

**CITY OF KIRKLAND**  
**City Hall Annex Building VRF HVAC Installation**

**JOB NO. 52-23-CMO**  
**CIP NO. GGC 0420000**  
**310 1<sup>st</sup> St, Kirkland, WA 98033**



**PROJECT MANUAL**

**December 6, 2023**



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CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON

SECTION 00 00 02  
APPROVED FOR CONSTRUCTION

**CITY OF KIRKLAND  
CITY MANAGER'S OFFICE  
FACILITIES DIVISION**

**City Hall Annex Building VRF HVAC Installation  
310 1<sup>st</sup> St, Kirkland, WA 98033  
JOB NO. 52-23-CMO  
CIP NO. GGC 0420000**

*Approved for Construction:*

*Lee Ann Skipton*

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Lee Ann Skipton  
Facilities Manager



**INVITATION FOR BIDS**

**City of Kirkland  
City Hall Annex Building VRF HVAC Installation  
CIP # GGC 042 0000  
JOB # 52-23-CMO  
310 1<sup>st</sup> St, Kirkland, WA 98033**

The City of Kirkland invites interested and qualified contractors to submit sealed bids for the following project:

TITLE:	City Hall Annex Building VRF HVAC Installation
ESTIMATED BID AMOUNT:	Approximately \$211,295 excluding sales tax
BID SUBMITTAL TIME/DATE/LOCATION:	Prior to 2:00 PM on December 21, 2023 at  Cashier - City of Kirkland 123 5 <sup>th</sup> Avenue Kirkland WA 98033  Bids can be hand delivered or mailed, but must be received by the City, at the Cashier counter at City Hall, prior to the stated date and time.
PUBLIC BID OPENING	2:00 PM on December 21, 2023  Council Chambers City of Kirkland 123 5 <sup>th</sup> Avenue Kirkland WA 98033  Bids will be publicly opened and read aloud and initially verified for completeness. Bid results will be posted online after the public bid opening. The City reserves the right ascertain full compliance with the bid proposal requirements in a more detailed review after the public bid opening.
PRE-BID CONFERENCE	December 12, 2023 @ 1:00 PM 310 First St, Kirkland, WA 98033  Attendance at one pre-bid conference is mandatory. Please check-in upon arrival. Attendance on Nov. 8, 2023 at Job 49-23-CMO pre-bid conference is accepted as fulfillment of this requirement.



**BID SUBMITTAL ENVELOPE:**

All bid submittal envelopes must be opaque, sealed, and *plainly marked on the outside* with "Bid for City Hall Annex Building VRF HVAC Installation, Job #52-23-CMO" The bid submittal envelope must contain all documents required at the bid submittal time. NO BIDS WILL BE ACCEPTED AFTER THE BID SUBMITTAL TIME. Upon submittal, bids will be marked by the City of Kirkland with the time and date received, and then secured until the date and time set for the public bid opening.

**ITEM FOR BID:**

The Project consists of all work to be performed as indicated in the Project Manual, Drawings, and any posted Addenda. The Project includes providing a variable refrigerant system at City of Kirkland City Hall Annex Building, which includes multiple wall and ceiling mounted terminal units to provide cooling and supplemental heating within the existing building. Existing hot water radiant heating system to remain. Perform TAB and cleaning of existing ductwork and exhaust fans. Provide Commissioning of new VRF system and exhaust fans. Provide electrical power for all units, including a rotary phase converter for 3 phase power to the new VRF condensing unit. Provide two ceiling fans in large office area and additional work as identified in the Contract Documents.

Substantial Completion shall be achieved within sixty (60) calendar days after the Owner's Notice to Proceed. Final Completion shall be achieved within fifteen (15) calendar days after Substantial Completion.

**BID DOCUMENTS:**

The City will not sell bid packages. Plans, specifications, and addenda may be viewed and obtained online at [www.bxwa.com](http://www.bxwa.com). Click on: "Posted Projects"; "Public Works"; "City of Kirkland". The Bidders List is maintained by the Builder's Exchange of Washington, Inc. Registration for the bidder's list may be made online, by phoning (425) 258-1303, or at Builder's Exchange of Washington located at 2607 Wetmore Ave, Everett, WA.

This online plan room provides Bidders with fully usable online documents with the ability to: download, view, print, order full/partial plan sets from numerous reprographic sources, and a free online digitizer/take-off tool. It is recommended that Bidders "Register" in order to receive automatic e-mail notification of future addenda, schedule changes, and to place themselves on the "Self-Registered Bidders List". Bidders that do not register will not be automatically notified of addenda and will need to periodically check the on-line plan room for addenda issued on this project. Contact Builders Exchange of Washington at (425) 258-1303 should you require assistance with access or registration.

The content available through [bxwa.com](http://bxwa.com) is our property or the property of our licensors and is protected by copyright and other intellectual property laws. Access to project documents is intended for use by bidders (general contractors/prime bidders, subcontractors and suppliers), agency personnel and agency's consultants, as well as for personal, noncommercial, use by the public. You may display or print the content available for these uses only. "Harvesting" (downloading, copying, and transmitting) of any project information and/or project documents for purposes of reselling and/or redistributing information by any other party is not allowed by BXWA.



**CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON**

**SECTION 00 00 10  
INVITATION FOR BIDS**

**QUESTIONS:**

Questions regarding this project shall be submitted in writing to Lee Ann Skipton (lskipton@kirklandwa.gov) via e-mail with the subject line of "Question - City Hall Annex Building VRF HVAC Installation, Job #52-23-CMO". Questions received via phone or any other method other than e-mail will not be accepted. Bidders shall submit questions no later than December 14, 2023, at 1:00 PM. Receipt of questions will be acknowledged however bidder questions will be answered via addendum.

**CONTRACTOR REGISTRATION:**

Pursuant to RCW 39.06, the bidder shall be registered and licensed as required by the laws of the State of Washington, including but not limited to RCW 18.27.

In order to perform public work, the successful bidder and subcontractors, prior to Contract award, shall hold or obtain such licenses and registrations as required by State Statutes and Codes, and Federal and local laws and regulations and a City of Kirkland business license.

**BID SECURITY:**

Certified check, bank cashier's check or bid bond congruent with the Bid Bond Security Form (Section 00 43 30) as identified in the "Instructions to Bidders" is required to be submitted with each proposal, in the amount equal to five percent (5%) of the total base bid plus additive alternate bids (if applicable). Make bid security payable to the City of Kirkland, furnish bond executed by a licensed bonding agency authorized to do business in the locality of the Project. No bid shall be considered unless accompanied by such bid security.

**RIGHT TO ACCEPT OR REJECT:**

The Contract will be awarded to the responsible bidder submitting the lowest proposal complying with these contract documents provided the bid is reasonable and in the best interest of the City of Kirkland.

The Owner (City of Kirkland) reserves the right to reject any or all bid proposals and the right to waive any irregularities or informalities in any proposal, subject to the Laws of the State of Washington as pertinent to Public Works and congruent with requirements and policies of City of Kirkland, and as may be deemed in the best interest of the Owner. In particular, the Owner reserves the right to reject a bid which is not accompanied by the documents specified in the Instructions to Bidders and incomplete or irregular bids which may exclude any item(s) as may be required by the Project Manual.

The City of Kirkland in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 USC 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21 Nondiscrimination in Federally-Assisted Programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this invitation, disadvantaged business enterprises as defined in 49 CFR Part 26 will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

City of Kirkland is an Equal Opportunity and Affirmative Action Employer.

Small, Minority and Women-Owned firms are encouraged to submit bids.



**CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON**

**SECTION 00 00 10  
INVITATION FOR BIDS**

**WITHDRAWAL OF BID:**

No bid may be withdrawn after the date set for the public bid opening for a period of sixty (60) calendar days.

**NOTICE GIVEN BY ORDER OF THE CITY OF KIRKLAND:**

Published in the Daily Journal of Commerce: December 6, 2023

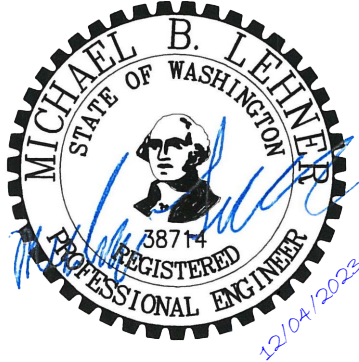
**END OF SECTION**



SEALS PAGE

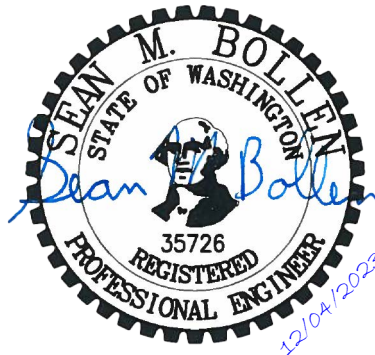
The undersigned hereby certifies that the Divisions 01, 20 and 23 Technical Specifications in this Project Manual were prepared by me or under my direct supervision, and that I am duly registered under the laws of the State of Washington and hereby affix my "Professional Seal".

Wood Harbinger, Inc.  
Michael B. Lehner, PE



The undersigned hereby certifies that the Division 26 Technical Specifications in this Project Manual were prepared by me or under my direct supervision, and that I am duly registered under the laws of the State of Washington and hereby affix my "Professional Seal".

Wood Harbinger, Inc.  
Sean M. Bollen, PE



END OF DOCUMENT



**BIDDER'S CHECKLIST**

The omission or deletion of any bid item may be considered non-responsive and may be cause for the rejection of the bid.

1. ☐ Has a bid bond or certified check been enclosed with your bid? Is the amount of the bid guaranty at least 5 percent of the total amount of the bid?
2. ☐ Has the proposal been properly completed and signed? Do written amounts on the proposal agree with the amounts shown in the figures?
3. ☐ Have you bid on all items including, if applicable, all alternates?
4. ☐ Have you acknowledged all addenda, if any, in the Bid Form (Section 00 41 00)
5. ☐ Do not submit any of the forms still attached to the Project Manual. Remove or copy the forms and submit in the sealed envelope as directed.
6. ☐ Are you and all your subcontractors familiar with the schedule of value requirements including but not limited to the required placement of 5% of the bid for work between substantial completion and final completion?
7. ☐ Have you reviewed the Bidder's Qualifications and Bidder Responsibility Criteria forms and understand these obligations if you are selected as the apparent low bidder?
8. The following items must be completed and included within the sealed bid submittal envelope:
  - A. ☐ **Bid Form (00 41 00)** The bid price must be shown in the space provided. Show price in both words and figures. The bid form must be completed in full, signed, and dated.
  - B. ☐ **Bidder's Qualifications Form (00 10 20):** This form must be filled in and signed. The owner reserves the right to check all statements and to judge the adequacy of the bidder's qualifications.
  - C. ☐ **Bid Bond Security Form (00 43 30):** A surety issued bid bond must be executed by the bidder and its surety company. The amount of the bid bond shall be not less than five (5%) of the total bid and may be shown in dollars or on a percentage basis. A cashier's check payable to the City of Kirkland and issued for an amount not less than 5% of the total bid may be submitted in lieu of a bid bond.
  - D. ☐ **Non-Collusion, Bidder Responsibility, and Minimum Wage Certification Form (00 15 40):** This form must be filled in, signed, and notarized.
9. All bidders must submit the following either within the sealed bid submittal envelope **or** within the stated time requirement after the published bid submittal time. If submitting after the published bid submittal time, Bidder must hand deliver this form to the Cashier Counter at City Hall, 123 5<sup>th</sup> Avenue, Kirkland WA 98033.
  - A. ☐ **Subcontractor Identification List (1 of 2) (00 44 00):** This form must be filled in and submitted within one (1) hour of the published bid submittal time, identifying subcontractors for HVAC, Plumbing, and Electrical.



10. The following forms are to be executed after the contract is awarded:

- A. ☐ **AGREEMENT FORM (00 52 20):** This agreement to be executed by the successful bidder.
  - B. ☐ **PERFORMANCE BOND (00 61 40):** One hundred percent of the Contract Price to be executed by the successful bidder and his surety company. The surety on such bonds shall be a duly authorized surety company satisfactory of the Owner.
  - C. ☐ **LABOR MATERIALS AND TAXES BOND (PAYMENT BOND) (00 61 41):** One hundred percent of the Contract Price to be executed by the successful bidder and his surety company. The surety on such bonds shall be a duly authorized surety company satisfactory of the Owner.
  - D. ☐ **RETAINAGE INVESTMENT OPTION (00 45 70):** This agreement to be executed by the successful bidder.
  - J. ☐ **CERTIFICATES OF INSURANCE (00 60 00):** To be executed by the successful bidder and by an acceptable insurance company. The City of Kirkland must be named as an additional insured.
  - K. ☐ **CONTRACTOR'S CERTIFICATION (00 83 00):** Concerning Labor Standards and Prevailing Wage Requirements. Submit Statement of Intent to Pay Prevailing Wages. (Form F 700-029-000, available at Offices of Washington State Department of Labor and Industries).
11. ☐ Special Note: Prior to commencing work, the Contractor and all subcontractors must have applied and paid for a City of Kirkland Business License.

**END OF SECTION**



### BIDDER'S QUALIFICATIONS

Each bidder submitting a proposal for this Project shall submit, as part of its bid, the following information:

1. Bidder (Contractor): \_\_\_\_\_
2. Contractor's Address: \_\_\_\_\_
3. Telephone Number and Area Code: \_\_\_\_\_
4. IRS Federal Employer's Identification Number: \_\_\_\_\_
5. Current State Unified Business Identification Number: \_\_\_\_\_
6. Number of years engaged in the construction business under the present company name.  
Number of Years: \_\_\_\_\_  
Name: \_\_\_\_\_
7. Total value of contracts in force: \_\_\_\_\_
8. To qualify for bidding for this project, the General Contractor, as the legal entity bidding the project, shall have acted as general contractor for and successfully completed four (4) projects, including at least two (2) publicly bid projects. The four projects must be similar size and scope to this project, each with a construction value of \$250,000 dollars or greater, within the past five (5) years. The contractor must demonstrate a body of work of similar complexity and similar construction cost.

In evaluating whether the projects were "successfully completed," the Owner may check references of its choice to evaluate the Bidder's performance including, but not limited to, the following areas: quality control, safety record, timeliness of performance, use of skilled personnel, management of subcontractors, availability and use of appropriate equipment, compliance with contract documents, and/or management of submittals, change orders, and close-out.

For the purposes of the Owner evaluating the Contractor's compliance with the criterion of "similar size and scope to this project," the Owner will look for publicly bid buildings including government offices, civic/legislative facilities, public safety facilities, schools, libraries, convention centers, and fire service facilities which are complete HVAC installation or replacement projects including but not limited to roof top units, heat pumps, VRF, and mini-split systems.

9. **List below project(s) which meet the requirements as outlined above.**  
(Attach additional project pages if required)

Project Name: \_\_\_\_\_  
Project Value: \_\_\_\_\_  
Reference Name, phone number and email: \_\_\_\_\_



Completion Year: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Value: \_\_\_\_\_

Reference Name, phone number and email: \_\_\_\_\_

Completion Year: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Value: \_\_\_\_\_

Reference Name, phone number and email: \_\_\_\_\_

Completion Year: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Value: \_\_\_\_\_

Reference Name, phone number and email: \_\_\_\_\_

Completion Year: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Value: \_\_\_\_\_

Reference Name, phone number and email: \_\_\_\_\_

Completion Year: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Value: \_\_\_\_\_

Reference Name, phone number and email: \_\_\_\_\_

Completion Year: \_\_\_\_\_

10. Recent significant projects completed by Bidder including owner's name, Approximate cost, and completion date:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

11. Washington State Contractor's Registration Number: \_\_\_\_\_

12. Bonding Reference: \_\_\_\_\_

\_\_\_\_\_

13. Bonding Capacity: \_\_\_\_\_



CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON

SECTION 00 10 20  
BIDDER'S QUALIFICATIONS

Bidder:

By (Name): \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**This Form Must Be Submitted with the Bid.**

**END OF SECTION**



## **BIDDER'S RESPONSIBILITY CRITERIA**

### **Low Responsible Bidder**

It is the intent of the Owner to award a contract to the low responsible bidder. The Bidder must meet the minimum project bidding requirements outlined in Section 00 10 20 Bidder's Qualifications Section, Item 8.

In addition, the Owner shall consider an overall accounting of the items listed below which the bidder must meet. The bidder must submit the Non-Collusion, Bidder Responsibility, and Minimum Wage Certification Form (00 15 40) demonstrating that they meet the following criteria:

### **Bid Procedures and Conditions**

#### **Qualifications of Bidder**

- A. Bidders must meet the minimum qualifications of RCW 39.04.350, as amended:  
"Before award of a public works contract, a bidder must meet the following responsibility criteria to be considered a responsible bidder and qualified to be awarded a public works project. The bidder must:
- (a) At the time of bid submittal, have a certificate of registration in compliance with chapter 18.27 RCW;
  - (b) Have a current State unified business identifier number;
  - (c) If applicable, have industrial insurance coverage for the bidder's employees working in Washington as required in Title 51 RCW; an employment security department number as required in Title 50 RCW; and a State excise tax registration number as required in Title 82 RCW; and
  - (d) Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).
  - (e) If bidding on a public works project subject to the apprenticeship utilization requirements in RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the date of the bid solicitation; and
  - (f) Have received training on the requirements related to public works and prevailing wage under this chapter and chapter 39.12 RCW. The bidder must designate a person or persons to be trained on these requirements. The training must be provided by the department of labor and industries or by a training provider whose curriculum is approved by the department. The department, in consultation with the prevailing wage advisory committee, must determine the length of the training. Bidders that have completed three or more public works projects and have had a valid business license in Washington for three or more years are exempt from this subsection. The department of labor and industries must keep records of entities that have satisfied the training requirement or are exempt and make the records available on its web site. Responsible parties may rely on the records made available by the department regarding satisfaction of the training requirement or exemption; and



- (f) Until December 31, 2013, not have violated RCW 39.04.370 more than one time as determined by the Department Of Labor And Industries.
- B. In addition to the bidder responsibility criteria above, the bidder must also meet the following relevant supplemental bidder responsibility criteria applicable to the project:
- a. The Bidder shall not currently be debarred or suspended by the Federal government. The Bidder shall not be listed as a current debarred or suspended bidder on the U.S. General Services Administration's "Excluded Parties List System" website. Bidder debarment or suspension status may be verified through this website: <http://www.sam.gov/>. The Owner may also use other sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
  - b. The Bidder shall not owe delinquent taxes to the Washington State Department of Revenue, without a payment plan approved by the Washington State Department of Revenue. The Bidder shall not be listed on the Washington State Department of Revenue's "Delinquent Taxpayer List", which may be verified at the following website:  
<http://dor.wa.gov/content/fileandpataxes/latefiling/dtlwest.aspx>. The Owner may also use other sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
  - c. The Bidder shall not have been convicted of a crime involving bidding on a public works contract within five (5) years prior to the bid submittal deadline. The Bidder shall provide a duly executed sworn statement (on the included form, or on a form otherwise determined to be acceptable by the Owner), that the Bidder has not been convicted of a crime involving bidding on a public works contract. The Owner may also use independent sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental.
  - d. The Bidder's standard subcontract form shall include the subcontractor responsibility language required by RCW 39.06.020, and the Bidder shall have an established written procedure which the Bidder uses to validate the responsibility of each of its subcontractors. The Bidder's subcontract form shall also include a requirement that each of its subcontractors shall have and document a similar procedure to determine whether the sub-tier subcontractors with whom it contracts are also "responsible" contractors as defined per RCW 39.06.020. The Owner may also use independent sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
  - e. The Bidder shall not have a record of prevailing wage complaints filed against the Bidder within five (5) years prior to the bid submittal date that demonstrates a pattern of failing to pay workers prevailing wages, unless there are extenuating circumstances that are acceptable to the Owner. The Owner may also use independent sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.



- f. The Bidder shall not have had any public works contract terminated for cause by a government agency during the five (5) year period immediately preceding the bid submittal deadline for the project, unless there are extenuating circumstances acceptable to the Owner. The Bidder shall provide a duly executed sworn statement (on the included form, or in a form otherwise determined to be acceptable by the Owner), that the Bidder has not had any public works contract terminated for cause by a government agency during the five (5) year period immediately preceding the bid submittal deadline for the project. The Owner may also use independent sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
  - g. The Bidder shall not have a record of excessive claims filed against the retainage or payment bonds for public works projects within three (3) years of the bid submittal date, that demonstrate a lack of effective management by the Bidder of making timely and appropriate payments to its subcontractors, suppliers, and workers, unless there are extenuating circumstances which are acceptable to the Owner. The Owner may also use independent sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
  - h. Within two (2) years prior to the bid submittal date the Bidder shall not have had a project construction site shut down due to a safety violation (i.e., WISHA / OSHA written citations) from the Washington State Department Labor & Industries or analogous agency with jurisdiction in the location the work was performed, regardless of whether such willful and/or serious safety violations have been abated or not. The Bidder shall maintain compliance with all safety and health requirements (i.e., WISHA / OSHA) from the Washington State Department Labor & Industries (or analogous agency with jurisdiction in the location the work is performed). The Owner may verify such information provided with the Washington State Department Labor & Industries or analogous agency with jurisdiction in the location the work was performed. The Owner may also use other sources of information that may be available to otherwise determine whether the Bidder is in compliance with these supplemental criteria.
- C. If a Bidder fails to supply the required bidder responsibility documentation, information, or materials, then Bidder may be determined by the Owner to be non-responsive, and the bid may be rejected on this basis. If the Owner determines the apparent successful bidder does not meet the bidder responsibility criteria above and is therefore not a responsible bidder, the Owner shall notify the bidder in writing with the reasons for its determination. If the bidder disagrees with this determination, it may appeal the determination within twenty-four (24) hours of receipt of the Owner's determination by presenting additional written information to the Owner. The Owner will consider the additional information before issuing its final determination. If the Owner's final determination affirms that the bidder is not responsible, the Owner will not execute a contract with any other bidder until two (2) business days after the bidder determined to be not responsible has received the final determination. Please note that the above-described information, materials, and documentation requested by the Owner for purposes of determining Bidder responsibility is not necessarily exclusive, and the Owner expressly reserves the right to request additional information, materials, and



documentation as may be determined to be necessary or desirable by the Owner in order to evaluate and determine Bidder's compliance with the above-described bidder responsibility criteria. At all times, the Owner may also use other sources of information that may be available to otherwise determine whether the Bidder is in compliance with the forgoing bidder responsibility criteria.

**END OF SECTION**



**NON-COLLUSION, BIDDER RESPONSIBILITY, AND  
MINIMUM WAGE CERTIFICATION FORM**

In accordance with the Contract Documents and Instructions to Bidder, the Bidder must provide the following sworn statement and certification:

Bidder (Contractor): \_\_\_\_\_

Contractor Address: \_\_\_\_\_

Telephone No. \_\_\_\_\_ E-Mail: \_\_\_\_\_

I, \_\_\_\_\_, the undersigned declarant, as the duly authorized representative on behalf of \_\_\_\_\_ (herein the "Bidder") hereby make this declaration on the basis of facts within the scope of my first-hand knowledge and authority to which I am competent to testify:

1. I hereby certify, swear and affirm under penalty of perjury, that the Bidder, as of the date of this declaration (below) meets all of the minimum bidder responsibility qualifications of RCW 39.04.250, as amended.
2. I hereby certify, swear and affirm under penalty of perjury, that the Bidder, as of the date of this declaration (below) meets all of the minimum project bidding requirements outlined in the Bidder's Qualifications Form (Section 00 10 20) Item 8, if any.
3. I hereby certify, swear and affirm under penalty of perjury, that the Bidder, as of the date of this declaration (below) meets all of the supplemental bidder responsibility criteria as set forth in the Bidder's Responsibility Criteria (Section 00 15 30), Section B.
4. I hereby certify, swear and affirm under penalty of perjury, that the undersigned is the person that submitted the bid herewith, that such bid is genuine and not a sham or collusive, or made in the interest of any person not therein named; and he/she further says that said Bidder has not directly or indirectly induced or solicited any Bidder on the above work or supplies to put in a sham bid, or any other person or corporation to refrain from bidding; and that said Bidder has not in any manner sought by collusion to secure to himself or to any other person an advantage over any other Bidder or Bidders.
5. I hereby certify, swear and affirm under penalty of perjury, that in connection with the performance of the work of this Project, if awarded, I will pay each classification of laborer, workman, or mechanic employed in the performance of such work; not less than the prevailing rate of wage or not less than the minimum rate of wages as specified in the Contract Documents.



CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON

SECTION 00 15 40  
BIDDER'S  
CERTIFICATION

Signed under penalty of perjury under the laws of the State of Washington this \_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_, at \_\_\_\_\_, Washington.

Bidder (Contractor): \_\_\_\_\_

Signature: \_\_\_\_\_

Name (Printed): \_\_\_\_\_

Title: \_\_\_\_\_

STATE OF WASHINGTON }  
COUNTY OF \_\_\_\_\_ } ss.

I certify that I know or have satisfactory evidence that \_\_\_\_\_ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was duly authorized execute the instrument and acknowledged it as the \_\_\_\_\_ of \_\_\_\_\_, to be the free and voluntary act of such party for the uses and purposes herein mentioned.

DATED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for the State of Washington

Name (Printed): \_\_\_\_\_

Residing at: \_\_\_\_\_

Commission Expiration: \_\_\_\_\_

NOTICE TO ALL BIDDERS

To report bid rigging activities call: 1-800-424-9071

The U.S. Department of Transportation (USDOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., ET. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the USDOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

**END OF SECTION**



**INSTRUCTION TO BIDDERS**

**A. EXAMINATION OF SITE AND CONSTRUCTION DOCUMENTS**

1. Before submitting a proposal, the bidder shall:
  - a. Carefully examine the Project Manual, Drawings, and any Addenda
  - b. Visit the site of the work. Bidders are required to attend a pre-bid conference on site (Section 00 00 10). Attendance on Nov. 8, 2023 at Job 49-23-CMO pre-bid conference is accepted as fulfillment of this requirement.
  - c. Fully inform itself of existing conditions and limitation, relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of its obligation to furnish all material and labor necessary to carry out the provisions of this contract.
  - d. Rely entirely upon its own judgment in making its bid,
  - e. Include in its bid a sum sufficient to cover all items required by the contract including all labor, materials, services, and incidentals necessary to complete this project.

**B. ADDENDA AND INTERPRETATIONS**

Bidders shall promptly notify the City of Kirkland of any ambiguity, inconsistency, or error which they may discover upon examination of the Project Manual, Drawings, and any Addenda or of the site and local conditions.

Bidders requiring clarification or interpretation of the Project Manual, Drawings, and/or any Addenda shall provide a written request to Lee Ann Skipton ([lskipton@kirklandwa.gov](mailto:lskipton@kirklandwa.gov)) via e-mail with the subject line of "Question: City Hall Annex Building VRF HVAC Installation Job 52-23-CMO". Requests received via phone or any other method other than e-mail will not be accepted. Bidders shall submit requests no later than December 14, 2023 at 1:00 PM. Receipt of requests will be acknowledged however response will be via addendum.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Project Manual and Drawings. Any interpretation, correction or change of the Project Manual, Drawings, and any Addenda made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, and changes.

