door frames with masonry, and concrete wall construction for frame anchor placement.

D. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

E. Install door louvers plumb and level.

F. Coordinate installation of glass and glazing specified in Section 08800.

G. Adjust door for smooth and balanced door movement.

H. Tolerances:
1. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

END OF SECTION

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes wood doors, fire rated and non-rated.

1.2 SUBMITTALS

A. Shop Drawings: Indicate door elevations, cutouts for glazing and louvers and hardware preparation.

B. Samples: Submit two of door veneer, 6 x 6 inch in size illustrating wood grain, color, and finish.

1.3 QUALITY ASSURANCE

A. Perform work in accordance with the following:
   1. NWWDA I.S.1.
   2. Fire Door Construction: Conform to NFPA 252.
   3. Installed Door and Panel Assembly: Conform to NFPA 80 for fire rated class as indicated on Drawings.

B. Maintain one copy of each document on site.

1.4 WARRANTY

A. Furnish ten year manufacturer warranty to include delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.1 WOOD DOORS

A. Product Description: Solid and hollow core wood doors, fire rated, non-rated, and acoustical; flush or glazed design; wood veneer; factory finished.
   1. Flush Exterior Doors: 1-3/4 inches thick; solid core five ply construction.
   2. Flush Interior Doors: 1-3/4 inches thick; solid core five ply construction; fire rated, or acoustical as indicated on Drawings.

2.2 COMPONENTS

A. Core:
   1. Core (Solid, Non-Rated): NWWDA, Type stile and rail core. Solid particleboard mat formed core.

B. Flush Door Facing:
   1. Wood Veneer: NWWDA Grade 1 - Premium; Birch species wood, rotary sliced with book, for transparent finish.
      a. Pair match multiple door leaves in single opening.

2.3 ACCESSORIES

A. Metal Louvers: Roll formed aluminum material, prepainted finish to color selected.

B. Glass Stops: Rolled steel type conform to UL requirements.

2.4 FABRICATION

A. Fabricate non-rated doors in accordance with NWWDA I.S.1 requirements.

B. Fabricate fire rated doors in accordance with NWWDA I.S.1 and to UL requirements. Attach fire rating label to door edge.

C. Acoustic Rating for Door Assembly: ASTM E90, minimum STC 35.

D. Fabricate doors with hardware reinforcement blocking in place.

E. Factory machine doors for finish hardware.

F. Factory fit doors for frame opening dimensions identified on shop drawings.

2.5 FINISH

A. Factory finish doors in accordance with approved sample.

B. Seal door top edge with sealer to match door facing.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install doors in accordance with NWWDA I.S.1 requirements [, and NFPA 80 requirements for fire rating label].

B. Coordinate installation of glass and glazing.

C. Install door louvers plumb and level.

D. Coordinate installation of doors with installation of metal frames specified in Section 08 11 00 and hardware specified in Section 08710. Glass specified in Section 08 80 00.

E. Adjust door for smooth and balanced door movement.

F. Tolerances:
   1. Conform to NWWDA requirements for fit and clearance tolerances and maximum diagonal distortion.

END OF SECTION

SECTION 08 52 13 – ALUMINIUM CLAD WOOD WINDOWS

Part 1 General

1.1 Section Includes

A. Aluminum Clad Wood Ultimate Casement/Awning Crank Out: Operators, Stationary and Picture units complete with hardware, glazing, weather strip, insect screen, removable screen, removable grille, simulated divided lite, jamb extension, and standard or specified anchors, trim and attachments

1.2 Related Sections

A. Section 01 33 23 – Submittal Procedures; Shop Drawings, Product Data and Samples

B. Section 01 62 00 – Product Options

C. Section 01 65 00 – Product Delivery

D. Section 01 66 00 – Storage and Handling Requirements

E. Section 01 71 00 – Examination and Preparation

F. Section 01 73 00 - Execution

G. Section 01 74 00 – Cleaning and Waste Management

H. Section 01 76 00 – Protecting Installed Construction

I. Section 06 22 00 – Millwork: Wood trim other than furnished by window manufacturer

J. Section 07 92 00 – Joint Sealant: Sill sealant and perimeter caulking

K. Section 09 90 00 – Painting and Coatings: Paint and stain other than factory-applied finish

1.3 References

A. American Society for Testing Materials (ASTM):

1. E 283: Standard Test method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors

2. E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference

3. E 547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential

4. E 2190: Specification for Sealed Insulated Glass Units

5. C 1036: Standard Specification for Flat Glass

6. E1996: Standard Specification or Performance of Exterior Windows, Curtain Walls, Door and Storm Shutters Impacted by Windborne Debris in Hurricanes

7. E1886: Standard Test Method for Performance Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

B. American Architectural Manufacturer's Association/Window and Door Manufacturer's Association (AAMA/WDMA/CSA):

1. AAMA/WDMA/CSA 101/I.S.2/A440-05 Standard/Specification for Window, Skylights and Doors

2. AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for Windows, Doors and Skylights

3. AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS 2011 – Northern American Fenestration Standard/Specification for Windows, Doors and Skylights

C. WDMA I.S.4: Industry Standard for Water Repellant Preservative Treatment for Millwork

D. Window and Door Manufacturer's Association (WDMA): 101/I.S.2 WDMA Hallmark Certification Program

E. Sealed Insulating Glass Manufacturer's Association/Insulating Glass Certification Council (SIGMA/IGCC)

F. American Architectural Manufacturer's Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

G. National Fenestration rating Council (NFRC):

1. 101: Procedure for Determining Fenestration Product thermal Properties

2. 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence

1.4 System Description

A. Design and Performance Requirements:

PRODUCT	Air Tested to psf	Water Tested to	Structural Tested to psf	Certification Rating	Design Pressure (DP)	Max Overall Width	Max Overall Height
Aluminum Clad Ultimate Casement StormPlus IZ3	1.57	9.75	97.5	CW-PG65	65	36"	96-1/8"
Aluminum Clad Ultimate Wood Awning StormPlus IZ3	1.57	9.75	97.5	CW-PG65-	65	48"	53-1/8"
Aluminum Clad Ultimate Casement Picture StormPlus IZ3	1.57	9.75	97.5	CW-PG65-FW	65	60"	106-5/8"
Aluminum Clad Ultimate Casement Picture StormPlus IZ3	1.57	9.75	97.5	CW-PG65-FW	65	72-5/8"	77-1/8"

1. Window units shall be designed to comply with ASTM E1996 Wind Zone 3 Missile Level D Rating +65/-65 psf

2. Air leakage shall not exceed the following when tested at 1.57 psf according to ASTM E283: 0.30 cfm per square foot of frame

3. No water penetration when tested at the following pressure according to ASTM E547: 9.75 psf

4. Assembly shall withstand a positive or negative uniform static air pressure difference of psf without damage when tested according to ASTM E330

5. Impact and Cycling per ASTM E1996 and E 1886 with passing results for Missile Level D and Pressure Cycling of +65/-65 psf

1.5 Submittals

A. Shop Drawings: Submit shop drawings under provision of Section 01 33 23

B. Product Data: Submit catalog data under provision of Section 01 33 23

C. Samples:

1. Submit corner section under provision of section 01 33 23

2. Include glazing system, quality of construction and specified finish

D. Quality Control Submittals: Certificates: submit manufacturer's certification indicating compliance with specified performance and design requirement under provision of section 01 33 23

1.6 Quality Assurance

A. Requirements: consult local code for IBC [International Building Code] and IRC [International Residential Code] adoption year and pertinent revisions for information on:

1. Egress, emergency escape and rescue requirements

2. Basement window requirements

3. Windows fall prevention and/or window opening control device requirements

1.7 Delivery

A. Comply with provisions of Section 01 65 00

B. Deliver in original packaging and protect from weather

1.8 Storage and Handling

A. Prime and seal wood surfaces, including to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation

B. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01660

1.9 Warranty

Complete and current warranty information is available at marvin.com/warranty. The following summary is subject to the terms, condition, limitations and exclusions set forth in the Marvin Windows and Door Limited Warranty and Products in Coastal Environments Limited Warranty Supplement:

A. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.

B. Standard exterior aluminum cladding finish is warranted against manufacturing defects resulting in chalk, fade and loss of adhesion (peel) per the American Architectural Manufacturer's Association (AAMA) Specification 2605-11 Section 8.4 and 8.9 for twenty (20) years from the original date of purchase.

C. Factory applied interior finish is warranted to be free from finish defects for a period of five (5) years from the original date of purchase.

D. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

Part 2 Products

2.1 Manufactured Units

A. Description: Factory-assembled Aluminum Clad Ultimate Casement/Awning as manufactured by Marvin Windows and Doors, Warroad, Minnesota.

B. Substitutions Permitted with Prior Written Approval of Architect.

2.2 Frame Description

A. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer.

1. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication

2. Water repellant preservative treated in accordance with WDMA I.S.4.

B. Frame exterior aluminum clad with 0.050 inch (1.3mm) thick extruded aluminum

C. Frame thickness: 1 3/16” (30mm)

D. Frame depths for full frame units have an overall 5 21/32” jamb (144mm). 4 9/16” (116mm) jamb depth from the nailing fin plane to the interior face of the frame for new construction.

2.3 Sash Description

A. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer.

1. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication

2. Water repellant preservative treated with accordance with WDMA I.S.4

B. Sash exterior aluminum clad with 0.050” (1.3mm) thick extruded aluminum

C. Sash thickness: Sash thickness is 1 5/8” (41mm) and 1 7/8” (48mm)

D. Stiles and Rails: 2 1/16” (52mm)

E. Sash Option: Optional tall bottom rail: 3 9/16” (90mm)

F. Interior Sash Sticking

1. Standard: Ogee

2. Optional: Square Sticking and Ovolo Profile

2.4 Glazing

A. Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 2190.

B. Glazing method: Insulating glass, consisting of inboard lite of laminated glass. Exterior glass is standard annealed glass with optional tempered glass available.

C. Glazing seal: Silicone bedding at interior and exterior

D. Glass Type: Clear, Bronze, Gray, Reflective Bronze, Tempered, Obscure, Laminated, Low E2 with or without Argon, Low E3 with or without Argon, Low E1 with or without Argon

2.5 Finish

A. Exterior: Aluminum clad. Fluoropolymer modified acrylic topcoat applied over primer. Meets AAMA 2605 requirements.

1. Aluminum clad color options: Stone White, Bahama Brown, Bronze, Pebble Gray, Evergreen, Sierra White, Coconut Cream, French Vanilla, Cashmere, Desert Beige, Cumulus Gray, Cadet Gray, Ebony, Arctic White, Cascade Blue, Hampton Sage, Wineberry, Bright Silver (pearlescent), Copper (pearlescent)

2. Custom colors: Contact your Marvin representative

B. Interior Finish options:

1. Prime: Factory-applied enamel primer. Available on Pine product only.

2. Painted Interior Finish. Available on Pine product only.

3. Factory-applied water-borne acrylic enamel clear coat. Applied on two coats with light sanding between coats. Available on Pine, Mahogany, Mixed Grain Douglas Fir, Vertical Grain Douglas Fir, Cherry, White Oak.

4. Factory-applied water-borne urethane stain. Stain applied over a wood (stain) conditioner. A water-borne acrylic enamel clear coat applied in two separate coats, with light sanding between coats, applied over the stain. Available on Pine, Mahogany, Mixed Grain Douglas Fir, Vertical Grain Douglas Fir, Cherry, White

Oak. Colors available: Wheat, Honey, Hazelnut, Leather, Cabernet, and Espresso.

2.6 Hardware

A. Casement operating hardware:

1. Locks: Multi-point sequential concealed locking system in the jamb opposite the hinge side for casement units. Lock handles are removable, non-handed and are available in the same finishes as the handles. Standard tie bars, cams and keepers – steel coated with E-Gard ™. Keeper features a roller for reduce average lock force and does not easily disengage with the cam even under severe loading. Stainless steel packages are available for coastal application.

2. Handles: Standard operating handle is a folding handle, zinc painted with the standard folding cover being molded plastic. Available colors: standard is Satin Taupe (painted), White (painted), Bronze (painted), Satin Chrome (plated), Satin Nickel (plated), Oil Rubbed Bronze (plated), Brass (plated), Antique Brass (plated)

3. Hinges: One at the sill to bottom rail, one at the head jamb to top rail. Hinges are steel coated with E-Gard™. Hinge track is stainless steel. Unit with a frame OM of 20 inches (508mm) and greater use an 18 inch (457mm) wash/egress hinge to allow the sash to slide across the frame opening which causes the sash exterior to rotate towards the user for easy wash ability. Units under a frame OM of 20 inches (508mm) width use a standard 2 bar hinge which will position the sash when fully open to 90degrees for the user to wash but does not include the feature of sliding the sash across the opening and rotating the exterior towards the user.

B. Awning hardware:

1. Locks: Uses a multipoint sequential concealed locking system in both jambs. Lock handles are removable, non-handed and are available in the same finishes as the handles. Standard tie bars and cams – steel coated with E-Gard ™. Standard keepers – steel coated with E-Gard ™. Keeper features a roller for reduce average lock force and dies not easily disengage with the cam even under severe loading

2. Handles: Standard operating handle is a folding handle, zinc painted with the standard folding cover being molded plastic. Available colors: standard is Satin Taupe (painted), White (painted), Bronze (painted), Satin Chrome (plated), Satin Nickel (plated), Oil Rubbed Bronze (plated), Brass (plated), Antique Bras (plated)

3. Hinges: two hinges that connect the stiles of the sash to the jambs of the frame.

Hinges are steel coated with E-Gard ™ and the hinge track is stainless steel.

2.7 Weather Strip

A. Weather strip at the frame is a hollow foamed material bent around 90 degree corner to allow for seamless corner joints

1. Color: Beige

B. Sash weather strip bulb shaped glass filled material

1. Color: White, beige or black

2.8 Jamb Extension

A. Jamb extensions are available for various wall thickness factory-applied up to a 12” (305mm) wide.

B. Finish: Match interior frame finish

2.9 Accessories and Trim

A. Installation Accessories:

1. Factory-installed vinyl nailing/drip cap

2. Installation brackets: 6 3/8” (162mm), 9 3/8” (283mm), 15 3/8” (390mm)

3. Masonry brackets: 6” (152mm), 10” (254mm)

B. Aluminum Extrusions:

1. Profile: Brick mold casing, flat casing, various special casing, frame expander, jamb extender, mullion cover, mullion expander, subsill, subsill end cap and lineal cap

2. Finish: Fluoropolymer modified acrylic topcoat applied over primer. Meets AAMA 2605 requirements.

3. Available in all exterior aluminum clad colors

Part 3 Execution

3.1 Examination

A. Verification of Condition: Before installation, verify openings are plumb, square and of proper dimensions as required in Section 01 71 00. Report frame defects or unsuitable conditions to the General Contractor before proceeding.

B. Acceptance of Condition: Beginning on installation confirms acceptance of existing conditions.

3.2 Installation

A. Comply with Section 01 73 00.

B. Assemble and install window/door unit(s) according to manufacturer's instruction and reviewed shop drawing.

C. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants. Do not use expansive foam sealant.

D. Install accessory items as required.

E. Use finish nails to apply wood trim and mouldings.

3.3 Cleaning

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 00.

3.4 Protecting Installed Construction

C. Protecting windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes hardware for wood, hollow steel, aluminum, doors, thresholds, weatherstripping, seals, and door gaskets.

1.2 SYSTEM DESCRIPTION

A. Fire Rated Openings: Provide door hardware listed by UL or Warnock Hersey, or other testing laboratory approved by applicable authorities.
   1. Hardware: Tested in accordance with NFPA 252.

1.3 SUBMITTALS

A. Shop Drawings: Indicate locations and mounting heights of each type of hardware.

B. Samples: Submit hinge, latchset, lockset, and closer, illustrating style, color, and finish. Incorporate into the work.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with the following requirements:
   1. ANSI A156 series.
   2. NFPA 80 - Fire Doors and Windows.
   3. NFPA 101 - Life Safety Code.

B. Furnish hardware marked and listed in BHMA Directory of Certified Products.

C. Coordination: Coordinate work of this section with other directly affected sections requiring integral reinforcement for door hardware.

D. Supplier: Company specializing in supplying commercial door hardware with minimum three years documented experience.

1.6 WARRANTY

A. Furnish ten-year manufacturer warranty for door hardware.

1.7 MAINTENANCE SERVICE

A. Provide service and maintenance services of door closers for one year from Date of Substantial Completion.

B. Provide special wrenches and tools applicable to each different or special hardware component.

PART 2 PRODUCTS

2.1 DOOR HARDWARE

A. Hinge Manufacturers:
   1. Ives
   2. McKinney Product Company
   3. PBB
   4. Substitutions: Permitted with prior approval of Architect.

B. Lockset and Latch Set Manufacturers:
   1. Schlage Lock Co.
   2. Sargent
   3. Corbin Russwin
   4. Substitutions: Permitted with prior approval of Architect.

C. Exit Device Manufacturers:
   1. Von Dupren, Inc.
   2. Sargent
   3. Corbin Russwin
   4. Substitutions: Permitted with prior approval of Architect.

D. Closers Manufacturers:
   1. LCN closers
   2. Sargent
   3. Corbin Russwin
   4. Substitutions: Permitted with prior approval of Architect.

E. Weatherstripping, Sweeps, Gaskets, and Thresholds Manufacturers:
   1. Pemko
   2. National Guard
   3. McKinney
   4. Substitutions: Permitted with prior approval of Architect.

F. Flat Goods:
   1. Rockwood
   2. Ives
   3. McKinney

G. Cylinders:

All locksets and cylinders provided must accept cores for City of Rome's Medeco restricted great grand master key system.
Hardware supplier shall supply and install Medeco cores. Hardware supplier to provide temporary cylinders as required – exterior doors, mechanical spaces, and temporary office or storage rooms.