Failure of any bidder to receive Addenda shall not relieve any such bidder from any obligation under its bid as submitted. All Addenda so issued shall become part of the Contract Documents. Bidders shall acknowledge receipt of all Addenda, if any, on the Bid Form. Failure to do so may result in the bid being declared non-responsive.

No oral or written statements by Owner, Engineer, Architect, or other representative of the Owner shall, in any way, modify the Project Manual, Drawings, and any Addenda whether made before or after letting the Contract.



C. PRODUCT SUBSTITUTIONS:

1. Substitutions: Bids must be based upon the specific articles and materials named in the Project Manual, Drawings, and any Addenda. Substitution may be made only under the following conditions:
  - a. Prior to Bid Opening: No later than December 14, 2023 at 1:00 PM, bidders may submit to the Owner's Representative (Section 01 25 00) written requests for approval of articles or materials, accompanied by complete descriptions, technical data and samples. Approval or rejection of the proposed substitutions will be made by addenda issued to all bidders. Submit material/product requests as specified in Section 01 25 00 to Mike Lehner (Mlehner@WoodHarbinger.com) via e-mail with the subject line of "Annex HVAC Job 49-23-CMO: Substitution". Requests received via phone or any other method other than e-mail will not be accepted. Receipt of requests will be acknowledged however response will be via addendum.
  - b. After Award of Contract: Approval of substitution will be made only in exceptional cases where the Contractor submits satisfactory evidence to the City of Kirkland that through no fault of its own, specified or otherwise approved items cannot be obtained in time to avoid delay to the work. Approval in such cases shall conform to the other requirements above.

D. BID FORM (Section 00 41 00)

Bids must be submitted on and according to the Bid Form. Fill in all spaces. Bids shall not contain any recapitulation of work done. State numbers in writing and in figures. Completed form must be without interlineation, alteration or erasure. Signatures shall be in longhand. The bid price(s) for the work as specified in the Project Manual, Drawings, any Addenda and any Alternates must be the total price to cover all items required by the contract including all labor, materials, services, taxes, permits, and incidentals necessary to complete this project.

E. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of the power of attorney.

F. ORAL AND TELEGRAPHIC BIDS

Oral and telephonic modifications of bids cannot be considered.

G. SUBMISSION OF BID

Enclose all required bid submittal documents an envelope, as indicated in the Invitation to Bid. Deliver as indicated in the Invitation to Bid. Bidder is responsible for delivery of bid at or before the time set for bid opening. The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such



bidder is properly qualified to carry out the obligation of the contract and to complete the work contemplated therein. Conditional bids will not be accepted. No proposal or bid may be changed after the time set for receiving bids.

**H. BID BOND**

Each bidder agrees to furnish a certified check, bank cashier's check, or bid bond in the amount equal to five percent (5%) of the total base bid plus additive alternative bids (if applicable) within its bid proposal. Failure to provide this bid security when required shall render the bid non-responsive. The right is reserved to hold the bid security of the three lowest bidders until the award of the contract or for a period of sixty (60) days, whichever is the shorter time. Bids of all unsuccessful bidders will be returned as soon as feasible after the bid opening.

**I. WITHDRAWAL OF BIDS**

Any bidder may withdraw its bid either personally or by written request at any time prior to the time set for the bid opening. No bid may be withdrawn or modified after the time set for opening unless and until the award of the contract is delayed for period exceeding sixty (60) days.

**J. TIME OF COMPLETION AND LIQUIDATED DAMAGES**

The Owner can issue a Limited Notice to Proceed for material procurement at any time after contract execution. Bidder must agree to commence procurement work within 14 calendar days of receipt of the Limited Notice to Proceed. The Owner can issue a Complete Notice to Proceed for at any time after materials are procured. Bidder must agree to commence work within fourteen (14) calendar days of receipt of the Complete Notice to Proceed and achieve Substantial Completion of the Work within sixty (60) consecutive calendar days of the date of the Complete Notice to Proceed, and to achieve Final Completion of the work within fifteen (15) consecutive calendar days thereafter. Bidder must agree to pay as liquidated damages the sum of \$500.00 for each consecutive calendar day that Substantial Completion is delayed and the sum of \$200.00 thereafter for each consecutive calendar day that Final Completion is delayed. Liquidated damages have been established based on reasonable estimation of actual damages that will be incurred by City of Kirkland in the event the Contractor fails to complete the Work in the time stipulated.

**K. SECURITY FOR FAITHFUL PERFORMANCE**

Simultaneously with its delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of the Contract and for payment of all persons performing labor under the Contract and furnishing material or services in connection with the Contract as described in the Contract Documents. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner, registered in the State of Washington, Insurance Commissioner's Office. List Bonding Agent and address of same.



**L. INSURANCE**

The Contractor shall obtain such construction insurance as is set forth in Section 00 60 00 "Bonds and Certificates."

**M. QUALIFICATIONS OF BIDDERS**

Bidder must meet all criteria set forth in the Bidder's Qualifications (Section 00 10 20), Item 8 and the Bidder's responsibility Criteria in Section 00 15 30). The Owner may make such investigations as necessary to determine the ability of a Bidder to perform the work, and the Bidder shall furnish all such information and data as may be requested prior to bidding. The Owner reserves the right to reject any bid if the evidence submitted by, or if investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to perform the obligations of the Contract and to complete the work contemplated therein. Conditional Bids will not be accepted.

**N. LAWS AND REGULATIONS**

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they shall be deemed to be included in the Contract the same as though written out in full therein. Bidders are advised that if successful, they will be required to meet all applicable federal, state, and local laws pertaining to permits, licenses, fees and taxes, as well as laws pertaining to employment and wages. Bidders are responsible for determining the extent and applicability of such laws.

**O. AWARD OF THE CONTRACT/REJECTION OF BIDS**

1. The Contract will be awarded to the responsible bidder submitting the lowest proposal complying with the condition of the Invitation for Bid and these contract documents provided the bid is reasonable and in the best interest of The Owner. Items in this bid, approved for contract by City of Kirkland, shall be awarded by the City of Kirkland.
2. If applicable, City of Kirkland reserves the right to select, or not select, all or individual alternate bid items whichever is determined to be in the best interest of the City of Kirkland. The City of Kirkland has the right to determine the low bidder on the basis of the sum of the Total Base Bid and Unit Prices (per bid form multipliers), and Alternates accepted (if any).
3. City of Kirkland reserves the right to reject any and all bids and to waive any informality in bids received whenever such rejection or waiver is in the interest of the Owner.
4. The bidder to whom the award is made will be notified at the earliest practicable date.

**P. DISQUALIFICATION OF BIDDERS**

Any one or more of the following causes may be considered sufficient for the disqualification of a Bidder and the rejection of its bid or bids:



- a. Evidence of collusion among Bidders.
- b. Lack of expertise as shown by past work, and judged from the standpoint of workmanship and performance history.
- c. Uncompleted work under other contracts which, in the judgment of the City, might hinder or prevent the prompt completion of additional work if awarded.
- d. Being in arrears on existing contracts, in litigation with an Owner, or having defaulted on a previous contract.
- e. Contractor's naming oneself as a Subcontractor for which they have no expertise and working knowledge directly within the firm.
- f. Contractor's inability to meet the Bidder's Qualifications (Section 00 10 20) outlined in item 8.
- g. Contractor's inability to meet the Bidder's Responsibility Criteria outlined in Section 00 15 30.
- h. Failure to comply with any requirements of the Invitation for Bid or Instructions to Bidders.

**END OF SECTION**



**INFORMATION AVAILABLE TO BIDDERS**

The following documents are provided for the Contractor's reference. These documents are part of the Contract Documents and are made available to the Contractor for information only.

- A. Electrical Permit ENR23-08282
- B. Mechanical Permit MNR23-08469
- C. 2008 Bid Set Drawings (for reference only)
- D. Materials Building Survey Report

**END OF SECTION**



# Electrical Permit



**City of Kirkland**  
123 Fifth Avenue  
Kirkland WA 98033  
425-587-3600

Permit Number: ENR23-08282  
Type: Electrical Non Residential  
Work Class: Alteration to Structure or System

ENR23-08282

## Permit Information

<b>Job Address(es):</b> 310 1ST ST	<b>Project:</b>		
	<b>Parcel:</b>	3885808550	<b>Application Date:</b> 10/17/2023
	<b>Valuation:</b>	\$30,000.00	<b>Issue Date:</b> 11/01/2023
	<b>Dwelling Units:</b>		<b>Expiration Date:</b> 11/01/2024
			<b>Code Edition:</b> 2020 NEC

## Scope of Work

COK Project - Annex HVAC: Electrical modifications to support installation of new VRF HVAC system in existing building.

## Contacts

Type	Name	Address	Phone
Owner	CITY OF KIRKLAND	123 5TH AVE KIRKLAND, WA 98033	B: C:
Owner is Contractor	CITY OF KIRKLAND	123 5TH AVE KIRKLAND, WA 98033	B: C:
Primary Contact	CITY OF KIRKLAND LEE ANN SKIPTON	123 5TH AVE KIRKLAND, WA 98033	B: 4255873931 C:
Applicant	LEE ANN SKIPTON	123 5TH AVE KIRKLAND, WA 98033	B: 4255873930 C:

**Request an inspection before 6 p.m. for next business day. Requests made after 6 p.m. will be scheduled on the second business day following the request.**

**How to request an inspection:**

- 1) Go to <http://mybuildingpermit.com>
- 2) Select Kirkland as the Jurisdiction.
- 3) Locate the permit using the permit # or property address
- 4) Follow the on-screen instructions to complete the inspection request.

## REQUIRED INSPECTIONS

Inspection(s)	Date	Inspector
ELE - Other		
ELE - Temporary Power		
ELE - Feeder		
ELE - Slab (Cover)		
ELE - Ditch		
ELE - Bonding/Grounding		
ELE - Service		
ELE - Wall Cover		
ELE - Ceiling Cover		
ELE - Rough In		
ELE - Final		

310 1ST ST

## Illicit Discharges and Connections

### **Illicit Discharges and Connections (Municipal Code 15.52) as prohibited in the Storm Drain System:**

Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violations to the city at 425-587-3900. A Final Inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.





**City of Kirkland**  
123 Fifth Avenue  
Kirkland WA 98033  
425-587-3600

Permit Number: ENR23-08282  
Type: Electrical Non Residential  
Work Class: Alteration to Structure or System

**General Conditions**

- 1. The issuance of this permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction.
- 2. The approved plans shall not be changed, modified, or altered without authorization from the building official.
- 3. This permit, inspection record and approved plans are required to be on the job site at all times.
- 4. The approved plans which are required to be onsite must be printed in color. The City added comments and mark-ups must appear in RED.
- 5. All development activity and heavy equipment operation is restricted to 7:00 a.m. to 8:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 on Saturdays. No development activity or heavy equipment operation may occur on Sundays or holidays observed by the City.
- 6. All work is subject to field inspection. Do not cover any work until approved by a City inspector.
- 7. Contact the Building Division at 425-587-3600 with any questions.
- 8. Any sales tax reported to the State in association with this project should be coded to the City of Kirkland tax location code 1716.

SEE ATTACHED SHEET FOR SPECIFIC CONDITIONS

**Inspector's Comments**

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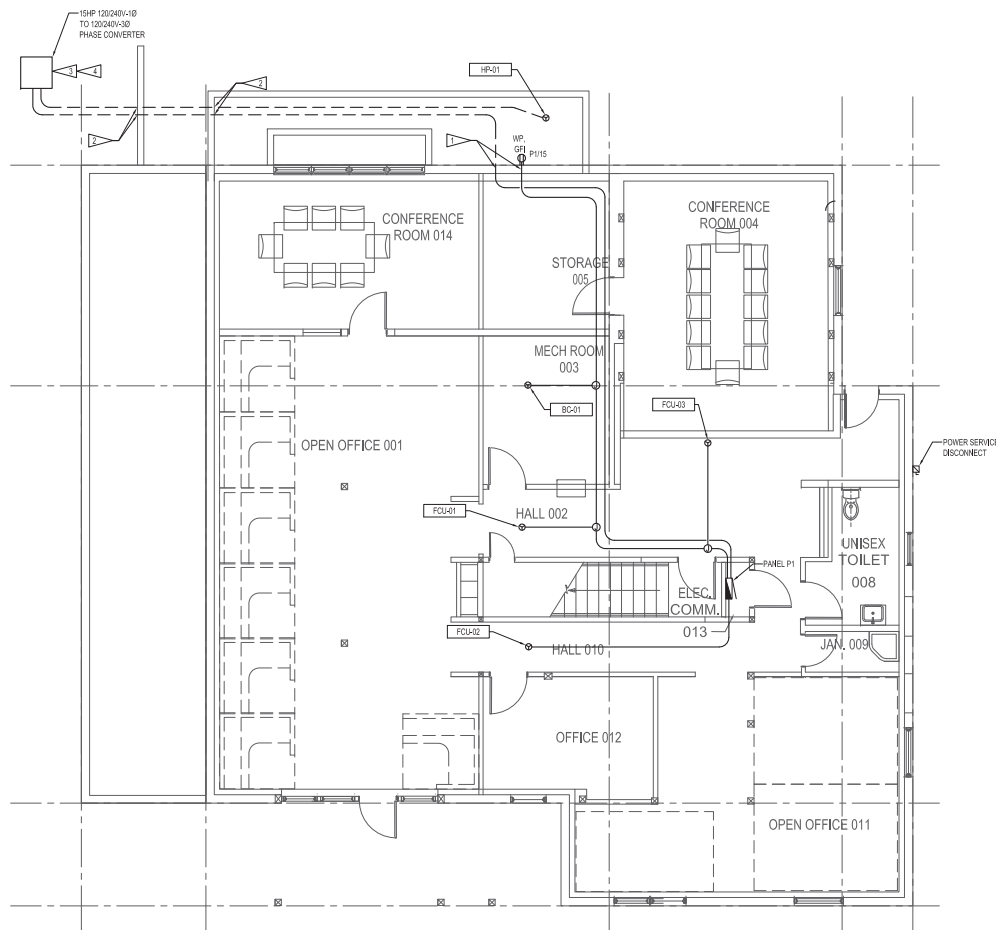
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**NEC 455.6(B)**  
**Manufactured Phase Marking.** The manufactured phase conductors shall be identified in all accessible locations with a distinctive marking. The marking shall be consistent throughout the system and premises.



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



**MUST REMAIN ON  
JOB SITE**

**NOTICE**  
HOURS OF WORK: 7AM TO 8PM MON-FRI  
9AM TO 6PM SAT. NO WORK SUNDAYS &  
HOLIDAYS (PER KZC SEC. 115.25)  
Exceptions must be approved in  
writing by Planning Official

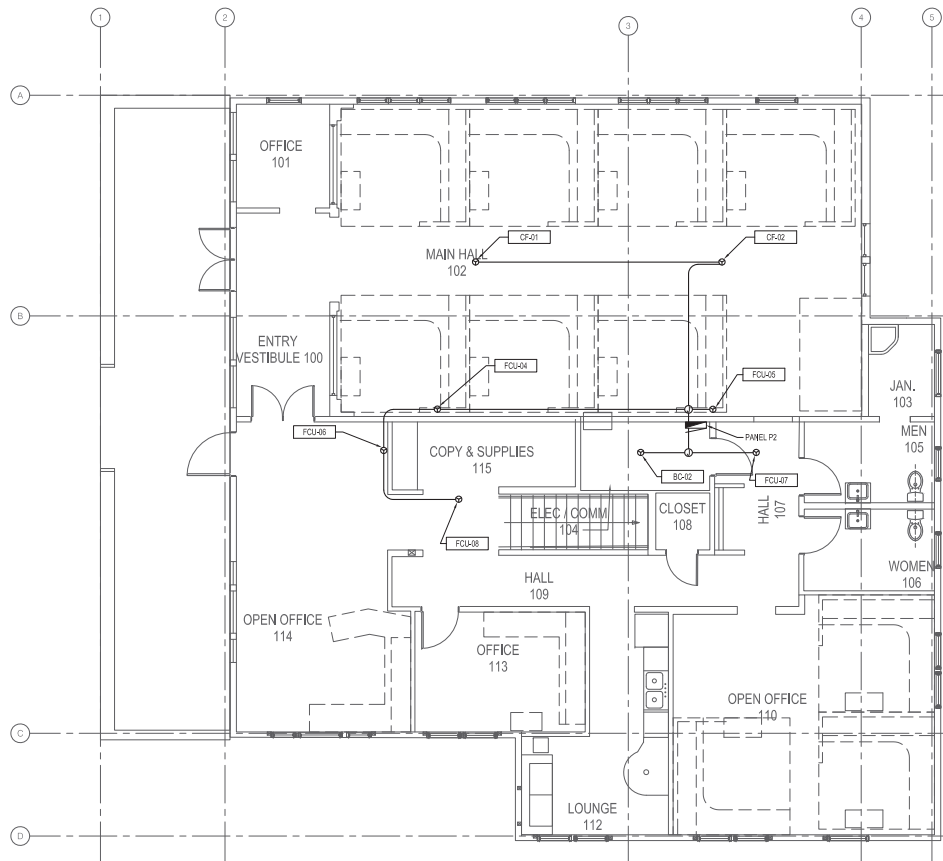
 $1/4"=1'-0"$ 

12  
feet

PERMIT DRAWING SET

[illegible]





ELECTRICAL FIRST FLOOR PLAN  
SCALE: 1/4" = 1'-0"



**MUST REMAIN ON  
JOB SITE**

NOTICE  
HOURS OF WORK: 7AM TO 5PM MON-FRI  
8AM TO 5PM SAT. NO WORK SUNDAYS &  
HOLIDAYS (PER K2C SEC. 115.29)  
Exceptions must be approved in  
writing by Planning Official

1/4" = 1'-0"

1/2"  
feet

PERMIT DRAWING SET

GENERAL NOTES  
1. CIRCUITS SHALL UTILIZE SURFACE  
METAL RACEWAY. FIELD VERIFY  
LOCATION OF BEAMS.

SHEET NOTES



REVISION	DATE

5270 110th Ave NE  
Bellevue, WA 98004  
425.628.6000  
woodharbinger.com



ANNEX BUILDING UPGRADES FOR HVAC AND EV CHARGING  
CITY OF KIRKLAND  
310 FIRST STREET, KIRKLAND, WA 98033

ELECTRICAL  
FIRST FLOOR PLAN

SHEET TITLE

DATE	10/17/2023
SCALE	AS-NOTED
ENGR	SMB
DRAWN	CL
CHKD	-
APPR	-
JOB	23018
SHEET	E3.2
	- OF 5



1. ALL ELECTRICAL ITEMS ON THIS SHEET ARE EXISTING AND SHOWN FOR REFERENCE ONLY.

**408.6 Short-Circuit Current Rating.** Switchboards, switchgear, and panelboards shall have a short-circuit current rating not less than the available fault current. In other than one- and two-family dwelling units, the available fault current and the date the calculation was performed shall be field marked on the enclosure at the point of supply. The marking shall comply with 110.21(B)(3).



**NOTICE**  
**HOURS OF WORK: 7AM TO 8PM MON-FRI**  
**9AM TO 6PM SAT. NO WORK SUNDAYS &**  
**HOLIDAYS (PER KZC SEC. 115.25)**  
**Exceptions must be approved in**  
**writing by Planning Official**



E5.1



PANEL NAME: P1 (EXIST)				PANEL SCHEDULE				MFR:			
LOCATION: IS				SECTION: 1				CAT: F			
FEED FROM: UTILITY				1 PHASE, 3 WIRE SURFACE MOUNT PNL							
22 MIE SYM				225 AMP BUS				100% NEUTRAL			
CMT. NO.	CIRCUIT DESCRIPTION	CB		P	H	CB		P	H	CB	
		AMPS	POL			AMPS	POL			AMPS	POL
CIRCUIT DESCRIPTION											
1	LYG-RN101 (01,08,09,11,12	20	1	0.80	A	0.10	20	1	0.40	0.40	0.40
2	LYG-RN102 (04,06,07,010,012,014	20	1	0.70	B	0.10	20	1	0.40	0.40	0.40
3	LYG-EXT BIRNS	20	1	0.10	A	0.07	20	1	0.07	0.07	0.07
4	REC-RN104-PROJECTOR	20	1	0.20	B	0.10	20	1	0.10	0.10	0.10
5	REC-RN104-PROJECTOR	20	1	0.20	A	0.20	20	1	0.20	0.20	0.20
6	FCU-1 THRU FCU-4 (B&G)	(NOTE 1)	2	0.20	A	0.80	20	1	0.80	0.80	0.80
7	-	-	-	0.20	A	1.00	20	1	1.00	1.00	1.00
8	REC-EXT-EXTERIOR	(NOTE 2)	20	1	0.16	B	0.80	20	1	0.80	0.80
9	SPARE	20	2	0.80	A	1.00	20	1	0.80	0.80	0.80
10	SPARE	-	-	0.80	A	0.72	20	1	0.72	0.72	0.72
11	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
12	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
13	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
14	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
15	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
16	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
17	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
18	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
19	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
20	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
21	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
22	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
23	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
24	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
25	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
26	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
27	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
28	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
29	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
30	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
31	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
32	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
33	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
34	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
35	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
36	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
37	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
38	SPARE	(NOTE 1)	70	2	5.80	B	0.80	20	1	0.80	0.80
39	SPARE	-	-	5.80	A	0.80	20	1	0.80	0.80	0.80
40	SPARE	-	-	5.80	A	0.80	20	1	0.80	0.80	0.80
41	SPARE	-	-	5.80	A	0.80	20	1	0.80	0.80	0.80
42	SPARE	-	-	5.80	A	0.80	20	1	0.80	0.80	0.80
LOAD SUMMARY											
CIRCUIT DESCRIPTION		CON LOAD		FACTOR		CALC LOAD		NOTES			
RECEPTACLES		30.16 KVA		125%		37.70 KVA		1. REMOVE EXISTING SPARE CIRCUIT BREAKERS AND PROVIDE NEW CIRCUIT BREAKER.			
ALL MOTORS		0.00 KVA		100%		0.00 KVA		2. NEW LOAD ON EXISTING CIRCUIT BREAKER.			
LIGHTING MOTOR		0.07 KVA		125%		0.09 KVA					
KITCHEN		0.00 KVA		100%		0.00 KVA					
MISCELLANEOUS		30.14 KVA		100%		30.14 KVA					
MISC-COMPONENT		0.00 KVA		0%		0.00 KVA					
TOTAL		60.73 KVA		125%		75.91 KVA					
		238.4 AMPS				221.1 Amps					

PANEL NAME: P2 (EXIST)				PANEL SCHEDULE				MFR:			
LOCATION: IS				SECTION: 1				CAT: F			
FEED FROM: UTILITY				1 PHASE, 3 WIRE SURFACE MOUNT PNL							
22 MIE SYM				225 AMP BUS				100% NEUTRAL			
CMT. NO.	CIRCUIT DESCRIPTION	CB		P	H	CB		P	H	CB	
		AMPS	POL			AMPS	POL			AMPS	POL
CIRCUIT DESCRIPTION											
1	LYG-BUILDING EXTERIOR	20	1	0.40	A	0.00	20	1	0.40	0.40	0.40
2	LYG-SPRINT EXTERIOR	20	1	0.40	B	0.00	20	1	0.40	0.40	0.40
3	LYG-RN102,103,104,105,106	20	1	0.40	A	0.80	20	1	0.80	0.80	0.80
4	LYG-RN101,102,103,104	20	1	0.80	B	0.70	20	1	0.70	0.70	0.70
5	LYG-EXT BIRNS	20	1	0.10	A	0.10	20	1	0.10	0.10	0.10
6	LYG-101-113	20	1	0.80	A	0.18	20	1	0.18	0.18	0.18
7	REC-RN104-PROJECTOR	20	1	0.80	A	0.40	20	1	0.40	0.40	0.40
8	REC-RN101,101	20	1	0.80	B	0.40	20	1	0.40	0.40	0.40
9	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
10	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
11	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
12	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
13	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
14	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
15	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
16	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
17	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
18	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
19	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
20	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
21	REC-RN101-101	20	1	0.80	A	0.20	20	1	0.20	0.20	0.20
22	REC-RN101-101	20	1	0.80	B	0.20	20	1	0.20	0.20	0.20
23	FCU-1 THRU FCU-4	(NOTE 1)	2	0.20	A	0.80	20	1	0.80	0.80	0.80
24	-	-	-	0.20	A	1.00	20	1	1.00	1.00	1.00
25	-	-	-	0.20	A	1.00	20	1	1.00	1.00	1.00
26	CF-401,CF-402	(NOTE 2)	20	1	0.20	B	0.80	20	1	0.80	0.80
27	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
28	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
29	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
30	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
31	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
32	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
33	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
34	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
35	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
36	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
37	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
38	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
39	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
40	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
41	SPARE	20	1	0.80	A	0.80	20	1	0.80	0.80	0.80
42	SPARE	20	1	0.80	B	0.80	20	1	0.80	0.80	0.80
LOAD SUMMARY											
CIRCUIT DESCRIPTION		CON LOAD		FACTOR		CALC LOAD		NOTES			
RECEPTACLES		6.48 KVA		100%		6.48 KVA		1. REMOVE EXISTING SPARE CIRCUIT BREAKERS AND PROVIDE NEW CIRCUIT BREAKER.			
ALL MOTORS		0.00 KVA		100%		0.00 KVA		2. NEW LOAD ON EXISTING CIRCUIT BREAKER.			
LIGHT MOTOR		0.00 KVA		125%		0.00 KVA					
KITCHEN		0.00 KVA		100%		0.00 KVA					
MISCELLANEOUS		7.50 KVA		100%		7.50 KVA					
NON-CONCURRENT		0.00 KVA		0%		0.00 KVA					
TOTAL		15.75 KVA				15.75 KVA					
		65.7 Amps				67.2 Amps					



# Mechanical Permit



**City of Kirkland**  
123 Fifth Avenue  
Kirkland WA 98033  
425-587-3600

Permit Number: MNR23-08469  
Type: Mechanical Non Residential  
Work Class: New Structure

MNR23-08469

## Permit Information

<b>Job Address(es):</b> 310 1ST ST	<b>Project:</b>		
	<b>Parcel:</b>	3885808550	<b>Application Date:</b> 10/27/2023
	<b>Valuation:</b>	\$250,000.00	<b>Issue Date:</b> 11/01/2023
	<b>Dwelling Units:</b>		<b>Expiration Date:</b> 11/01/2024
			<b>Code Edition:</b> 2018 IMC

## Scope of Work

COK Project - COK Annex HVAC: Add new VRF HVAC system to existing building.