2.2 COMPONENTS

A. General Hardware Requirements: Where not specifically indicated, comply with applicable ANSI A156 standard for type of hardware required. Furnish each type of hardware with accessories as required for applications indicated and for complete, finished, operational doors.

1. Templates: Furnish templates or physical hardware items to door and frame manufacturers sufficiently in advance to avoid delay in Work.
2. Reinforcing Units: Furnished by door and frame manufacturers; coordinated by hardware supplier or hardware manufacturer.
3. Fasteners: Furnish as recommended by hardware manufacturer and as required to secure hardware.
   a. Finish: Match hardware item being fastened.
4. Electrical Devices: Make provisions and coordinate requirements for electrical devices and connections for hardware.

B. Hinges: ANSI A156.1, full mortise type, complying with following general requirements unless otherwise scheduled.
1. Widths: Sufficient to clear trim projection when door swings 180 degrees.
2. Number: Furnish minimum three hinges to 90 inches high, four hinges to 120 inches high for each door leaf.

C. Locksets and Latchsets: Furnish locksets compatible with specified cylinders. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt verify type of cutouts provided in metal frames.
1. Mortise Locksets and Latchsets: ANSI A156.13, Series 1000, Grade 1 unless otherwise indicated.
2. Bored (Cylindrical) Locksets and Latchsets: ANSI A156.2, Series 4000, Grade 1 unless otherwise indicated.

3. Interconnected Locksets: ANSI A156.12, Series 5000, Grade 1 unless otherwise indicated.

D. Exit Devices: ANSI A156.3, Grade 1 rim type, with push pad, unless otherwise indicated. Furnish standard strikes with extended lips to protect trim from being

marred by latch bolt verify type of cutouts provided in metal frames, with dust-proof floor strikes.

1. Types: Suitable for doors requiring exit devices.
2. Coordinators: Furnish overhead type at pairs of doors.

E. Cylinders: ANSI A156.5, Grade 1, 6 pin type removable cylinders Match existing building cylinders.

1. Keying: Key to existing keying system.
2. Supply keys in the following minimum quantities:
   a. 5 master keys.
   b. 2 change keys for each lock.

F. Closers: ANSI A156.4 modern type with cover, surface mounted closers; full rack and pinion type with steel spring and non-freezing hydraulic fluid; closers required for fire rated doors unless otherwise indicated.

1. Adjustability: Furnish controls for regulating closing, latching, speeds, and back checking.
2. Arms: Type to suit individual condition; parallel-arm closers at reverse bevel doors and where doors can swing full 180 degrees.
3. Location: Mount closers on inside of exterior doors, room side of interior doors typical; mount on pull side of other doors.
4. Operating Pressure: Maximum operating pressure as follows.
   a. Interior Doors: Maximum 5 pounds.
   b. Exterior Doors: Maximum 10 pounds.
   c. Fire Rated Doors: As required for fire rating, maximum 15 pounds.

G. Door Controls and Overhead Holders: Furnish with accessories as required for complete operational installation.

1. Manual Door Holders and Overhead Stops: ANSI A156.8, Grade 1 types as specified
2. Closer Holder Release Devices: ANSI A156.15 door mounted closers with single point designed to make swing doors close upon receiving electrical signal.
3. Power Assist Door Operators: ANSI A156.19 power mechanism reduces opening resistance of self-closing door.
4. Low Energy Power Door Operators: ANSI A156.19 power mechanism opens and closes door upon receipt of signal.
5. Low Energy Power Open Door Operators: ANSI A156.19 power mechanism opens self-closing door; closing of door independent of power operator.

H. Push/Pulls, Manual and Automatic Bolts, Protection Plates, Gaskets, Thresholds, and

Trim: Furnish as indicated in Schedule, with accessories as required for complete operational door installations.

1. Push/Pulls: ANSI A156.6; Furnish straight push-pull type pulls with bolts to secure from opposite door face.

2. Manual and Automatic Bolts: ANSI A156.16 Grade 1 top and bottom flush bolts, with dust-proof floor strike.
3. Kickplates Mop Plate: ANSI A156.6, metal; height indicated in Schedule by 1 inch (25 mm) less than door width; stainless steel.
4. Weatherstripping: Furnish continuous weatherstripping at top and sides of exterior doors.
5. Fire Rated Gaskets: Furnish continuous fire rated gaskets at top and sides of fire rated doors.
6. Thresholds: Maximum 1/2 inch height; requirements to ensure accessibility for persons with disabilities.

2.3 ACCESSORIES

A. Lock Trim: Furnish levers with rose as selected from manufacturer's full range of levers and roses.

B. Through Bolts: Through bolts and grommet nuts are not permitted on door faces in occupied areas unless no alternative is possible.
1. Do not use through bolts on solid wood core doors.

2.4 FINISHING

A. Finishes: ANSI A156.18; with following finishes except where otherwise indicated in Schedule at end of section.
1. Hinges and Pivots:
a. BHMA 630 and 626, satin finish.
2. Typical Exterior Exposed and High Use Interior Door Hardware:
a. BHMA 630, satin finished stainless steel.
3. Typical Interior Door Hardware:
a. BHMA 630, satin finished stainless steel.
4. Typical Interior Bathroom Door Hardware:
a. BHMA 630, satin finished stainless steel.
5. Closers: Finish appearance to match door hardware on same face of door.
a. BHMA 628, satin aluminum, clear anodized.
6. Thresholds: Finish appearance to match door hardware on exterior face of door.
a. BHMA 630, satin finished stainless steel.
7. Other Items: Provide manufacturer's standard finishes to match similar hardware types on same door, and maintain acceptable finish considering anticipated use and BHMA category of finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify doors and frames are ready to receive work and dimensions are as indicated.

B. Verify electric power is available to power operated devices and is of correct characteristics.

3.2 INSTALLATION

A. Coordinate mounting heights with door and frame manufacturers. Use templates provided by hardware item manufacturer.

B. Mounting Heights From Finished Floor to Center Line of Hardware Item: Comply with manufacturer recommendations and applicable codes.

3.4 DOOR HARWARE SCHEDULE

1. See schedule on A/8.01

END OF SECTION

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Metal stud wall framing.
2. Shaft wall system.
3. Gypsum board and joint treatment.
4. Predecorated gypsum board.
5. Gypsum sheathing.
6. Tile backer board.
7. Acoustic insulation.
8. Textured finishes.

1.2 SUBMITTALS

A. Product Data: Submit data on metal framing, gypsum board, joint tape.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840. GA-201 - Gypsum Board for Walls and Ceilings. GA-214 - Recommended Specification: Levels of Gypsum Board Finish. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board. GA-600 - Fire Resistance Design Manual.

B. Furnish framing materials in accordance with SSMA - Product Technical Information.

C. Perform Work in accordance with local standards

D. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturer List:
1. Temple-Inland.
2. USG Corporation.
3. American Gypsum.

4. National Gypsum
5. Substitutions permitted.

B. Performance / Design Criteria:

1. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
2. Moisture- and Mold-Resistant Assemblies: Provide and install moisture- and mold-resistant glass-mat gypsum wallboard products with moisture-resistant surfaces complying with ASTM C 1658 and ASTM C 1177 where indicated on Drawings and in all locations which might be subject to moisture exposure during construction.

COMPONENTS

C. Studs and Tracks: GA-216 and GA-600; galvanized sheet steel, and Section 05500 - Miscellaneous Metals.

D. Furring, Framing, and Accessories: GA-216 and GA-600.

E. Gypsum Board Materials:
   1. Gypsum Wallboard: ASTM C 1396/C139M
      a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Gypsum Board
      b. Thickness: 5/8 inch
      c. Long Edges: Tapered.
   2. Gypsum Ceiling Board: ASTM C 1396/C139M
      a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Ceiling Board
      b. Thickness:1/2 inch
      c. Long Edges: Tapered.
   3. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C139M. With moisture and mold-resistant core and paper surfaces
      a. Basis-of-Design Product: Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Panel
      b. Thickness: 5/8 inch, regular type
      c. Long Edges: Tapered.
      d. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274
   4. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M, with fiberglass mat laminated to both sides and with manufacturer's standard edges.
      a. Basis-of-Design Product: Gerogia-Pacific Gypsum; DensGlass Gypsum
      b. Core: 5/8 inch
      c. Long Edges: Square
   5. Acoustically Enhanced Gypsum Board: ASTM C 1396/C 1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.
      a. Basis-of-Design Product: National Gypsum Company; Sound Break.
      b. Core: 5/8 inch

c. Long Edges: Tapered.

6. Tile Backer Boards: Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
   a. Thickness: 5/8 inch, regular type

b. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
c. Tile Backer Board Joint Tape: 2 inch wide, coated glass fiber tape for joints and corners; as recommended by panel manufacturer.

2.2 ACCESSORIES

A. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

B. Gypsum Board Accessories: ASTM C1047; metal; corner bead and edge trim.
1. Metal Accessories: Aluminum coated steel.
2. Edge Trim: Type L and J bead.

C. Joint Materials: GA-201 and GA-216, reinforcing tape, joint compound, and water.

D. Fasteners: GA-216; length to suit application.

E. Adhesive: GA-216.

F. Textured Finish Materials: Latex based texturing material.
1. Screws for Steel Framing: Type S.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work.

3.2 INSTALLATION

A. Metal Studs:
1. Install studs in accordance with ASTM C754 A-216 and GA-600.
2. Partition Heights: According to drawings.

B. Ceiling Framing:
1. Install in accordance with ASTM C754 and GA-216.
2. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.
3. Reinforce openings in ceiling suspension system interrupting main carrying channels or furring channels, with lateral channel bracing.

4. Laterally brace entire suspension system.

C. Acoustic Accessories:

1. Install resilient channels at maximum 24 inches oc. Locate joints over framing members when possible.

2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
3. Install acoustic sealant within partitions.

D. Gypsum Board:
1. Install gypsum board in accordance with GA-216 and GA-600.
2. Fasten gypsum board to furring or framing with screws. Staples may only be used when securing first layer of double layer applications.
3. Place control joints consistent with lines of building spaces as directed by Architect/Engineer.
4. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
5. Seal cut edges and holes in moisture resistant gypsum board with sealant.

E. Joint Treatment:
1. Finish in accordance with GA-214 Level 4.
2. Feather coats onto adjoining surfaces so camber is maximum 1/32inch.
3. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

END OF SECTION

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Metal stud framing and accessories at interior and exterior locations.

1.2 SYSTEM DESCRIPTION

A. Interior Walls: Metal stud framing system with interior gypsum board as specified in Section 09 21 16.

B. Maximum Allowable Horizontal Deflection: 1: 240 interior.

C. Wall System:
1. Design to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
2. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1.3 SUBMITTALS

A. Shop Drawings:
1. Indicate component details, framed openings, anchorage to structure, type and location of fasteners, and accessories or items required of other related Work.
2. Describe method for securing studs to tracks, beams, columns; splicing, and for blocking and reinforcement to framing connections.

1.4 QUALITY ASSURANCE

A. Perform Work according to NAAMM ML/SFA 540.

B. Form, fabricate, install, and connect components according to NAAMM ML/SFA 540.

C. Furnish framing materials according to SSMA - Product Technical Information.

PART 2 PRODUCTS

2.1 METAL FRAMING SYSTEM

A. Manufacturers:
   1. Nucor
   2. Substitutions: Permitted

2.2 COMPONENTS

A. Studs: ASTM A653/A653M, non-load bearing rolled steel, channel shaped, punched for utility access, as scheduled on drawings.

B. Tracks and Headers: Same material and thickness as studs, bent leg retainer notched to receive studs

C. Furring and Bracing Members: Of same material as studs; thickness to suit purpose.

D. Fasteners: GA-216; length to suit application.

E. Sheet Metal Backing: 0.03” thick galvanized steel.

F. Anchorage Devices: As recommended by manufacturer.

G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I Inorganic, zinc-rich.

2.3 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to Site, ready for installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify rough-in utilities are in proper location.

3.2 INSTALLATION

A. Align and secure top and bottom runners at 24 inches o.c.

B. Achieve air tight seal between runners and substrate with acoustic sealant in conjunction with Section 07 27 00.

C. Achieve air tight seal between studs and adjacent vertical surfaces with acoustic sealant in conjunction with Section 07 27 00.

D. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

E. Install studs vertically at 16 inches o.c.

F. Align stud web openings horizontally.

G. Secure studs to tracks using fastener method. Do not weld.

H. Stud splicing not permissible.

I. Double stud at wall openings, door and window jambs, not more than 2 inches from each side of openings.

J. Brace stud framing system rigid.

K. Coordinate erection of studs with requirements of door frames, window frames, and HVAC system; install supports and attachments.

L. Coordinate installation of wood bucks, anchors, and wood blocking with electrical and mechanical Work to be placed within or behind stud framing.

M. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, opening frames, and media appliances.

3.3 ERECTION TOLERANCES

A. Maximum Variation from Indicated Position: 1/8 inch in 10 feet

B. Maximum Variation from Plumb: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09 30 00 - TILE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes porcelain, porcelain mosaic and glass tile for interior wall applications; cementitious backer board as tile substrate; and thresholds at door openings.

1.2 SUBMITTALS

A. Shop Drawings: Indicate patterned applications and thresholds.

B. Product Data: Submit instructions for using grouts and adhesives.

C. Samples: Submit two samples of each type of product to be used.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with TCA Handbook and ANSI A108.1 Series/A118.1 Series.

B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in unventilated environment.

B. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

PART 2 PRODUCTS

2.1 TILE

A. Manufacturers:
   1. Manufacturer and model as specified in finish schedule.

2.2 COMPONENTS

A. Grout Materials:

1. Standard Grout: Commercial Portland cement type as Latex-Portland cement type as specified in ANSI A118.6; color as selected.
2. Silicone Rubber Grout: Silicone sealant, moisture and mildew resistant type, complying with ANSI A118.6, color as selected ; use for shower floors and walls.

B. Cementitious Backer Board: ANSI A118.9; High density, glass fiber reinforced, 5/8 inch thick; 2 inch wide coated glass fiber tape for joints and corners; manufactured by United States Gypsum Co.

C. Thresholds and Tile Floor Edging: Schluter Schiene, aluminum finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces are ready to receive work.

3.2 PREPARATION

A. Install cementitious backer board. Tape joints and corners, cover with skim coat of dry-set mortar to feather edge.

3.3 INSTALLATION

A. Install tile, thresholds, tile floor edging, and grout in accordance with applicable requirements of ANSI A108.1 through A108.10, and TCA Handbook recommendations.

B. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor, base and wall joints.

C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

D. Grout tile joints. Use standard grout unless otherwise indicated.

E. Floors:
1. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.
   a. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland cement grout.
2. Over wood substrates, install in accordance with TCA Handbook Method F142, with standard grout.

F. Showers:
1. All showers shall be constructed using the Schulter Kerdi Shower Kit.
2. Grout with silicone rubber grout.
3. Seal joints between tile work and other work with sealant Type specified in Section 07 90 00.

G. Wall Tile:
1. Over cementitious backer units install in accordance with TCA Handbook Method W244, using membrane at toilet rooms, kitchens, and locker rooms.
2. Over gypsum wallboard on wood or metal studs install in accordance with TCA Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.
3. Over interior concrete and masonry install in accordance with TCA Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

END OF SECTION

SECTION 09 51 23 - ACOUSTICAL TILE CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes suspended metal grid ceiling system; and acoustic tile.

1.2 SYSTEM DESCRIPTION

A. Provide system capable of supporting imposed loads with deflection limited to 1: 360.

B. Installed System: Conform to UL rating for ceiling and floor assembly; seismic restrained.

C. Conform to applicable code for fire rated assembly.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

B. Samples: Submit ceiling tile and suspension.

1.4 QUALITY ASSURANCE

A. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity acoustic unit installation.

PART 2 PRODUCTS

2.1 SUSPENDED ACOUSTICAL CEILINGS

A. Manufacturers:
   1. USG Interiors Model: Millennia Clima Plus, 2’x2’x5/8”.
   2. Substitutions: May be permitted with prior approval of architect.

2.2 COMPONENTS

A. Grid:
   1. Non-Fire Rated Grid: Donn DXL 15/16” exposed .

2. Accessories: Stabilizer bars, clips, splices, and hold down clips required for suspended grid system.
3. Grid Finish: White color.
4. Support Channels and Hangers: Galvanized steel, size and type to suit application and ceiling system flatness requirements specified.
5. Seismic Hangers: Galvanized steel compression struts: Donn Corporation Series VSA or equal, size and type to suit seismic requirements.
6. Axiom 10” Classic Trim , Bend to Radius As Indicated On Drawings.

2.3 ACCESSORIES

A. Acoustic Sealant for Perimeter Moldings: Specified in Section 07 90 00.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify layout of hangers does not interfere with other work.

3.2 INSTALLATION

A. Suspension System:
1. Install system in accordance with ASTM C636.
2. Coordinate location of hangers with other work. Where components prevent regular spacing of hangers, reinforce system to span extra distance.
3. Hang system independent of walls, columns, ducts, pipes and conduit.
4. Center system on room axis leaving equal border units.
5. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths.

B. Acoustic Units:
1. Install acoustic units level, free from damage, twist, warp or dents.
2. Lay directional patterned units one way with pattern parallel to longest room axis.
3. Lay acoustic insulation above acoustic units for distance of 48 inches on both sides of acoustic partitions.

C. Fire Rate Acoustic Units:
1. Install hold down clips to retain panels tight to grid system within 20 ft of exterior doors.
2. Install light fixture boxes constructed of gypsum board above light fixtures in accordance with UL assembly requirements.

D. Tolerances: Variation from Flat and Level Surface: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09 65 00 - RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes resilient sheet and tile flooring and base and resilient stair nosings, treads, and risers.

1.2 SYSTEM DESCRIPTION

A. Resilient Flooring: Conform to applicable code for flame/smoke rating requirements of 75/450 in accordance with ASTM E84 and critical radiant flux (CRF) of 0.45 in accordance with ASTM E648.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.

B. Samples:
   1. Submit manufacturer's complete set of color samples for initial selection.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance instruction and data.

1.5 QUALITY ASSURANCE

A. Installer: Company specializing in performing Work of this section with minimum three years experience approved by manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS

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 temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.1 LUXURY VIYNL TIEL/PLANK

A. Manufacturers:
   1. Shaw Hard Surfaces: Grain + Pigment; Char 64549
   2. Substitutions: May be permitted with prior approval of architect.

B. Vinyl Composition Tile: ASTM F1700: Class 3 printed film vinyl plank, type b.
   1. Size: 7 x 48 inch.
   2. Thickness: 0.156 inch

2.2 RESILIENT BASE

A. Manufacturers:
   1. Burke
   2. Substitutions: May be permitted with prior approval of architect.

B. Base: ASTM F1861 Vinyl; top set coved:
   1. Height: 4 inch.
   2. Thickness: 0.125 inch thick.
   3. Finish: Satin.
   4. Length: 10 foot rolls.

2.3 STAIR COVERING

A. Manufacturers:
   1. Roppe Corp. Model Rubber Stair Tread No. 94 Raised Square Design
   2. Substitutions: May be permitted with prior approval of architect.

B. Rubber Stair Treads: ASTM F-2169, Type TS; full width and depth of stair tread in one piece; tapered thickness; nosing not less than 1-5/8 inch deep.
   1. Nominal Thickness: 0.250 inch.
   2. Nosing: Square
   3. Color Style: Solid

C. Stair Risers: Maintain height and length in one piece, matching treads in material and color:
   1. Thickness: 0.080 inch.

2.4 ACCESSORIES

A. Subfloor Filler: Premix latex; type recommended by floor material manufacturer.

B. Primers and Adhesives: Waterproof, types recommended by floor material manufacturer.

C. Moldings and Edge Strips: Same material as flooring.

D. Sheet Flooring Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.

E. Sealer and Wax: Types recommended by floor material manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify concrete floors are dry to maximum moisture content as recommended by manufacturer, and exhibit negative alkalinity, carbonization, and dusting.

3.2 PREPARATION

A. Clean substrate.

B. Fill minor low spots and other defects with sub-floor filler.

C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

A. Spread adhesive and set flooring in place. Press sheet flooring with 150 pound roller to attain full adhesion.

B. Install sheet flooring with joints and seams parallel to length of room. Do not rotate sheet flooring from one area to another. Provide minimum of 1/3 full roll width. Double cut sheet and heat weld seams.

C. Scribe flooring to produce tight joints at items penetrating flooring.

D. Where floor finishes 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. Secure resilient strips by adhesive.

F. Adhere base tight to wall and floor surfaces.

G. Fit joints tightly and make vertical. Miter internal corners. At external corners, V cut back of base strip to 2/3 of its thickness and fold.

H. Adhere stair covering materials tightly to wall and stair surfaces.

I. Install stair covering materials in one piece, wherever possible. Install stringers configured tightly to stair profile.

3.4 CLEANING

A. Remove excess adhesive from surfaces without damage.

END OF SECTION

SECTION 09 90 00 - PAINTS AND COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes surface preparation and field application of paints, stains, varnishes, and other coatings.

1.2 SUBMITTALS

A. Product Data: Submit data on finishing products. Indicate VOC levels of each product on data sheets.

B. Samples: Submit two paper chip samples, 3 x 3 inch in size illustrating range of colors available for each surface finishing product scheduled.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance and cleaning instructions.

1.4 QUALITY ASSURANCE

A. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

A. Manufacturers:
   1. Benjamin Moore
   2. PPG Porter
   3. Sherwin Williams Co.
   4. Minwax Co.
   5. Nature One
   6. Substitutions: May be permitted with prior approval of Architect.

2.2 COMPONENTS

A. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve finishes specified.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

3.2 PREPARATION

A. Correct minor defects and clean surfaces affecting work of this section.

B. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or applying finishes.

C. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with solution of tri-sodium phosphate, rinse well and allow to dry.

F. Uncoated Steel and Iron Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Clean surfaces with solvent. Prime bare steel surfaces.

H. Interior Wood Items Scheduled to Receive Paint 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.

I. Interior Wood Items Scheduled 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.

J. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior paintable caulking compound after prime coat has been applied.

K. Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.

3.3 APPLICATION

A. Sand wood and metal surfaces lightly between coats to achieve required finish.

B. Where clear finishes are required, tint fillers to match wood.

C. Prime concealed surfaces of interior and exterior woodwork with primer paint.

D. Prime concealed surfaces of interior wood surfaces scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with thinner.

E. Cleaning: As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

3.4 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

A. Metal Fabrications Section 05500: Exposed surfaces of lintels, Elevator pit ladders, Stairs, Handrails, Bollards, and Guardrails.

3.5 SCHEDULE - EXTERIOR SURFACES

A. Wood - Painted (Opaque):
1. One coat of latex primer sealer.
2. Two coats latex enamel, gloss.

B. Wood - Transparent:
1. Three coats of Nature One Acrylic Exterior Stain.

C. Fiber Cement Siding/Soffits:
1. One coat of Sherwin Williams Loxon Masonry Primer.
2. Two coats of Sherwin Williams Duration Exterior Latex.

D. Pavement Markings:
1. Two coats of paint, white, provided blue for ADA spaces.

E. Concrete, Concrete Block:
1. Two coats of block primer.
2. Two coats of latex, flat.

F. Cement Plaster Soffits:
1. One coat of primer sealer latex.
2. Two coats of latex, flat.

G. Steel - Shop Primed:
1. Touch-up with zinc rich primer.

2. Two coats of alkyd enamel, gloss.

H. Steel - Galvanized:
1. One coat of galvanize primer.
2. Two coats of alkyd enamel, gloss.

3.6 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted:
1. One coat of latex primer sealer.
2. Two coats of latex enamel, gloss.
3. VOC limit of 150g/L.

B. Wood - Transparent:
1. Filler coat (for open grained wood only).
2. Two coats of stain.
3. Two coats of varnish, satin.
4. VOC limit of 250g/L on stains.
5. VOC limit of 350g/L on varnishes.

C. Concrete, Concrete Block:
1. One coat of block filler.
2. Two coats of latex, flat.
3. VOC limit of 150g/L.

D. Steel - Unprimed:
1. One coat of alkyd primer.
2. Two coats of alkyd latex enamel, gloss.
3. VOC limit of 250g/L.

E. Steel - Primed:
1. Touch-up with alkyd primer.
2. Two coats of alkyd enamel, gloss.
3. VOC limit of 250g/L.

F. Steel - Galvanized:
1. Touch-up with one coat of galvanize primer.
2. Two coats of alkyd enamel, gloss.
3. VOC limit of 250g/L

G. Plaster, Gypsum Board:
1. One coat of alkyd primer sealer.
2. Two coats of latex acrylic enamel, eggshell.
3. VOC limit of 150g/L.

END OF SECTION

SECTION 10 14 00 - INTERIOR SIGNAGE

PART 1 GENERAL

1.1 SCOPE

A. Space name signs shall be provided for each opening into a space, i.e each space listed in the finish schedule or titled. All signs shall meet the requirements of the Americans with Disabilities CT 2010 and ANSI A117.1-1986. Tactile characters/symbols shall be raised or incised 1/32” with grade 2 Braille for all text. All signage to comply with ADA requirements.

1.2 SUBMITTALS

A. Space signs
   1. Furnish manufacturers literature indicating material thickness, finish and style of letters for door signs.
   2. Obtain sign schedule from Owner prior to ordering materials.
   3. Furnish owner with samples showing type, color, and actual size.

1.3 STORAGE

Signs shall be stored to prevent damage and surface abrasions. Damaged units shall be replaced.

PART 2 PRODUCTS

A. Room signs

At a minimum signs shall display: Room Name, Room Number. (Braille room number)

All copy shall be centered on sign and be arranged to fit in space adjacent to door.

Provide products from Mohawk Sign Systems, National Sign Affiliates, Best Manufacturing, or Takeform.

B. Restrooms

1. All restroom shall be equipped with universal male or female symbols in the addition to the words “Men” or “Women” and in addition to Braille.

2. Provide products from Mohawk Sign Systems, National Sign Affiliates, Takeform, or Best Manufacturing.

3. All signs shall be manufactured using Graphic Process Series 200A - Sand Carved.

a) Tactile characters/symbols shall be raised the required 1/32" from sign face. Glue-on letters are not acceptable.

b) Perimeter borders shall be 3/8".

c) All letters, numbers and/or symbols shall contrast with their background, either light characters on a dark background or dark characters on a light background shall have a non-glare finish.

d) Corners: 3/8" radius.

e) Signs shall be mounted with construction adhesive and 4 screws.

PART 3 EXECUTION

3.1 INSTALLATION

A. Signs shall be mounted adjacent to door.

B. Signs shall be installed at 60” above floor to the centerline.

3.2 SCHEDULE

A. Rooms # 101,103,106, 201, 202, 203, 204, 208, 209, 210, 211 shall receive signs that display name, of room in both English and Braille grade 1 lettering.

B. Rooms # 102, 206, 207 shall receive signs that meet ANSI/ADA restroom sign requirements.

END OF SECTION

SECTION 10 21 13 - TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes metal toilet compartments and urinal screens.

1.2 SUBMITTALS

A. Shop Drawings: Indicate partition plan and elevation views, dimensions, details of wall and floor supports, and door swings.

B. Samples: Color brochure illustrating full range of color choices.

PART 2 PRODUCTS

2.1 TOILET COMPARTMENTS

A. Manufacturers:
   1. Hadrian Manufacturing Inc. Model: Headrail Braced, Powder Coated Finish.
   2. Substitutions: May be permitted with prior approval of architect.

2.2 COMPONENTS

A. Door, Panel, and Pilaster Construction: Sheet steel ASTM A653 GR33 zinc coating formed with reinforced core, baked enamel finish, in standard color as selected; furnish stainless steel protective splash panels on partitions adjacent to urinals.

B. Doors and Panels: 1 inch thick.

C. Pilasters: 1-1/4 inch thick.

2.3 ACCESSORIES

A. Head Rails: Hollow aluminum tube, with anti-grip profile and cast socket wall brackets.

B. Pilaster Shoes: Formed stainless steel. Provide adjustment for height variations with screw jack through steel saddles.

C. Internal reinforcement: Provide for attached hardware and fittings.

D. Attachments and Bolts: Steel, with heavy duty aluminum brackets.

E. Hardware:
   1. Hinges: Pivot hinges, gravity type, adjustable; two for each door.
   2. Latch and Keeper: Sliding type latch, door strike and keeper with rubber bumper; for each door.
   3. Coat Hook: Cast alloy, with rubber bumper tip; mounted on door.
   4. Pull: furnish pull for outswinging doors.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening dimensions and plumbing fixture and rough-in locations are as indicated on shop drawings.

B. Verify correct location of built-in framing, anchorage, bracing, and blocking.

3.2 INSTALLATION

A. Install partition components secure, plumb, and level.

B. Attached panel brackets securely using anchor devices.

C. Adjust and align door hardware so free movement is attained.

END OF SECTION

SECTION 11 13 13 - LOADING DOCK BUMPERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Dock bumpers with attachment frame.

1.2 SUBMITTALS

A. Product Data: Unit dimensions, method of anchorage, and details of construction.

B. Manufacturer's Installation Instructions: Special installation requirements.

1.3 QUALITY ASSURANCE

A. Perform Work according to local standards.

PART 2 PRODUCTS

2.1 DOCK BUMPERS

A. Manufacturers:
   1. Pioneer
   2. DLM, Inc.
   3. Substitutions: Permitted

2.2 COMPONENTS

A. Bumpers: Molded rubber, ozone resistant, nylon and rayon reinforced, minimum Shore A Durometer of 70, tensile strength of 950 to 1050 psi:
   1. Thickness From Wall: 3 inches
   2. Vertical Height: 12 inches.
   3. Width: 4 inches .
   4. Profile: Semi-circular.

B. Attachment Hardware: 3/4 inch diameter galvanized bolts and L" shaped anchor rods for casting into concrete.

C. Touch-up Primer: Zinc-rich type.

PART 3 EXECUTION

3.1 INSTALLATION

A. Secure angle end frames to concrete.

B. Weld angle end frames to embedded anchors. Touch up weld with primer.

3.2 SCHEDULES

A. Main Loading Dock: Fabric reinforced rubber units; each 4 inches thick x 10 inches vertical height x 6 feet (long, rectangular profile, end angles welded to dock edge channel.

END OF SECTION

SECTION 15010

MECHANICAL GENERAL

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

A. Specification: This specification is intended to cover all portions of this building.

B. Reference Codes: This installation shall comply with the following codes and regulations, latest accepted editions.
1. State Minimum Standard Mechanical Code.
2. NFPA No. 90A Installation of Air Conditioning and Ventilation Systems.
3. State Minimum Standard Plumbing Code.
4. State Minimum Standard Gas Code.
5. NFPA #54 National Fuel Gas Code.
6. State Minimum Standard Gas Code.
7. NFPA No.70, latest accepted edition, National Electric Code.
8. NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
9. Life Safety Code.
10. State Handicapped Accessibility Code.
11. State Minimum Standard Fire Prevention Code.
12. State and local Energy Code for Buildings, with all Supplements and Amendments.

C. Reference Standards: This installation shall comply with the following standards.
1. Manufacturers Standardization Society of the Valve and fittings Industry (1815 North Ft. Meyer Drive, Arlington, VA 22209). MSS-SP-58-2002, called MSS-SP-58. MSS-SP-69-2003, called MSS-SP-69.
2. American Society of Heating and Ventilating and Air Conditioning Engineers Guide, Fundamentals, 2009 Edition.
3. Sheet Metal and Air Conditioning Contractor National Association (SMACNA) HVAC Duct Construction Standards, Metal & Flexible, 2005 Edition. Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems. 1986 Edition. Seismic Restraint Manual Guidelines for Mechanical Systems, Second Edition.
4. American Society of Sanitary Engineers (ASSE) Standard, Latest Edition.
5. North American Insulation Manufacturers Association (NAIMA) Fibrous Glass Duct Construction Standards.

1.2 REGULATIONS

A. Attention is called to the fact that all work shall be done in accordance with all applicable City, County and State regulations, which regulations shall be considered as minimum requirements, and shall not alter the arrangement and pipe sizes indicated on the plans, except where they conflict.

1.3 DRAWINGS

A. The work is shown on the architectural drawings.

1.4 PROTECTION OF PUBLIC

A. If the contractor must operate any potentially dangerous devices before all specified safety valves controls and devices are installed, he shall notify the Architect in writing. He shall not operate such devices under these conditions until arrangements for supervision by competent operators have been instituted and Architect's written approval has been issued.

1.5 EXCAVATION, SHORING AND BRACING

A. Excavate and back-fill for the installation of all underground work.

B. Provide all shoring and bracing to prevent cave-ins during the construction period.

1.6 SHOP DRAWINGS

A. Shop drawings shall be submitted for but not limited to the following items:
1. All Scheduled Equipment
2. Ductwork & Accessories
3. Hangers
4. Piping & Accessories
5. Supports
6. Vibration Isolation
7. Fixtures
8. Roof Portals
9. Control System
10. Duct Systems
11. Equipment Curbs
12. Insulation
13. Filters
14. Access Panels
15. Louvers
16. Refrigerant Pipe Sizes

B. Provide with the submittal package the proposed Test & Balance Company's credentials as described in Section 15950. Include a latter from the Test & Balance company indicating that they have read Section 15950 and will perform testing and balancing of the mechanical systems as described in that Section.

C. Provide a complete list of all accessories and options (indicate factory or field installed) for all scheduled mechanical equipment, including air distribution devices. Provide manufacturer generated specifications and ratings sheets for each individual piece of air conditioning and heating equipment. Generic photocopies from manufacturers catalog will not be accepted.

D. In addition to cut sheets, provide a summary sheet indicating exactly what pipe material joining methods, valves, etc. will be provided in the various piping systems.

E. The Contractor shall produce ¼" scale CAD-generated ductwork and piping shop drawing for every area of the building. Contractor shall coordinate all new mechanical systems with other Divisions, specifically including piping, lights, the building structure, and ceiling heights. It shall be the Contractor's responsibility to ensure that the mechanical work is coordinated with all other trades. The shop drawings submitted shall reflect this coordination in its entirety,

including location of piping 2" and larger, all ductwork (except runouts to diffusers), and all equipment by dimensions to column lines. Bottom of duct and bottom of pipe dimensions shall be taken from finished floor, and shall be recorded on the shop drawings for review. Any interferences or conflicts not resolved during normal shop drawing coordination between trades shall be specifically noted to the Architect for his instructions. Conflicts arising out of work installed (or ductwork already fabricated) without shop drawings or shop drawings that have no been completely coordinated, shall be the Contractor's responsibility and at his expense for any necessary changes.

F. The Contract Drawings are diagrammatic and indicated generally the size and location of ductwork and equipment. While duct sizes shall not be decreased, it is recognized that job site conditions may require re-routing or re-sizing of ductwork, and the Contractor shall be responsible for this coordination. Ductwork that has to be re-sized and/or re-routed as a result of this coordination effort shall be the Contractor's responsibility and at his expense. Ductwork re-sized shall be equivalent to that shown on the drawings.

G. Steel fabrication shop drawings shall be coordinated with all Division 15 rooftop equipment and roof openings. The resulting coordination shall be confirmed and verification shall be submitted with associated equipment and roof curbs.