## Contacts

Type	Name	Address	Phone
Owner	CITY OF KIRKLAND	123 5TH AVE KIRKLAND, WA 98033	B: C:
Primary Contact	CITY OF KIRKLAND LEE ANN SKIPTON	123 5TH AVE KIRKLAND, WA 98033	B: 4255873931 C:
Applicant	LEE ANN SKIPTON	123 5TH AVE KIRKLAND, WA 98033	B: 4255873931 C:
Project Contact	CITY OF KIRKLAND LEE ANN SKIPTON	123 5TH AVE KIRKLAND, WA 98033	B: 4255873930 C:

**Request an inspection before 6 p.m. for next business day. Requests made after 6 p.m. will be scheduled on the second business day following the request.**

### How to request an inspection:

- 1) Go to <http://mybuildingpermit.com>
- 2) Select Kirkland as the Jurisdiction.
- 3) Locate the permit using the permit # or property address
- 4) Follow the on-screen instructions to complete the inspection request.

## REQUIRED INSPECTIONS

Inspection(s)	Date	Inspector
MEC - Other		
MEC - Fuel Gas Piping		
MEC - Ceiling Cover		
MEC - Wall Cover		
MEC - HVAC Piping (Hydronic/Chilled/Refrigerant)		
MEC - Hydronic Tubing		
MEC - Rough Mechanical		
MEC - Fire/Smoke Dampers		
MEC - Duct Seal		
MEC - Duct Insulation		
MEC - Final		

310 1ST ST

## Illicit Discharges and Connections

### Illicit Discharges and Connections (Municipal Code 15.52) as prohibited in the Storm Drain System:

Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violations to the city at 425-587-3900. A Final Inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.





**City of Kirkland**  
123 Fifth Avenue  
Kirkland WA 98033  
425-587-3600

Permit Number: MNR23-08469  
Type: Mechanical Non Residential  
Work Class: New Structure

**General Conditions**

- 1. The issuance of this permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction.
- 2. The approved plans shall not be changed, modified, or altered without authorization from the building official.
- 3. This permit, inspection record and approved plans are required to be on the job site at all times.
- 4. The approved plans which are required to be onsite must be printed in color. The City added comments and mark-ups must appear in RED.
- 5. All development activity and heavy equipment operation is restricted to 7:00 a.m. to 8:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 on Saturdays. No development activity or heavy equipment operation may occur on Sundays or holidays observed by the City.
- 6. All work is subject to field inspection. Do not cover any work until approved by a City inspector.
- 7. Contact the Building Division at 425-587-3600 with any questions.
- 8. Any sales tax reported to the State in association with this project should be coded to the City of Kirkland tax location code 1716.

SEE ATTACHED SHEET FOR SPECIFIC CONDITIONS

**Inspector's Comments**

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REVISION	DATE

woodhanger.com

woodhanger

529 108th Ave NE  
Suite 1000  
Kirkland, WA 98033  
425.828.0000



ANNEX BUILDING UPGRADES FOR HVAC AND EV CHARGING  
CITY OF KIRKLAND  
310 FIRST STREET, KIRKLAND, WA 98033  
GROUND FLOOR HVAC PLAN

SHEET TITLE	DATE
	10/17/2023
SCALE	1/4"=1'-0"
ENGR	ML
DRAWN	ML
CHECKED	MS
APPR	MS
JOB	23018

M-31  
SHEET 2 OF 5

GENERAL NOTES:

- COORDINATE ALL SHUTDOWNS WITH OWNER PRIOR TO START OF WORK.
- PROVIDE NECESSARY CUTTING, PAINTING, PATCHING, ETC. TO FACILITATE MECHANICAL WORK.
- THE WORK PERSONS PRECONSTRUCTION MEETING SHALL BE ATTENDED. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS PERFORMED AFTER ALL DUCTWORK HAS BEEN CLEANED PER SPECIFICATIONS.
- CLEAN ALL EXISTING DUCTWORK AND BRANCHES PRIOR TO INSTALLATION.
- PROVIDE COMMISSIONING FOR NEW HVAC SYSTEM FOR 90 DAYS.

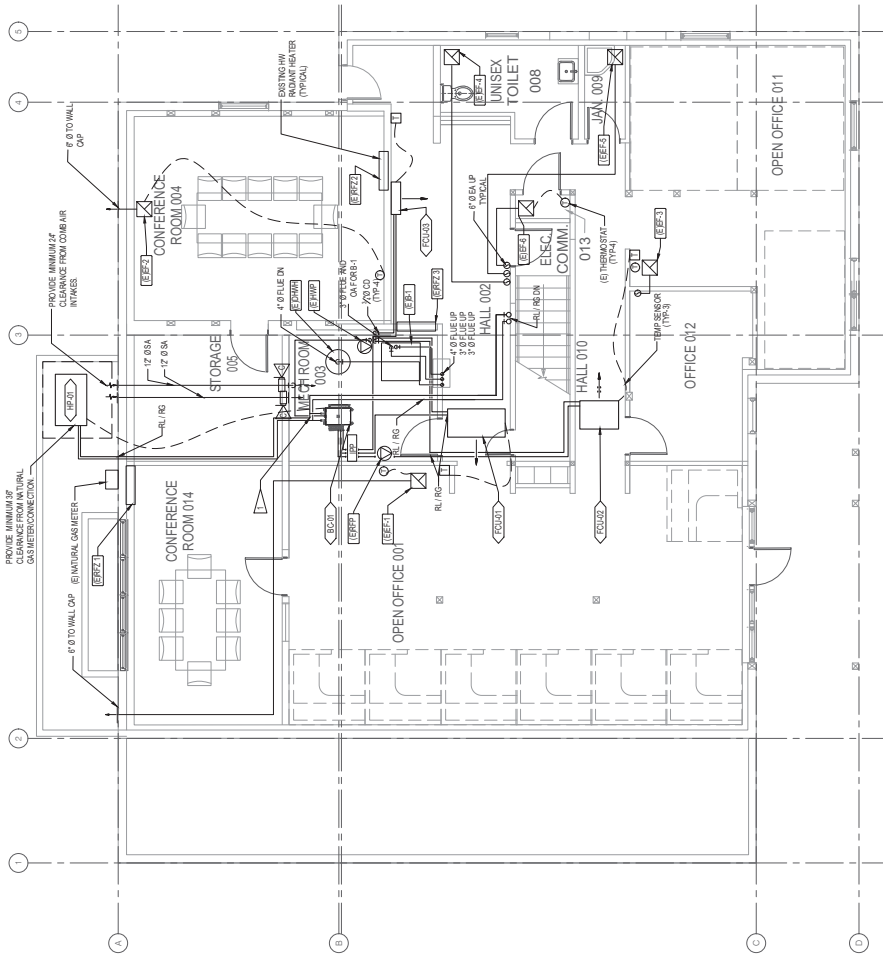
SHEET NOTES

- PROVIDE 1 BRANCH TO EACH REFRIGERATION LINE

ELECTRICAL NOT PLAN  
REQUIRE SEPARATE PERMIT  
REQUIRE

HOURS OF WORK:  
7 AM to 5 PM Mon-Fri and 9 AM to 6 PM Sat-Sun  
SPECIAL PERMIT REQUIRED FOR KZC 115.251. Exceptions must be approved in writing by Planning Official.

Approved construction plans on-site must be printed full size.



1 GROUND FLOOR HVAC PLAN  
SCALE: 1/4"=1'-0"



REVISION	DATE

WOOD HARBINGER  
3209 108th Ave NE  
Suite 1000  
Bellevue, WA 98004  
425.828.0000  
woodharbinger.com



ANNEX BUILDING UPGRADES FOR HVAC AND EV CHARGING  
CITY OF KIRKLAND  
310 FIRST STREET, KIRKLAND, WA 98033

FIRST FLOOR HVAC PLAN

SHEET TITLE

DATE	10/17/2023
SCALE	1/4"=1'-0"
ENGR	ML
DRAWN	AL
CHECKED	MS
APPR	MS
JOB	23018

M-3.2  
SHEET 3 OF 5

GENERAL NOTES:

- COORDINATE ALL SHUTDOWNS WITH OWNER PRIOR TO START OF WORK.
- PROVIDE NECESSARY CUTTING, PAINTING, PATCHING, ETC., TO FACILITATE MECHANICAL WORK.
- THE WORK PERSONS PRECONSTRUCTION MEETING SHALL REVIEW ALL MECHANICAL SPECIFICATIONS. AFTER ALL SPECIFICATIONS HAVE BEEN CLEANED PER SPECIFICATIONS.
- CLEAN ALL EXISTING DUCTWORK AND BRANCHED PIPING REPAIRS/REPLACEMENTS.
- PROVIDE COMMISSIONING FOR NEW RFF SYSTEM FOR REPAIRS/REPLACEMENTS.

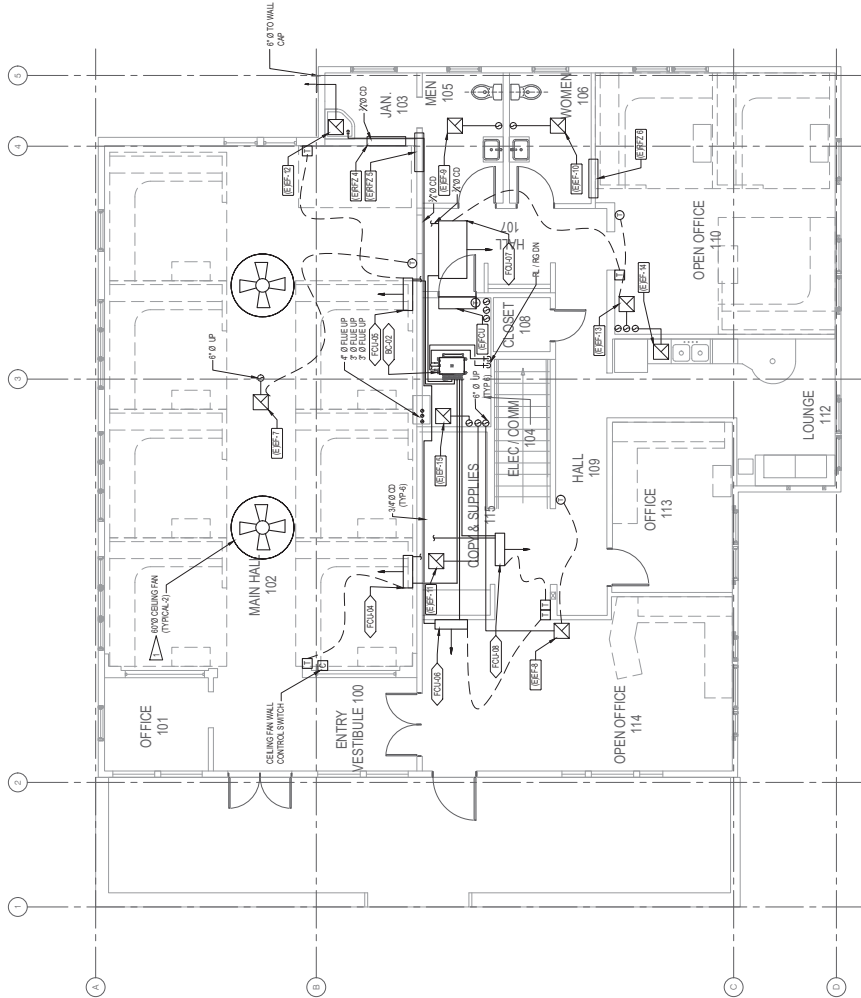
SHEET NOTES

- PROVIDE TWO CEILING FANS

ELECTRICAL AND PLUMBING WORK SHALL BE REVIEWED ON APPROVED. SEPARATE PERMIT REQUIRED.

HOURS OF WORK:  
7 AM to 8 PM Mon-Fri and 9 AM to 6 PM Sat. No work Sundays & holidays (per K2C 115.25). Exceptions must be approved in writing by Planning Official.

Approved construction plans on-site must be printed full size.

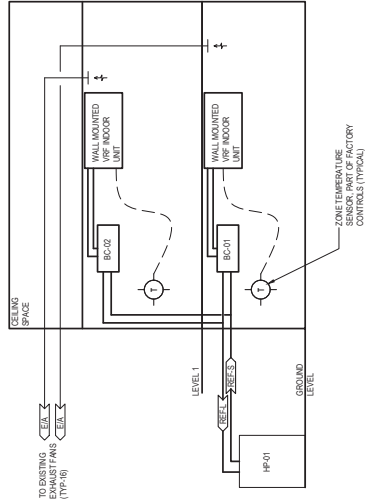


1 FIRST FLOOR HVAC PLAN  
SCALE: 1/4"=1'-0"









④ VRF OUTDOOR CONDENSER AND INDOOR FAN COIL UNIT (TYPICAL FOR HP-01, AND ACU-01 THROUGH 14) -CONTROL DIAGRAM

(1) SCALE: N/A

M3.1 M3.2

- ### SEQUENCE OF OPERATION - VRF OUTDOOR CONDENSER AND INDOOR FAN COIL UNITS.
1. GENERAL PROVIDE SCHEDULE CONTROLS FOR VRF SYSTEM PROVIDE CAPABILITY TO BULK/ENABLE TO THE UNIT BASED ON A PROGRAMMABLE SCHEDULE. VENTILATION ON PROVIDE CAPABILITY AS VAPORATE AIR SYSTEM WHICH IS NOT PART OF THE VRF SYSTEM. AIR FAN COIL UNITS SHALL BE CONTROLLED TO CYCLE WITH LOAD. AN EXISTING HOT WATER RADIANT HEATING SYSTEM SHALL BE MAINTAINED.
  2. MORNING WAKING: THE HOT WATER SYSTEM WILL PERFORM MORNING WAKING BASED ON EXISTING LOCAL SCHEDULE.
  3. COOLED MODE: VRF FAN COIL SHALL USE FACTOR PACKAGED CONTROLS TO START IN ROOM TEMPERATURE SETPOINT PROVIDE WAKING SPACE TEMPERATURE IN SETPOINT OF 68° (FAH) AND PROVIDE COOLING SPACE TEMPERATURE IN SETPOINT OF 75° (FAH).
  4. UNOCCUPIED MODE: USABLE UNIT VAPORATE (IN FACTOR CONTROLLER).

REVISION	DATE

929 108th Ave NE  
Suite 1000  
Bellevue WA 98004  
425.628.6000  
woodharpinger.com



ANNEX BUILDING UPGRADES FOR HVAC AND EV CHARGING  
CITY OF KIRKLAND  
310 FIRST STREET, KIRKLAND, WA 98033

MECHANICAL CONTROL

		SHEET TITLE
DATE	10/17/2023	
SCALE	NONE	
ENGR	ML	
DRWN	AL	
CHKD	NRB	
APPR	NRB	
JOB	23018	

PERMIT DRAWING SET

M-7.1



**Hazardous Material  
Building Survey**  
Kirkland Annex  
310-312 First Avenue  
Kirkland WA 98033  
December 6, 2007



**Project Title:** Hazardous Material Building Survey Kirkland Annex  
310-312 First Avenue  
Seattle WA 98033

**Prepared For:** Ms. Susan Boyle  
320 Terry Avenue N.  
Seattle WA 98109

**Inspection Conducted By:** Argus Pacific, Inc.  
1900 W. Nickerson Street, Suite 315  
Seattle, WA 98119

**Argus Pacific Project Number:** 471707

**Client Project Number:** N/A

**Inspection Personnel:** John Caparimo, EPA AHERA Certified Building Inspector Number 10210268052 (expiration September 28, 2007),

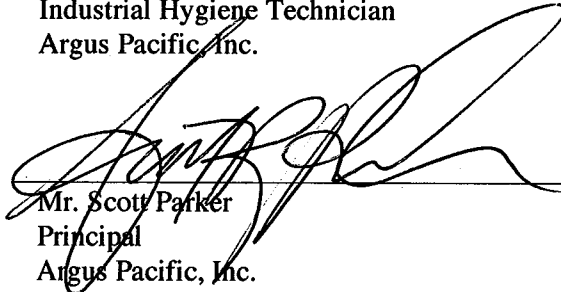
**Inspection Date(s):** November 20, 2007

**Report Prepared By:**



Mr. John Caparimo  
Industrial Hygiene Technician  
Argus Pacific, Inc.

**Report Reviewed By:**



Mr. Scott Parker  
Principal  
Argus Pacific, Inc.

**Report Issued:** December 6, 2007



## **TABLE OF CONTENTS**

<b>Section</b>	<b>Title</b>
1.0	Executive Summary
2.0	Scope of Work
3.0	Asbestos Inspection
4.0	Lead Inspection
5.0	Florescent Light Tube, HID Lamp and PCB Light Ballast Inspection
<b>Appendix</b>	<b>Title</b>
A	Suspected ACM HMAT List, Sample Locations and Sample Results
B	Suspected Lead-Based Paints, Sample Locations and Sample Results
C	Inventory of Fluorescent Light Tubes and Suspected PCB-Containing Fluorescent Light Ballasts
D	Drawings With Sample Locations
E	Chain of Custody and Laboratory Analytical Results - Asbestos
F	Chain of Custody and Laboratory Analytical Results - Lead
G	Certifications



## **1.0 EXECUTIVE SUMMARY**

Argus Pacific, Inc. (Argus Pacific) conducted a building inspection at the Kirkland Annex located at 312-310 First Avenue in Kirkland, WA on November 20, 2007.

The building was inspected for asbestos, lead-based coatings, and PCB-containing light ballasts.

Suspected asbestos-containing materials (ACM) sampled consisted primarily of wall plaster, surfacing texture, caulk, pipe insulation, cove base, carpet, ceiling tile, concrete, and mastic. Detectable asbestos was found in 7 out of the 45 samples collected and analyzed.

Suspected lead based paints were identified and sampled on building materials throughout the building. The samples were analyzed and all were below the limit of detection.

Florescent light fixtures and potential PCB containing ballasts were identified during the inspection. A representative sample of all the light fixtures present was inspected. No PCB containing ballasts were identified in the representative sample.



## **2.0 SCOPE OF WORK**

At your request, on November 20, 2007 Argus Pacific, Inc. (Argus Pacific) conducted a limited building inspection at the Kirkland Annex located at 312-310 First Avenue in Kirkland, WA for the following:

- Asbestos-containing materials (ACM);
- Assumed asbestos-containing materials;
- Lead-based coatings (paints);
- Suspected PCB-containing fluorescent light ballasts;
- Fluorescent light tubes.

The purpose of the inspection was to locate, identify, and quantify ACM and assumed asbestos-containing materials in order to fulfill the requirements indicated by the City of Kirkland. Paint chips were sampled to identify lead-based paints that may be impacted by construction activities at the site. Suspected PCB-containing ballasts and fluorescent light tubes were inventoried to facilitate removal and disposal of PCB and mercury containing materials during construction activities.

### **2.1 Limitations**

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The building was not occupied at the time of the inspection. Destructive sampling was conducted at the site with the exception of certain areas. The hardwood floor throughout most of the house was not sampled at the request of the site contact, but can potentially conceal an asbestos containing moisture barrier.

Any newly discovered suspect materials not identified in this report that are found during construction activities must be treated as ACM until they are sampled and shown not to contain asbestos.

### **2.2 Building Description**

---

The building is a three-story wood structure with a concrete foundation and a pitched roof. The interior finishes include plaster, concrete masonry unit (CMU) walls, gypsum wallboard, carpet, vinyl floor tiles, and ceiling tiles.



## **3.0 ASBESTOS INSPECTION**

### **3.1 Inspection Areas**

---

The following areas of the building were inspected for asbestos: (See Appendix C)

### **3.2 Sampling Methodology**

---

Suspect asbestos-containing materials were sampled according to 40 CFR 763.86 by an EPA certified AHERA building inspector. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag and hand delivered to Seattle Asbestos Test, LLC in Lynwood, WA. Samples were analyzed via polarized light microscopy (PLM) in accordance with EPA 600/R-93/116.

This survey was conducted using a modified protocol adapted from the Asbestos Hazard Emergency Response Act (AHERA). The protocol is as follows:

- Identify all suspect asbestos-containing materials.
- Group materials into homogeneous sampling areas/materials.
- Quantify each homogeneous material and collect representative samples. The number of samples collected of miscellaneous materials was determined by the inspector.
- Samples of each material were taken to the substrate, ensuring that all components and layers of the material were included.
- Sample locations are referenced on the field data forms and maps according to sample number.
- Sampling was performed by a Certified Building Inspector, and the use of proper protective equipment and procedures was followed.

Materials were grouped into homogenous materials (HMATs) that were identified as being uniform in appearance, color, and texture. An HMAT # is an un-biased, non-repeating, consecutive number assigned by the inspector to numerically represent a specific HMAT.

Unique sample numbers were generally developed as follows:

***HMAT # -- HMAT series number -- Room number sample collected in***

### **3.3 Sampling Procedure**

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1. Spread the plastic drop cloth (if needed) and set up other equipment, e.g., ladder.
2. Don protective equipment (respirator and protective clothing if needed).
3. Label sample container with its identification number and record number. Record sample location, and type of material sampled on a sampling data form.
4. Moisten area where sample is to be extracted (spray the immediate area with water).



5. Extract sample using a clean knife, drill capsule, or cork boring tool to cut out or scrape off approximately one tablespoon of the material. Penetrate all layers of material.
6. Place sample in a container and tightly seal it.
7. Wipe the exterior of the container with a wet wipe to remove any material which may have adhered to it during sampling.
8. Clean tools with wet wipes and wet mop; or vacuum area with HEPA vacuum to clean all debris.
9. Seal the sampling location with caulking compound or a roofing tar, as appropriate.
10. Discard protective clothing, wet wipes and rags, cartridge filters, and drop cloth in a labeled plastic waste bag.

### 3.4 Results

---

The following materials were **sampled** and found to contain asbestos:

- Gypsum Wallboard (GWB6-1-7) The gypsum wallboard on the 1<sup>st</sup> floor in room 7 was sampled, analyzed, and shown to contain 2% Chrysotile. However, the composite result for the whole sample is less than 1% asbestos.
- Hard Mudded Fittings (HMF1-1-8) The insulating elbows, also referred to as hard mudded fittings, on the first floor were sampled, analyzed, and shown to contain 3% Crocidilite and 25% Amosite. Insulating elbows were identified in the basement in rooms 1, 8, 9, and 10.
- Hard Mudded Fittings (HMF2-1-10) The insulating elbows, also referred to as hard mudded fittings, on the first floor were sampled, analyzed, and shown to contain 17% Chrysotile. Insulating elbows were identified in the basement in rooms 1, 8, 9, and 10.
- Surfacing Material (SM11-2-6) Surfacing material was identified on the walls of room 6 of the second floor. The material was sampled, analyzed, and shown to contain 2% Chrysotile. There is approximately 272 square feet of surfacing material.
- Surfacing Material (SM12-2-6) Surfacing material was identified on the walls of room 6 of the second floor. The material was sampled, analyzed, and shown to contain 2% Chrysotile. There is approximately 272 square feet of surfacing material.
- Surfacing Material (SM13-2-6) Surfacing material was identified on the walls of room 6 of the second floor. The material was sampled, analyzed, and shown to contain 2% Chrysotile. There is approximately 272 square feet.
- Vinyl Floor Sheeting (VFS3-1-4) Beige multi-color vinyl floor sheeting was identified on the floor of room 4 on the 1<sup>st</sup> floor. The material was sampled, analyzed, and shown to contain 2% Chrysotile. There is approximately 50 square feet of surfacing material.

The following materials were **sampled** and found to contain no detectable concentrations of asbestos:

- See Appendix A and D

The following materials were **inspected** and determined to contain no asbestos:

- Fiberglass pipe insulation and elbows;
- Neoprene pipe insulation;
- Wood and rubber materials.



The following materials were not **inspected** and may contain asbestos:

- Paper backing located under wood floor;
- Electrical panels located Basement Vestibule and upstairs Hall

The following are provided for the building as appendices:

- Complete inventory of suspected asbestos-containing building materials (HMATs) with material descriptions, sample locations, sample results, and estimated quantities of ACM and assumed asbestos containing materials;
- Drawings with sample locations;
- Laboratory analytical results.

### **3.5 Conclusions and Recommendations**

---

Argus Pacific collected 7 samples of gypsum wallboard. In the first layer of one of the samples 2% Chrysotile asbestos was detected by the laboratory (see sample number GWB6-1-7). Treated as a composite result with other layers the whole result is less than 1%. Although a material containing less than 1% asbestos is not defined as an “asbestos-containing material” by the environmental or worker protection regulations, certain worker protection requirements may apply, see Washington State Department of Labor and Industries regulations for additional guidance and information.

Not all materials were inspected or sampled during the inspection. Argus Pacific recommends that materials assumed to contain asbestos be inspected and sampled prior to demolition, renovation, salvage, or re-use of the materials.

Any newly discovered material not identified in this report that is found during construction activities must also be treated as ACM until it is sampled and shown not to contain asbestos.

This survey is intended for use in developing plans and specifications. This survey is not intended to be used as or replace asbestos abatement plans, specifications, or bidding documents.

All asbestos-related work must be conducted according to the requirements of Washington State worker protection and environmental protection requirements. See WAC 296-62, 296-65, and Puget Sound Clean Air Agency regulation III, Article 4 for additional information.

The Asbestos Model Accreditation Program (MAP) found in 40 CFR 763 requires that a certified Asbestos Project Designer design any asbestos abatement job.



## **4.0 LEAD INSPECTION**

### **4.1 Methodology**

---

Homogeneous areas of suspected lead-based coatings (paints) were identified and sampled in accessible areas throughout the interior and exterior of the Kirkland Annex. Homogeneous painted surfaces were defined by substrate, color, and application.

Representative samples of suspected lead-based paints were collected from the following:

- Pb1-2-Ext 2<sup>nd</sup> floor/exterior
- Pb2-2-Ext 2<sup>nd</sup> floor/exterior
- Pb3-1-10 1<sup>st</sup> floor/room 10
- Pb4-1-1 1<sup>st</sup> floor/room 1
- Pb5-2-1 2<sup>nd</sup> floor/room 1
- Pb6-2-10 2<sup>nd</sup> floor/room 10
- Pb7-2-4 2<sup>nd</sup> floor/room 4

Paint chip samples were collected to the substrate to ensure that all layers present on the substrate were included in the laboratory analysis. Each sample was collected and stored in a heavy-duty, self-sealing plastic bag and delivered to NVL Laboratories, Inc. in Seattle, WA. Samples were analyzed via Atomic Absorption Spectrophotometry in accordance with EPA SW 846, Method 7420.

### **4.2 Results**

---

Detectable concentrations of lead were found in all the paints sampled. A list of suspected homogeneous lead-based paints including sample locations and sample results is included as an appendix B.

Laboratory analytical results and field drawings with sample locations are included as appendices.

### **4.3 Conclusions and Recommendations**

---

Lead-based paints were identified at the Kirkland Annex.

Worker protection requirements apply to all construction activities that may disturb lead-based paints. Employers are required to protect their employees from occupational exposures to lead in accordance with WAC 296-155-176.

Building demolition waste and debris is required to be characterized before it can be accepted by a landfill. The characterization of waste streams known to contain lead is determined using the Toxicity Characteristic Leachate Process (TCLP), which determines the leaching potential of lead in the construction debris. A material "fails" the TCLP when there is greater than 5.0 parts per million (ppm) lead in the leachate.



## **5.0 FLUORESCENT LIGHT TUBE AND PCB LIGHT BALLAST INSPECTION**

### **5.1 Methodology**

---

An inventory of fluorescent light tubes and potential PCB-containing light ballasts was conducted in all accessible areas of the building.

Where fluorescent light fixtures were accessible, the ballast covers were removed, and the ballast labels were visually examined. Different types of fluorescent fixtures were distinguished by shield shape, fixture dimension, diffuser type, and the manner in which the ballast covers were connected to the fixture. Inspectors attempted to visually inspect at least two of each type of fluorescent light fixture.

Where fluorescent light fixtures could not be visually examined, the number of potential PCB-containing ballasts and fluorescent light tubes were estimated based on the following assumptions:

- Each double light tube fluorescent fixture contains one ballast;
- Each triple light tube fluorescent fixture contains two ballast.

All light ballasts are assumed to contain PCB's unless otherwise noted on the manufacturer's label.

### **5.2 Results**

---

Fluorescent light tubes were identified in the building, while no PCB containing light ballasts were identified. Forty-two 4-ft fluorescent light tubes were counted.

### **5.3 Conclusions and Recommendations**

---

Fluorescent light tubes may contain mercury. Fluorescent light ballasts may contain PCB's. Employers must inform their employees of mercury and PCB hazards in accordance with WAC 296-800-170.

Fluorescent light tubes and PCB-containing light ballasts must be removed and disposed of prior to building demolition as per 40 CFR 262, 40 CFR 265, and WAC 173-303.



We appreciate this opportunity to be of service to you. Please contact us at (206) 283-3733 if you have questions regarding this report, or if you require additional information.

Inspected by,



John Caparimo  
Industrial Hygiene Technician  
Argus Pacific, Inc.

Reviewed by,



Scott Parker  
Principal  
Argus Pacific, Inc.



*Appendix A*

---

*Suspected ACM HMAT List, Sample Locations, and Sample Results*



TABLE 1. ASBESTOS RESULTS

SAMPLE ID*	MATERIAL DESCRIPTION	SAMPLE RESULTS	SAMPLE LOCATION*	CONDITION	ESTIMATED QUANTITY
GWB1-2-1	Plaster L1: Plaster with paint	ND	2nd Floor, Room 1	Good	
GWB2-2-1	Gypsum Wallboard L1: Joint Comp'd L2: Drywall	ND ND	2nd Floor, Room 1	Good	
GWB3-2-2	Gypsum Wallboard L1: Joint Comp'd with paint L2: Drywall with paper backing	ND ND	2nd Floor, Room 2	Good	
GWB4-2-5	Plaster L1: Plaster with paint	ND	2nd Floor, Room 5	Good	
GWB5-1-4	Gypsum Wallboard L1: Joint Comp'd with paint L2: Drywall with paper backing	ND ND	1st Floor, Room 4	Good	
GWB6-1-7	Gypsum Wallboard L1: Joint Comp'd L2: Drywall with paper backing	2% Chrysotile ND	1st Floor, Room 7	Good	
GWB7-1-2	Plaster L1: Plaster with paint and wood debris	ND	1st Floor, Room 2	Good	
CA1-2-Ext	Window Glazing L1: Caulk with paint	ND	2nd Floor, Exterior	Good	
CA2-2-Ext	Window Glazing L1: Caulk with paint	ND	2nd Floor, Exterior	Good	
HMF1-1-8	Insulating Elbow L1: Cloth L2: Insulating Cement	ND 3% Crocidolite 25% Amosite	1st Floor, Room 8	Good	21 elbows
HMF2-1-10	Insulating Elbow L1: Cloth L2: Insulating Cement	ND 17% Chrysotile	1st Floor, Room 10	Good	21 elbows

\* <1% Asbestos based on composite analyzed.



TABLE 1. ASBESTOS RESULTS

SAMPLE ID*	MATERIAL DESCRIPTION	SAMPLE RESULTS	SAMPLE LOCATION*	CONDITION	ESTIMATED QUANTITY
VFS1-1-3	Vinyl Floor Sheeting L1: Vinyl sheeting L2: Gray paper backing with mastic	ND ND	1st Floor, Room 3	Good	
VFS2-2-6	Vinyl Floor Sheeting L1: Vinyl sheeting L2: Tan paper backing with mastic	ND ND	2nd Floor, Room 6	Good	
CV1-2-3	Cove Base L1: Mastic with paint	ND	2nd Floor, Room 3	Good	
SM1-2-10	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 10	Good	
SM2-2-2	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 2	Good	
SM3-2-5	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 5	Good	
SM4-2-2	Wall Texture (Light) L1: Comp'd with paint and paper	ND	2nd Floor, Room 2	Good	
SM5-2-1	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 1	Good	
SM6-2-1	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 1	Good	
SM7-2-10	Wall Texture (Light) L1: Comp'd with paint	ND	2nd Floor, Room 10	Good	
SM8-1-8	Wall Texture (Medium) L1: Comp'd with paint	ND	1st Floor, Room 8	Good	
SM9-1-3	Wall Texture (Medium) L1: Comp'd with paint	ND	1st Floor, Room 3	Good	
SM10-1-4	Wall Texture (Medium) L1: Comp'd with paint	ND	1st Floor, Room 4	Good	
SM11-2-6	Wall Texture (Heavy) L1: Comp'd with paint	2% Chrysotile	2nd Floor, Room 6	Good	272 sq. ft.
SM12-2-6	Wall Texture (Heavy) L1: Comp'd with paint	2% Chrysotile	2nd Floor, Room 6	Good	272 sq. ft.
SM13-2-6	Wall Texture (Heavy) L1: Comp'd with paint	2% Chrysotile	2nd Floor, Room 6	Good	272 sq. ft.



TABLE 1. ASBESTOS RESULTS

SAMPLE ID*	MATERIAL DESCRIPTION	SAMPLE RESULTS	SAMPLE LOCATION*	CONDITION	ESTIMATED QUANTITY
SEA1-1-7	Duct Sealant L1: Putty	ND	1st Floor, Room 7	Good	
SEA2-1-7	Duct Sealant L1: Putty	ND	1st Floor, Room 7	Good	
	L1: Cove L2: Mastic	ND ND			
CV3-1-2	Cove Base L1: Cove L2: Mastic with drywall	ND ND	1st Floor, Room 2	Good	
CV4-1-4	Cove Base L1: Cove L2: Mastic with drywall	ND ND	1st Floor, Room 4	Good	
CV5-1-1	Cove Base L1: Cove L2: Mastic with drywall	ND ND	1st Floor, Room 1	Good	
CM1-1-8	Carpet and Mastic L1: Carpet L2: Mastic	ND ND	1st Floor, Room 8	Good	
CM2-1-1	Carpet and Mastic L1: Carpet L2: Mastic	ND ND	1st Floor, Room 1	Good	
VFS3-1-4	Vinyl Floor Sheeting L1: Vinyl sheeting L2: Gray paper backing with mastic L3: Vinyl tile L4: Mastic	ND ND 2% Chrysotile ND	1st Floor, Room 4	Good	50 sq. ft.
CON1-1-7	Concrete Floor L1: Cement	ND	1st Floor, Room 7	Good	
SEA3-1-1	Penetration Putty L1: Comp'd	ND	1st Floor, Room 1	Good	
SEA4-1-8	Penetration Putty L1: Putty	ND	1st Floor, Room 8	Good	



TABLE 1. ASBESTOS RESULTS

SAMPLE ID*	MATERIAL DESCRIPTION	SAMPLE RESULTS	SAMPLE LOCATION*	CONDITION	ESTIMATED QUANTITY
CER1-2-7	Ceramic Tile L1: Ceramic Tile L2: Grout L3: Mastic	ND ND ND	2nd Floor, Room 7	Good	
RF1-2-Ext	House Siding (Wood) L1: Drywall L2: Vapor barrier L3: Wood siding	ND ND ND	2nd Floor, Exterior	Good	
RF2-2-Ext	House Roof L1: Shingle L2: Vapor barrier	ND ND	2nd Floor, Exterior	Good	
BM1-3-Att	Brick and Mortar (Fireplace) L1: Brick with cement	ND	3rd Floor, Attic	Good	
CER2-2-3	Ceramic Tile L1: Ceramic Tile L2: Grout L3: Mastic	ND ND ND	2nd Floor, Room 3	Good	
CT1-2-7	Ceiling Tile L1: Paper with paint	ND	2nd Floor, Room 7	Good	

Notes: SF = square feet

GWB = gypsum wallboard

ND = no detectable concentration of asbestos

CHR = Chrysotile

L = layer



***Appendix B***

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***Suspected Lead based Paints, Sample Locations, and Sample Results***



TABLE 2. LEAD RESULTS

SAMPLE ID	MATERIAL DESCRIPTION	SAMPLE LOCATION*	SAMPLE RESULT (%)
Pb1-2-Ext	Siding/Wood/Beige	2nd Floor, Exterior	16.0000
Pb2-2-Ext	Trim/Wood/Green	2nd Floor, Exterior	1.1000
Pb3-1-10	Floor/Concrete/Red	1st Floor, Room 10	0.2800
Pb4-1-1	Trim/Wood/White	1st Floor, Room 1	0.1100
Pb5-2-1	Wall/Plaster/Beige	2nd Floor, Room 1	0.0300
Pb6-2-10	Wall/Plaster/Pale Yellow	2nd Floor, Room 10	0.0130
Pb7-2-4	Radiator/Iron/Beige	2nd Floor, Room 4	0.0940



*Appendix C*

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***Inventory of Fluorescent Light Tubes and Suspected PCB-  
Containing Fluorescent Light Ballasts***



TABLE 3. PCB LIGHT BALLASTS AND FLUORESCENT LIGHT TUBES

LOCATION	PCB LIGHT BALLASTS	FLUORESCENT LIGHT TUBES	FLUORESCENT LIGHT TUBES (LENGTH)
2nd Floor, Room 2	0	12	4
2nd Floor, Room 4	0	4	4
1st Floor, Room 1	0	2	4
1st Floor, Room 2	0	2	4
1st Floor, Room 6	0	4	4
1st Floor, Room 8	0	12	4
1st Floor, Room 10	0	6	4



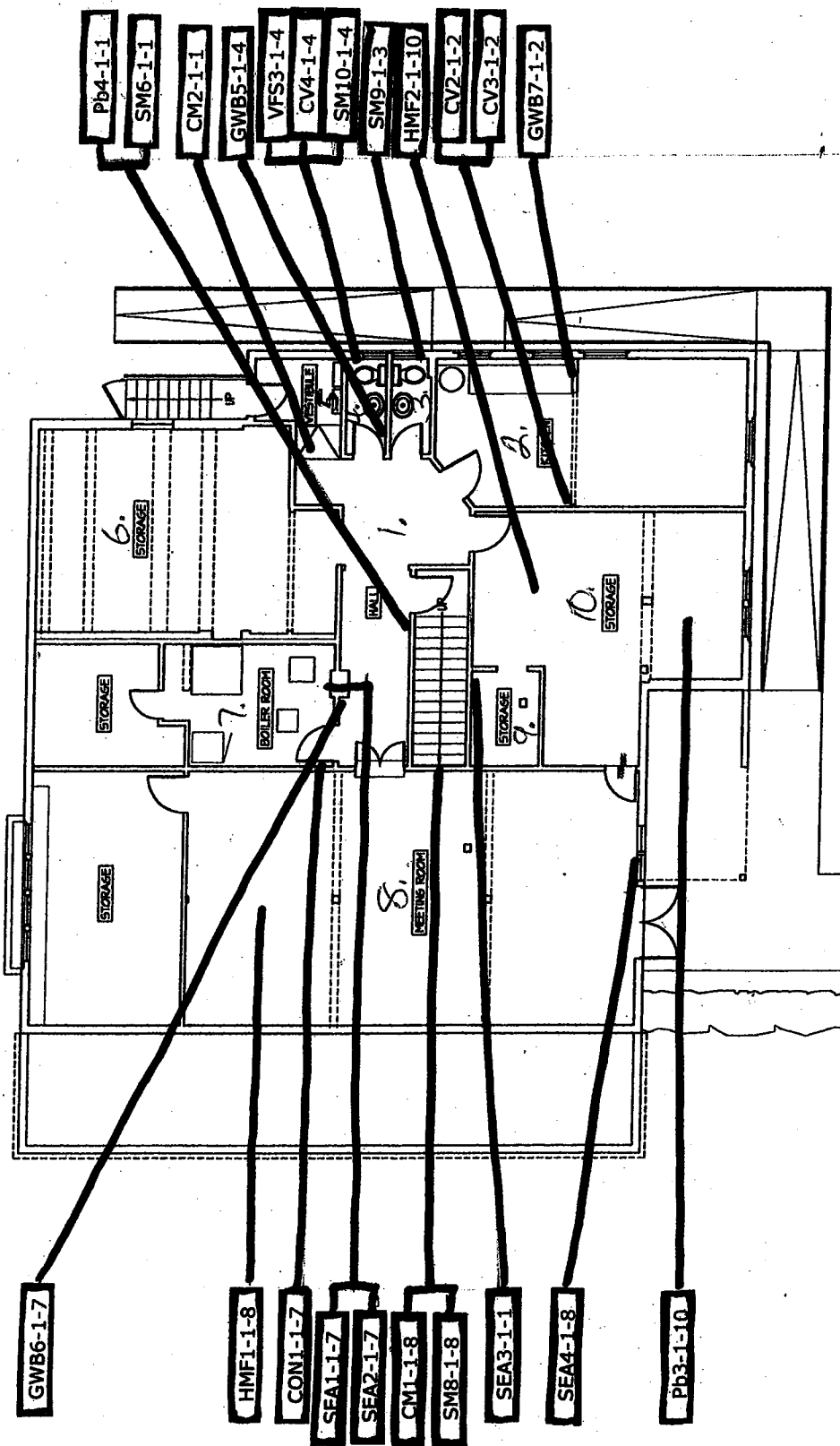
***Appendix D***

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***Drawings with Sample Locations***



1st Floor



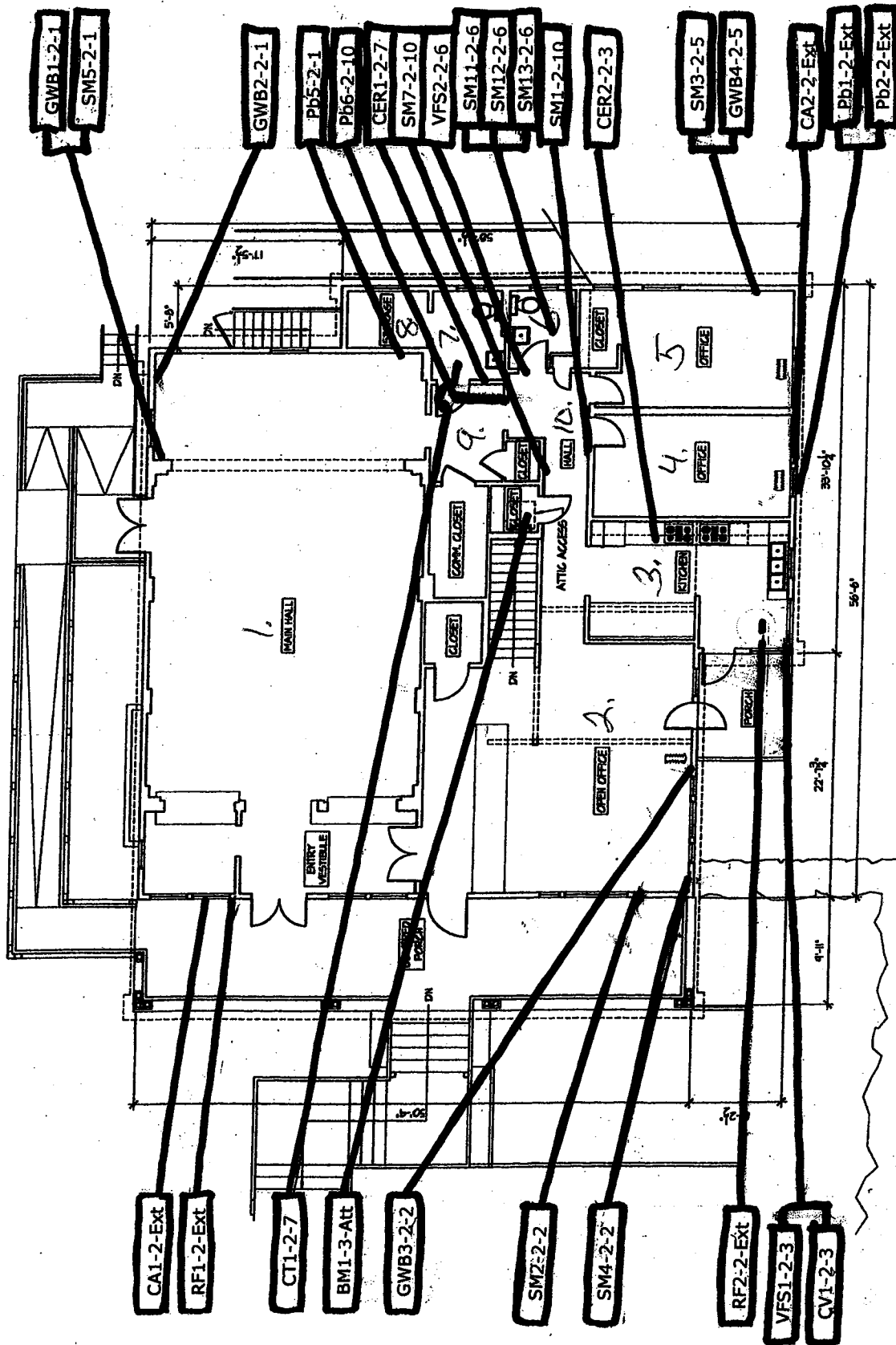
Basement Plan  
Scale: 3/16" = 1'-0"



AE2.00  
Existing  
Basement Plan

KIRKLAND CITY HALL ANNEX CITY OF KIRKLAND		ARCHITECTURE + PLANNING
EXISTING CONDITIONS	19 NOVEMBER 2007	TERRY AVENUE N. SEATTLE, WA 98109 TEL 206.447.4749 FAX 206.447.4462





AE2.01

Existing  
Main Floor Plan

Main Floor Plan  
Scale: 1/4" = 1'-0"



# KIRKLAND CITY HALL ANNEX

CITY OF KIRKLAND

EXISTING CONDITIONS

19 NOVEMBER 2007

ARCHITECTURE + PLANNING

TERRY AVENUE N. SEATTLE WA 98109  
TEL 206.447.4749 FAX 206.447.6462



***Appendix E***

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***Chain of Custody and Laboratory Analytical Results-Asbestos***



**SEATTLE ASBESTOS TEST, LLC**

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NVLAP Accreditation

Lab Code: 200768-0

**ANALYTICAL LABORATORY REPORT**

PLM by Method EPA/600/R-93/116

Attn.: Mr. Scott Parker

Client: Argus Pacific, Inc.

Address: 1900 W Nickerson St # 315

Seattle, WA 98119

Client Job #: 302-310

Laboratory Batch #: 200792637

Date Received: 11/20/2007

Samples Received: 45

Date Analyzed: 11/23/2007

Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219254	GWB1-2-1	1	Gray sandy/brittle material with paint		None detected	Sands, Filler, Mica	3	Cellulose
2007219255	GWB2-2-1	1	White powdery material with paint		None detected	Binder/filler, Paint	4	Cellulose
		2	Gray sandy/brittle material		None detected	Sands, Filler, Mica	3	Cellulose
2007219256	GWB3-2-2	1	White powdery material with paint		None detected	Binder/filler, Paint	2	Cellulose
		2	White chalky material with paper		None detected	Binder/filler Gypsum/binder	25	Cellulose
2007219257	GWB4-2-5	1	Gray sandy/brittle material with paint		None detected	Sands, Filler, Mica, Paint	4	Cellulose
2007219258	GWB5-1-4	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler Gypsum/binder	22	Cellulose
2007219259	GWB6-1-7	Analyst Comments: Composite result for whole sample is less than 1% asbestos.						
		1	Tan powdery material	2	Chrysotile	Binder/filler	5	Cellulose
		2	White chalky material with paper		None detected	Binder/filler Gypsum/binder	27	Cellulose
2007219260	GWB7-1-2	1	Gray sandy/brittle material with paint and wood debris		None detected	Sands, Filler, Mica	3	Cellulose

Analyzed by: Steve (Fanyao) Zhang


 Reviewed by: Steve (Fanyao) Zhang, President



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 Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219261	CA1-2-EXT	1	Gray brittle material with paint		None detected	Paint, Filler, Binder	2	Cellulose
2007219262	CA2-2-EXT	1	Gray brittle material with paint		None detected	Paint, Filler, Binder	3	Cellulose
2007219263	HMF1-1-8	1	White woven fiber with paint		None detected	Filler, Paint	65	Cellulose
		2	White powdery/fibrous material	3	Crocidolite 25 Amosite	Ceramic/binder, Filler	15	Cellulose
2007219264	HMF2-1-10	1	White woven fiber with paint		None detected	Filler, Paint	65	Cellulose
		2	White powdery/fibrous material	17	Chrysotile	Ceramic/binder, Filler	14	Cellulose
2007219265	VFS1-1-3	1	Gray sheet vinyl		None detected	Vinyl/binder		None detected
		2	Gray fibrous material with mastic		None detected	Binder/filler, Mastic/binder	70	Cellulose
2007219266	VFS2-2-6	1	Beige sheet vinyl		None detected	Vinyl/binder		None detected
		2	Tan fibrous material with mastic		None detected	Binder/filler, Mastic/binder	67	Cellulose
2007219267	CV1-2-3	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
2007219268	SM1-2-10	1	White powdery material with paint and paper		None detected	Binder/filler, Paint	25	Cellulose

Analyzed by: Steve (Fanyao) Zhang

  
 Reviewed by: Steve (Fanyao) Zhang, President



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 Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219269	SM2-2-2	1	White powdery material with paint		None detected	Binder/filler, Paint	6	Cellulose
2007219270	SM3-2-5	1	White powdery material with paint		None detected	Binder/filler, Paint	7	Cellulose
2007219271	SM4-2-2	1	White powdery material with paint and paper		None detected	Binder/filler, Paint	17	Cellulose
2007219272	SM5-2-1	1	White powdery material with paint		None detected	Binder/filler, Paint	6	Cellulose
2007219273	SM6-2-1	1	White powdery material with paint		None detected	Binder/filler, Paint	8	Cellulose
2007219274	SM7-2-10	1	White powdery material with paint		None detected	Binder/filler, Paint	6	Cellulose
2007219275	SM8-1-8	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
2007219276	SM9-1-3	1	White powdery material with paint		None detected	Binder/filler, Paint	6	Cellulose
2007219277	SM10-1-4	1	White powdery material with paint		None detected	Binder/filler, Paint	4	Cellulose
2007219278	SM11-2-6	1	Tan powdery material with paint	2	Chrysotile	Binder/filler, Paint	6	Cellulose
2007219279	SM12-2-6	1	Tan powdery material with paint	2	Chrysotile	Binder/filler, Paint	6	Cellulose

Analyzed by: Steve (Fanyao) Zhang



Reviewed by: Steve (Fanyao) Zhang, President



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 Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219280	SM13-2-6	1	Tan powdery material with paint	2	Chrysotile	Binder/filler, Paint	2	Cellulose
2007219281	SEA1-1-7	1	Gray hard/brittle material		None detected	Sands, Filler	3	Cellulose
2007219282	SEA2-1-7	1	Gray hard/brittle material		None detected	Sands, Filler	3	Cellulose
2007219283	CV2-1-2	1	Blue rubbery material		None detected	Rubber/binder	5	Cellulose
		2	White mastic		None detected	Mastic/binder	2	Cellulose
2007219284	CV3-1-2	1	Blue rubbery material		None detected	Rubber/binder	2	Cellulose
		2	White mastic with powdery material		None detected	Mastic/binder	4	Cellulose
2007219285	CV4-1-4	1	Blue rubbery material		None detected	Rubber/binder	2	Cellulose
		2	White mastic with powdery material		None detected	Mastic/binder	6	Cellulose
2007219286	CV5-1-1	1	Beige rubbery material		None detected	Rubber/binder	2	Cellulose
		2	Brown mastic with powdery material		None detected	Mastic/binder	2	Cellulose



Analyzed by: Steve (Fanyao) Zhang

Reviewed by: Steve (Fanyao) Zhang, President



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 Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219287	CM1-1-8	1	Gray woven fibrous material		None detected	Filler, Binder	85	Synthetic fibers
		2	Brown Mastic		None detected	Mastic/binder	5	Cellulose
2007219288	CM2-1-1	1	Gray woven fibrous material		None detected	Filler, Binder	80	Synthetic fibers
		2	Brown Mastic		None detected	Mastic/binder	3	Cellulose
2007219289	VFS3-1-4	1	Beige sheet vinyl		None detected	Vinyl/binder		None detected
		2	Gray fibrous material with mastic		None detected	Binder/filler, Mastic/binder	55	Cellulose
		3	Brown tile	2	Chrysotile	Vinyl/binder, Mineral grains	2	Cellulose
		4	Brown mastic		None detected	Mastic/binder	4	Cellulose
2007219290	CON1-1-7	1	Gray sandy/brittle material		None detected	Sands, Filler, Mica	3	Cellulose
2007219291	SEA3-1-1	1	White powdery material		None detected	Binder/filler, Paint	5	Cellulose
2007219292	SEA4-1-8	1	Gray soft/elastic material		None detected	Binder, Filler	4	Cellulose

Analyzed by: Steve (Fanyao) Zhang



Reviewed by: Steve (Fanyao) Zhang, President



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 Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
2007219293	CER1-2-7	1	White ceramic		None detected	Ceramic/binder		None detected
		2	Gray brittle/sandy material		None detected	Binder Sands,	2	Cellulose
		3	Brown mastic		None detected	Mastic/binder	2	Cellulose
2007219294	RF1-2-EXT	1	White powdery material with paint		None detected	Binder/filler, Paint	5	Cellulose
		2	Black asphaltic fibrous material		None detected	Asphalt/binder, Binder/filler	70	Cellulose
		3	Brown wood		None detected	Wood	15	Cellulose
2007219295	RF2-2-EXT	1	Multi-layered black asphaltic material with sand		None detected	Asphalt/binder	75	Cellulose
		2	Black asphaltic fibrous material		None detected	Asphalt/binder, Binder/filler	67	Cellulose
2007219296	BM1-3-ATT	1	Gray/brown sandy/brittle material		None detected	Sands, Filler, Mica	3	Cellulose
2007219297	CER2-2-3	1	White ceramic		None detected	Ceramic/binder		None detected
		2	Gray brittle/sandy material		None detected	Binder Sands,	2	Cellulose

Analyzed by: Steve (Fanyao) Zhang



Reviewed by: Steve (Fanyao) Zhang, President



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**ANALYTICAL LABORATORY REPORT**

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Attn.: Mr. Scott Parker

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Address: 1900 W Nickerson St # 315

Seattle, WA 98119

Client Job #: 302-310

Laboratory Batch #: 200792637

Date Received: 11/20/2007

Samples Received: 45

Date Analyzed: 11/23/2007

Samples Analyzed: 45

Project: N/A

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-Fibrous Components	%	Non-asbestos Fibers
		3	Brown mastic		None detected	Mastic/binder	3	Cellulose
2007219298	CT1-2-7	1	Gray fibrous material with paint		None detected	Paint, Filler, Perlite	65	Cellulose

Analyzed by: Steve (Fanyao) Zhang



Reviewed by: Steve (Fanyao) Zhang, President



## SEATTLE ASBESTOS TEST, LLC

19711 Scriber Lake Road, Suite D, Lynnwood, WA 98036

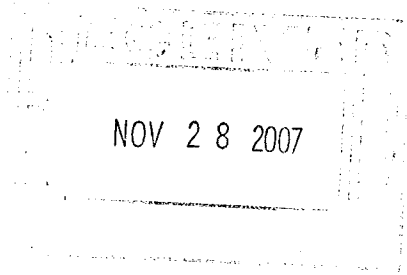
Tel: 425.673.9850, Fax: 425.673-9810

www.seattleasbestostest.com, admin@seattleasbestostest.com

NVLAP Accreditation

Lab Code: 200768-0

Mr. Scott Parker  
Argus Pacific, Inc.  
1900 W Nickerson St # 315  
Seattle, WA 98119



Date Analyzed: 11/23/2007

Client Job #: 302-310  
Laboratory Batch #: 200792637  
Samples Received: 45

Enclosed please find the test results for the bulk samples submitted to our laboratory for asbestos analysis. Analysis was performed using polarized light microscopy (PLM) in accordance with Test Method US EPA/600/R-93/116.