H. Division 15 shall coordinate with structural steel contractors to insure where ductwork is required to be routed within joist space that an alternate to x bracing is installed. Failure to coordinate shall subject the Contractor to full cost incurred to meet the design intact on the contract documents.

1.7 MOTORS, WIRING AND ELECTRICAL EQUIPMENT

A. All motors required for this work shall be built in accordance with the latest standards of National Electrical Manufacturer's Association, and shall be especially designed for quiet operation. All motors shall be selected for operation within their nameplate amperage. Adjustable bases shall be provided with motors and equipment which have belt drives.

B. All electrical materials shall comply with requirements of the National Electric Code. All contactors, starters, relays and panels used in this work, which are included in Underwriters Label Service, shall be new and bear the National Board of Fire Underwriters inspection label. Material not included in Underwriters Label service shall be new and conform to NEMA or other applicable industry standard.

C. Division 16, ELECTRICAL, provides for the furnishing of conduit and wire from electrical source to electrical use, called "path of power," and for the installation of certain line voltage devices specified in Division 15 which lie in the "path of power," including but not limited to:
   1. Manual switches.
   2. Line voltage thermostats.
   3. Solid state speed controllers.
   4. Operators for operable dampers.
   5. Aquastats for domestic hot water circulating pumps.
   6. Alarms for Flow Switches and Valve Supervisor Switches.

D. The "path of power" terminates at contactors or control panels of the following listed items of equipment. These control panels contain starters/contactors for the motors or heaters installed

on or within the unit and are specifies in Division 15. Any wiring past the point of termination described above is Division 15 work.

1. Packaged Rooftop Units.
2. Domestic Water Heaters.
3. Condensing and/or Heat Pump Units.
4. Mini-split Systems.
5. Electric Heaters.

E. Division 16, ELECTRICAL, provides for electrical power to any given item of equipment at the voltage and phase required by the primary use only. If the item of equipment contains devices such as fans, thermostats, motorized dampers or other controls which require other than primary voltage for their proper function, then transformers shall be furnished under Division 15 for that purpose.

F. Voltage and phase for Division 15 equipment shall be as specified by Division 16. Division 15 Contractor shall submit a list of all mechanical equipment requiring electrical connections to the Contractor prior to release of any equipment, for coordination with the Division 16 contractor. A copy of this list that has been reviewed and approved by the General Contractor shall be submitted to the Architect with the submittal for mechanical equipment. Failure to include this list may result in the rejection of the entire mechanical equipment submittal.

G. The control power source (point of connection for control power) for major equipment except those single phase fans which are thermostatically controlled and those items listed in C above, are provided at the combination starters.

H. The automatic control of signal for STOP-START of major equipment is furnished and installed to and from combination starts as part of Division 15.

I. All other conduit and wire, not in "path of power" described above is included in Division 15.

J. If any Division's Contractor makes a change by submittal, by delivery, by wiring rearrangement or power requirements, which results in increased costs, the Contractor initiating the change shall bear all cost increases.

K. All motors that are 1 HP and larger shall be high efficiency motors with nominal and minimum full load efficiencies equal to or greater than those specified by the State Energy Code. Specifications shall be submitted for each motor furnished.

L. Starters or contractors shall be furnished in Division 15 for each motor.

1. Magnetic starters shall be NEMA standard sizes adequate for the load served, Size 00, 1, 2, 3, 4. Half sizes and/or quarter sizes are not acceptable.
2. Overload relays shall be unit constructed, hand reset melting alloy type, and shall be provided for all ungrounded legs.
3. Units shall have NEMA-3R enclosures, three thermal overloads in three-phase starts, HAND-OFF-AUTO switches or as required by the "controls" specification section.
4. All fractional HP single-phase motors shall have internal thermal overload protection except where starters are scheduled.
5. All motor starters shall be of the same manufacturer and shall be General Electric Type CR-306, or equal by Square-D, Westinghouse, Allen-Bradley, Furnas, Siemens, or Cutler-Hammer subject to full compliance with all criteria.

M. Where power wiring to Division 15 equipment is not within the equipment curb, roof curb and boots shall be provided under Division 16. The portal location shall be coordinated with Division 15 equipment power inlet requirements, and located not to block access for equipment servicing.

1.8 ACCESS PANELS

A. Shall be provided to permit operation of concealed valves, dampers, or equipment. The following table lists types of Bilco access frames and doors. Panels of equivalent construction by Titus, Milcor, Hohmann, and Barnard or Zurn are acceptable.

B. Wall:

1.	Sheetrock	Style G
2.	Plaster	Style A
3.	Masonry	Style C

C. Ceiling:

1.	Sheetrock	Style G
2.	Plaster	Style A
3.	Concealed spline	Style D
4.	Lay-in tile	None

D. Fire Rated Wall or Ceiling Style F (U.L Listed)

E. Sizes shall be: Small valves – 12" x 12". Multiple valves and dampers – 24" x 24"

F. Access panels shall be insulated for sound barrier equal to wall in which it is installed.

G. Acoustical Tile: Coordinate with tile installed to provide a removal tile at access point. Install a colored thumb tack to mark the access panel of above ceiling equipment, control instrument, valves or relay.

1.9 WARRANTY

A. The Contractor shall operate the air conditioning, heating and ventilating systems and plumbing systems for a period of one week to the satisfaction of the Architect. Thereafter, the Contractor shall guarantee and be responsible for all materials and workmanship (parts and labor) for a period of one (1) year following the date of acceptance by the Architect.

B. The Contractor shall also provide maintenance for the one (1) year period by providing four (4) periodic inspections at approximately three-month intervals, which shall include the following.
   1. Check all bearing, align and oil or grease.
   2. Check belt tensions and pulley adjustment and adjust as necessary.
   3. Check filters and advise Owner when change is necessary.
   4. Check refrigerant charges and oil levels and replenish as necessary.
   5. Check and re-calibrate controls as necessary.

C. Any required maintenance for the above shall be performed and materials needed shall be furnished by the Contractor. Not included in the materials to be furnished by the Contractor

are fuel, electricity, water and filters. Provide the Owner with four (4) copies of the inspection reports indicating all items checked and adjustment or repairs performed.

D. Water heaters shall be guaranteed for five years; parts and labor.

E. All equipment compressors shall be guaranteed for five years; parts and labor.

1.10 CUTTING AND PATCHING

A. The Contractor shall set sleeves for pipes, ducts and equipment accurately before the concrete walls and floors are poured.

B. Should the contractor neglect to perform this preliminary work and should cutting and patching be required in order to install the piping, ductwork or equipment, then the expense of the cutting and restoring of surfaces to their original condition shall be borne by the Contractor.

1.11 BASIS OF DESIGN

A. When brand, trade or manufacturer's names are used for basis of design, they are used in the interest of brevity to describe the style, type, size, quality or arrangement of articles of equipment and are not intended to limit competition. If articles of equipment by manufacturers other than basis of design are submitted for installation, the Architect shall compare them with specified articles of equipment on basis of qualities mentioned. The size, weight and arrangement of other equipment shall be checked by the Contractor to ascertain that it can be installed, connected, operated, and serviced successfully, and that walking space and service space can be maintained without altering equipment space or enclosures or the work of other trades. Manufacturers not listed as "Acceptable Manufacturers" will not be considered.

B. If any Division's Contractor makes a change by submittal, by delivery or by wiring rearrangement which results in increased costs, the Contractor initiating the change shall bear all cost increases.

1.12 AS-BUILT DRAWINGS

A. Per the Georgia State energy Code, the Contractor shall produce and submit to the Architect, "As-Built" drawings, four (4) copies, as described below.

B. As work progresses, neatly and clearly record on four (4) sets of mechanical plans (in red) all changes and deviations from the contract drawings in size, locations, etc., of all piping, ductwork terminal units and other equipment. Record (in red) final location of piping, ductwork, starts, valves, thermostats, etc., by dimensions to adjacent walls and floors. Make sufficient measurement to accurately locate all equipment. Locate underground lines by dimension from building walls.

1.13 OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance manuals (6 sets) shall be provided to the Owner or the Owners designated representative. Manuals shall be in accordance with the Georgia State Energy Code for Buildings.

1. Manuals shall include as a minimum the following:
   a. Final, corrected submittal data with equipment sizes and selected options for each piece of equipment, including Engineer's submittal review comments.
   b. Current manufacturer's published operation and maintenance manuals for each piece of equipment.
   c. Name, address and phone number of at least one LOCAL service agency.
   d. HVAC controls system maintenance and calibration information including wiring diagrams, schematics, and control drawings.
   e. Complete narrative of how each system is intended to operate, including suggested set-points.
   f. Copy of the final Test & Balance report.
   g. Copy of the final As-built drawings.
   h. Controls certification letter.
   i. Copy of Engineer's final punch list items, with each item checked off when completed or an explanation of why the item was not completed.

1.14 INTERFACES WITH OTHER WORK

A. There are many interfaces between the work involved with Division 15 and the work involved with other Sections and Divisions, particularly with Division 16. Contractor shall be aware of the requirements of these other Sections or Divisions and his responsibilities at the interfaces.

B. No mechanical equipment, piping, or ductwork shall be places within 42" of switchboards and/or panel boards.

C. No water piping (domestic, storm, sanitary, etc., except sprinkler piping when required) shall be located above electrical switchboards and/or panel boards. When sprinklers are required, shields must be provided over the panels.

1.15 EQUIPMENT IDENTIFICATION

A. Equipment Identification:
   1. All items of equipment shall be identified with engraved tags. Tags shall be 1/8" thick plastic stock with adhesive backing, and shall be permanently secured to the equipment that they identify.
   2. All tags shall be of uniform 2" high x 4" wide with 1" high letters and numbers. Tags can be wider if required to accommodate the equipment number. All tags shall be black with white lettering.
   3. Equipment Identification numbers shall be the same as those scheduled on the design drawings. Identification shall be located where it can be conveniently read, and shall be located in the same relative position on like equipment.
   4. In addition to the above ID tags, all scheduled equipment shall be provided with permanent factory installed engraved nameplate labels listing complete model and serial numbers, unit voltage, motor sizes, etc.
   5. Identify all disconnect switches that are not directly attached to the equipment that they serve, with identical ID tags as specified above for the equipment.

1.16 PIPE IDENTIFICATION

A. All piping systems shall be identified.

1. All piping systems within the building except as noted herein shall be identified with clear block letters and number stenciled on the outside surface of the pipe or insulation, indicating the system contents by abbreviated letters and direction of the flow.
2. This identification marking shall be applied to the pipe systems where pipe enters or leaves a wall or floor, and item of equipment such as pumps, fan coil units and tanks, and at tees. Identification shall be applied no less than 50 feet apart on horizontal pipe; and one identification per floor on vertical pipe.
3. Letters and numbers shall be high on pipe 2" and smaller.
4. Letters and numbers shall be 1" high on pipe 3" and larger.
5. Directional arrows shall be 4" long and "wide.
6. Letters and numbers shall be black on white pipe or insulation.
7. Letters and number shall be white on dark pipe or insulation.
8. Pipe identification symbols shall be the same as shown on the drawings.
9. Soil, vent and refrigerant piping shall not be identified.

1.17 PERMITS AND INSPECTIONS

A. The Contractor shall secure and pay for all permits, fees, inspections, and utility connection costs.

1.18 EQUIPMENT & MATERIAL PROTECTION

A. All equipment and material shall be kept clean and free of debris as construction progresses. Closures shall be provided over duct, piping and major equipment openings during storage, erection and prior to connection. Material finishes shall be protected by covers to prevent impingement of corrosive, abrasive and disfiguring foreign matter. Accidental finish damage shall be repaired equivalent to original finish.

1.19 TEST, BALANCE AND REPORT

A. See Section 15950.

1.20 PROHIBITED MATERIALS

A. All products, materials or assemblies which contain asbestos or polychlorinated biphenyl (PCB) in any form or in any concentration whatsoever, are expressly forbidden from being used on this project.

1.21 SITE VISIT AND FAMILIARIZATION

A. Contractors proposing to undertake work under this Division shall visit the site of the work and fully inform themselves of all conditions that effect the work or cost thereof, examine the drawings and specifications as related to the site conditions, and acquaint themselves with the utility companies from whom services will be supplied; verify locations of utility services and determine requirements for connections.

B. Consideration will not be granted for any alleged misunderstanding of the amount of work to be performed. Tender of proposal shall convey full agreement to all items and conditions specified, indicated on the drawings, and/or required by nature of the site.

C. Attention is called to the fact that this scope of work includes renovation to an existed facility and/or an addition to an existing building. When the work is finished, the mechanical systems shall be complete in every respect, and completely integrated with all affected mechanical and control systems.

D. Existing mechanical systems in the existing facility shall not be interrupted without prior approval of the Owner or Architect.

1.22 DISINFECTION AND TESTING OF WATER SYSTEM

A. Sanitize plumbing potable water systems per the latest accepted edition of the International Plumbing Code.

END OF SECTION

SECTION 15080

PLUMBING INSULATION

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 applies.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN

A. Manufacturers shown below as Basis of Design
1. Acceptable Manufacturers for Glass Fiber and Mineral Fiber Insulation Products: CertainTeed, Knauf, Johns Manville, Owens-Corning.

2.2 PIPE INSULATION

A. Domestic Hot Water Supply and Recirculation
1. ASTM C547, molded glass fiber pipe insulation.
2. Thermal Conductivity: 0.23 at 75 degrees F.
3. Operating Temperature Range: 0 to 850 degrees F.
4. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
5. Jacket Temperature Limit: minus 20 to 150 degrees F.
6. Thickness: 1" thickness for 1-1/2" pipe and smaller. 1-1/2" thickness for pipes larger than 1-1/2".

B. Domestic Cold Water Supply and Condensate Piping
1. ASTM C547, molded glass fiber pipe insulation.
2. Thermal Conductivity: 0.23 at 75 degrees F.
3. Operating Temperature Range: 0 to 850 degrees F.
4. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
5. Jacket Temperature Limit: minus 20 to 150 degrees F.
6. Thickness: 1/2" thickness for all pipes.

C. Pipe Insulation Jacket
1. ASTM C921, white Kraft paper with glass fiber yarn, bonded to aluminized film.
2. Water vapor transmission: ASTM E96/E96M; 0.02 perm-inches.

PART 3 EXECUTION

3.1 INSTALLATION – PIPING SYSTEMS

A. Paint insulation to match ceiling where piping and pipe insulation are exposed to view.

B. Verify piping and equipment has been tested before applying insulation materials. Verify surfaces are clean and dry, with foreign material removed. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

C. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide expanding fire stopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.

D. Hot and Cold Piping Systems:
1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
2. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
3. 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.
4. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations. For hot piping systems above 140 degrees F, insulate unions and flanges at equipment.

E. Inserts and Shields:
1. Piping 1-1/2 inches Diameter and Smaller: Install steel shield between pipe hanger and insulation.
2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
    a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
    b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.
    a. Condensate Piping: Insulate entire piping system and components inside the building space to prevent condensation.
    b. Pipe exposed in Mechanical Equipment or Finished Spaces: Finish with PVC jacket and fitting covers. Labels on exterior covers should be oriented so as to be easily readable and shall have directional flow arrows.

END OF SECTION

SECTION 15100

PLUMBING PIPING AND ACCESSORIES

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 is applicable.

1.2 PRESSURE

A. The working pressure of all pipes, fittings, valves, and joints shall be in excess of the maximum system pressure and maximum system temperature at the point of installation.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Conform to ASME B31.9, ASTM F708.

B. Hangers for Non Insulated Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or carbon steel, adjustable swivel, split ring.

C. Hangers for Insulated and Non Insulated Pipe Sizes ½" to 30 inches: Carbon steel, adjustable, clevis.

D. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

E. Vertical Support: Steel riser clamp.

F. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.

G. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.

H. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

I. Floor Support for horizontal Pipe Sizes to 4 inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

J. Floor Support for horizontal Pipe Sizes 6 inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.

K. Ground support for exterior horizontal Pipe: Adjustable stainless steel roll and stand, and concrete pier support.

2.2 PIPE SLEEVES

A. Sleeves are defined as holes that are provided to permit the passage of pipe (and insulation) through walls or floors. Soil, waste, vent, and domestic water pipes stubbed through walls and floors for plumbing fixture connections do not require sleeves.

B. Masonry: Sleeves shall be schedule 40 steel pipe and shall be large enough to accommodate continuous passage of pipe plus insulation through the wall or floor system. Pipe sleeves shall extend 1" on both sides of a wall or floor.

C. Concrete:
1. Sleeves through concrete walls and floor shall be formed by any device that forms a neat circular hole, of proper size, through the wall or floor system. Acceptable devices are pipe and sheet metal.
2. Structural floor sleeves require extension above the floor surface to prevent water passage down the sleeves, and shall be made of schedule 40 black steel pipe extended 1" above the floor.

D. Other Sleeves: Where sleeves pass through wood, drywall, plaster partitions, or suspended ceilings, sleeves shall be neatly cut holes sealed with caulk, finished with chrome plated escutcheon where exposed in visible areas.

E. Sealing of annular space: For sleeves in masonry and concrete walls and elevated floor slabs, non-rated, annular spaces shall be packed with silicone RTV foam. Sleeves in exterior walls shall be sealed with a "Link Seal" assembly or packed with fiberglass and sealed at both ends with weather-resistant, non-hardening caulk. Where escutcheons are not required, the annular space shall be neatly sealed at the sleeve end. Pipes passing through ducts and plenums shall be sealed air tight. Annular spaces that pass through fire resistive or fire rated partitions, or ceilings shall be closed with 3M Fire Barrier Penetration Sealing System.

F. Unused holes in floors made for duct or pipe penetrations shall be sealed neatly to match existing wall or floor.

G. All sleeves shall be sized for full pipe size plus pipe insulation thickness through the entire length of the sleeve.

2.3 ESCUTCHEONS

A. Escutcheons are annular shaped metal plates installed to cover annular spaces around pipes entering walls, floors, or other partitions. They are installed for decorative purposes in areas where these penetrations are visible. Escutcheons shall be chrome plated steel, fastened to remain secure and in position at all times.