Since variation in data increases as the quantity of asbestos decreases toward the limit of detection, the EPA recommends point counting for samples containing between <1% and 10% asbestos (NESHAP, 40 CFR Part 61). Statistically, point counting is a more accurate method. If you feel a point count might be beneficial, please feel free to call and request one.

The test results refer only to the samples submitted. The accuracy with which these samples represent the actual materials is totally dependent on the acuity of the person who took the samples.

This report is highly confidential and will not be released without your consent. Samples are archived for two weeks after the analysis, and disposed of as hazardous waste thereafter.

Thank you for using our service and let us know if we can further assist you.

Sincerely

Steve (Fanyao) Zhang  
President



SEATTLE ASBESTOS TEST, LLC  
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Tel: (425) 673-9850 Fax: (425) 673-9810  
www.seattleasbestos.com

200792637  
NVLAP Accredited, 200768-0

Accredited, Experienced, Insured, and Well Managed!

### CHAIN OF CUSTODY

ANALYSIS: BULK ASBESTOS TEST ☒ POINT COUNT (400) \_\_\_\_\_, POINT COUNT (1000) \_\_\_\_\_, POINT COUNT (Gravimetric) \_\_\_\_\_, Other \_\_\_\_\_

Client Name Argus Pacific

Address \_\_\_\_\_ City \_\_\_\_\_ ST \_\_\_\_\_ ZIP \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Project Location: \_\_\_\_\_

Proj. Manager: Scott Parker

Turn Around Time 3d Number of Samples 45 Client Job # 302-310

Sample Condition: Good \_\_\_\_\_ Damaged \_\_\_\_\_ Severe Damage (Spillage) \_\_\_\_\_

SEQ#	CLIENT SAMPLE #	SAMPLE DESCRIPTION	LAB ID	A/R
1	GWB1-2-1			
2	GWB2-2-1			
3	GWB3-2-2			
4	GWB4-2-5			
5	GWB5-1-54			
6	GWB6-1-7			
7	GWB7-1-22			
8	CA1-2-Ext			
9	CA2-2-Ext			
10	HMF1-1-8			
11	HMF2-1-10			
12	VF1-1-3			
13	VF2-2-6			
14	CV1-2-3			
15	SM1-2-10			
16	SM2-2-2			
17	SM3-2-5			
18	SM4-2-2			
19	SM5-2-1			
20	SM6-2-1			

	Print Name	Signature	Company Name	Date	Time
Sampled	<u>J. Capomino</u>	<u>J. Capomino</u>	<u>Argus</u>	<u>11/20/07</u>	<u>4:10pm</u>
Relinquished					
Delivered					
Received	<u>Long</u>	<u>Long</u>	<u>SIT</u>	<u>11/20</u>	<u>4:10pm</u>
Analyzed	<u>Blumenthal</u>	<u>Blumenthal</u>	<u>SIT</u>	<u>11/23/07</u>	
Reported	<u>Long</u>	<u>Long</u>	<u>SIT</u>	<u>11/23/07</u>	

Result reporting method: Phone \_\_\_\_\_, Fax \_\_\_\_\_, Email ☒ Pick-up report \_\_\_\_\_

Seattle Asbestos Test warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted and disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. Seattle Asbestos Test accepts no legal responsibility for the purpose for which the client uses the test results. By signing on this form the clients agree to relieve Seattle Asbestos Test of any liability that may arise from the test results. Invoices paid late may be charged of interest, and invoices go to collection may be charged 17% to 25% of collection fee. Checks with NSF will be charged \$50.

E-mail results to: JohnC@ArgusPacific.com



## SEATTLE ASBESTOS TEST, LLC

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Tel: (425) 673-9850 Fax: (425) 673-9810

www.seattleasbestos.com

Accredited, Experienced, Insured, and Well Managed!

20792637  
NVLAP Accredited, 200758-0

## CHAIN OF CUSTODY

ANALYSIS: BULK ASBESTOS TEST ☒ POINT COUNT (400) \_\_\_\_\_ POINT COUNT (1000) \_\_\_\_\_ POINT COUNT (Gravimetric) \_\_\_\_\_ Other \_\_\_\_\_Client Name Argus Pacific

Address \_\_\_\_\_ City \_\_\_\_\_ ST \_\_\_\_\_ ZIP \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Project Location: \_\_\_\_\_

Proj. Manager: Scott ParkerTurn Around Time 3d Number of Samples 43 Client Job # 302-310

Sample Condition: Good \_\_\_\_\_ Damaged \_\_\_\_\_ Severe Damage (Spillage) \_\_\_\_\_

SEQ#	CLIENT SAMPLE #	SAMPLE DESCRIPTION	LAB ID	A/R
1	SM7-2-10			
2	SM8-1-8			
3	SM9-1-3			
4	SM10-1-4			
5	SM11-2-6			
6	SM12-2-6			
7	SM13-2-6			
8	SEA1-1-7			
9	SEA2-1-7			
10	CV2-1-2			
11	CV3-1-2			
12	CV4-1-4			
13	CV5-1-1			
14	CM1-1-8			
15	CM2-1-1			
16	VF33-1-4			
17	CON1-1-7			
18	SEAB-1-1			
19	SEA4-1-8			
20	CER1-2-7			

	Print Name	Signature	Company Name	Date	Time
Sampled	J. Caparimo	J. Caparimo	Argus	11.20.07	4:15pm
Relinquished					
Delivered	Comp	Comp	SM	11/20	4:15pm
Received	Stanley	Stanley	SM	11/23/07	
Analyzed					
Reported					

Result reporting method: Phone \_\_\_\_\_, Fax \_\_\_\_\_, Email ☒ Pick-up report \_\_\_\_\_

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By signing on this form the clients agree to relieve Seattle Asbestos Test of any liability that may arise from the test results.

Invoices paid late may be charged of interest, and invoices go to collection may be charged 17% to 25% of collection fee.

Checks with NSF will be charged \$50.

E-mail results to: JohnC@ArgusPacific.com



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2007 92637  
NVLAP Accredited, 200768-0

## CHAIN OF CUSTODY

ANALYSIS: BULK ASBESTOS TEST ☒ POINT COUNT (400) \_\_\_\_\_ POINT COUNT (1000) \_\_\_\_\_ POINT COUNT (Gravimetric) \_\_\_\_\_ Other \_\_\_\_\_

Client Name Argus Pacific

Address \_\_\_\_\_ City \_\_\_\_\_ ST \_\_\_\_\_ ZIP \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Project Location: \_\_\_\_\_

Proj. Manager: Scott Parker

Turn Around Time 3d Number of Samples 46

Client Job # 302-310

Sample Condition: Good \_\_\_\_\_ Damaged \_\_\_\_\_ Severe Damage(Spillage) \_\_\_\_\_

SEQ#	CLIENT SAMPLE #	SAMPLE DESCRIPTION	LAB ID	A/R
1	RF1-2-EXT			
2	RF2-2-EXT			
3	BM1-3-AH			
4	CER2-2-3			
5	CT1-2-7			
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

	Print Name	Signature	Company Name	Date	Time
Sampled	J. Caparimo	J. Caparimo	Argus	11/20/07	4:20pm
Relinquished					
Delivered					
Received	Long	Long	SN	11/20/07	first
Analyzed	Stevenson	Stevenson		11/23/07	
Reported					

Result reporting method: Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email ☒ Pick-up report \_\_\_\_\_

Seattle Asbestos Test warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted and disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. Seattle Asbestos Test accepts no legal responsibility for the purpose for which the client uses the test results. By signing on this form the clients agree to relieve Seattle Asbestos Test of any liability that may arise from the test results. Invoices paid late may be charged of interest, and invoices go to collection may be charged 17% to 25% of collection fee. Checks with NSF will be charged \$50.

Email Results: JohnC@ArgusPacific.com



*Appendix F*

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*Chain of Custody and Laboratory Analytical Results-Lead*



# NVL Laboratories, Inc.

4708 Aurora Ave. N., Seattle, WA 98103  
Tel: 206.547.0100, Fax: 206.634.1936  
www.nvllabs.com

## Analysis Report

AIHA - IH # 101861  
WA - DOE # C1765



### Total Lead (Pb)

Client: Argus Pacific, Inc.  
Address: 1900 W. Nickerson St., Suite 315  
Seattle, WA 98119

**Batch #: 2716329.00**

Matrix: Paint Chips

Method: EPA 7000B

Client Project #: 302-310

Date Received: 11/20/2007

Samples Received: 7

Samples Analyzed: 7

**Attention: Mr. Scott Parker**

Project Location: N/A

Lab ID	Client Sample #	Sample Weight	RL in mg/Kg	Results in mg/Kg	Results in percent
27105276	Pb1-2-EXT	0.2089	43.0	160000.0	16.0000
27105277	Pb2-2-EXT	0.2022	44.0	11000.0	1.1000
27105278	Pb3-1-10	0.1406	63.0	2800.0	0.2800
27105279	Pb4-1-1	0.2249	40.0	1100.0	0.1100
27105280	Pb5-2-1	0.1763	50.0	300.0	0.0300
27105281	Pb6-2-10	0.2077	43.0	130.0	0.0130
27105282	Pb7-2-4	0.1958	45.0	940.0	0.0940

Sampled by: Client

Analyzed by: Tanveer Khan

Reviewed by: Nick Ly

Date Analyzed: 11/23/2007

Date Issued: 11/23/2007

  
Nick Ly, Technical Director

mg/ Kg =Milligrams per kilogram

Percent = Milligrams per kilogram / 10000

Note : Method QC results are acceptable unless stated otherwise.

Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

RL = Reporting Limit

'<' = Below the reporting Limit



**NVL Laboratories, Inc.**

4708 Aurora Ave N, Seattle, WA 98103  
 Tel: 206.547.0100 Emerg. Pager: 206.344.1878  
 Fax: 206.634.1936 1.888.NVL.LABS (685.5227)

# CHAIN of CUSTODY SAMPLE LOG

BATCH ID  
**2716329.00**

Client Argus Pacific, Inc.Street 1900 W. Nickerson StreetSuite 315

Seattle, WA 98119

Project Manager ~~John~~ John Parker

Project Location \_\_\_\_\_

NVL Batch Number \_\_\_\_\_

Client Job Number 302-310

Total Samples \_\_\_\_\_

Turn Around Time

- ☐ 1-Hr ☐ 24-Hrs ☐ 4 Days  
☐ 2-Hrs ☐ 2 Days ☐ 5 Days  
☐ 4-Hrs ☒ 3 Days ☐ 6 to 10 Days  
 Please call for TAT less than 24 Hrs

Email address yoshimoto.m@portseattle.org

Phone: (206) 396-4938

Fax: (206) 285-3927

Home \_\_\_\_\_

<input type="checkbox"/> Asbestos Air	<input type="checkbox"/> PCM (NIOSH 7400)	<input type="checkbox"/> TEM (NIOSH 7402)	<input type="checkbox"/> TEM (AHERA)	<input type="checkbox"/> TEM (EPA Level II)	<input type="checkbox"/> Other _____
<input type="checkbox"/> Asbestos Bulk	<input type="checkbox"/> PLM (EPA/600/R-93/116)	<input type="checkbox"/> PLM (EPA Point Count)	<input type="checkbox"/> PLM (EPA Gravimetry)	<input type="checkbox"/> TEM Bulk	
<b>METALS</b>	<b>Det. Limit</b>	<b>Matrix</b>	<b>RCRA Metals</b>	<input type="checkbox"/> All 8	<b>Other Metals</b>
<input checked="" type="checkbox"/> Total Metals	<input type="checkbox"/> ppm (AAS)	<input type="checkbox"/> Air Filter	<input type="checkbox"/> Arsenic (As)	<input checked="" type="checkbox"/> Lead (Pb)	<input type="checkbox"/> All 3
<input type="checkbox"/> TCLP	<input type="checkbox"/> ppb (GFAA)	<input type="checkbox"/> Drinking water	<input type="checkbox"/> Barium (Ba)	<input type="checkbox"/> Mercury (Hg)	<input type="checkbox"/> Copper (Cu)
		<input type="checkbox"/> Dust/wipe	<input type="checkbox"/> Cadmium (Cd)	<input type="checkbox"/> Selenium (Se)	<input type="checkbox"/> Nickel (Ni)
		<input type="checkbox"/> Soil	<input type="checkbox"/> Chromium (Cr)	<input type="checkbox"/> Silver (Ag)	<input type="checkbox"/> Zinc (Zn)
<input type="checkbox"/> Other Types of Analysis	<input type="checkbox"/> Fiberglass	<input type="checkbox"/> Nuisance Dust	<input type="checkbox"/> Other (Specify) _____		
	<input type="checkbox"/> Silica	<input type="checkbox"/> Respirable Dust			

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comments	A/R
1		Pb1-2-Ext	Wall/Wood/Beige	
2		Pb2-2-Ext	Trim/Wood/Green	
3		Pb3-1-10	Floor/Concrete/Red	
4		Pb4-1-1	Trim/Wood/White	
5		Pb5-2-1	Wall/Plaster/Beige	
6		Pb6-2-10	Wall/Plaster/Pale Yellow	
7		Pb7-2-4	Radiator/Steel/Beige	
8				
9				
10				
11				
12				
13				
14				
15				

	Print Below	Sign Below	Company	Date	Time
Sampled by	<u>S. Capanon</u>	<u>J. Capanon</u>	Argus Pacific	11/20/07	
Relinquished by			Argus Pacific		
Received by	<u>Mindy Nguyen</u>	<u>_____</u>	NVL	11/20/07	5:08
Analyzed by	<u>Tamara Khan</u>	<u>Jamela Khan</u>	NVL	11-23-07	11:10 AM
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.

Email results to JohnC@Arguspacific.com



November 23, 2007

Scott Parker  
**Argus Pacific, Inc.**  
1900 W. Nickerson St., Suite 315  
Seattle, WA 98119

NOV 30 2007



**RE: Metals Analysis; NVL Batch # 2716329.00**

Dear Mr. Parker,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Examination of these samples was conducted using analytical instruments in accordance to U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm), Percent (%) or mg/cm<sup>2</sup> by area. Dust wipe sample results are usually expressed in ug/wipe and ug/ft<sup>2</sup>. TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and ug/m<sup>3</sup>. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested. Lead test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. If you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Nick Ly, Technical Director

Enclosure:



AIHA - IH  
#101861

**NVL LABORATORIES, INC**  
4708 AURORA AVE N  
SEATTLE, WA 98103.6516  
TEL **206.547.0100**  
FAX 206.634.1936  
nvlabs@nvlabs.com

[www.nvllabs.com](http://www.nvllabs.com)  
**1.888.NVL.LABS** (685.5227)

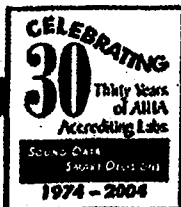


## *Appendix G*

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## *Certifications*





**LABORATORY QUALITY  
ASSURANCE PROGRAMS**

**SOUND DATA**

**SMART DECISIONS**

**AIHA**

**Your Essential Connection: Advancing Occupational  
and Environmental Health and Safety Globally**

2700 Prosperity Ave., Suite 250, Fairfax, VA 22031 U.S.A.  
(703) 849-8888; Fax (703) 207-3561; [www.aiha.org](http://www.aiha.org)

## AIHA Laboratory Quality Assurance Programs

### SCOPE OF ACCREDITATION

**NVL Laboratories, Inc.**  
4708 Aurora Avenue North, Seattle, WA 98103

**Laboratory ID: 101861**  
**Issue Date: 08/09/2006**

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or revocation. A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA website at:  
<http://www.aiha.org/Content/LOAP/accred/AccreditedLabs.htm>

### Industrial Hygiene Laboratory Accreditation Program (IHLAP)

**Initial Accreditation Date: 04/01/1997**

IHLAP Category	Field of Testing (FoT)	Method	Method Description (for internal methods only)
Core Program Testing	AA	NIOSH 7082	
		NIOSH 7048	
		NIOSH 7024	
		NIOSH 7030	
	ICP	NIOSH 7300	
	Phase Contrast Microscopy (PCM)	NIOSH 7400	

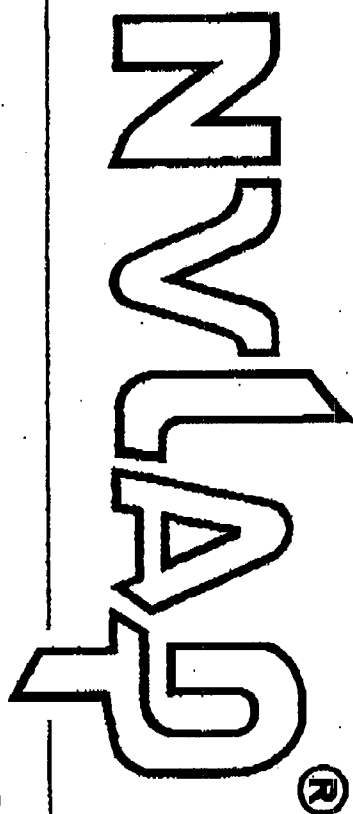
**The laboratory participates in the following AIHA\*  
or AIHA-approved proficiency testing programs:**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Metals*                                | <input type="checkbox"/> Organic Solvents*                |
| <input type="checkbox"/> Silica*   | <input type="checkbox"/> Diffusive Sampler (3M)*          |
| <input checked="" type="checkbox"/> Asbestos*                              | <input type="checkbox"/> Diffusive Sampler (SKC)*         |
| <input type="checkbox"/> Bulk Asbestos*                                    | <input type="checkbox"/> Diffusive Sampler (AT)*          |
| <input type="checkbox"/> Beryllium*  | <input type="checkbox"/> WASP <sup>1</sup> (Formaldehyde) |
| <input type="checkbox"/> WASP <sup>1</sup> (Thermal Desorption Tubes)      |   |
| <input type="checkbox"/> Pharmaceutical Round Robin                        |   |
| <input type="checkbox"/> Compressed/Breathing Air Round Robin              |   |
| <input type="checkbox"/> NVLAP (determined at the time of site assessment) |   |

<sup>1</sup> Workplace Analytical Scheme for Proficiency



United States Department of Commerce  
National Institute of Standards and Technology



# Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200768-0

Seattle Asbestos Test, LLC  
Lynnwood, WA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:

## BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).

2007-10-01 through 2008-09-30

Effective dates



For the National Institute of Standards and Technology

*John D. Bures*



# Certificate of Completion

This is to certify that

**John Caparimo**

has satisfactorily completed  
4 hours of refresher training as an

**Asbestos Building Inspector**

to comply with the training requirements of  
EPA Title III / 40 CFR 763 (ASBESTOS)

Certificate Number: 10268052

  
Instructor

EPA Provider Cert. Number: 1085



Sep 26, 2007

Date(s) of Training

Exam Score: NA

Expiration Date: Sep 25, 2008

Argus Pacific, Inc. • 1900 W. Nickerson, Suite 315 • Seattle, Washington • 98119 • (206) 285.3373 • fax (206) 285.3927



December 6, 2007

Ms. Susan Boyle  
320 Terry Avenue, N  
Seattle, WA 98109

RE: MOLD SAMPLING AT KIRKLAND ANNEX, 312-310 FIRST AVENUE,  
SEATTLE, WA 98033

Dear Ms. Boyle,

Matt Hamel (BOLA) expanded Argus Pacific's scope of work to include the collection and analysis of a tape lift sample for suspected visible growth (SVG) at the Kirkland Annex, 312-310 First Avenue, Seattle, WA 98033.

John Caparimo (Argus Pacific), an EPA-certified AHERA Building Inspector, # 102680052 (exp. September 25, 2008) performed the sampling.

This inspection and associated results letter are intended to assist with an evaluation for the need for further testing of SVG and moisture at the Kirkland Annex.

#### RESULTS

Argus Pacific conducted a Hazardous Materials inspection on November 20, 2007 of the Kirkland Annex. Sampling of the SVG was requested by the on-site contact, Mr. Dave Snyder (City of Kirkland). We held the sample and did not have it analyzed until receiving verbal instructions from Matt Hamel (BOLA) to submit the sample for analysis.

For the sample, a tape lift sampling technique was performed and then the sample was analyzed for Nonviable Fungal ID. The results and the location of the sampling are as follows:

Sample ID	Sample Location	Date of Sampling	Results
FU 01-MF-MH	Main Floor, Main Hall, NE corner, Wall	November 20, 2007	High: Cladosporium*

\*Most of the spores are found in clusters associated with insect frass.

#### CONCLUSIONS AND RECOMMENDATIONS

On November 20, 2007 Argus Pacific sampled the Kirkland Annex for SVG, which revealed a high concentration of Cladosporium in the area sampled. In addition, the presence of mold indicates the possibility of water intrusion into the building. Additional moisture sampling could identify the extent of moisture intrusion into the building.



Argus Pacific can perform additional mold and moisture sampling if requested. Please contact Scott Parker to discuss these services relating to your project.

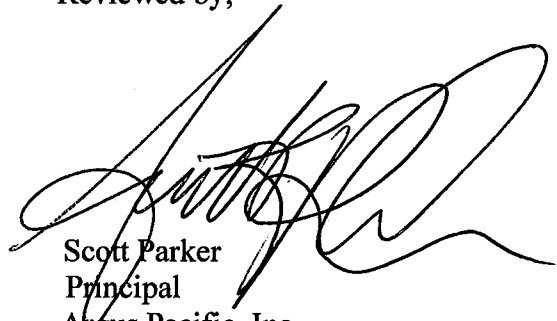
We appreciate this opportunity to be of service to you. Please contact us at (206) 283-3733 if you have questions regarding this report, or if you require additional information.

Inspected by,



John Caparimo  
Industrial Hygiene Technician  
Argus Pacific, Inc.

Reviewed by,

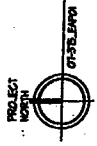
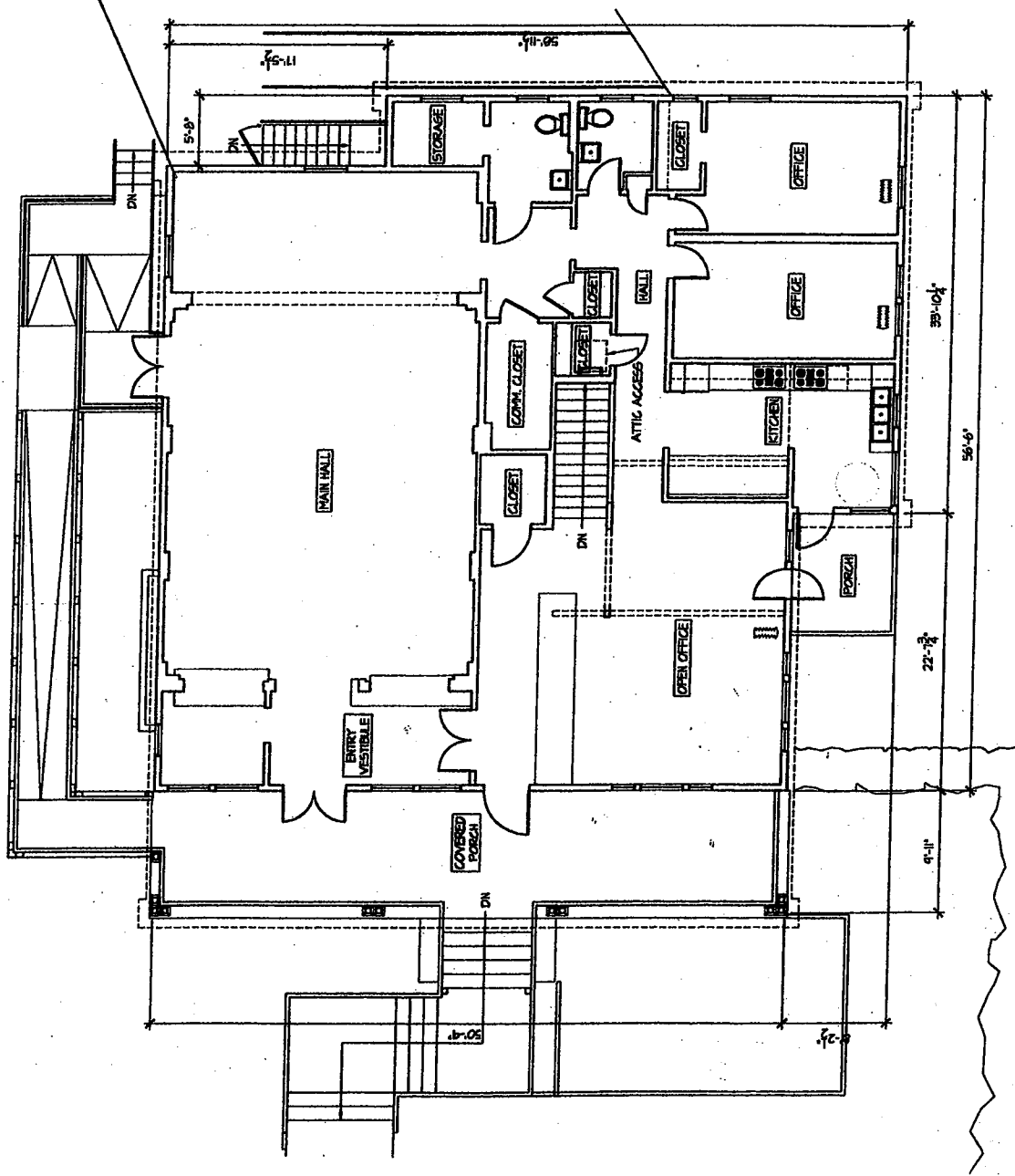


Scott Parker  
Principal  
Argus Pacific, Inc.

Attachment: Site drawing with sample location



FU 01-MF-MH  
(Interior Wall Surface)



Main Floor Plan  
Scale: 3/16" = 1'-0"

AE2.01

Existing  
Main Floor Plan

# KIRKLAND CITY HALL ANNEX

CITY OF KIRKLAND

EXISTING CONDITIONS

19 NOVEMBER 2007

BO  
ARCHITECTURE + PLANNING  
TERRY AVENUE N. SEATTLE WA 98109  
TEL 206.447.4749 FAX 206.447.6462



**BID FORM**

Bidder (Contractor): \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

**TO: City of Kirkland  
123 5<sup>th</sup> Avenue  
Kirkland, WA 98033**

**RE: City Hall Annex Building VRF HVAC Installation  
JOB NO. 52-23-CMO  
CIP NO. GGC 0420000  
310 1<sup>st</sup> St, Kirkland WA 98033**

**GENERAL PROPOSAL**

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this proposal are those named herein; that this proposal is in all respects fair and without fraud; that it is made without collusion with any official or employee City of Kirkland; and that the proposal is made without any connection or collusion with any person making another proposal on this contract.

The Bidder further declares that they have carefully examined the contract documents for the construction of the project; that they have personally inspected the site; that they have satisfied themselves as to the quantities involved, including materials and equipment and conditions of work involved, including the fact that the description of the quantities of work materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the contract documents; and that this proposal is made according to the provisions and under the terms of the contract documents, which documents are hereby made a part of this proposal.

The Bidder further agrees that they have exercised their own judgment regarding the interpretation of subsurface information and have utilized all data which they believe is pertinent from the Engineers, Owner and other sources in arriving at his/her conclusions.

The Bidder agrees to hold their bid proposal open for sixty (60) days after the actual date of bid opening and to accept the provisions of the Instructions to Bidders regarding disposition of bid bond.

The Bidder agrees that if this bid is accepted through Award of Contract by Council, it will, within fourteen (14) calendar days after notification of acceptance, execute the contract with the Owner in the form of contract included in the contract documents, and will, at the time of execution of the Contract, deliver to the Owner the Performance and Payment Bonds and all Certificates of Insurance required therein, and will, to the extent of its proposals, furnish all machinery, tools, apparatus, and other means of construction and do the work in the manner, in the time, and according to the requirements as specified in the contract documents and required by the engineer/architect or other project manager designated thereunder.



BID FORM

**TIME OF COMPLETION:**

The Owner can issue Notice to Proceed at any time after contract execution. The undersigned understands and agrees that Substantial Completion of the work shall be no later than 60 consecutive calendar days after the Notice to Proceed, and that Final Completion of the work shall be no later than 15 consecutive calendar days after Substantial Completion.

**PERMITS, FEES AND INSPECTIONS:**

The Owner will apply for and pay for the mechanical and electrical permits. The contractor is required to meet the requirements and conditions of any owner-procured permits, to post the permits, and for the scheduling and inspections related to these permits. The Contractor is responsible for all other required permits for the project in their entirety. A City right-of-way permit is not required to be applied for or paid for as this is a City project, although the Contractor will need to comply with requirements of working in the right of way, such as, but not limited to, having an approved traffic control plan. Utility connection fees, if incurred by the contractor to facilitate the work, shall be paid back to the contractor by the Owner within the contract document change order process without markup of any kind. All other City of Kirkland and other State of Washington or local agency permits and requirements are the financial and administrative responsibility of the Contractor at no cost to the City of Kirkland.

**BASE BID:**

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the contract documents and based upon the bid price for fully completed work as included in the proposal and the Bid Price represents a true measure of the labor, equipment, and materials required to perform and complete the work, including all allowances for overhead and profit for each type of work called for in these contract documents, as well as all use taxes, overhead, profit, bond premiums, insurance premiums and all other miscellaneous and incidental expenses. The amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

The undersigned bids for complete construction of the City Hall Annex VRF HVAC Installation Project as follows:

For the **Total Base Bid**, which does not include Washington State sales tax, the sum of:

\_\_\_\_\_ DOLLARS  
(Please print dollar amount in words in space above.)

\$ \_\_\_\_\_  
(Please write dollar figure in numerals in space above.)



BID FORM

**SUMMARY OF BID**

Write the numerical Total for Base Bid amount below for the evaluation of low bid.

<b>Total Base Bid</b>	
-----------------------	--

(Please write numerical dollar amounts in spaces above)

**ADDENDA**

Receipt of the following Addenda is hereby acknowledged.

Addendum No. \_\_\_\_\_ dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ dated \_\_\_\_\_



BID FORM

**BID REVIEW MEETING**

The Undersigned agrees that if they are the successful bidder, they will be available for a bid review meeting with the Engineer, Owner's Representative, and the Owner at the Owner's office, at a time to be agreed upon.

**Within the three-year period immediately preceding the date of the bid solicitation for this Project, bidder has not been determined by a final and binding citation and notice of assessment issued by the department of labor and industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW.**

**I certify (or declare) under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct:**

\_\_\_\_\_  
CONTRACTOR (Company Name)

\_\_\_\_\_  
By (Signature)

\_\_\_\_\_  
Printed Name/Title of Signatory

\_\_\_\_\_  
(Indicate whether Contractor is Partnership)

\_\_\_\_\_  
Washington State Contractor's  
Registration Number

\_\_\_\_\_  
Contractor's Industrial Insurance  
Account Number

Contractor's Address:

\_\_\_\_\_

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_

\_\_\_\_\_  
Fax Number

**BID FORM TO BE SUBMITTED IN A SEALED ENVELOPE  
END OF SECTION**



## BID DEPOSIT

Herewith find deposit in the form of a cashier's check or certified check in the amount of  
\$ \_\_\_\_\_ which amount is not less than five percent (5%) of the total bid.

SIGN HERE \_\_\_\_\_

---

---

## BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_, as Principal, and  
\_\_\_\_\_, as Surety, are  
held and firmly bound unto the City of Kirkland, as Obligee, in the penal sum of \_\_\_\_\_  
\_\_\_\_\_ dollars, for the payment of which the  
Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns,  
jointly and severally, by these presents.

The condition of this obligation is such that if the Obligee shall make any award to the Principal for

\_\_\_\_\_  
Project Name Job Number

according to the terms of the proposal or bid made by the Principal therefor, and the Principal shall duly  
make and enter into a contract with the Obligee in accordance with the terms of said proposal or bid and  
award and shall give bond for faithful performance thereof, with Surety or Sureties approved by the Obligee;  
or if the Principal shall, in case of failure to do so, pay and forfeit to the Obligee the penal amount of the  
deposit specified in the call for bids, then this obligation shall be null and void; otherwise it shall be and  
remain in full force and effect and the Surety shall forthwith pay and forfeit to the Obligee, as penalty and  
liquidated damages, the amount of this bond.

SIGNED, SEALED AND DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_\_.

PRINCIPAL:

SURETY:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Note: If a Bid Bond is provided, it must be accompanied by a power of attorney which appoints the  
Surety's true and lawful attorney-in-fact to make, execute, seal and deliver this Bid Bond.



**CITY OF KIRKLAND**

**SUBCONTRACTOR IDENTIFICATION FOR CONTRACTS ESTIMATED TO BE  
IN EXCESS OF ONE MILLION DOLLARS (\$1,000,000.00)**

RCW 39.30.060 requires the following:

“(1) Every invitation to bid on a prime contract that is expected to cost one million dollars or more for the construction, alteration, or repair of any public building or public work of the state or a state agency or municipality as defined under RCW 39.04.010 ... shall require each prime contract bidder to submit:

(a) **Within one hour after the published bid submittal time**, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of: HVAC (heating, ventilation, and air conditioning); plumbing as described in chapter 18.106 RCW; and electrical as described in chapter 19.28 RCW, or to name itself for the work; and

(b) **Within forty-eight hours after the published bid submittal time**, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of structural steel installation and rebar installation.

The prime contract bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the prime contract bidder must indicate which subcontractor will be used for which alternate. Failure of the prime contract bidder to submit as part of the bid the names of such subcontractors or to name itself to perform such work or the naming of two or more subcontractors to perform the same work shall render the prime contract bidder's bid non-responsive and, therefore, void."



**CITY OF KIRKLAND**  
**SUBCONTRACTOR IDENTIFICATION LIST (1 of 2)**

Submit this form within the bid proposal envelope **or** within one (1) hour after the published bid submittal time. If submitting after the published bid submittal time, Bidder must hand deliver this form to the Cashier Counter at City Hall, 123 5<sup>th</sup> Avenue, Kirkland WA 98033.

Bidder (Company): \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

**Proposed Subcontractors and items of work to be performed:**

**Subcontractor Name:** \_\_\_\_\_

**HVAC Work to be Performed:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Plumbing Work to be Performed:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Subcontractor Name:** \_\_\_\_\_

**Electrical Work to be Performed:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**RETAINAGE INVESTMENT OPTION**

CONTRACTOR:

PROJECT NAME: City Hall Annex Building VRF HVAC Installation

DATE:

Pursuant to R.C.W. 60.28.010, as amended, you may choose how your retainage under this contract will be held and invested. Please complete and sign this form indicating your preference. If you fail to do so, the Owner will hold your retainage as described in "Current Expense" option 1 below.

- \_\_\_\_ 1. Current Expense: The Owner will retain your money in its Current Expense Fund Account until thirty days following final acceptance of the improvement or work as completed. You will not receive interest earned on this money.
- \_\_\_\_ 2. Interest Bearing Account: The Owner will deposit retainage checks in an interest-bearing account in a bank, mutual savings bank, or savings and loan association, not subject to withdrawal until after the final acceptance of the improvement or work as completed or until agreed to by both parties. Interest on the account will be paid to you. Any fees incurred shall be the responsibility of the contractor.
- \_\_\_\_ 3. Escrow/Investments: The Owner will place the retainage checks in escrow with a bank or trust company until thirty days following the final acceptance of the improvement or work as completed. When the moneys reserved are to be placed in escrow, the Owner will issue a check representing the sum of the moneys reserve payable to the bank or trust company and you jointly. This check will be converted into bonds and securities chosen by you and approved by the Owner and these bonds and securities will be held in escrow. Interest on these bonds and securities will be paid to you as interest accrues.

<p><i>The Contractor in choosing option (3) agrees to assume full responsibility to pay all costs which may accrue from escrow services, brokerage charges or both, and further agrees to assume all risks in connection with the investment of the retained percentages in securities.</i></p>
---

- \_\_\_\_ 4. Bond-in-Lieu: With the consent of the Owner, the contractor may submit a bond for all or any portion of the amount of funds retained by the Owner in a form and from an authorized surety insurer acceptable to the Owner. Such bond and any proceeds therefrom shall be made subject to all claims and liens and in the same manner and priority as set forth for retained percentages in this chapter. The Owner shall release the bonded portion of the retained funds to the contractor within thirty days of accepting the bond from the contractor. Whenever an Owner accepts a bond in lieu of retained funds from a contractor, the contractor shall accept like bonds from any subcontractors or suppliers from which the contractor has retained funds. The



contractor shall then release the funds retained from the subcontractor or supplier to the subcontractor or supplier within thirty days of accepting the bond from the subcontractor or supplier.

Retainage is normally released 30 days after Final Acceptance of the work, or following receipt of Labor and Industries/Department of Revenue clearance, whichever date is the later. Retainage on landscaping work may be retained longer, due to its seasonal nature. State law allows for limited early release in certain circumstances.

**CONTRACTOR:**

Signature: \_\_\_\_\_

Print or Type Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**THIS FORM TO BE EXECUTED AFTER CONTRACT IS AWARDED**

**END OF SECTION**



**AGREEMENT FORM**

THIS AGREEMENT is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between the City of Kirkland, Washington, a municipal corporation of the State of Washington, hereinafter referred to as "City" and \_\_\_\_\_, hereinafter referred to as "Contractor" effective as of the date of the first signature on the agreement so long as all other parties' authorized signatories have also executed the Agreement.

In consideration of the mutual covenants and obligations contained herein, the City and Contractor agree as follows:

1. **Agreement.** The "Contract Documents" form the "Contract." The Contract Documents consist of this Agreement, any attached Exhibits, the Project Manual, including the General Conditions; Supplemental Conditions, if any, Special Provisions, if any, the Specifications, Contract Plans, and Amendments to the Specifications; and written modifications, amendments and Change Orders to the Contract issued after execution of this Agreement, the City's Contract Bid Documents for the Project, including but not limited to the Bid package, Instructions to Bidder, Addenda, Proposal Form, Contractor's Proposal and all documents submitted therewith in response to the City's Invitation to Bid, and any additional documents referenced as comprising the Contract and Contract Documents, which are hereby fully incorporated as part of the Contract as if set forth herein.
2. **Project.** Contractor shall fully complete all Work and furnish all labor, tools, materials, and equipment for the project entitled City Hall Annex Building VRF HVAC Installation, Project No. GGC0420000, including all changes to the Work, timely and in strict accordance with the Contract Documents.
3. **Payments.** In consideration of full and faithful compliance with the terms and conditions of this agreement and the Contract Documents, the City shall pay Contractor, at the times and in the manner provided in the Contract Documents, the total sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which sum is subject, however, to increase or decrease in such proportion as the quantities for unit price items set forth in the Bid Proposal Form are so changed as set forth in the Contract Documents or as modified by an approved Change Order or addendum as permitted by the Contract Documents. The payments to Contractor include the costs for all labor, tools, materials, equipment, and subcontracts for the Work.
4. **Contract Sum.** The Contract Sum shall be the Total for Base Bid amount plus anticipated Washington State Sales Tax, subject to addition and deductions as provided in the Contract Documents. The anticipated sales tax, at a rate of \_\_\_\_\_ is \_\_\_\_\_; therefore, the Contract Sum is \_\_\_\_\_.
5. **Unit Prices.** Not used.
6. **Completion Date.** The Contract Time shall be measured from the Notice to Proceed date to the date of Substantial Completion, subject to adjustments of the Contract Time as provided in the Contract Documents. Time is of the essence in completion of the Work. Contractor shall achieve Substantial Completion of the Work by sixty (60) consecutive calendar Days after receipt of the notice to proceed, which shall be sent via e-mail, subject



to adjustments of this Contract Time as provided in the Contract Documents, and shall achieve Final Completion not later than fifteen (15) consecutive calendar Days thereafter. Contractor represents to the City that the Contract Time is adequate for full performance of the Work. Contractor shall also achieve any interim milestones and phasing requirements set forth in the Contract Documents. If the physical Work under this Agreement is not completed within the time specified, Contractor shall pay liquidated damages and all engineering inspection and supervisions costs to the City as specified in the Contract Documents.

7. **Liquidated damages.** The City will assess, and Contractor will be responsible for, liquidated damages in the amount of \$500.00 per Day for each Day beyond the Contract Time that Substantial Completion is not timely achieved and \$200.00 per Day beyond the Contract Time that Final Completion is not timely achieved. Contractor and the City agree that any liquidated damages established by this Agreement are not penalties and are a reasonable estimation of actual damages to the City, as of this date of Agreement, based on the inherent uncertainty and difficulty in calculating and quantifying damages caused by delays in the construction of the Project. This provision is intended to be in lieu of Contractor's liability for delay damages sustained by Owner by reason of Contractor's delay in reaching Substantial Completion by the date set for Substantial Completion. This provision shall not relieve or release Contractor from liability occasioned by other breaches or defaults under this Contract, nor shall it limit Owner's rights to terminate the Contract for cause pursuant to the General Conditions or to pursue any other remedy under the Contract or otherwise. In addition, Owner may recover its actual damages (including direct architectural, administrative, and other related costs attributable to the Project) as a result of any delay by Contractor in reaching Final Completion within the time required in Paragraph 4 above.
8. **Independent Contractor.** Contractor's employees, while engaged in the performance of any of Contractor's services under this Agreement, shall be considered employees of the Contractor and not employees, agents, representatives of the City and as a result, shall not be entitled to any coverage or benefits from the City. Contractor's relation to the City shall be at all times as an independent contractor. Any and all Workman's Compensation Act claims on behalf of Contractor employees, and any and all claims by third-party as a consequence of any negligent act or omission on the part of Contractor's employees, while engaged in services provided to be rendered under this Agreement, shall be solely Contractor's obligation and responsibility.
11. **Jurisdiction and Venue.** Any lawsuit or legal action brought by any party to enforce or interpret this Agreement or any of its terms or covenants shall be brought in King County Superior Court for the State of Washington.
12. **Contract is complete and integrated agreement.** The Contract represents the entire, complete, and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. No oral representations or other agreements have been made by the parties except as specifically established in the Contract.
13. **Severability.** A court of competent jurisdiction's determination that any provision or part of this Agreement is illegal or unenforceable shall not cancel or invalidate the remainder of this



CITY OF KIRKLAND  
CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION  
KIRKLAND, WASHINGTON

SECTION 00 52 20  
AGREEMENT FORM

Agreement, which shall remain in full force and effect. In such event a provision is determined void or unenforceable, the parties agree to negotiate a replacement provision to enable that party to receive the benefit as nearly as possible as to what it would have received but for the determination that a provision was illegal or unenforceable.

14. **Disclaimer.** No liability of Contractor shall attach to the City by reason of entering into this Agreement, except as expressly provided in this Agreement.

In witness whereof, the City, as approved by the City Council, and Contractor have executed this agreement by their proper officers or duly authorized agents

Dated: \_\_\_\_\_ Dated: \_\_\_\_\_

City of Kirkland

[Contractor Name] (Contractor)

By: \_\_\_\_\_

By: \_\_\_\_\_

Its: \_\_\_\_\_

Its: \_\_\_\_\_

Attention: If Contractor is a corporation, the name of the corporation should be listed in full and both the President and Secretary must sign the contract. OR, if one signature is permitted by corporation by-laws, a copy of the by-laws shall be furnished to the City and made part of the Contract Documents.

If the business is a partnership, the full name of each partner should be listed followed by d/b/a and the firm or trade name. Any one partner may sign the Contract.

If the business is a limited liability company, an authorized management member or manager must sign followed by his/her title.

(For corporations, LLC's and other legal entities)

STATE OF WASHINGTON     )  
  ) SS  
COUNTY OF KING         )

On this day before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared \_\_\_\_\_, to me known to be the \_\_\_\_\_ of \_\_\_\_\_, the legal entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said legal entity, for the uses and purposes therein set forth, and on oath stated that he/she was authorized to sign said instrument.

Given under my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Print Name: \_\_\_\_\_  
NOTARY PUBLIC in and for the State of  
Washington, residing \_\_\_\_\_



Commission expires: \_\_\_\_\_

(For individuals and d/b/a's)

STATE OF WASHINGTON     )  
  ) SS  
COUNTY OF \_\_\_\_\_ )

On this day before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared \_\_\_\_\_ and \_\_\_\_\_ to me known to be the individual(s) described herein and who executed the foregoing instrument, and acknowledged that he/she/they signed the same as his/her/their free and voluntary act and deed, for the uses and purposes therein mentioned.

Given under my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Print Name: \_\_\_\_\_  
NOTARY PUBLIC in and for the State of  
Washington, residing \_\_\_\_\_  
Commission expires: \_\_\_\_\_

**END OF SECTION**



### BONDS AND CERTIFICATES

The bond and insurance requirements set forth on the following pages are required of the successful bidder.

- 1.01     GENERAL: In addition to the Bid Security, the City of Kirkland requires the Contractor to furnish the bonds and insurance as listed in Section 00 70 00.
- 1.02     EVIDENCE OF COMPLIANCE:
- A.     Performance Bond: Submitted at time of execution of the Contract and attached thereto.
- B.     Labor, Materials, and Taxes Bond: Submitted at time of execution of the Contract and attached thereto.
- B.     Insurance: A Certificate of Insurance shall be filed with the Owner. This Certificate shall be reflective of all Insurance Coverage required by the City's Contract Documents. Any Certificate filed with the City of Kirkland found to be incomplete or not according to Form, will be returned as not satisfactory. Rejected Certificates shall be corrected as necessary and resubmitted to the City of Kirkland.
- All insurance coverages shall be endorsed to include Owner, its officers, its elected officials, its employees, its consultants, and any required governmental agencies as additional named insureds for Work performed in accordance with the Contract Documents, and all insurance certificates and endorsements shall evidence such additional insureds.
- In addition to the foregoing, the Certificate of Insurance must include a Cancellation Notification of not less than forty-five (45) days. The Certificate should also contain the Owner's Project number and Project Title to reference the Contract to which the Certificate applies.
- 1.03     INSURANCE GENERALLY: The Contractor shall not commence work under this contract until he has obtained the insurance required hereunder and such insurance has been approved by the City of Kirkland. In like manner, the General Contractor shall not allow any subcontractor to commence work on any subcontract until the subcontractor has submitted to the General Contractor a Certificate of Insurance reflective of the coverage required by the City of Kirkland. The City of Kirkland's approval of insurance shall not relieve or decrease the Contractor's liability hereunder.
- 1.04     CONTRACTOR'S LIABILITY INSURANCE: Refer to Section 00 70 00 Part 2.
- 1.05     BUILDER's RISK INSURANCE: Refer to Section 00 70 00 Part 2.
- 1.06     BONDS: Refer to Section 00 70 00 Part 2.

### END OF SECTION



PERFORMANCE BOND

SURETY TO HAVE AN A.M. BEST RATING OF A:VII OR BETTER.

Bond No. \_\_\_\_\_

KNOW ALL PERSONS BY THESE PRESENTS, that \_\_\_\_\_ (Contractor), as Principal, and \_\_\_\_\_, (insert name of surety), as Surety, a corporation duly organized under the laws of the State of \_\_\_\_\_, (insert Surety's state of incorporation), and authorized to do business as a surety in the State of Washington, are held and firmly bound unto the City of Kirkland (City) in the sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_), lawful money of the United States of America, plus the total amount of extra orders issued by the City to the Principal pursuant to the terms of the Contract referred to in the next succeeding paragraph hereof, for the payment whereof Principal and Surety bind ourselves, and our heirs, executors, administrators, representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has been awarded, and is about to enter into, a written Contract with the City for **PROJECT NAME: CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION**, which is hereby made a part of this bond as if fully set forth herein;

NOW, THEREFORE, the condition of this bond is such that:

1. If the Principal shall completely and faithfully perform all of its obligations under the Contract, including any warranties required thereunder, and all modifications, amendments, additions, and alterations thereto, including modifications which increase the contract price or time for completion, with or without notice to the surety;
2. If the Principal shall indemnify and hold the City harmless from any and all losses, liability, damages, claims, judgments, liens, costs, and fees of any type that the City may be subject to because of the failure or default of the Principal (a) in performance of any of the terms, conditions, or obligations of the Contract, including all modifications, amendments, additions, and alterations thereto, and any warranties required thereunder, and/or (b) in the payment for labor, equipment, and materials by satisfying all claims and demands incurred under the Contract, and reimbursing and paying Owner all expenses that Owner may incur in making good any default by the Principal; and
3. If the Principal shall indemnify and hold the City harmless from all claims, liabilities, causes of action, damages and costs, including property damages and personal injuries, resulting from any defect appearing or developing in the material provided or workmanship performed under the Contract;

THEN THIS obligation shall be null and void; otherwise to remain in full force and effect. If the City shall declare Principal to be in default of the Contract, and shall so notify Surety, Surety shall, within a reasonable time which shall not exceed 14 days, except for good cause shown, notify the City in writing of the manner in which surety will satisfy its obligations under this Bond.

Nonpayment of the Bond premium will not invalidate this Bond nor shall the City be obligated for the payment thereof. The Surety hereby waives notice of any modification of the Contract or extension of time made by the City.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Principal: \_\_\_\_\_

Surety: \_\_\_\_\_

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City/Zip: \_\_\_\_\_

City/Zip: \_\_\_\_\_

Telephone: ( ) \_\_\_\_\_

Telephone: ( ) \_\_\_\_\_

Note: A power of attorney must be provided which appoints the Surety's true and lawful attorney-in-fact to make, execute, seal and deliver this performance bond.





**LABOR, MATERIAL, AND TAXES BOND (PAYMENT BOND)**

**Surety to have an A.M. Best rating of A:VII or better.**

**Bond No.** \_\_\_\_\_

KNOW ALL PERSONS BY THESE PRESENTS, that, \_\_\_\_\_ **(Contractor)**, as Principal, and \_\_\_\_\_, (insert name of surety), as Surety, a corporation duly organized under the laws of the State of \_\_\_\_\_ (insert Surety's state of incorporation), and authorized to do business as a surety in the State of Washington, are held and firmly bound unto the City of Kirkland (City) for the use and benefit of claimants as hereinafter defined, in the sum of \_\_\_\_\_ **Dollars (\$\_\_\_\_\_)**, lawful money of the United States of America, plus the total amount of any extra orders issued by the City, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has been awarded, and is about to enter into, a Contract with City of Kirkland for **PROJECT NAME: CITY HALL ANNEX BUILDING VRF HVAC INSTALLATION**, which contract is by this reference made a part hereof;

WHEREAS, the contract is a public works contract, subject to the provisions of RCW Titles 39 and 60;

NOW, THEREFORE, the conditions of this obligation are such that, if the Principal shall promptly make payment to all claimants as hereinafter defined, for (a) all labor and material used or reasonably required for use in the performance of the contract and (b) all taxes, increases, and penalties incurred on the above-referenced contract under Titles 50, 51, and 82 RCW which may be due, then this obligation shall be void; otherwise, it shall remain in full force and effect, subject, however, to the following conditions: A claimant is defined as and includes (a) a person claiming to have supplied labor or materials for the prosecution of the work provided for in the contract, including any person having direct contractual relationship with the contractor furnishing the bond or direct contractual relationship with any subcontractor, or an assignee of such person, (b) the state with respect to taxes incurred on the above-referenced contract under Titles 50, 51, and 82 RCW which may be due and (c) any other person or entity as allowed or required by law.

1. The Principal and Surety hereby jointly and severally agree with the City that every claimant as herein defined, who has not been paid in full prior to Final Acceptance of the project, or materials were furnished by such claimant, has an action on this bond for such sum or sums as may be justly due claimant, and may have execution thereon. The City shall not be liable for the payment of any

(Form continues on next page)



costs or expenses of any such suit or action.