B. Escutcheons for water closets, plated supply pipes, and shower heads shall be chrome plated brass with setscrew.

C. Escutcheons are not to be installed on the bell of any soil or drain pipes, on any pipe larger than 4", on insulated pipe if exterior diameter of insulation is larger than 4", or on pipes which do not enter the wall or floor at right angles.

2.4 FLASHING

A. Flashing shall be sheet lead, 4 lbs. per square foot, and shall extend out from pipe and edge of drain a minimum of 12".

B. Roof drains, floor drains, area drains, and equipment room drains installed where membrane water-proofing is installed shall be flashed.

C. Vent stacks and other pipes through roof shall be flashed. Flashing may be caulked into pipe bell if flush with finished roof, or on 3" and larger may employ 4 lb. boot flashing. Vents shall extend a minimum of 12" above finished roof elevation at penetration. Refer to roof pipe portals for piping through roof other than sanitary vents or overflow drains.

2.5 PIPES AND TUBES

A. Sanitary Sewer (SS), Vent Piping (V)
1. Domestic cast iron pipe. Fittings shall be no-hub cast iron DWV grade soil pipe fittings, with stainless steel clamps and neoprene gaskets.

B. Domestic Water Piping, Cold water (CW), Hot water (HW) & Hot water return (HWR)
1. Type L copper tubing, ASTM B88, drawn with wrought copper fittings and grade 95TA solder joints.
2. Exposed fixtures: Chrome plated brass and copper tubing with threaded plated brass fittings.

C. Trap Primer piping (TP):
1. Type K Copper Tubing ASTM B42, Tempered O61 annealed without fittings.

2.6 VALVES

A. For drinking water service, provide valves complying with NSF 61.

B. Gate Valves:
1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.

C. Ball Valves:
1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.
2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.

D. Relief Valves:
1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

E. Plug Valves:

1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.

F. Butterfly Valves:
1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, 10-position lever handle.
2. Over 2 inches: Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.

G. Swing Check Valves:
1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

H. Spring Loaded Check Valves:
1. Iron body, bronze trim with threaded, wafer or flanged ends and stainless steel spring with renewable composition disc.

I. Relief Valves:
1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

2.7 METERS AND GAGES

A. Thermometers:
1. Scale Range: Temperature ranges for services listed are as follows:
   a. Domestic Hot Water: 30 to 240 deg F, with 2-degree scale divisions
   b. Domestic Cold Water: 0 to 100 deg F, with 2-degree scale divisions

B. Liquid-In-Glass Thermometers Description: ASTM E 1.
   a. Case: Die cast and aluminum finished in baked-epoxy enamel, glass front, spring secured, 9 inches (230 mm) long.
   b. Adjustable Joint: Finish to match case, 180-degree adjustment in vertical plane, 360-degree adjustment in horizontal plane, with locking device.
   c. Tube: Red or blue reading, organic-liquid filled with magnifying lens.
   d. Tube: Red or blue reading, mercury filled with magnifying lens.
   e. Scale: Satin-faced nonreflective aluminum with permanently etched markings.
   f. Stem: Copper-plated steel, aluminum, or brass for separable socket; of length to suit installation.
1. Thermometer Wells: Fitting with protective well for installation in threaded pipe fitting to hold test thermometer.
   a. Material: Brass, for use in copper piping.
   b. Material: Stainless steel, for use in steel piping.
   c. Material: Steel, for use in steel piping.

d. Extension-Neck Length: Nominal thickness of 2 inches but not less than thickness of insulation. Omit extension neck for wells for piping not insulated.
e. Retain one of three subparagraphs below.
f. Insertion Length: To extend to one-third of diameter of pipe.
g. Cap: Threaded, with chain permanently fastened to socket.
h. Heat-Transfer Fluid: Oil or graphite.

C. Pressure Gages
1. Description: ASME B40.1, phosphor-bronze bourdon-tube type with bottom connection; dry type, unless liquid-filled-case type is indicated.
2. Cases are also constructed of molded aluminum and phenolic plastic. Lenses are also made of clear acrylic plastic.
3. Case: Drawn steel, brass, or aluminum with 4-1/2-inch diameter, glass lens.
4. Connector: Brass, NPS 1/4.
5. Scale: White-coated aluminum with permanently etched markings.
6. Range: 0-100 PSI.

D. Test Plugs
1. Description: Nickel-plated, brass-body test plug in NPS 1/2 fitting.
2. Body: Length as required to extend beyond insulation.
3. Pressure Rating: 500 psig minimum.
4. Core Inserts: One or two self-sealing valves, suitable for inserting 1/8-inch OD probe from dial-type thermometer or pressure gage.
5. Test-Plug Cap: Gasketed and threaded cap, with retention chain or strap.
6. Test Kit: Pressure gage and adapter with probe, two bimetal dial thermometers, and carrying case.

E. Calibrated Flow Balancing Valves
1. Furnished with calibrated nameplate and memory stop.
2. Fitted with capped readout fittings.

F. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Liquid-in-Glass Thermometers:
a. Dresser Industries, Inc.; Instrument Div.; Weksler Instruments Operating Unit.
b. Ernst Gage Co.
c. Marsh Bellofram.
d. Palmer Instruments, Inc.
e. Trerice: H. O. Trerice Co.
f. Weiss Instruments, Inc.
g. Winter's Thermogauges, Inc.
2. Pressure Gages:
a. AMETEK, Inc.; U.S. Gauge Div.
b. Dresser Industries, Inc.; Instrument Div.; Ashcroft Commercial Sales Operation.
c. Dresser Industries, Inc.; Instrument Div.; Weksler Instruments Operating Unit.

d. Ernst Gage Co.
e. Marsh Bellofram.
f. Noshok, Inc.
g. Trerice: H. O. Trerice Co.
h. Weiss Instruments, Inc.
i. WIKA Instruments Corp.
j. Winter's Thermogauges, Inc.

3. Test Plugs:
   a. Flow Design, Inc.
   b. MG Piping Products Co.
   c. National Meter.
   d. Peterson Equipment Co., Inc.
   e. Sisco Manufacturing Co.
   f. Trerice: H. O. Trerice Co.
   g. Watts Industries, Inc.; Water Products Div.
4. Calibrated Flow Balancing Valve:
   a. Taco
   b. Bell & Gossett
   c. Macon

2.8 PIPING SPECIALTIES

A. Flanges, Unions, and Couplings:
   1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
   2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
   3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
   4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier. Dielectric unions shall be used for joining ferrous and non-ferrous metals to prevent galvanic corrosion.

B. Strainers:
   1. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
   2. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

C. Flexible Connectors:
   1. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure 300 psig.

D. Water Hammer Arrestors:
   1. Install on all fixture branches having quick-closing valves and at the tops of all risers to prevent water hammer. Each water hammer arrestor shall be sized and certified according to the Plumbing and Drainage Institute standard - WH201.

2.9 DRAINAGE FIXTURES

A. Floor Drain (FD): Floor drain shall be epoxy coated cast iron drain with anchor flange, reversible clamping collar with primary and secondary weep holes, adjustable round nickel bronze strainer and no hub outlet.
1. Basis of design: Watts FD-100-A (FD-100-M where square strainer required)

2.10 CLEANOUTS (CO)

A. Cleanouts shall be provided at the base of each stack, and at each change in direction greater than 45 degrees. Cleanouts shall be of the same nominal size as the connected pipe up to and including 4" and not less than 4" in larger pipe.

B. All cleanouts in areas with heavy equipment traffic floors shall be EXTRA HEAVY DUTY models suitable for heavy equipment traffic.

C. The distance between cleanouts in horizontal soil and waste lines shall not be greater than 50 feet for pipes up to and including 3", 80 feet for lines 4" and larger.

D. All cleanouts shall be made with a caulking cast ferrule having a cast brass cleanout screw plug, having a raised nut not less than 1" high, except that cleanouts underground under floor slabs shall be extended through the slabs, flush with the floor line, provided with countersunk caps.

E. Basis of Design: JR Smith according to the following table.

1.	Exposed piping, cast iron:	4470
2.	Exterior or unfinished area floors, cast iron:	4031
3.	Finished ceramic or quarry tile floors:	4051
4.	Vinyl tile floors (recessed top for tile insert):	4151
5.	All walls:	4472
6.	Carpeted area floors (carpet cleanout markers):	4031-X

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside piping before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.4 INSTALLATION - PIPING SYSTEMS

A. Install dielectric connections wherever joining dissimilar metals.

B. Label all piping with labels and directional flow arrows per 22 0001.

C. Install unions downstream of valves and at equipment or apparatus connections.

D. Route piping parallel to building structure and maintain gradient.

E. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Sleeve pipe passing through partitions, walls and floors.

I. Install piping system allowing clearance for installation of insulation and access to valves and fittings.

J. Install identification on piping systems including underground piping.

K. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

3.5 INSTALLATION - VALVES

A. Install valves with stems upright or horizontal, not inverted.

B. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Install ball or butterfly valves for throttling, bypass, or manual flow control services.

D. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.

E. Install spring loaded check valves on discharge of pumps.

F. Install plug valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.

G. Install 3/4 inch drain ball valves at main shut-off valves, low points of piping, bases of vertical risers, and equipment drains. Pipe to nearest drain.

3.6 INSTALLATION - PIPING SPECIALTIES

A. Install pressure gages with pulsation dampers. Provide ball valve to isolate each gage. Extend nipples and siphons to allow clearance from insulation.

B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.

C. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

D. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

E. Provide drain and hose connection with valve on strainer blow down connection.

F. Test backflow preventers in accordance with ASSE.

3.7 INSTALLATION - PLUMBING SUPPLY PIPING

A. Install water piping in accordance with ASME B31.9.

B. Insulate all domestic hot water (and recirculating) pipes and domestic cold water pipes per specs.

C. Establish elevations of buried piping outside the building to obtain not less than two (2) ft of cover.

D. Provide support for utility meters in accordance with requirements of utility companies.

E. Slope water piping and arrange to drain at low points.

F. Install piping from relief valves, back-flow preventers and drains to nearest drain.

G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories, sinks, washing machine outlets, and other fixtures and equipment with quick acting valves.

H. Provide water service complete with approved reduced pressure back-flow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.

I. Install flow controls in water circulating systems as indicated on Drawings.

J. Disinfecting of Domestic Water Systems:
1. Prior to starting, verify system is complete, flushed and clean.
2. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
3. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.
4. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
5. Maintain disinfectant in system for 24 hours.
6. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
7. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
8. 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.

3.8 INSTALLATION - PLUMBING DRAINAGE PIPING

A. Install bell and spigot pipe with bell end upstream.

B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Install with 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. Establish elevations of buried piping outside building to provide not less than 2 ft of cover.

F. Install piping penetrating roofed areas to maintain integrity of roof assembly.

G. Establish invert elevations, slopes for drainage per plumbing plan notes. Maintain gradients.

H. Test drainage piping in accordance with local code requirements.

3.9 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as scheduled.

B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.

C. Place hangers within 12 inches of each horizontal elbow.

D. Use hangers with 1-1/2 inch minimum vertical adjustment.

E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.

F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.

G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

H. Design hangers for pipe movement without disengagement of supported pipe.

I. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.10 SERVICE CONNECTIONS

A. Install sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and verify proper slope for drainage and proper cover to avoid freezing.

3.11 PIPE CLEANING

A. Flush heating system hot water, and cooling system chilled water piping with clean water. Where temporary construction strainers are installed, remove and install permanent strainer. Remove and clean or replace other strainer screens.

END OF SECTION

SECTION 15180

HVAC PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Pipe and pipe fittings.
2. Valves.
3. Piping specialties.
4. HVAC piping specialties.
5. HVAC pumps.
6. Chemical treatment.

PART 2 PRODUCTS

2.1 PIPES AND TUBES

A. Chilled Water Piping:
1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40, black, malleable iron or forged steel fittings, threaded or welded joints.
2. Copper Tubing: ASTM B88, Type M drawn, cast brass, wrought copper, or mechanically extracted fittings, lead free solder joints.

B. Equipment Drains and Overflows:
1. PVC Pipe: ASTM D1785, Schedule 40, PVC fittings, solvent weld joints.

2.2 VALVES

A. Gate Valves:
1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.

B. Globe Valves:
1. Up to 2 Inches: Bronze body, bronze trim, rising stem and hand wheel, inside screw, renewable composition disc, solder or threaded ends, with back seating capacity.
2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, plug type disc, flanged ends, renewable seat and disc.

C. Ball Valves:
1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.

2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.

D. Plug Valves:
1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.

E. Butterfly Valves:
1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, 10-position lever handle.
2. Over 2 inches: Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.

F. Swing Check Valves:
1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

G. Spring Loaded Check Valves:
1. Iron body, bronze trim with threaded, wafer or flanged ends and stainless steel spring with renewable composition disc.

H. Relief Valves:
1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

2.3 PIPING SPECIALTIES

A. Flanges, Unions, and Couplings:
1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Strainers:
1. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
2. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
3. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

C. Flexible Connectors:

1. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure 300 psig.

D. Air Vents:
   1. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.
   2. Float Type: Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.

E. Pipe Expansion Compensation Devices:
   1. Two-ply Bronze Bellows Type:
      a. Construction: Bronze with anti-torque device, limit stops, internal guides.
      b. Pressure Rating: 125 psig WSP and 400 degrees F.
      c. Joint: As specified for pipe joints.
      d. Size: Use pipe sized units.
      e. Application: Copper piping.
   2. Low Pressure Compensators with two-ply Bronze Bellows:
      a. Working Pressure: 75 psig.
      b. Maximum Temperatures: 250 degrees F.
      c. Joint: Soldered.
      d. Size: Use pipe sized units.
      e. Application: Copper or steel piping 2 inch and under.
   3. Pipe Alignment Guides: Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inch travel.

F. Pressure Gages:
   1. Gage: ASME B40.1, with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.
      a. Case: Steel or cast aluminum.
      b. Bourdon Tube: Brass.
      c. Dial Size: 4 inch diameter.
      d. Scale: Psi.

G. Thermometers:
   1. Stem Type Thermometer: ASTM E1, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device.
      a. Size: 9 inch scale.
      b. Window: Clear glass.
      c. Stem: Brass.
      d. Accuracy: 2 percent.
      e. Calibration: Degrees F.

2.4 HVAC PIPING SPECIALTIES

A. Expansion Tanks:
1. Construction: Closed, welded steel, ASME tested and labeled, 100 psig rating; cleaned, prime coated, and supplied with steel support saddles; with taps for installation of accessories.
2. Gage Glass Set: Brass compression stops, guard, and 3/4 inch glass.
3. Automatic Cold Water Fill Assembly: Pressure reducing valve, reduced pressure double check back flow preventer, test cocks, strainer, vacuum breaker, and by-pass with valves.

B. Air Separators:
1. In-Line Air Separators: Cast iron for sizes 1-1/2 inch and smaller, or steel for sizes 2 inch and larger; ASME tested and stamped; for 125 psig operating pressure.

2.5 HVAC PUMPS

A. In-Line Circulators:
1. Type: Horizontal shaft, single stage, direct connected, with resiliently mounted motor for in-line mounting, oil lubricated, for 125 psig maximum working pressure.
2. Construction: Cast iron casing with flanged connections, cadmium plated steel impeller keyed to shaft, two oil lubricated bronze sleeve bearings, alloy steel shaft with sleeve, integral thrust collar, mechanical seal; flexible coupling.

B. Vertical In-Line Pumps:
1. Type: Vertical, single stage, close coupled, radially or horizontally split casing, for in-line mounting, for 175 psig working pressure.
2. Construction: Cast iron casing with suction and discharge gage port, casing wear ring, seal flush connection, drain plug, flanged suction and discharge, bronze, fully enclosed impeller keyed directly to motor shaft or extension, [mechanical] [packed] seal.

C. Close Coupled Pumps:
1. Type: Horizontal shaft, single stage, close coupled, radially split casing, for 125 psig maximum working pressure.
2. Construction: Cast iron casing with suction and discharge gage ports, renewable bronze casing wearing rings, seal flush connection, drain plug, flanged suction and discharge, bronze, fully enclosed impeller keyed to motor shaft extension, seal.

D. Base Mounted Pumps:
1. Type: Horizontal shaft, single stage, direct-connected. Radially or horizontally split casing, for 125 psig maximum working pressure.
2. Construction: Cast iron casing with suction and discharge gage ports, renewable bronze casing wearing rings, seal flush connection, drain plug, flanged suction and discharge, bronze, fully enclosed impeller keyed to shaft, oil lubricated roller or ball bearings, seal; flexible coupling with guard.

3. Baseplate: Cast iron or fabricated steel with integral drain rim.

2.6 CHEMICAL TREATMENT

A. System Cleaner: Liquid alkaline compound with emulsifying agents and detergents.

B. Closed System Treatment (Water):
1. Sequestering agent to reduce deposits and adjust pH.
2. Corrosion inhibitors.
3. Conductivity enhancers.

C. By-pass (Pot) Feeder: size per manuf. system requirements, with quick opening cap.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside piping before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.4 INSTALLATION - PIPING SYSTEMS

A. Install dielectric connections wherever jointing dissimilar metals.

B. Install unions downstream of valves and at equipment or apparatus connections.

C. Route piping parallel to building structure and maintain gradient.

D. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

G. Sleeve pipe passing through partitions, walls and floors.

H. Install piping system allowing clearance for installation of insulation and access to valves and fittings.

I. Install identification on piping systems including underground piping. Refer to Section 15051.

J. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

3.5 INSTALLATION - VALVES

A. Install valves with stems upright or horizontal, not inverted.

B. Install gate or ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.

D. Install spring loaded check valves on discharge of pumps.

E. Install plug valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.

F. Install 3/4 inch ball drain valves at main shut-off valves, low points of piping, bases of vertical risers, and at equipment. Pipe to nearest drain.