2. No suit or action shall be commenced hereunder by any claimant (except the state with respect to taxes, increases, and penalties incurred on the above-referenced contract under Titles 50, 51, and 82 RCW which may be due) unless the claimant has sent the written notice required under RCW Title 39 to the Principal and to the City's Purchasing Agent by registered or certified mail, or by hand delivery, no later than 30 days after Final Acceptance of the Project.

The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against the improvement, whether or not claim for the amount of such lien be presented under and against this bond.

The Surety hereby waives notice of any modification of the contract or extension of time made by the City.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

Principal: \_\_\_\_\_ Surety: \_\_\_\_\_

By: \_\_\_\_\_ By: \_\_\_\_\_

Title: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_ Address: \_\_\_\_\_

City/Zip: \_\_\_\_\_ City/Zip: \_\_\_\_\_

Telephone: ( ) \_\_\_\_\_ Telephone: ( ) \_\_\_\_\_

Note: A power of attorney must be provided which appoints the Surety's true and lawful attorney-in-fact to make, execute, seal and deliver this performance bond.

**END OF LABOR, MATERIAL AND TAXES PAYMENT BOND FORM**



## GENERAL CONDITIONS

### PART 1 – GENERAL TERMS

#### 1.1 DEFINITIONS

- A. “Application for Payment” means a written request submitted by Contractor to Owner for payment of Work completed in accordance with the Contract Documents and approved Schedule of Values, supported by such substantiating data as Owner may require.
- B. “Architect,” “Engineer,” or “A/E” means a person or entity lawfully entitled to practice architecture or engineering, representing Owner within the limits of its delegated authority.
- C. “Award of Contract” refers to City of Kirkland Council’s acceptance of the Contractor’s Bid. Council Award, or Bid Rejection, will occur within 60 calendar days after Bid opening. If the lowest responsible Bidder and the City of Kirkland agree, this deadline may be extended. If they cannot agree on an extension by the sixty (60) calendar day deadline, the City of Kirkland reserves the right to Award the Contract to the next lowest responsible Bidder or reject all Bids. The City of Kirkland will notify the successful Bidder of the Contract Award in writing.
- D. “Change Order” means a written instrument signed by Owner and Contractor stating their agreement upon all of the following: (1) a change in the Work; (2) the amount of the adjustment in the Contract Sum, if any, and (3) the extent of the adjustment in the Contract Time, if any.
- E. “Claim” means Contractor’s exclusive remedy for resolving disputes with Owner arising out of or relating to the Contract Documents or the breach thereof or requesting an adjustment in the Contract Sum or Contract Time. As used in the Contract Documents, the exclusive meaning of “equitable adjustment” is the ability of Contractor to follow the contractual dispute resolution process as set forth herein, including the requirement for submitting a timely Notice, substantiation, and Claim.
- F. “Construction Change Directive” (“CCD”) is a written order prepared by Owner that directs Work prior to total agreement on adjustment, if any, in the Contract Sum or Contract Time, or both.
- G. The “Contract” is the agreement between Owner and Contractor and is formed by the Contract Documents. The Contract represents the entire and integrated agreement between Owner and Contractor and supersedes prior negotiations, representations or agreements, either written or oral.
- H. “Contract Award Amount” is the sum of the Base Bid and any City accepted Alternates, including applicable sales tax at the current rate where the project resides.



- I. "Contract Documents" includes the Executed Agreement, General Conditions, modifications to the General Conditions, Supplementary and Special Conditions, Drawings and Specifications, the Project Manual, the Bonds and Insurance Certificate Requirements provided in the Bid Documents, and all addenda and modifications thereof.
- J. "Contract Sum" is the total amount payable by Owner to Contractor for performance of the Work in accordance with the Contract Documents, including all taxes imposed by law and properly chargeable to the Work, including applicable sales tax at the current rate where the project resides.
- K. "Contract Time" is the number of calendar days allotted in the Contract Documents from the Notice to Proceed for achieving Substantial Completion of the Work.
- L. "Contractor" means the person or entity who has agreed with Owner to perform the Work in accordance with the Contract Documents.
- M. "Day(s)" means calendar day(s) unless otherwise specified.
- N. "Drawings" are the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, and may include plans, elevations, sections, details, schedules, and diagrams.
- O. "Final Acceptance" means the written acceptance of the Work by Owner, as more fully set forth in Section 6.
- P. "Final Completion" means that the Work is fully and finally complete in accordance with the Contract Documents and Contractor has submitted its final Application for Payment, as more fully set forth in Section 6.
- Q. "Force Majeure" means those acts entitling Contractor to request an equitable adjustment in the Contract Time, as more fully set forth in Section 3.
- R. "Notice" means a written notice which has been delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended or, if delivered or sent by registered or certified mail, to the last business address known to the party giving notice.
- S. "Notice to Proceed" means a written Notice from Owner to Contractor that permits pre-construction and construction activities to commence upon specified terms and defines the date on which the Contract Time begins to run.
- T. "Owner" means the City of Kirkland, a municipal corporation, which has the authority to enter into, administer, and/or terminate the Work in accordance with the Contract Documents. Owner shall designate in writing a Representative who shall have authority to bind Owner with respect to all matters requiring Owner's approval or authorization. A/E does not have such authority.



- U. "Person" means a corporation, partnership, business association of any kind, trust, company, or individual.
- V. "Prior Occupancy" means Owner's use of all or parts of the Project before Substantial Completion, as more fully set forth in Section 6.
- W. "Project Manual" means all Bid Documents, Contract Documents, General Conditions, Supplementary Conditions, if any, Specifications, Special Provisions, if any, and Addenda, if any.
- X. "Progress Schedule" means a schedule of the Work, in a form satisfactory to Owner, as further set forth in Section 3.
- Y. "Project" means the total construction of which the Work performed in accordance with the Contract Documents may be the whole or a part and which may include construction by Owner or by separate contractors.
- Z. "Schedule of Values" means a written breakdown allocating the total Contract Sum to each principal category of Work, in such detail and format as requested by Owner.
- AA. "Specifications" are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services. Specifications are prepared in sections which conform generally with trade practices. These sections are for Owner and Contractor convenience and shall not control Contractor in dividing the Work among the Subcontractors or in establishing the extent of the Work to be performed by any trade.
- BB. "Subcontract" means a contract between Contractor and a Subcontractor for the purpose of obtaining supplies, materials, equipment, work or services of any kind for or in connection with the Work.
- CC. "Subcontractor" means any Person of any tier, other than Contractor, who agrees to furnish or furnishes by contract with, or through Contractor, any supplies, materials, equipment, or services of any kind in connection with the Work.
- DD. "Substantial Completion" means that stage in the progress of the Work (or portion of the Work designated and approved by Owner) when the construction is sufficiently complete, in accordance with the Contract Documents, so that Owner can fully occupy or utilize the Work (or portion designated by Owner) for its intended use, as more fully set forth in Section 6. There may be separate dates of Substantial Completion specified in the Contract Documents for various phases or portions of the Work.
- EE. "Work" means the construction and services required by the Contract Documents, and includes, but is not limited to, labor, materials, supplies, equipment, services, permits, and the manufacture and fabrication of components, performed, furnished, or provided in accordance with the Contract Documents.



- FF. "Work Site" means the space identified and circumscribed on construction documents. The work site is controlled by the Contractor and the Contractor is responsible for compliance to regulatory requirements within the circumscribed area. Changes to the work site shall be submitted by Contractor and approved by Owner.

## 1.2 ORDER OF PRECEDENCE

Any conflict or inconsistency in the Contract Documents shall be resolved by giving the documents precedence in the following order, with a revision to a Contract Document having precedence over the original document and a later document having precedence over an earlier document:

1. Executed Agreement, including any Change Orders.
2. Supplementary Conditions.
3. Special Conditions or Modifications to the General Conditions.
4. General Conditions
5. Specifications and Drawings. The Specifications and Drawings are complementary and shall have equal precedence. Thus, anything mentioned in the Specifications but not shown on the Drawings, or shown on the Drawings but not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both. If there is any inconsistency between the Specifications and Drawings, Contractor will make an inquiry to Owner to determine how to proceed. Unless otherwise directed, Contractor will provide the better quality or greater quantity of any Work or materials, as reasonably interpreted by Owner, at no change in the Contract Sum or Contract Time. In case of conflict within the Specifications, provisions in Division 1 shall take precedence over provisions of any other Division. In case of conflict within the Drawings, large scale Drawings shall take precedence over small scale Drawings.
6. Signed and Completed Bid Form
7. Instructions to Bidders
8. Advertisement for Bids

## 1.3 EXECUTION AND INTENT

Contractor Representations: Contractor makes the following representations to Owner:

1. Contract Sum and Contract Time reasonable: The Contract Sum is reasonable compensation for the Work and the Contract Time is adequate for the performance of the Work, as represented by the Contract Documents;
2. Contractor familiar with Project: Execution of the Contract by Contractor is a representation that Contractor has carefully reviewed the Contract Documents, visited and examined the Project site, become familiar with the local conditions in which the Work is to be performed, and satisfied itself as to the nature, location, character,



quality and quantity of the Work, the labor, weather, materials, equipment, goods, supplies, work, services and other items to be furnished and all other requirements of the Contract Documents, as well as the surface and subsurface conditions and other matters that may be encountered at the Project site or affect performance of the Work or the cost or difficulty thereof; No allowance shall subsequently be made on behalf of Contractor on account of error or negligence on its part or its failure to acquaint itself with the conditions of the site;

3. Contractor financially capable: Contractor is financially solvent, able to pay its debts as they mature, and possesses sufficient working capital to complete the Work and perform Contractor's obligations required by the Contract Documents; and
4. Contractor can complete the Work: Contractor is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform the obligations required by the Contract Documents and has sufficient experience and competence to do so.

## **PART 2 – INSURANCE AND BONDS**

### **2.1 CONTRACTOR'S LIABILITY INSURANCE**

General insurance requirements: Prior to commencement of the Work, Contractor shall obtain all the insurance required by the Contract Documents and provide evidence satisfactory to Owner that such insurance has been procured, including but not limited to (1) Certificates of Insurance, on ACORD Form 27 and/or ACORD Form 25-S, or other forms that are similarly binding on insurers, (2) the actual costs (expressed as a percentage) of Contractor's liability insurance under Section 2.1A.1 below, (3) endorsements, including endorsements for additional insureds as listed in Section 2.1D below, (4) evidence of State Workers' Compensation coverage, and (5) a copy of any builder's risk policy required by the Contract Documents. All policies, endorsements and certificates must be signed copies and shall contain a provision that coverages afforded under the policies cannot be materially altered (i.e. the coverages reduced, the limits decreased or the additional insured removed) allowed to expire, or cancelled without first giving forty-five (45) days prior written Notice by certified mail to Owner. Contractor shall furnish to Owner copies of any subsequently issued endorsements amending, modifying, altering or restricting coverage limits. Review of Contractor's insurance by Owner shall not relieve or decrease the liability of Contractor. Companies writing the insurance to be obtained shall be licensed to do business under Chapter 48 RCW or comply with the Surplus Lines Law of the State of Washington, and shall be acceptable to Owner.

The Contractor's maintenance of insurance, its scope of coverage and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Owner's recourse to any remedy available at law or in equity.

The Contractor's Automobile Liability, Commercial General Liability and Builders Risk insurance policies are to contain, or be endorsed to contain, that they shall be primary insurance as respect the Owner. Any insurance, self-insurance, or self-insured pool coverage maintained by the Owner shall be excess of the Contractor's insurance and shall not contribute with it.



Contractor shall include in the Contract Sum the cost of all insurance and bond costs required for the Work. Insurance carriers providing insurance shall be acceptable to Owner, and its A. M. Best rating of not less than A: VII. shall be indicated on the insurance certificates.

- A. Term of insurance coverage: Contractor shall maintain the following insurance coverage during the Work and for three years after Final Acceptance, unless noted otherwise. Contractor shall also maintain the following insurance coverage during the performance of any corrective Work required by Section 5.
1. Commercial General Liability: Commercial General Liability (CGL) insurance shall be at least as broad as ISO occurrence form CG 00 01 and shall cover liability arising from premises and operations, employer's liability (stop gap), independent contractors, and products-completed operations for a period of three years following substantial completion of the Work for the benefit of the Owner; personal injury and advertising injury (including coverages A, B, and C); and liability assumed under an insured contract.  
  
The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an endorsement providing at least as broad coverage. There shall be no exclusion for liability arising from explosion, collapse, or underground property damage. The City of Kirkland shall be named as an additional insured under the Contractor's Commercial General Liability insurance policy with respect to the work performed for the City of Kirkland using ISO Additional Insured endorsement CG 20 10 10 01 and Additional Insured-Completed Operations endorsement CG 20 37 10 01 or substitute endorsements providing at least as broad coverage.
  2. Automobile Liability Insurance: Automobile liability insurance covering all owned, non-owned, hired, borrowed, and leased vehicles. Coverage shall be at least as broad as Insurance Services Office (ISO) form CA 00 01.
  3. Worker's Compensation Coverage: Coverage as required by the Industrial Insurance laws of the State of Washington. Contractor shall comply with the Washington State Industrial Insurance Act and, if applicable, the Federal Longshoremen's and Harbor Workers' Act and the Jones Act.
  4. Professional Liability: Required if professional services (e.g., architect, engineering, surveying, legal or medical) are being provided to the Owner and if those professional services are excluded from the General Liability Insurance provided. Coverage may be on a Claims Made basis if coverage is maintained at least 3-years beyond Final Acceptance.
- C. Insurance to protect for the following: All insurance coverages shall protect against claims for damages for personal and bodily injury or death, as well as claims for property damage, which may arise from operations in connection with the Work whether such operations are by Contractor or any Subcontractor.
- D. Owner as Additional Insured: All insurance coverages shall be endorsed to include Owner, its officers, its elected officials, its employees, its consultants, and any required governmental agencies as additional named insureds for Work performed in accordance



with the Contract Documents, and all insurance certificates and endorsements shall evidence such additional insureds.

- E. Subcontractor Coverage: The Contractor shall cause each and every Subcontractor to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors. The Contractor shall ensure that the Owner is an additional insured on each Subcontractor's Commercial General liability insurance policy using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations and give at least 30 Days' Notice of cancellation.
- F. Failure to Maintain Insurance: Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Owner may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Owner on demand, or at the sole discretion of the Owner, offset against funds due the Contractor from the Owner.

## 2.2 COVERAGE LIMITS

Insurance amounts: The minimum coverage limits shall be as follows for applicable required insurance are specified in the Bonds and Insurance Certificates Section (Section 00 60 00) included with the Bid Documents. To the extent not set forth in the Bonds and Certificates Section or otherwise in the Contract Documents, they are as set forth below:

1. Commercial General Liability insurance shall be written with limits no less than \$1,000,000 each occurrence, \$2,000,000 general aggregate and a \$2,000,000 products- completed operations aggregate limit.

- A. Limits of Liability shall not be less than \$1,000,000 Combined Single Limit for Bodily Injury and Property Damage (other than Automobile Liability) Each Occurrence; Personal Injury and Advertising Liability Each Occurrence.
- B. \$2,000,000 Combined Single Limit Annual General Aggregate.
- C. \$2,000,000 Annual Aggregate for Products and Completed Operations Liability.
- D. \$2,000,000 Combined Single Limit for Automobile Bodily Injury and Property Damage Liability, Each Accident or Loss.
- E. Professional Liability: The minimum acceptable coverage for Professional Liability shall be \$1,000,000, if applicable.
- F. Coverages and Minimums: The Owner does not represent that the minimum required insurance coverage or limits are adequate to protect Contractor from all liabilities.



- G. If the Contractor maintains higher insurance limits than the minimums shown above, the Owner shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract or whether any certificate of insurance furnished to the Owner evidences limits of liability lower than those maintained by the Contractor.
2. Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of \$1,000,000 per accident.
3. Excess or Umbrella Liability insurance shall be written with limits of not less than \$3,000,000 per occurrence and annual aggregate. The Excess or Umbrella Liability requirement and limits may be satisfied instead through the Contractor's Commercial General Liability and Automobile Liability insurance, or any combination thereof that achieves the overall required limits.
4. Worker's Compensation Coverage. Employees not subject to the State Act shall be insured under Employer's Liability with a \$1,000,000.00 limit of liability. A separate Certificate of Insurance shall be furnished to the Owner if any of the Contractor's payroll is not reported to the Washington State Industrial Insurance. The contractor shall be responsible for confirming compliance of all subcontractors with the above requirements.

## 2.3 INSURANCE COVERAGE CERTIFICATES

- A. Certificate required: Prior to commencement of the Work, Contractor shall furnish to Owner a completed certificate of insurance coverage and additional insured endorsements.
- B. List Project info: All insurance certificates shall name Owner's Project number and Project title.
- C. Cancellation provisions: All insurance certificates shall specifically require 45 Days prior notice to Owner of cancellation or any material change, except 30 Days for surplus line insurance.

## 2.4 PERFORMANCE AND PAYMENT BONDS

Conditions for bonds: Payment and performance bonds for 100% of the Contract Award Amount, including Washington state sales tax, shall be furnished for the Work, using the City of Kirkland Contract Bond Forms provided (Sections 00 61 40 and 00 61 41) covering faithful performance of the work and payment of labor, materials, and taxes. Furnish bonds issued by a bonding company licensed to transact business in the locality of the Work and approved by the Owner. The bond must state that it is provided pursuant to Ch. 39.08 RCW. Prior to execution of a Change Order, that cumulatively with previous Change Orders, increases the Contract Award Amount by 15% or more, the Contractor shall provide either new payment and performance bonds for the revised Contract Sum, or riders to the existing payment and performance bonds increasing the amount of the bonds. The Contractor shall likewise provide additional bonds or riders when subsequent Change Orders increase the Contract Sum by 15% or more. No payment or performance bond is required if the



Contract Sum is \$35,000 or less and Contractor agrees that Owner may, in lieu of the bond, retain 50% of the Contract Sum for the period allowed by RCW 39.08.010.

## 2.5 ALTERNATIVE SURETY

When alternative surety required: Contractor shall promptly furnish payment and performance bonds from an alternative surety to protect Owner and persons supplying labor or materials required by the Contract Documents if (A) Owner has a reasonable objection to the surety; or (B) Any surety fails to furnish reports on its financial condition if required by Owner.

## 2.6 BUILDER'S RISK

Builder's Risk: Contractor shall provide Builder's Risk insurance covering interests of the Owner, the Contractor, Subcontractors, and Sub-subcontractors in the Work being performed. The coverage shall be written on a "Builder's Risk" basis. All materials which are to be made part of the construction project are to be so insured while being stored at or off the job site(s) and/or while being transported to and from the job site(s). Builders Risk insurance shall be on a special perils policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including flood, wind, earthquake, theft, vandalism, malicious mischief, falsework, and collapse. The Builders Risk insurance shall include coverage for temporary buildings, debris removal including demolition, and damage to materials in transit or stored off-site. Builder's risk insurance shall cover reasonable compensation for A/E's services and expenses required as a result of an insured loss.

This Builders Risk insurance covering the Work will have a deductible of \$5,000 for each occurrence, which will be the responsibility of the Contractor. Higher deductibles for flood and earthquake perils may be accepted by the Owner upon written request by the Contractor and written acceptance by Owner. Any increased deductibles accepted by the Owner will remain the responsibility of the Contractor. The Builders Risk insurance shall be maintained until the Owner has granted substantial completion of the project.

Contractor shall purchase and maintain Builder's Risk insurance in the amount of the Contract Sum, including all Change Orders, with no coinsurance provisions, for the Work on a replacement cost basis until Substantial Completion. For projects not involving new building construction, an "Installation Floater" is an acceptable substitute for the Builder's Risk insurance. The insurance shall cover the interests of Owner, Contractor, and any Subcontractors, as their interests may appear.

Insurance against loss of tools, equipment, machinery, motor vehicles, temporary structures, scaffolding, protective fencing, or otherwise not to be incorporated into the Work, owned or rented by the Contractor, the Contractor's agents, suppliers, contractors, or subcontractors is the responsibility of the Contractor and the cost of such insurance shall not be included in the cost of insurance required herein before.

Waiver of Subrogation Rights: Owner and Contractor waive all subrogation rights against each other, any Subcontractors, A/E, A/E's subconsultants, separate contractors, if any, and any of their subcontractors, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Section or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by Owner as fiduciary. The policies shall provide such waivers of subrogation by endorsement or otherwise. Contractor shall require a similar waiver from its Subcontractors of Subcontractors' subrogation rights against



Contractor, Owner, A/E, A/E's subconsultants as part of their Subcontract. A waiver of subrogation shall be effective to a Person or entity even though that Person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the Person or entity had an insurable interest in the property damaged.

## **PART 3 – TIME AND SCHEDULE**

### **3.1 PROGRESS AND COMPLETION**

- A. Contractor to meet schedule: Contractor shall diligently prosecute the Work, with adequate forces, achieve Substantial Completion within the Contract Time, and achieve Final Completion within the time period specified in the Contract Documents. If Contractor fails to perform in a timely manner in accordance with the Contract Documents and, through the fault of Contractor or Subcontractor(s), fails to meet the Progress Schedule, Contractor shall be in default and shall take such steps as may be necessary to immediately improve its progress without change in the Contract Sum or Contract Time.
- B. Progress Schedule: Promptly, but in no event later than fourteen (14) days after issuance of the Notice to Proceed, Contractor shall prepare and submit a preliminary network diagram in the form of a critical path method analysis ("Progress Schedule"). See Section 01 32 00 for specific requirements for the Contractor's Construction Schedule ("Progress Schedule"). The Progress Schedule shall be related to the entire Project and fully consistent with the Contract Documents. The Progress Schedule shall not exceed time limits specified by the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work, and shall show the sequence in which Contractor and the dates on which Contractor plans to start and finish major portions of the Work, including dates for submission of Submittals, which shall be coordinated with the Progress Schedule and identify dates for Owner review, and for acquiring materials and equipment. The Owner shall not be obligated to accept any Early Completion Schedule suggested by the Contractor. If the Contractor feels that the Work can be completed in less than the specified Contract Time, then the Surplus Time shall be considered Project Float. This Float shall be shown on the Project Schedule. It shall be available to accommodate changes in the work and unforeseen conditions. Neither the Contractor nor the Owner have exclusive right to this Float Time. It belongs to the Project.
- C. Monthly Updates: With each Application for payment submitted by Contractor other than the final Application for Payment, Contractor shall submit to the Owner a current Progress Schedule revised to indicate the portion of the Work executed during the time period covered by the Application for Payment, all progress slippages occurring during the previously covered time period, and the corrective actions taken for the slippage carryover into the time period covered by the Application for Payment, the anticipated delays or difficulties, and all other information required to adequately present the actual status of the progress of the Work as of the date of the Application for Payment as may be further required by the Owner.



- D. Compliance with Progress Schedule: In the event the Contractor falls behind the Progress Schedule to such an extent that the Owner in good faith determines that the Contractor will be unable to achieve Substantial Completion by the date set forth in the Progress Schedule, as such date may be extended as provided in the Contract Documents, the Contractor shall within two (2) working days following the Owner's demand therefor, provide to the Owner, in writing, a detailed explanation of the measures the Contractor will take in order to recover from the delays so that the progress of the Work complies with the Progress Schedule. If, in the Owner's good faith business judgment, the Contractor's intended recovery measures will not cause the Contractor to recover from the delay (provided such delay arises from a cause which is the Contractor's or its Subcontractor's responsibility) so as to achieve Substantial Completion on schedule, the Owner may direct the Contractor to accelerate the progress of the Work, at the Contractor's sole cost, which acceleration costs shall not cause an adjustment to the Contract Sum.
- E. Contractor to notify Owner of delays: Contractor shall perform the Work in accordance with the most recent Progress Schedule submitted to Owner. Contractor shall promptly notify Owner in writing of any actual or anticipated event, interference, or that is delaying or could delay achievement of any milestone, performance of any critical path activity of the Work, or delay in the Substantial Completion date. Contractor shall indicate the expected duration of the delay, the anticipated effect of the delay on the Progress Schedule, and the action being or to be taken to correct the problem. Provision of such Notice does not relieve Contractor of its obligation to complete the Work within the Contract Time.

### 3.2 DELAY

- A. Force Majeure Events: Acts of Force Majeure include, but are not limited to: acts of God or the public enemy; acts or omissions of any government entity not the fault of Owner or Contractor; fire or other casualty for which Contractor is not responsible; quarantine or epidemic; industry-wide strike or defensive lockout; unusually severe weather conditions which could not have been reasonably anticipated; and unusual delay in receipt of supplies or products which were ordered and expedited and for which no substitute reasonably acceptable to Owner was available. "Unusually severe weather" shall mean weather conditions that are abnormal for the period of time for which Force Majeure is claimed, that could not reasonably have been anticipated or avoided, and that had an adverse effect on the Progress Schedule.
- B. Contract Time adjustment for Force Majeure: Contractor shall be entitled to an equitable adjustment in the Contract Time for changes in the time of performance directly attributable to an act of Force Majeure, provided it submits Notice and a Claim in strict compliance with the requirements of Section 8. Contractor shall not be entitled to an adjustment in the Contract Sum resulting from an act of Force Majeure.
- C. Contract Time or Contract Sum adjustment if Owner at fault: Contractor shall be entitled to an equitable adjustment in Contract Time, and may be entitled to an equitable adjustment in Contract Sum, if the cost or time of Contractor's performance is changed due to the fault or negligence of Owner, provided the Contractor submits Notice and a Claim in strict compliance with the requirements of Section 8.



- D. No Contract Time or Contract Sum adjustment if Contractor at fault: Contractor shall not be entitled to an adjustment in Contract Time or in the Contract Sum for any delay or failure of performance to the extent such delay or failure was caused by Contractor or anyone for whose acts Contractor is responsible.
- E. Contract Time adjustment only for concurrent fault: To the extent any delay or failure of performance was concurrently caused by the Owner and Contractor, Contractor may be entitled to an adjustment in the Contract Time only for that portion of the delay or failure of performance that was concurrently caused, provided it submits Notice and a Claim in strict compliance with the requirements of Section 8, but shall not be entitled to an adjustment in Contract Sum.
- F. Contractor to mitigate delay impacts: Contractor shall make all reasonable efforts to prevent and mitigate the effects of any delay, whether occasioned by an act of Force Majeure or otherwise. Contractor shall not recover damages, an equitable adjustment or an increase in the Contract Sum or Contract Time from Owner where Contractor could have reasonably avoided the delay by the exercise of due diligence.
- G. Types of damages permitted: If Contractor and its Subcontractors are entitled to a change in the Contract Sum, the amount of the change shall be the actual costs incurred by the Contractor and Subcontractors directly related to the change calculated in accordance with Section 7 and provided Contractor has complied with Section 8. Failure of Contractor to comply with Section 8 shall result in waiver of Contractor's Claim. Contractor and its Subcontractors shall not be entitled to damages arising out of actual or alleged loss of efficiency; morale, fatigue, attitude, or labor rhythm; constructive acceleration; home office overhead; expectant underrun; trade stacking; reassignment of workers; rescheduling of Work, concurrent operations; dilution of supervision; learning curve; beneficial or joint occupancy; logistics; ripple; season change; extended overhead; profit upon damages for delay; impact damages including cumulative impacts; or similar damages.
- H. Contractor to notify Owner of labor disputes: If Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay timely performance in accordance with the Contract Documents, Contractor shall immediately give notice, including all relevant information, to Owner.
- I. Pass through notification provisions to Subcontractors: Contractor agrees to insert a provision in its Subcontracts and to require insertion in all sub-subcontracts, that in the event timely performance of any such contract is delayed or threatened by delay by any actual or potential labor dispute, the Subcontractor or Sub-subcontractor shall immediately notify the next higher tier Subcontractor or Contractor, as the case may be, of all relevant information concerning the dispute.