3.6 INSTALLATION - PIPING SPECIALTIES

A. Install one pressure gage for each pump, locate taps before strainers and on suction and discharge of pump; pipe to gage.

B. Install pressure gages with pulsation dampers. Provide needle valve or ball valve to isolate each gage. Extend nipples to allow clearance from insulation.

C. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.

D. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

E. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

F. Install manual air vents at system high points.

G. For automatic air vents in ceiling spaces or other concealed locations, install vent tubing to nearest drain.

H. Install air separator on suction side of system circulation pump and connect to expansion tank.

I. Provide drain and hose connection with valve on strainer blow down connection.

J. Pipe relief valve outlet to nearest floor drain.

3.7 INSTALLATION - HEATING AND COOLING PIPING

A. Install piping in accordance with ASME B31.1, B31.9.

B. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.

C. Support tanks inside building from building structure.

D. Install relief valves on pressure tanks, and expansion tanks.

E. Select system relief valve capacity greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment. Install piping from relief valve outlet to nearest floor drain.

F. Support piping adjacent to pump so no weight is carried on pump casings. For close coupled or base mounted pumps, install supports under elbows on pump suction and discharge line sizes 4 inches and over.

G. Install line size shut-off valve and strainer on pump suction. Install line size check valve, on pump discharge.

H. Install air cock and drain connection on horizontal pump casings. Install drain piping for bases and seals, piped to and discharging into floor drains. Lubricate pumps before start-up.

I. Install close coupled and base mounted pumps on concrete base, with anchor bolts, set and level, and grout in place.

J. Install bypass feeder for chilled water, and glycol systems. Install across pump with flow from pump discharge to pump suction from pump taps.

K. Cleaning:
   1. After completion, fill, start, and vent prior to cleaning. Use water meter to record capacity in each system. Place terminal control valves in open position during cleaning.
   2. Add cleaner to closed systems at concentration as recommended by manufacturer.
   3. Chilled Water Systems: Circulate for 48 hours, then drain. Refill with clean water, circulate for 24 hours, then drain. Refill with clean water. Repeat until system cleaner is removed.
   4. Flush open systems with clean water for one-hour minimum. Drain completely and refill.
   5. Remove, clean, and replace strainer screens. Disassemble system components to inspect and remove sludge. Flush low points with clean water after cleaning process is completed.

SECTION 15195

FACILITY NATURAL GAS PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Natural gas piping buried within 5 feet of building.
2. Natural gas piping above grade.
3. Unions and flanges.
4. Valves.
5. Pipe hangers and supports.
6. Strainers.
7. Natural gas pressure regulators.
8. Natural gas pressure relief valves.
9. Underground pipe markers.
10. Bedding and cover materials.

B. All general conditions of the contract apply.

C. Related Sections:
1. Section 15010 – Mechanical General
2. Section 15061 - Hangers and Supports for HVAC Piping and Equipment: Product requirements for pipe hangers and supports for placement by this section.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI Z21.15 - Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves.

B. American Society of Mechanical Engineers:
1. ASME B16.3 - Malleable Iron Threaded Fittings.
2. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
3. ASME B16.33 - Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 125 psig (sizes 1/2 - 2).
4. ASME B31.9 - Building Services Piping.
5. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

C. ASTM International:
1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
3. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

4. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric).
5. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
6. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
7. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

D. American Welding Society:
1. AWS D1.1 - Structural Welding Code - Steel.

E. American Water Works Association:
1. AWWA C105 - American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.

F. Manufacturers Standardization Society of the Valve and Fittings Industry:
1. MSS SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
2. MSS SP 67 - Butterfly Valves.
3. MSS SP 69 - Pipe Hangers and Supports - Selection and Application.
4. MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
5. MSS SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
6. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

G. National Fire Protection Association:
1. NFPA 54 - National Fuel Gas Code.

H. Underwriters Laboratories Inc.:
1. UL 842 - Valves for Flammable Fluids.

1.3 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified, provide compatible system components and joints. Use non-conducting dielectric connections when joining dissimilar metals in systems.

B. Provide flanges, unions, or couplings at locations requiring servicing. Use unions, flanges, or couplings downstream of valves and at equipment connections. Do not use direct welded or threaded connections to valves, equipment.

C. Provide pipe hangers and supports in accordance with ASME B31.9, ASTM F708.

D. Use plug, ball, or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.

1.4 QUALITY ASSURANCE

A. Perform natural gas Work in accordance with NFPA 54, local gas company requirements

B. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.

1.5 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

PART 2 PRODUCTS

2.1 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASTM A234/A234M forged steel welding type.
   2. Joints: ASME B31.9, welded.
   3. Jacket: AWWA C105 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.

2.2 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 forged steel welding type.
   2. Joints: Threaded for pipe 2 inch and smaller; welded for pipe 2-1/2 inches and larger.

B. Corrugated Stainless Steel Tubing: ANSI LC 1.

2.3 REGULATOR VENT PIPING, ABOVE GRADE

A. Indoors and outdoors: Same as natural gas piping, above grade.

2.4 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:
   1. Ferrous Piping: Class 150, malleable iron, threaded.
   2. Copper Piping: Class 150, bronze unions with [soldered] [brazed joints].
   3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Flanges for Pipe 2-1/2 inches and Larger:
   1. Ferrous Piping: Class 150, forged steel, slip-on flanges.
   2. Copper Piping: Class 150, slip-on bronze flanges.
   3. Gaskets: 1/16 inch thick preformed neoprene gaskets.

2.5 BALL VALVES

A. Acceptable Manufacturers: Crane Valve, Hammond Valve, Milwaukee Valve, NIBCO, Stockham Valves & Fittings.

B. 1/4 inch to 1 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, full port.

C. 1-1/4 inch to 3 inch: MSS SP 110, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, conventional port.

2.6 PLUG VALVES

A. Acceptable Manufacturers: DeZURIK, Unit of SPX Corp., Flow Control Equipment, Inc., Homestead Valve.

B. 2 inches and Smaller: MSS SP 78, Class 150 construction, round port, full pipe area, pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.

C. 2-1/2 inches and Larger: MSS SP 78, Class 150 construction, round port, full pipe area, pressure lubricated, teflon packing, flanged ends.

2.7 BUTTERFLY VALVES

A. Acceptable Manufacturers: Crane Valve, Hammond Valve, Milwaukee Valve, NIBCO, Stockham Valves & Fittings.

B. 2 inches and Smaller: MSS SP 67, 175 psi, bronze body, Viton seals, stainless steel trim, lever or tee handle UL 842 listed for gas service, threaded ends, full port.

2.8 PIPE HANGERS AND SUPPORTS

A. Manufacturers:
1. Carpenter & Paterson, Creative Systems Inc., Flex-Weld, Inc., Glope Pipe Hanger, Michigan Hanger Co., Superior Valve Co., Cooper B-Line

B. Conform to NFPA 54, ASME 31.9.

C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or carbon steel adjustable swivel, split ring.

D. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.

E. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

F. Wall Support for Pipe 3 inches and Smaller: Cast iron hook.

G. Vertical Support: Steel riser clamp.

H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

J. Sheet Lead: ASTM B749, 2.5 lb/sq ft, 0.039 inch thick.

2.9 STRAINERS

A. Acceptable Manufacturers:
1. Mueller Steam Specialty, O.C. Keckley Co., Spirax Sarco

B. 2 inch and Smaller: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.

C. 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

D. 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

2.10 NATURAL GAS PRESSURE REGULATORS

A. Product Description: Spring loaded, general purpose, self-operating service regulator including internal relief type diaphragm assembly and vent valve. Diaphragm case can be rotated 360 degrees in relation to body.
1. Comply with ANSI Z21.80.
2. Temperatures: minus 20 degrees F to 150 degrees F.
3. Body: Cast iron or Steel.
4. Spring case, lower diaphragm casing, union ring, seat ring and disk holder: Aluminum.
5. Disk, diaphragm, and O-ring: Nitrile.
6. Maximum inlet pressure: 150 psig.
7. Furnish sizes 2 inches and smaller with threaded ends. Furnish sizes 2-1/2 inches and larger with flanged ends.

2.11 NATURAL GAS PRESSURE RELIEF VALVES

A. Product Description: Spring loaded type relief valve.
1. Body: Aluminum.
2. Diaphragm: Nitrile.
3. Orifice: Aluminum, brass, or stainless steel.
4. Maximum operating temperature: 150 degrees F.
5. Inlet Connections: Threaded.
6. Outlet or Vent Connection: Same size as inlet connection.

2.12 UNDERGROUND PIPE MARKERS

A. Plastic Ribbon Tape: Bright colored, continuously printed, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

B. Trace Wire (for non-metallic pipe): Magnetic detectable conductor, brightly colored plastic covering, imprinted with “Natural Gas Service" in large letters.

2.13 BEDDING AND COVER MATERIALS

A. Site specifications override this section as applicable.

B. Excavation: Excavate trenches by open cut. Pavement removal and replacement required by the excavation of trenches shall be done in accordance with the requirements of section 02150, Removing and Replacing Pavement. Perform all excavation in accordance with the latest accepted Occupational Safety and Health Act of 1970 as amended. The Developer shall pay particular attention to Safety & Health Regulations Part 1926, subpart P “Excavations, Trenching & Shoring.”

C. Bedding:
1. General: Compact stone bedding material by tamping or slicing with a flatblade shovel. Prepare the trench bottom to support the pipe uniformly throughout its length. Provide bell holes to relieve pipe bells of all loads. If the trench is excavated to excessive width or depth, provide the next better class of bedding.
2. Materials: Bedding materials shall be crushed stone unless shown or specified otherwise. Crushed stone bedding material shall meet the requirements of Georgia Department of Transportation Specification 800.01 for No. 57 stone, Group II (quartzite granite).
3. Bedding: Excavate the bottom of the trench flat at a minimum 36” depth or as shown on the Site Plans below the bottom of the pipe barrel. Place and compact bedding material to the proper grade. Bedding shall then be carefully placed by hand and compacted to provide full support under and up to the crown of the pipe.

D. Cover and Backfill: Place initial backfill material carefully around the pipe above bedding in uniform six (6) inch layers to a depth of at least eighteen (18) inches above the pipe bell. Compact each layer thoroughly with suitable hand tools. Do not disturb or damage the pipe. Backfill on both sides of the pipe simultaneously to prevent side pressures. Initial backfill material shall be clean and free of rock, stumps, limbs or other unsuitable material.

PART 3 EXECUTION

3.1 EXAMINATION

A. 01300 - Administrative Requirements: Coordination and project conditions.

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

3.2 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.

3.3 INSTALLATION - INSERTS

A. Provide inserts for placement in concrete forms.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install hangers and supports in accordance with ASME B31.9, ASTM F708.

B. Support horizontal piping hangers as scheduled.

C. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Install hangers to allow 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

F. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.

G. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.

H. Finish paint exposed steel hangers and supports to match ceiling or wall color. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

I. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

J. Install pipe hangers and supports in accordance with Section 15061.

3.5 INSTALLATION - BURIED PIPING SYSTEMS

A. Site specifications override this section as applicable.

B. Install natural gas piping in accordance with NFPA 54.

C. Verify connection to existing piping system size, location, and invert are as indicated on Drawings.

D. Establish elevations of buried piping with not less than 2 ft of cover.

E. Establish minimum separation from other services piping in accordance with local codes.

F. Remove scale and dirt on inside of piping before assembly.

G. Excavate pipe trench in accordance with Site Plans or methods utilized by the local AHJ.

H. Install pipe to elevation as indicated on Drawings.

I. Place bedding material at trench bottom to provide uniform bedding for piping, level bedding materials in one continuous layer not exceeding 4 inches compacted depth; compact to 95 percent maximum density.

J. Install pipe on prepared bedding.

K. Route pipe in straight line.

L. Install pipe to allow for expansion and contraction without stressing pipe or joints.

M. Install plastic ribbon tape or trace wire continuous over top of pipe.

N. Pipe Cover and Backfilling:
1. Backfill trench in accordance with Site Plans or methods utilized by the local AHJ.
2. Maintain optimum moisture content of fill material to attain required compaction density.
3. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in 6 inch compacted layers to 12 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
4. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
5. Do not use wheeled or tracked vehicles for tamping.

3.6 INSTALLATION - ABOVE GROUND PIPING SYSTEMS

A. Install natural gas piping in accordance with NFPA 54.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient.

D. Where required, bend pipe with pipe bending tools in accordance with procedures intended for that purpose.

E. Install piping to conserve building space and not interfere with use of space.

F. Size and install gas piping to provide sufficient gas to supply maximum appliance demand at pressure higher than appliance minimum inlet pressure.

G. Group piping whenever practical at common elevations.

H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

I. Sleeve pipe passing through partitions, walls and floors. Refer to Section 15061.

J. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping.

K. Provide clearance for installation of insulation and access to valves and fittings.

L. Provide access where valves and fittings are not exposed.

M. Where pipe support members are welded to structural building framing, scrape, brush clean, weld, and apply one coat of zinc rich primer.

N. Provide support for utility meters in accordance with requirements of utility company.

O. Install vent piping from gas pressure reducing valves to outdoors and terminate in weatherproof hood. Protect vent against entry of insects and foreign material.
1. Minimum Vent Size: Connection size at regulator vent connection.
2. Run individual vent line from each relief device, independent of breather vents.

P. Breather vents may be manifolded together with piping sized for combined appliance vent requirements.

Q. Prepare pipe, fittings, supports, and accessories not pre-finished, ready for finish painting.

R. Install identification on piping systems including underground piping.

S. Install valves with stems upright or horizontal, not inverted.

T. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

U. Install gas pressure regulator with independent vent full size opening on regulator and terminate outdoors.

V. Provide new gas service complete with gas meter and regulators. Gas service distribution piping to have initial minimum pressure of 2 psi, 5 psi, or as indicated on plans. Provide regulators on each line serving gravity type appliances, sized in accordance with equipment.

3.7 FIELD QUALITY CONTROL

A. Where gas appliance will be damaged by test pressure, disconnect appliance and cap piping during pressure test. Reconnect appliance after pressure test and leak test connection.

B. Where gas appliance is designed for operating pressures equal to or greater than piping test pressure, provide gas valve to isolate appliance or equipment from gas test pressure.

C. Pressure test natural gas piping in accordance with NFPA 54.

D. Where new branch piping is extended from existing system, pressure test new branch piping only. Leak test joint between new and existing piping with noncorrosive leak detection fluid or other approved method.

E. When pressure tests do not meet specified requirements, remove defective work, replace and retest.

F. Immediately after gas is applied to a new system, or a system has been restored after gas service interruption, check pipe for leakage.
   1. Where leakage is detected, shut off gas supply until necessary repairs are complete.

3.8 SCHEDULES

A. Pipe Hanger Spacing:

PIPE SIZE Inches	COPPER TUBING MAXIMUM HANGER SPACING Feet	STEEL PIPE MAXIMUM HANGER SPACING Feet	COPPER TUBING MINIMUM HANGER ROD DIAMETER Inches	STEEL PIPE MINIMUM HANGER ROD DIAMETER Inches
1/2	4	6	3/8	3/8
3/4	6	7	3/8	3/8
1	6	7	3/8	3/8
1-1/4	8	7	3/8	3/8
1-1/2	8	9	3/8	3/8
2	8	10	3/8	3/8
2-1/2	8	10	1/2	1/2
3	8	10	1/2	1/2
4	8	10	1/2	5/8
5	8	10	1/2	5/8
6	8	10	5/8	3/4

8	8	10	3/4	3/4

END OF SECTION

SECTION 15400

MAJOR PLUMBING EQUIPMENT

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 applies.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN

A. Equipment and accessory brands and model numbers shown below are intended to establish minimum acceptable quality. Models deemed by the engineer to be of inferior quality as compared to the Basis of Design will not be accepted. Equivalent fixtures and accessories by the manufacturers noted below are acceptable unless noted otherwise.
1. Water heaters (gas/instantaneous): Rheem, Rinnai, Bradford White

B. GWH: Gas water heater shall be Condensing, Tankless, Temperature controlled, continuous flow, capable of producing 6.2 gpm flow at 60 degree temperature rise gas hot water system, Energy Star Qualified.
1. Basis of Design: Rinnai REU-KB3237FFUD-US
2. Unit shall meet the thermal efficiency and standby loss requirements of the U. S. Department of Energy and Current Edition of ASHRAE/IESNA 90.1 and be design-certified by UL (Underwriters Laboratories) according to ANSI Z21.10.3-CSA4.3 standards governing storage tank water heaters.

END OF SECTION

SECTION 15401

PLUMBING FIXTURES

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 is applicable.

B. All general conditions of the contract are applicable.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN

A. Fixture and accessory brands and model numbers shown below are intended to establish minimum acceptable quality. Models deemed by the engineer to be of inferior quality as compared to the Basis of Design will not be accepted. Equivalent fixtures and accessories by the manufacturers noted below are acceptable unless noted otherwise.
1. Fixtures: Toto, Kohler, Crane, American Standard
2. Sinks: Just, Moen, Kohler, Advance Tabco, Elkay, Toto
3. Faucets: Toto, Delta, Kohler, Zurn, Symmons, Moen
4. Supplies: Brasscraft, McGuire, ProFlo, Franklin Brass
5. Water Closet Seats: Kohler, Toto, American Standard, Proflo, Bemis, Beneke
6. Drinking Fountains: Elkay, Kohler, Oasis
7. Fixture Carriers: J.R. Smith, Zurn, Josam, Wade
8. Floor drains: Watts, J.R. Smith, Josam, Zurn
9. Cleanouts: Watts, J.R. Smith, Josam, Zurn, Wade
10. Hose Bibbs: Woodford, Chicago, T&S Brass
11. Wall Hydrants: Josam, Woodford, Smith
12. Shower Stalls: Oasis, Aqua Bath

PART 3 PLUMBING FIXUTURES:

3.1 HANDICAPPED WATER CLOSET (HWC)

A. HWC: Handicapped water closet shall be floor mounted tank type water closet with elongated bowl and capable of operating at 1.28 gpf. Seat shall be commercial elongated type with open front, less seat. Installation to be ADA and Water Sense compliant. Include all required hardware for a complete installation.
1. Fixture: Kohler K-3999
2. Seat: Kohler K-4650
3. Supplies: Brasscraft CS500A

3.2 STANDARD HEIGHT WATER CLOSET (WC)

A. WC: Standard height water closet shall be floor mounted tank type water closet with elongated bowl and capable of operating at 1.28 gpf. Seat shall be commercial elongated type with open front, less seat. Installation shall be Water Sense compliant. Include all required hardware for a complete installation.

1. Fixture: Kohler K-3998
2. Seat: Kohler K-4650
3. Supplies: Brasscraft CS500A

3.3 URINAL (UR)

A. UR: Standard height urinal and handicapped accessible height urinal shall be white vitreous china wall hung 0.5 gpf manual flush valve type. Fixture mounting height for standard height and ADA compliant height mounting is determined from architectural plans. Include floor mounted commercial wall carrier and all hardware required for wall-mount installation.
   1. Fixture: Kohler K-5016-ET
   2. Flush Valve: Kohler K-13519
   3. Wall Carrier: Wade 400(AM11)

3.4 COUNTER-TOP LAVATORY (CTLAV)

A. CTLAV: Counter-top lavatory shall be handicapped accessible drop-in, white vitreous china single basin lavatory with overflow. Include all parts necessary for complete installation.
   1. Fixture: Kohler K-2292
   2. Faucet: delta 501
   3. P-trap: J.R.SMITH 2698 (where used as trap primer)
   4. Supplies: Brasscraft CS500A
   5. Covers: Truebro 103 (where plumbing is not concealed by millwork)

3.5 ACCESSIBLE SHOWER (HSH)

A. HSH: Handicapped accessible shower shall be one piece, acrylic, handicapped accessible shower. Coordinate stall specification with Arch plans.
   1. Fixture: Moen 8342EP15
   2. Stall: Aqua Bath C4136BF-fus3/4" (coordinate Left and Right model with Arch plans)

PART 4 EXECUTION

4.1 INSTALLATION

A. Verify adjacent construction is ready to receive rough-in work of this section. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation. If discrepancies exist between millwork sizes and fixtures specified, contact Engineer for direction.

B. All fixtures shall be installed straight, level, and plumb. When three or more of the same fixture are installed adjacent to each other, use equal spacing between fixtures.

C. All fixtures and equipment shall be installed with all accessories required for a complete and fully functional installation, regardless of whether all equipment and accessories are listed on the plans or in the specifications.

D. All vitreous china fixtures shall be bright white in color unless otherwise noted. Faucets shall be polished chrome unless otherwise noted. If these colors are unavailable, contact Engineer for approved alternatives.

E. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons. All water and drain piping exposed to view shall be chrome plated. Piping underneath counters with closing doors need not be chrome plated.

F. All handicapped fixtures shall be installed according to ADA and local code requirements. All handicapped drains shall be covered.

G. All floors where floor drains are installed shall slope to drain, minimum 2%. This contractor shall coordinate with the applicable trades to ensure that the proper slope is achieved.

H. Prime all floor drains. Where accessible, prime drain by water-saver trap primer from adjacent lavatory. Otherwise prime floor drain using water-valve type primer from domestic water supply. In lieu of water-based trap primers, PROVENT trap guards may be used where AHJ allows.

I. All pressure operated fixtures and equipment shall be furnished with water stops. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

J. All hand washing fixtures shall have a delivered water temperature limit of 110 degrees F unless specified otherwise. This may be accomplished with a tempering valve at each device to maintain delivered temperature below 110 F. See plans for location of tempering valves as applicable.

END OF SECTION

SECTION 15700

HVAC INSULATION

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 applies.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN

A. Manufacturers shown below as Basis of Design
1. Acceptable Manufacturers for Glass Fiber and Mineral Fiber Insulation Products: CertainTeed, Knauf, Johns Manville, Owens-Corning.
2. Acceptable Manufacturers for Closed Cell Elastomeric Insulation Products: Aeroflex Aerocell, Armacell Armaflex, Nomaco K-flex.

2.2 DUCT INSULATION

A. Supply, Return, Exhaust, and Outdoor Ventilation Ducts
1. Duct liner: ASTM C1071, Type I, flexible, glass fiber duct liner with 100% coated air side. Minimum density 1.5 lb/ft3.
2. Externally insulated: All sheet metal supply, return, and outdoor ventilation ducts shall be insulated on the outside with a Formaldehyde-free, flexible glass fiber blanket. Insulation shall have a minimum installed R-value of R-6 and have a Type 75 facing. Insulation shall be provided with a factory-applied facing with a composite UL HFC rating of 25/50. Basis of Design: Johns-Manville Microlite XG Formaldehyde-free Fiber Glass Duct Wrap.
3. All supply, return, and outdoor ventilation air ducts shall be completely insulated on the outside.
4. Exhaust ducts shall be insulated within 10 feet of exterior openings.
5. Duct shown as internally lined shall be also externally insulated as needed to bring total R-value to required level.

2.3 PIPE INSULATION

A. Chilled Water Piping
1. ASTM C547, molded glass fiber pipe insulation.
2. Thermal Conductivity: 0.23 at 75 degrees F.
3. Operating Temperature Range: 0 to 850 degrees F.
4. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
5. Jacket Temperature Limit: minus 20 to 150 degrees F.
6. Thickness: 1-1/2” for all pipe sizes.

B. Condensate Piping

1. ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
2. Thermal Conductivity: 0.27 at 75 degrees F.
3. Operating Temperature Range: Range: Minus 70 to 180 degrees F.
4. Thickness: 1/2" thickness for all pipe sizes.

PART 3 EXECUTION

3.1 INSTALLATION – DUCT SYSTEMS

A. Verify all surfaces are clean and dry before applying insulation.

B. Butt joints of insulation together to obtain total coverage. Do not compress the insulation. Tape all joints.

C. Mechanical fasteners: weld or adhesive applied pins shall be used to secure insulation to bottom of ducts 20" wide or wider. Install 18" on centers, both directions.

D. Place holding washers over weld pins firmly, do not compress insulation, clip of excessive length of pin, cover with 4" length of tape.

E. Where 2" flaps are provided, use adhesive to obtain full 2" coverage in lieu of tape.

F. Repair breaks, holes, and perforations to full thickness flush with adjoining surface, with new sections if large, with tape on small areas so that 2" of tape or replacement foil-kraft project away from the imperfection.

G. Insulation on round ducts may be wired in place with soft monel wire, 12" O.C., with joints taped and vapor sealed.

H. Cover flexible equipment connections on air conditioning units with specified supply/return duct insulation. Lap connection 6" and secure 2" edge flap with adhesive.

3.2 INSTALLATION – PIPING SYSTEMS

A. Verify piping has been tested before applying insulation materials. Verify surfaces are clean and dry, with foreign material removed. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions.

C. Piping Systems Conveying Fluids Below Ambient Temperature:
   1. Insulate entire piping system including fittings, valves, unions, flanges, strainers, flexible connections, and expansion joints.
   2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
   3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.

D. Inserts and Shields:
   1. Piping 1-1/2 inches Diameter and Smaller: Install steel shield between pipe hanger and insulation.
   2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
      a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
      b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.

3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.

E. Condensate Piping: Insulate entire piping system and components inside the building space to prevent condensation.

F. Closed Cell Elastomeric Insulation:
1. Push insulation on to piping, miter joints at elbows.
2. Seal seams and butt joints with manufacturer's recommended adhesive.
3. When application requires multiple layers, apply with joints staggered.
4. Insulate fittings and valves with insulation of like material and thickness as adjacent pipe.

G. Refrigeration suction piping shall be insulated through pipe clamps and hangers, provide insulation shields when insulation passes through clamps and hangers.

H. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with PVC jacket and fitting covers. Labels on exterior covers should be oriented so as to be easily readable and shall have directional flow arrows.

I. Buried Piping: Insulate only where insulation manufacturer recommends insulation product may be installed in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.

END OF SECTION

SECTION 15750

MAJOR HVAC EQUIPMENT

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 applies.

B. Electrical characteristics: As specified on Division 16 plans. All units shall be provided with disconnect switch and wired to unit terminals by Division 15. Division 16 is responsible for installing power to disconnect switch.

1.2 BASIS OF DESIGN

A. Acceptable manufacturers for products specified under this section are listed below.
1. Split System Heat Pumps: Carrier, Trane, Daikin-McQuay, Lennox
2. Split System Air Handling Units: Carrier, Trane, Daikin-McQuay, Lennox
3. Exhaust Fans: Greenheck, Cook, Broan, Twin City, Penbarry

PART 2 PRODUCTS

2.1 SPLIT SYSTEM HEAT PUMPS (HP)

A. General:
1. Equipment is scheduled on the drawings.
2. Factory assembled and tested air cooled condensing units and heat pumps, consisting of casing, compressors, condensers, coils, condenser fans and motors, and unit controls.
3. Unit Casings: Exposed casing surfaces constructed of galvanized steel with manufacturer's standard baked enamel finish. Designed for outdoor installation and complete with weather protection for components and controls, and complete with removable panels for required access to compressors, controls, condenser fans, motors, and drives.
4. Compressor: Single and dual refrigeration circuits (per plans) with compressors, resiliently mounted, with positive lubrication, and internal motor overload protection.
5. Condenser Coil: Constructed of copper tubing mechanically bonded to aluminum fins, factory leak and pressure tested.
6. Furnish operating and safety controls including high and low pressure cutouts. Control transformer. Furnish magnetic contactors for compressor and condenser fan motors.
7. Condenser Fans and Drives: Direct drive propeller fans statically and dynamically balanced. Wired to operate with compressor. Permanently lubricated ball bearing type motors with built-in thermal overload protection. Furnish high efficiency fan motors.
8. Condensing Unit Accessories:
9. Controls to provide low ambient cooling, time delay relay, anti-short cycle timer, vibration isolators on all equipment supported by structure or upper floor slabs, condenser coil hail guard, suction and discharge pressure gauge connections.
10. Refrigeration specialties: Furnish the following for each circuit:

11. Charge of compressor oil, Holding charge of refrigerant, Replaceable core type filter drier, liquid line sight glass and moisture indicator, shut-off valves on suction and liquid piping, liquid line solenoid valve, charging valve, oil level sight glass, crankcase heater, hot gas muffler, pressure relief device, P-traps (as needed).
12. Refrigerant: Furnish full charge of refrigerant R-410A.
13. Electrical characteristics: See Div. 16.

2.2 SPLIT SYSTEM AIR HANDLING UNITS (AHU)

A. General:
1. Equipment is scheduled on the drawings.
2. Configuration: As indicated on Drawings.
3. Cabinet:
   a. Panels: Constructed of galvanized steel with baked enamel finish. Access Panels: Located on both sides of unit. Furnish with duct collars on inlets and outlets.
   b. Insulation: Factory applied to each surface to insulate entire cabinet. One inch thick aluminum foil faced glass fiber with edges protected from erosion.
4. Evaporator Fan: Forward curved centrifugal type, resiliently mounted with adjustable belt drive (for belt drive units) and high efficiency motor. Motor permanently lubricated with built-in thermal overload protection.
5. Evaporator Coil: Constructed of copper tubes expanded onto aluminum fins. Factory leak tested under water. Removable, PVC construction, double-sloped drain pan with piping connections on both sides.
6. Refrigeration System: Single and dual refrigeration circuits, as per plans, controlled by factory installed thermal expansion valve.
7. Electric Heating Coil: Helical nickel-chrome resistance wire coil heating elements with refractory ceramic support bushings easily accessible with automatic reset thermal cut-out, built-in contactors, galvanized steel frame, manual reset thermal cut-out, air flow proving device, load fuses.
8. Air Filters: 1 inch thick glass fiber disposable media in metal frames. 25 to 30 percent efficiency based on ASHRAE 52.1.
9. Electrical characteristics: See Div. 16.

2.3 EXHAUST FANS (EF)

A. General
1. Fans are scheduled on the drawings.
2. All fans shall bear the AMCA Certified Performance Rating seal and UL label. Sone ratings shall be in accordance with AMCA Bulletin 300. Fans shall have published ratings certified by AMCA Standard 210 and Class established by AMCA 2408-69. Fan BHP and RPM shall be selected to produce specified capacity when installed in system with accessories as indicated. Fan wheels shall be statically and dynamically balanced.
3. Belt drive fan motors shall have bases which permit adjustment of belt tension, belt guards with tachometer hole for fan shaft, and variable pitch diameter sheaves.
4. Bearings for fan shafts, other than propeller type, shall have an average service life of 100,000 hours. Bearings shall be factory lubricated and shall have grease fittings for lubrication as recommended by bearing manufacturer. Grease lines shall extended to outside of casing where fittings are inaccessible during fan run time.

5. Solid state speed controllers for direct drive fans shall be provided and wired under Division 15 for initial balancing of fan air quantity.
6. Motors shall be provided as specified in Section 15010 and shall be readily accessible. Motors 1 hp and larger shall be premium efficiency type.

B. Ceiling/Cabinet Type
1. Housing shall be reinforced phosphatized steel. Wheels shall be true centrifugal, forward curved in design, and shall be statically and dynamically balanced.
2. Where grilles are required, they shall be aluminum with white baked enamel symmetrically finished appearance. Interior of housings shall be lined with dark acoustical insulation permanently attached in place. Interior of installed unit shall not be visible when grille is installed.
3. Motors shall be shaded pole type with sleeve bearings supported by one piece die formed steel suspension brackets with rubber isolation dampers.
4. Terminal box shall be mounted in the housing with receptacle, plug and cord inside of the cabinet. All motors shall be suitably grounded. Motor and fan assembly shall be removable from installed ceiling ventilator.
5. Where duct flanges are required on one or both ends of the fan, they shall be pre-assembled to housings.
6. Backdraft dampers shall be of integral design with aluminum damper on steel spring and foam rubber seal to eliminate chatter.
7. A speed controller on direct drive fans shall be shall be mounted at the fan and factory wired or field wired under Division 15 between the fan and fan energizer.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install Work in accordance with state and local Building Inspection Department's standards.

B. Install all equipment per manufacturer's instructions.

C. Curb manufacturer is responsible for design of curbs and isolation rails.

D. Install roof mounted units on roof curb providing watertight enclosure to protect ductwork and utility services. Install roof curb and equipment level.

E. Install components furnished loose for field mounting.

F. Install electrical devices downstream of contactors furnished loose for field mounting. Division 16 contractor is responsible for providing remote disconnects for all mechanical equipment under this contract. Division 16 contractor is responsible for providing and installing power wiring to terminals on all mechanical equipment.

G. Install condensate drain piping from drain pan to nearest floor drain or to condensate drainage system provided. Pump condensate as needed.

H. Furnish units fully charged with refrigerant and filled with oil.

I. Furnish initial start-up and shutdown during first year of operation, including routine servicing and checkout.

END OF SECTION

SECTION 15751

PACKAGED ROOFTOP AIR CONDITIONING UNITS 27-1/2 TO 50 TONS

PART 1 GENERAL

1.1 SUMMARY

A. Section 15010 applies.

B. Electrical characteristics: As specified on Division 16 plans.

1.2 BASIS OF DESIGN

A. Acceptable manufacturers for products specified under this section are listed below.
   1. Gas Electric Rooftop Units: Trane, Carrier, Lennox

PART 2 PRODUCTS

2.1 PACKAGED ROOFTOP AIR CONDITIONING UNITS

A. The units shall be dedicated horizontal airflow. The operating range shall be between 115°F and 0°F in cooling as standard from the factory for all units. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation and control sequence, before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. Units shall be UL listed to U.S. and Canadian Safety Standards.

B. Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 500 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. In order to ensure a water and air tight seal, service panels shall have lifting handles and no more than three screws to remove. All exposed vertical panels and top covers in the indoor air section shall be insulated with a 1/2 inch, 1 pound density foil-faced, fire-resistant, permanent, odorless, glass fiber material. The base of the unit shall have provisions for forklift and crane lifting. The top cover shall be one piece, or where seams exist, double hemmed and gasket sealed to prevent water leakage.

C. Filters: Two inch standard filters shall be factory supplied on all units. Optional two inch pleated media filters shall be available.

D. Compressors: All units shall have direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Internal overloads shall be provided with the scroll compressors. All models shall have crankcase heaters, low and high pressure control as standard.

E. Refrigerant Circuits: Each refrigerant circuit shall have independent fixed orifice or thermostatic expansion devices, service pressure ports, and refrigerant line filter driers factory installed as standard. An area shall be provided for replacement suction line driers.

F. Evaporator and Condenser Coils: Internally finned, 3/8" copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 200 psig and pressure tested to 450 psig. All dual compressor units shall have intermingled evaporator coils. Sloped condensate drain pans are standard. Patent-pending 1+1+1 condenser coil, permanently gapped for easy cleaning is available.

G. Gas Heating Section: The heating section shall have a drum and tube heat exchanger design using corrosion resistant steel components. A forced combustion blower shall supply premixed fuel to a single burner ignited by a pilotless hot surface ignition system. In order to provide reliable operation, a negative pressure gas valve shall be used that requires blower operation to initiate gas flow. On an initial call for heat, the combustion blower shall purge the heat exchanger 45 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat. Units shall be suitable for use with natural gas or propane (field installed kit) and shall also comply with California requirements for low NOx emissions. The 12½-25 tons shall have two stage heating.

H. Outdoor Fans: The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor(s) shall be permanently lubricated and shall have built-in thermal overload protection.

I. Indoor Fan: Units above shall have belt driven, FC centrifugal fans with adjustable motor sheaves. Units with standard motors shall have an adjustable idler-arm assembly for quick-adjustment of fan belts and motor sheaves. All motors shall be thermally protected. Oversized motors shall be available for high static application. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

J. Controls: Unit shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. ReliaTel controls shall be provided for all 24 volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

K. Defrost Controls: Adaptive demand defrost shall be provided to permit defrost wherever coil icing conditions begin to significantly reduce unit capacity.

L. Dehumidification Option: The dehumidification (hot gas reheat) option shall provide increased dehumidification. The option shall consist of a hot-gas reheat coil located on the leaving air side of the evaporator coil pre-piped and circuited. Low pressure switch(es) and thermostatic expansion valve(s) TXV are standard. Frostat™, ReliaTel options module, and

2"pleated filters are required but not standard. They must be ordered and configured separately.

M. Single Zone VAV: SZVAV option shall be provided with all necessary controls to operate rooftop unit based on maintaining two temperature setpoints; the discharge air and zone. Option shall include factory installed variable frequency drive to provide supply fan motor speed modulation. During one zone VAV cooling, the unit will maintain zone cooling setpoint by modulating the supply fan speed more or less to meet zone load demand, and the unit will maintain discharge temperature to the discharge cooling setpoint by modulating economizer and staging dx cooling.

N. High Efficiency Motors: This option is available with efficiency ratings from 86.5 up to 91.0. It is not available for all models.

O. Variable Frequency Drives: VFDs shall be factory installed and tested to provide supply fan motor speed modulation. The VFD shall receive a 0-10 Vdc signal from the unit controls based on zone demand if configured for Single Zone VAV control and shall cause the drive to accelerate or decelerate as required to maintain the load of the zone. When subjected to high ambient return conditions the VFD shall reduce its output frequency to maintain operation. Bypass control to provide full nominal air flow in the event of drive failure shall be optional

P. Motor Shaft Grounding Ring: Motors with internal shaft grounding rings can be used with VFD's to provide a conductive discharge path away from the motor bearings to ground.

Q. High Pressure Cutout: This option is offered for units that do not have High Pressure cutout as standard.

R. Supply and/or Return Air Smoke Detector: With this option installed, if smoke is detected, all unit operation will be shut down. Reset will be manual at the unit. Return Air Smoke Detectors require minimum allowable airflow when used with certain models. See the Installation, Operation, and Maintenance (IOM) manual for the models affected and the minimum allowable airflow required. This option is available on all downflow models.

S. Hinged Access Doors: Sheet metal hinges are available on the Filter/Evaporator Access Door and the Compressor/Control Access Door.

T. Through the Base Electrical with Circuit Breaker: This option is a thermal magnetic, molded case, HACR Circuit Breaker with provisions for through the base electrical connections. The circuit breaker will be installed in a water tight enclosure in the unit with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The circuit breaker will provide overcurrent protection, be sized per NEC and UL guidelines, and be agency recognized by UL/CSA. This option is available on all downflow models.

U. Through the Base Electrical With Disconnect Switch: Three-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized. Note: The disconnect switch

will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection. This option is available on all downflow models.

V. Through the Base Utilities Access: An electrical service entrance shall be provided allowing electrical access for both control and main power connections inside the curb and through the base of the unit. Option will allow for field installation of liquid-tight conduit and an external field installed disconnect switch.

W. Two-Inch Pleated Filters: Two inch pleated media filters shall be available on all models.

X. Clogged Filter/Fan Failure Switch: A dedicated differential pressure switch is available to achieve active fan failure indication and/or clogged filter indication. These indications will be registered with either a zone sensor with status indication lights or an Integrated Comfort™ System.

Y. Differential Pressure Switches: These options allow for individual fan failure and dirty filter indication. The fan failure switch will disable all unit functions and "flash" the Service LED on the zone sensor. The dirty filter switch will light the Service LED on the zone sensor and will allow continued unit operation.

Z. Discharge Air Sensing: Provides true discharge air sensing in heating and cooling models. This sensor is a status indicator readable through Tracer, Tracker, or LCI-R. Discharge air sensing is standard with Variable Air Volume (VAV) units, Single Zone Variable Air Volume units, and is optional with Constant Volume (CV) units.

AA. Economizer: The assembly includes fully modulating 0-100 percent motor and dampers, barometric relief, minimum position setting, preset linkage, wiring harness with plug, fixed dry bulb and spring return actuator. The barometric relief damper shall be standard with the downflow economizer and shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment "off" cycle. Solid state enthalpy and differential enthalpy control shall be field-installed.

BB. Economizer – Horizontal: The horizontal economizer shall contain the same features as the downflow economizer with the exception of barometric relief.

CC. Reference or Comparative Enthalpy: Reference Enthalpy is used to measure and communicate outdoor humidity. The unit receives and uses this information to provide improved comfort cooling while using the economizer. Comparative Enthalpy measures and communicates humidity for both outdoor and return air conditions, and return air temperature. The unit receives and uses this information to maximize use of economizer cooling, and to provide maximum occupant comfort control.

DD. Remote Potentiometer: The minimum position setting of the economizer shall be adjusted with this accessory.

EE. High Efficiency Unit (eStage) : The sStage option provides five stages of mechanical cooling with the ability to be at or below 25% compressor displacement at stage one.

FF. Frostat: This option is to be utilized as a safety device. The Frostat opens when temperatures on the evaporator coil fall below 10°F. The temperature will need to rise to 50°F before closing. This option should be utilized in low airflow or high outside air applications.

GG. LonTalk® Communications Interface: The LonTalk communications interface, when installed in a Voyager unit, allows the unit to communicate as a Tracer™LCIV device or directly with generic LonTalk Network Building Automation System Controls.

HH. Trane Communication Interface: This factory or field-installed option shall be provided to interface ReliaTel™ controlled units with the Trane Integrated ComfortTM systems.

II. CO2 Sensing: The CO2 sensor has the ability to monitor space occupancy levels within the building by measuring the parts per million of CO2 (Carbon Dioxide) in the air. As the CO2 levels increase, the outside air damper modulates to meet the CO2 space ventilation requirements.

JJ. Oversized Motors: Oversized motors shall be available for high static applications.

KK. Powered or Unpowered Convenience Outlet: This option is a GFCI, 120v/15amp, 2 plug, convenience outlet, either powered or unpowered. When the convenience outlet is powered, a service receptacle disconnect will be available. The convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected by the position of the disconnect or circuit breaker. This option can only be ordered when the Through the Base Electrical with either the Disconnect Switch, or Circuit Breaker, option is ordered. This option is available on all downflow models.

LL. Tool-less Hail Guards: Tool-less, hail protection quality coil guards are available for condenser coil protection.

MM.Manual Outside Air Damper: The rain hood and screen shall provide up to 25 percent outside air.

NN. Motorized Outside Air Dampers: Manually set outdoor air dampers shall provide up to 50 percent outside air. Once set, outdoor air dampers shall open to set position when indoor fan starts. The damper shall close to the full closed position when indoor fan shuts down.

OO. Modulating Powered Exhaust: A differential control system shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure and shall turn the exhaust fan on and off and modulate the barometric exhaust dampers to control the building pressure within an adjustable specified deadband.

PP. Roof Curb – Horizontal: The roof curb shall be designed to mate with the horizontal unit and provide support and a water tight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb design shall comply with NRCA requirements. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.

QQ. Ventilation Override: Ventilation Override shall allow a binary input from the fire/life safety panel to cause unit to override standard operation and assume one of three factory preset

ventilation sequences for Smoke Purge, Pressurization, or Exhaust. The three sequences shall be selectable based upon a binary select input.

RR. Zone Sensors: This option shall be provided to interface with the Micro equipped Voyagers and shall be available in either manual, automatic, programmable with night setback, with system malfunction.

SS. Digital Display Zone Sensor: The Digital LCD (Liquid Crystal Display) zone sensor has the look and functionality of standard zone sensors. This sensor includes a digital display of set point adjustment and space temperature in F (Fahrenheit) or C (Celsius). Includes FAN and SYSTEM buttons (supports the service functions of the standard sensor). E-squared memory stores last programmed set points. Requires 24 VAC (Volts AC). This sensor should be utilized with ReliaTel™ controls.

TT. Dual Thermistor Remote Zone Sensor: This sensor will allow the customer to reduce the total number of remote sensors to obtain space temperature averaging. This sensor should be utilized with ReliaTel controls.

PART 3 EXECUTION

3.1 INSTALLATION

A. Field coordinate power requirements with Division 16 contractor before ordering any equipment.

B. Install Work in accordance with state and local Building Inspection Department's standards.

C. Mount equipment from building roof.

D. Install remote panels and control wiring between remote control locations and unit. Install in accordance with Section 15900.

E. Install components furnished loose for field mounting.

F. Install electrical devices downstream of contactors furnished loose for field mounting. Division 16 contractor is responsible for providing remote disconnects for all mechanical equipment under this contract. Division 16 contractor is responsible for providing and installing power wiring to terminals on all mechanical equipment.

G. Install gas piping, combustion air and flue ducts per plans.

H. Furnish initial start-up and shutdown during first year of operation, including routine servicing and checkout.

END OF SECTION

SECTION 15850

AIR DISTRIBUTION

PART 1 GENERAL

1.1 GENERAL

A. Section 15010 is applicable.

1.2 BASIS OF DESIGN

A. Acceptable manufacturers for products specified under this section are listed below.
1. Flexible duct: Thermaflex, Flexmaster, Clecon
2. Flexible equipment connections: Durodyne, Ventafabrics
3. Volume control dampers: Ruskin, Greenheck, Nailor, United, Price
4. Fire/Smoke dampers: Ruskin, Greenheck, Nailor, United
5. Air diffusers and grilles: Price, Titus, Nailor, Metalaire

1.3 PRESSURE

A. All new supply, return, outdoor air, and exhaust air ducts are to be STD, 1" static pressure type, class "A" seal, ASHRAE/SMACNA.

PART 2 PRODUCTS

2.1 METAL DUCTWORK

A. Duct work shall be rectangular, oval, or round as shown on plans, and shall be fabricated from ASTM A653/A653M galvanized steel sheet, lock-forming quality. All fasteners shall be galvanized steel.

B. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards). Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
1. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
2. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

3. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
4. Provide standard 45-degree branch takeoffs per plans. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.
5. Seal ducts to ASHRAE/SMACNA Class A standard. No cloth duct tape will be allowed.

2.2 FLEXIBLE DUCTWORK

A. Flex ducts connections are for connecting round galvanized duct to air distribution devices. Maximum allowed length of any flex duct section shall be 5'-0". Flex duct shall be two ply vinyl film supported by helical wound spring steel wire; fiberglass insulation; vapor barrier film. Minimum R-6, max velocity 4000 fpm, pressure raing 10 iwg positive and 1 iwg negative. Temperature rating -20 degrees F to 200 degrees F. Basis of design is Thermaflex MK-E.

2.3 FLEXIBLE EQUIPMENT CONNECTIONS

A. Flexible connections shall be used for all duct connections to HVAC equipment and fans. Flexible connections shall be per SMACNA chapter 7, Figure 7-7 and 7-8. Flexible material for indoor installation shall be airtight heavy glass fabric, double coated with neoprene.

2.4 VOLUME CONTROL DAMPERS

A. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.

B. Fabricate splitter dampers of material matching duct gage to 24 inches size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with minimum 1/4 inch diameter rod.

C. Fabricate single blade dampers for duct sizes to 12 x 30 inch. Fabricate multi-blade damper 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.

D. Furnish locking, indicating quadrant regulators on single and multi-blade dampers with 2" standoff brackets. Where width exceeds 30 inches, furnish regulator at both ends.

2.5 FIRE DAMPERS

A. Damper shall be UL 555 listed and labeled as a 1-1/2 hour static fire damper. UL approved for dual directional air flow. Integral Sleeve Frame: Minimum 20 gage by 12 inches roll formed, galvanized steel. Apply factory sealant to dampers in HVAC systems with pressures to maximum 4 inches wg. Mill galvanized finish.
   1. Blades:
      a. Style: Curtain type, out of airstream.
      b. Action: Spring or gravity closure upon fusible link release.
      c. Orientation: Horizontal or vertical as indicated on plans.

d. Material: Minimum 24 gage roll formed, galvanized steel.

2. Closure Springs: Type 301 stainless steel, constant force type, if required.
3. Temperature Release Device: fusible link, 165 degrees F.

B. Type "B" fire dampers shall have no less than 90% free area, shall have 160 degree F fusible link, and integral 12" long 20 gauge integral sleeve and preformed picture frame mounting angles. Basis of design is Ruskin IBD2 Style B.

C. For applications where damper is in wall without interconnecting duct, or where noted as such, damper frame shall be size shown on drawing and shall be type A.

D. For applications where damper is in wall with a grille on both sides or on one side, use thin line type A damper, Ruskin IBDT or approved manufacturer listed above.

E. Provide hinged, insulated access panels with part turn latches in ductwork to all fire dampers where access is not otherwise possible. Duct access panels shall be insulated and stenciled "F.D." with 2" high black letters on light surfaces, light letters on dark surfaces.

F. Picture Frame Mounting Angles:
1. One-piece, roll formed retaining angles 1-1/2 x 1-1/2 inches.
2. Factory matched and shipped attached to damper.

2.6 TURNING DEVICES AND EXTRACTORS

A. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.

B. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.

2.7 INSPECTION PANELS

A. Inspection panels shall be installed in plenums and ductwork in order to facilitate inspection of filters, fans, dampers, and coils. Panels into spaces large enough for a person to enter shall be 24"x24" minimum. Panels into smaller spaces shall be 12"x12" minimum. Panels in insulated metal duct shall be 22 gauge galvanized frame with 24 gauge galvanized steel door panel and shall be gasketed, double wall insulated with 1" fiberglass insulation. Panels shall be piano hinged on one side with galvanized cam lock on the other. Inspection panels with sheet metal screw fasteners are not acceptable.

2.8 AIR OUTLETS AND INLETS

A. Air diffusers and grilles are scheduled on the plans. No on-board dampers shall be allowed for ceiling mounted diffusers and grilles. Dampers should be purchased and installed separately at the point of each branch take-off from trunk ducts.

2.9 FILTERS

A. Normal operating filters for all systems shall be disposable pleated media type filter of a size standard for the unit(s) installed.

B. Construction phase filters shall be dry fiberglass media, double wall box panel type, of a size standard for the unit(s) installed. Only construction phase filters shall be used during construction, and normal operating filters shall be installed by contractor after final punch-out. Construction phase filters shall be checked regularly as the project progresses and changed as needed. Units shall not be run without filters.

C. For projects with DDC systems, dirty filter switches shall be installed on equipment filters to indicate, through the DDC, when these filters are dirty.

2.10 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical characteristics of powered equipment are shown on the Div. 16 plans.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify sizes of equipment connections before fabricating transitions.

B. Verify rated walls are ready for fire damper installation.

C. Verify ducts and equipment are ready for installation and accessories.

D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 FIRE DAMPERS

A. Install fire dampers at locations shown on drawings. Installation of fire dampers shall comply with SMACNA Fire, Smoke, and Radiation Damper Installation Guide for HVAC systems.

1.	Basic installation	Figure 1
2.	Breakaway connections	Figure 2
3.	Specific Installation	Figure 5
4.	Damper out of wall	Figure 12
5.	Opening protection	Figure 15

B. Fire damper openings in metal stud walls shall be internally framed on four sides from vertical members for rigid support of opening with internal gypsum board liner per SMACNA installation guide or manufacturer's guidelines for installation in metal stud walls.

3.3 METAL DUCTS

A. Install in accordance with SMACNA Duct Construction Standards – Metal and Flexible, for pressures and seal as specified herein.

B. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

3.4 FLEXIBLE DUCTS

A. Flex duct connections shall be made with a band on inner liner and another band to secure vapor jacket. Max length of any flexible duct section is 5'-0". Tape all loose ends with foil tape, no cloth duct tape is allowed.

3.5 FLEXIBLE EQUIPMENT CONNECTIONS

A. Install on inlets and outlets of all powered equipment prior to any duct hangers. Manufacturer shall provide with equipment where option is available. Install connecting duct in a straight line with equipment connection, and prevent flexible connection from being in tension while equipment is running.

3.6 DUCT SMOKE DETECTORS

A. Shall be provided and wired by Division 16, installed in duct by Division 15.

3.7 FILTERS

A. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.

B. Install filter gage static pressure tips upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum, in accessible position. Adjust and level.

3.8 INSPECTION PANELS

A. Install inspection panels at the following locations and as indicated on drawings:
1. Before and after each automatic control damper.
2. Before and after each fire, smoke, and/or combination fire and smoke damper.

B. Access Door Sizes: Install minimum 12 x 12 inch size for hand access, 18 x 18 in. size for shoulder access. Review locations prior to fabrication.
1. Mark access doors for fire and smoke dampers on outside surface, with minimum 2 in. high letters reading: FIRE/SMOKE DAMPER, SMOKE DAMPER, OR FIRE DAMPER.

3.9 AIR DIFFUSERS AND GRILLES

A. Install balancing dampers for diffusers and grilles at branch take-off from main trunk, no dampers allowed on-board diffusers or grilles unless explicitly specified on plans. Do not install manual volume dampers next to grilles unless required by field conditions.

B. Do not locate air registers, diffusers or grilles in floors of toilet or bathing rooms.

C. Paint ductwork, cans, and plenums visible behind air outlets and inlets matte black.

D. Install safety screen where fan inlet or outlet is exposed.

END OF SECTION