### 3.3 DAMAGES FOR FAILURE TO ACHIEVE TIMELY COMPLETION

- A. Liquidated Damages:



1. Reason for Liquidated Damages: Timely performance and completion of the Work is essential to Owner and time limits stated in the Contract Documents are of the essence. Owner will incur serious and substantial damages if Substantial Completion of the Work does not occur within the Contract Time. However, it would be difficult if not impossible to determine the exact amount of such damages. Consequently, provisions for liquidated damages are included in the Contract Documents.
  2. Calculation of Liquidated Damages amount: The liquidated damage amounts set forth in the Contract Documents will be assessed not as a penalty, but as liquidated damages for breach of the Contract Documents. This amount is fixed and agreed upon by and between the Contractor and Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain. This amount shall be construed as the actual amount of damages sustained by the Owner, and may be retained by the Owner and deducted from periodic payments to the Contractor.
  3. Contractor responsible even if Liquidated Damages assessed: Assessment of liquidated damages shall not release Contractor from any obligations or liabilities pursuant to the Contract Documents. If Contractor substantially fails to perform in a timely manner in accordance with the Contract Documents and, through the fault of Contractor or Subcontractor(s), fails to achieve Substantial Completion within the Contract Time, Contractor shall be in default.
- B. Actual Damages: If no liquidated damages are set forth in the Contract Documents, actual damages may be assessed for failure to achieve both Substantial Completion and Final Completion within the time provided. Actual damages will be calculated on the basis of direct, architectural, administrative, and any other related costs attributable to the Project from the date when Substantial and/or Final Completion should have been achieved, as applicable. Owner may offset these costs against any payment due Contractor.

## **PART 4 – SPECIFICATIONS AND CONTRACT DOCUMENT REVIEW**

### **4.1 DISCREPANCIES AND CONTRACT DOCUMENT REVIEW**

- A. Specifications and Drawings are basis of the Work: The intent of the Specifications and Drawings is to describe a complete Project to be constructed in accordance with the Contract Documents. Contractor shall furnish all labor, materials, equipment, tools, transportation, permits, and supplies, and perform the Work required in accordance with the Drawings, Specifications, and other provisions of the Contract Documents.
- B. Parts of the Contract Documents are complementary: The Contract Documents are complementary. What is required by one part of the Contract Documents shall be binding as if required by all. Anything mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.



- C. Contractor to report discrepancies in Contract Documents: Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by Owner. If, during the performance of the Work, Contractor finds a conflict, error, inconsistency, or omission in the Contract Documents, it shall promptly and before proceeding with the Work affected thereby, report such conflict, error, inconsistency, or omission to A/E in writing.
- D. Contractor knowledge of discrepancy in documents – responsibility: Contractor shall do no Work without applicable Drawings, Specifications, and, where required, accepted shop drawings and other Submittals, unless instructed to do so in writing by Owner. If Contractor performs any construction activity, and it knows or reasonably should have known that any of the Contract Documents contain a conflict, error, inconsistency, or omission, Contractor shall be responsible for the performance and shall bear the cost for its correction.
- E. Contractor to perform Work implied by Contract Documents: Contractor shall provide any work or materials the provision of which is clearly implied and is within the scope of the Contract Documents even if the Contract Documents do not mention them specifically.
- F. Interpretation questions referred to A/E: Questions regarding interpretation of the requirements of the Contract Documents shall be referred to the A/E.

#### 4.2 SUBMITTALS

- A. Definition of Submittals: “Submittals” means documents and other information required to be submitted to A/E by Contractor pursuant to the Contract Documents, showing in detail: the proposed fabrication and assembly of structural elements; and the installation (i.e. form, fit, and attachment details) of materials and equipment. Submittals can include, but are not limited to, shop drawings, product data, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, samples, and similar materials furnished by Contractor to explain in detail specific portions of the Work required by the Contract Documents. For materials and equipment to be incorporated into the Work, Contractor submittal shall include the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the item. When directed, Contractor shall submit all samples at its own expense. Owner may duplicate, use, and disclose Submittals provided in accordance with the Contract Documents. Submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require Submittals.
- B. Approval of Submittals by Contractor and A/E: Contractor shall coordinate all Submittals with the Progress Schedule, shall review them for accuracy, completeness, and compliance with the Contract Documents, and shall indicate its approval thereon as evidence of such coordination and review. Where required by law, Submittals shall be stamped by an appropriate professional licensed by the state of Washington. Submittals submitted to A/E without evidence of Contractor's approval shall be returned for resubmission. Contractor shall review, approve, and submit Submittals with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of



Owner or separate contractors. Contractor's Submittal schedule shall allow a reasonable time for A/E review. A/E will review, approve, or take other appropriate action on the Submittals. Contractor shall perform no portion of the Work requiring submittal and review of Submittals until the respective submittal has been reviewed and the A/E has approved or taken other appropriate action. Owner and A/E shall respond to Submittal with reasonable promptness. Any Work by Contractor shall be in accordance with reviewed Submittals. Submittals made by Contractor which are not required by the Contract Documents may be returned without action.

- C. Contractor not relieved of responsibility when Submittals approved: Approval, or other appropriate action with regard to Submittals, by Owner or A/E shall not relieve Contractor of responsibility for any errors or omissions in such Submittals, nor from responsibility for compliance with the requirements of the Contract Documents. Unless specified in the Contract Documents, review by Owner or A/E shall not constitute an approval of the safety precautions employed by Contractor during construction, or constitute an approval of Contractor's means or methods of construction. If Contractor fails to obtain approval before installation and the item or work is subsequently rejected, Contractor shall be responsible for all costs of correction.
- D. Variations between Submittals and Contract Documents: If Submittals vary from the requirements of the Contract Documents, Contractor shall in detail describe such variations in writing, separate from the Submittals, at the time it submits the Submittals containing such variations. If Owner approves any such variation, an appropriate Change Order will be issued. If the variation is minor and does not involve an adjustment in the Contract Sum or Contract Time, a Change Order need not be issued; however, the modification shall be approved by Owner in writing. Approval for substitutions shall not be sought and shall not be approved through the submission of Submittals.

#### **4.3 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS**

- A. The City/Owner not Contractor, owns Copyright of Drawings and Specifications: The Drawings, Specifications, and other documents prepared by A/E are instruments of A/E's contracted service to the City through which the Work to be executed by Contractor is described. Neither Contractor nor any Subcontractor shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by A/E, and A/E shall be deemed the author of them and will, along with any rights of Owner, retain all common law, statutory, and other reserved rights, in addition to the copyright. All copies of these documents, except Contractor's set, shall be returned or suitably accounted for to A/E, on request, upon completion of the Work.
- B. Drawings and Specifications to be used only for this Project: The Drawings, Specifications, and other documents prepared by the A/E, and copies thereof furnished to Contractor, are for use solely with respect to this Project. They are not to be used by Contractor or any Subcontractor on other projects or for additions to this Project outside the scope of the Work without the specific written consent of Owner and A/E. Contractor and Subcontractors are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications, and other documents prepared by A/E appropriate to and for use in the execution of their Work.



- C. License granted to Owner: Contractor and all Subcontractors grant a non-exclusive license to Owner, without additional cost or royalty, to use for its own purposes (including reproduction) all Submittals, together with the information and diagrams contained therein, prepared by Contractor or any Subcontractor. In providing Submittals, Contractor and all Subcontractors warrant that they have authority to grant to Owner a license to use the Submittals, and that such license is not in violation of any copyright or other intellectual property right. Contractor agrees to defend and indemnify Owner pursuant to the indemnity provisions in Section 5 from any violations of copyright or other intellectual property rights arising out of Owner's use of the Submittals hereunder, or to secure for Owner, at Contractor's own cost, licenses in conformity with this Section.

## **PART 5 – PERFORMANCE**

### **5.1 CONTRACTOR CONTROL AND SUPERVISION**

- A. Contractor responsible for Means and Methods of construction: Contractor shall supervise and direct the Work, using its best skill and attention, and shall perform the Work in a skillful manner. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work, unless the Contract Documents give other specific instructions concerning these matters. Contractor shall disclose its means and methods of construction when requested by Owner. The Contractor shall be responsible to the Owner for acts and omissions of Contractor, Contractor's employees, Subcontractors, and their agents and employees, and other person or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.
- B. Competent superintendent required: Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Contractor, as soon as practicable after award of the Contract, shall furnish in writing to Owner the name and qualifications of its proposed superintendent. Within 14 days of receipt of the information, Owner may reply to Contractor in writing stating (1) whether Owner has reasonable objection to the proposed superintendent or (2) that Owner requires additional time to review. The superintendent must be satisfactory to Owner and shall not be changed without the prior written consent of Owner. Owner may require Contractor to remove the superintendent from the Work or Project site, if Owner reasonably deems the superintendent incompetent, careless, or otherwise objectionable, provided Owner has first notified Contractor in writing and allowed a reasonable period for transition.
- C. Contractor to employ competent and disciplined workforce: Contractor shall enforce strict discipline and good order among all of the Contractor's employees and other persons performing the Work. Contractor shall not permit employment of persons not skilled in tasks assigned to them. Contractor's employees shall at all times conduct business in a manner which assures fair, equal, and nondiscriminatory treatment of all persons. Owner may, by written notice, request Contractor to remove from the Work or Project site any employee Owner reasonably deems incompetent, careless, or otherwise objectionable.



- D. Contractor to keep Project documents on site: Contractor shall keep on the Project site a copy of the Drawings, Specifications, addenda, reviewed Submittals, and permits and permit drawings.
- E. Contractor to comply with ethical standards: Contractor shall ensure that its owner(s) and employees, and those of its Subcontractors, comply with the Ethics in Public Service Act RCW 42.52, which, among other things, prohibits state employees from having an economic interest in any public works contract that was made by, or supervised by, that employee. Contractor shall remove, at its sole cost and expense, any of its, or its Subcontractors' employees, if they are in violation of this act.
- F. Daily Reports: Contractor shall provide a Daily Report to the Owner for each work day during the Contract Time. The Daily Report shall be completed on a form subject to the approval of the Owner and Architect. The Daily Report shall include any disputed, delayed, or disrupted Work as well as any changed or additional Work requested or identified. The Daily Report shall not serve as a substitute for, or relieve Contractor of its obligations to provide formal written notice to Contractor as required by the Contract Documents, including but not limited to Section 7 and Section 8.

## 5.2 PERMITS, TAXES, PATENTS AND ROYALTIES

- A. Permits: Owner will obtain and pay for the Land Use Permit, General Building Permit, Civil Construction Permit, and Signage permit. All other permits and fees required to execute the work shall be obtained and paid for by the Contractor. Prior to Final Acceptance, the approved, signed permits shall be delivered to the Owner.
- B. Contractor to comply with all applicable laws: Contractor shall comply with and give notices required by all federal, state, and local laws, ordinances, rules, regulations, and lawful orders of public authorities applicable to performance of the Work. No person shall, on the grounds, of age, race, creed, color, sex, sexual orientation, religion, national origin, marital status, honorably discharged veteran or military status, or disability (physical, mental, or sensory) be denied the benefits of, or otherwise be subjected to discrimination under any project, program, or activity funded in whole or in part under this Agreement.
- C. Taxes: Contractor shall pay sales, consumer, use, business and occupation, income and similar taxes for the Work that are legally enacted when the initial Contract Sum is agreed.
- D. Patents and Royalties: Contractor is responsible for, and shall pay, all royalties and license fees. Contractor shall defend, indemnify, and hold Owner harmless from any costs, expenses, and liabilities arising out of the infringement by Contractor of any patent, copyright, or other intellectual property right used in the Work; however, provided that Contractor gives prompt notice, Contractor shall not be responsible for such defense or indemnity when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents. If Contractor has reason to believe that use of the required design, process, or product constitutes an infringement of a patent or copyright, it shall promptly notify Owner of such potential infringement.



### 5.3 PREVAILING WAGES

- A. Contractor to pay Prevailing Wages: Contractor shall pay the prevailing rate of wages to all workers, laborers, or mechanics employed in the performance of any part of the Work in accordance with RCW 39.12 and the rules and regulations of the Department of Labor and Industries. The schedule of prevailing wage rates for the locality or localities of the Work, is determined by the Industrial Statistician of the Department of Labor and Industries. It is the Contractor's responsibility to verify the applicable prevailing wage rate.
- B. Statement of Intent to Pay Prevailing Wages: Before payment is made by the Owner to the Contractor for any work performed by the Contractor and subcontractors whose work is included in the application for payment, the Contractor shall submit, or shall have previously submitted to the Owner for the Project, a Statement of Intent to Pay Prevailing Wages, approved by the Department of Labor and Industries, certifying the rate of hourly wage paid and to be paid each classification of laborers, workers, or mechanics employed upon the Work by Contractor and Subcontractors. Such rates of hourly wage shall not be less than the prevailing wage rate.
- C. Affidavit of Wages Paid: Prior to release of retainage, the Contractor shall submit to the Owner an Affidavit of Wages Paid, certified by the Department of Labor and Industries, for the Contractor and each and every Subcontractor that performed work on the Project. Contractor's compliance with this paragraph and RCW 60.28 is a condition precedent to the release of retainage to Contractor.
- D. Disputes: Disputes regarding prevailing wage rates shall be referred for arbitration to the Director of the Department of Labor and Industries. The arbitration decision shall be final and conclusive and binding on all parties involved in the dispute as provided for by RCW 39.12.060.
- E. Statement with pay application; Post Statements of Intent at job site: Each Application for Payment submitted by Contractor shall state that prevailing wages have been paid in accordance with the prefilled statement(s) of intent, as approved. Copies of the approved intent statement(s) shall be posted on the job site with the address and telephone number of the Industrial Statistician of the Department of Labor and Industries where a complaint or inquiry concerning prevailing wages may be made.
- F. Contractor to pay for Statements of Intent and Affidavits: In compliance with chapter 296-127 WAC, Contractor shall pay to the Department of Labor and Industries the currently established fee(s) for each statement of intent and/or affidavit of wages paid submitted to the Department of Labor and Industries for certification.
- G. Certified Payrolls: Consistent with WAC 296-127-320, the Contractor and any subcontractor shall submit a certified copy of payroll records if requested.

### 5.4 SAFETY AND CLEAN-UP



- A. Contractor responsible for safety: Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. Contractor shall be solely and completely responsible for conditions of the Project site, including safety of all persons and property, during performance of the Work. Contractor shall maintain the Project site and perform the Work in a manner that meets statutory and common-law requirements for the provision of a safe place to work. This requirement shall apply continuously and not be limited to working hours. Any review by Owner or A/E of Contractor's performance shall not be construed to include a review of the adequacy of Contractor's safety measures in, on or near the site of the Work.
- B. Contractor safety responsibilities: In carrying out its responsibilities according to the Contract Documents, Contractor shall protect the lives and health of employees performing the Work and other persons who may be affected by the Work; prevent damage to materials, supplies, and equipment whether on site or stored off-site; and prevent damage to other property at the site or adjacent thereto. Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss; shall erect and maintain all necessary safeguards for such safety and protection; and shall notify owners of adjacent property and utilities when prosecution of the Work may affect them.
- C. Contractor to maintain safety records: Contractor shall maintain an accurate record of exposure data on all incidents relating to the Work resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment. Contractor shall immediately report any such incident to Owner. Owner shall, at all times, have a right of access to all records of exposure.
- D. Contractor to provide HazMat training: Contractor shall provide all persons working on the Project site with information and training on hazardous chemicals in their work at the time of their initial assignment, and whenever a new hazard is introduced into their work area. At a minimum, Contractor shall inform persons working on the Project site of the requirements of chapter 296-62 WAC, General Occupational Health Standards, any operations in their work area where hazardous chemicals are present; and the location and availability of written hazard communication programs, including the required list(s) of hazardous chemicals and material safety data sheets required by chapter 296-62 WAC. Contractor shall also provide training for persons working on the Project site which includes Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area, the physical and health hazards of the chemicals in the work area; the measures such persons can take to protect themselves from these hazards, the details of the hazard communications program developed by Contractor, or its Subcontractors, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.
- E. Hazardous, toxic or harmful substances and Notice: Contractor shall not keep, use, dispose, transport, generate, or sell on or about the Project site, any substances now or hereafter designated as, or which are subject to regulation as, hazardous, toxic, dangerous, or harmful by any federal, state or local law, regulation, statute or ordinance



(hereinafter collectively referred to as "hazardous substances"), in violation of any such law, regulation, statute, or ordinance, but in no case shall any such hazardous substance be stored more than 90 Days on the Project site. Contractor shall promptly notify Owner of all spills or releases of any hazardous substances which are otherwise required to be reported to any regulatory agency and pay the cost of cleanup. Contractor shall promptly notify Owner of all failures to comply with any federal, state, or local law, regulation, or ordinance; all inspections of the Project site by any regulatory entity concerning the same; all regulatory orders or fines; and all responses or interim cleanup actions taken by or proposed to be taken by any government entity or private party on the Project site.

- F. Public safety and traffic: All Work shall be performed with due regard for the safety of the public. Contractor shall perform the Work so as to cause a minimum of interruption of vehicular traffic or inconvenience to pedestrians. All arrangements to care for such traffic shall be Contractor's responsibilities. All expenses involved in the maintenance of traffic by way of detours shall be borne by Contractor.
- G. Contractor to act in an emergency: In an emergency affecting the safety of life or the Work or of adjoining property, Contractor is permitted to act, at its discretion, to prevent such threatened loss or injury, and Contractor shall so act if so authorized or instructed.
- H. No duty of safety by Owner or A/E: Nothing provided in this Section shall relieve Contractor of sole and complete responsibility for safety at the Project site, for sole and complete responsibility for any violation of safety or property protection requirements or the correction thereof, or impose any duty upon Owner or A/E with regard to, or as constituting any express or implied assumption of control or responsibility over, any other safety conditions relating to employees or agents of Contractor or any of its Subcontractors, or the public. Any Notice Owner or A/E gives to Contractor of a safety or property protection violation will not: (1) relieve Contractor of sole and complete responsibility for the violation and the correction thereof, or for sole liability for the consequences of said violation; (2) impose any obligation upon Owner or A/E to inspect or review Contractor's safety program or precautions or to enforce Contractor's compliance with the requirements of this Section; or (3) impose any continuing obligation upon Owner or A/E to provide such Notice to Contractor or any other persons or entity.
- I. Contractor to keep site clean and leave it clean: Contractor shall at all times keep the Project site, including hauling routes, infrastructures, utilities, and storage areas, free from accumulations of waste materials. Before completing the Work, Contractor shall remove from the premises its rubbish, tools, scaffolding, equipment, and materials. Upon completing the Work, Contractor shall leave the Project site in a clean, neat, and orderly condition satisfactory to Owner. If Contractor fails to clean up as provided herein, and after reasonable notice from Owner, Owner may do so and the cost thereof shall be charged to Contractor.

## 5.5 OPERATIONS, MATERIAL HANDLING, AND STORAGE AREAS

- A. Limited storage areas: Contractor shall confine all operations, including storage of materials, to Owner-approved areas.



- B. Temporary buildings and utilities at Contractor expense: Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be provided by Contractor only with the consent of Owner and without expense to Owner. The temporary buildings and utilities shall be removed by Contractor at its expense upon completion of the Work.
- C. Roads and vehicle loads: Contractor shall use only established roadways or temporary roadways authorized by Owner. When materials are transported in prosecuting the Work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by federal, state, or local law or regulation.
- D. Ownership and reporting by Contractor of demolished materials: Ownership and control of all materials or facility components to be demolished or removed from the Project site by Contractor shall immediately vest in Contractor upon severance of the component from the facility or severance of the material from the Project site. Contractor shall be responsible for compliance with all laws governing the storage and ultimate disposal. Contractor shall provide Owner with a copy of all manifests and receipts evidencing proper disposal when required by Owner or applicable law.
- E. Contractor responsible for care of materials and equipment on-site: Contractor shall be responsible for the proper care and protection of its materials and equipment delivered to the Project site. Materials and equipment may be stored on the premises subject to approval of Owner. When Contractor uses any portion of the Project site as a shop, Contractor shall be responsible for any repairs, patching, or cleaning arising from such use.
- F. Contractor responsible for loss of materials and equipment: Contractor shall protect and be responsible for any damage or loss to the Work, or to the materials or equipment until the date of Substantial Completion, and shall repair or replace without cost to Owner any damage or loss that may occur, except damages or loss caused by the acts or omissions of Owner. Contractor shall also protect and be responsible for any damage or loss to the Work, or to the materials or equipment, after the date of Substantial Completion, and shall repair or replace without cost to Owner any such damage or loss that might occur, to the extent such damages or loss are caused by the acts or omissions of Contractor, or any Subcontractor.

## 5.6 UNFORESEEN PHYSICAL CONDITIONS

- A. Notice requirement for concealed or unknown conditions: If Contractor encounters conditions at the site which are subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or unknown physical conditions of an unusual nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then Contractor shall give written notice to Owner promptly and in no event later than 7 Days after the first observance of the conditions. Conditions shall not be disturbed prior to such notice.
- B. Adjustment in Contract Time and Contract Sum: If such conditions differ materially and cause a change in Contractor's cost of, or time required for, performance of any part of the Work, the Contractor may be entitled to an equitable adjustment in the Contract Time



or Contract Sum, or both, provided it makes a request therefore as provided in Section 7 and Section 8. Failure to provide notice as required by this Section, Section 7 and Section 8 shall result in waiver of Contractor's right to any adjustment in the Contract Time and Contract Sum.

## 5.7 MATERIAL, EQUIPMENT, TESTS, AND INSPECTION

- A. Contractor to provide new and equivalent equipment and materials: All equipment, material, and articles incorporated into the Work shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in the Contract Documents. References in the Specifications to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard quality and shall not be construed as limiting competition. Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of A/E and after submittal and approval of a substitute request, is equal to that named in the Specifications, unless otherwise specifically provided in the Contract Documents.
- B. Contractor responsible for fitting parts together: Contractor shall do all cutting, fitting, or patching that may be required to complete the Work or to make its several parts fit together properly, or receive or be received by work of others set forth in, or reasonably implied by, the Contract Documents. Contractor shall not damage or endanger any work of Owner or separate contractors by cutting, excavating, or otherwise altering the Work and shall not cut or alter the work of any other contractor unless approved in advance by Owner. Contractor shall restore all areas requiring cutting, fitting and patching to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.
- C. Owner may reject defective Work and non-conforming materials: Should any of the Work and/or materials be found defective, or in any way not in accordance with the Contract Documents, this Work, in whatever stage of completion, may be rejected by Owner. However, neither this authority of Owner nor a decision made either to exercise or not to exercise such authority shall give rise to a duty or responsibility of Owner or its representatives to Contractor, Subcontractors, their agents or employees, or other persons or entities performing portions of the Work. Work or materials condemned by the Owner or Architect/Engineer as failing to conform to Contract Documents, including but not limited to the quality of such materials, shall, upon notice from Owner or Architect/Engineer, be immediately removed by Subcontractor. Failure of Owner to immediately condemn any Work or materials as installed shall not in any way waive Owner's right to object thereto at any subsequent time.
- D. Contractor to provide for all testing and inspection of Work: Contractor shall maintain an adequate testing and inspection program and perform such tests and inspections as are necessary or required to ensure that the Work conforms to the requirements of the Contract Documents. Contractor shall be responsible for inspection and quality surveillance of all its Work and all Work performed by any Subcontractor. Unless otherwise provided, Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. Contractor shall give Owner timely notice of when and where tests and



inspections are to be made. Contractor shall maintain complete inspection records and make them available to Owner.

- E. Owner may conduct tests and inspections: Owner may, at any reasonable time, conduct such inspections and tests as it deems necessary to ensure that the Work is in accordance with the Contract Documents. Owner shall promptly notify Contractor if an inspection or test reveals that the Work is not in accordance with the Contract Documents. Unless the subject items are expressly accepted by Owner, such Owner inspection and tests are for the sole benefit of Owner and do not: constitute or imply acceptance; relieve Contractor of responsibility for providing adequate quality control measures; relieve Contractor of responsibility for risk of loss or damage to the Work, materials, or equipment; relieve Contractor of its responsibility to comply with the requirements of the Contract Documents; or impair Owner's right to reject defective or nonconforming items, or to avail itself of any other remedy to which it may be entitled.
- F. Inspections or inspectors do not modify Contract Documents: Neither observations by an inspector retained by Owner, the presence or absence of such inspector on the site, nor inspections, tests, or approvals by others, shall relieve Contractor from any requirement of the Contract Documents, nor is any such inspector authorized to change any term or condition of the Contract Documents.
- G. Contractor responsibilities on inspections: Contractor shall promptly furnish, without additional charge, all facilities, labor, material and equipment reasonably needed for performing such safe and convenient inspections and tests as may be required by Owner. Owner may charge Contractor any additional cost of inspection or testing when Work is not ready at the time specified by Contractor for inspection or testing, or when prior rejection makes reinspection or retest necessary. Owner shall perform its inspections and tests in a manner that will cause no undue delay in the Work.

## 5.8 CORRECTION OF NONCONFORMING WORK

- A. Work covered by Contractor without inspection: If a portion of the Work is covered contrary to the request of Owner or the requirements in the Contract Documents or a governmental authority having jurisdiction, it must, if required in writing by Owner, be uncovered for Owner's observation and be replaced at Contractor's expense and without change in the Contract Sum or Contract Time.
- B. Payment provisions for uncovering covered Work: If, at any time prior to Final Completion, Owner desires to examine the Work, or any portion of it, which has been covered, Owner may request to see such Work and it shall be uncovered by Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an adjustment in the Contract Sum for the costs of uncovering and replacement, and, if completion of the Work is thereby delayed, an adjustment in the Contract Time, provided it makes such a request as provided in Section 7. If such Work is not in accordance with the Contract Documents, the Contractor shall pay the costs of examination and reconstruction.
- C. Contractor to correct and pay for non-conforming Work: Contractor shall promptly correct Work found by Owner not to conform to the requirements of the Contract Documents,



whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. Contractor shall bear all costs of correcting such nonconforming Work, including additional testing and inspections.

- D. Contractor's compliance with correction and warranty provisions: If, within one year after the date of Substantial Completion of the Work or designated portion thereof, or within one year after the date for commencement of any system warranties established, or within the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, Contractor shall correct it promptly after receipt of written Notice from Owner to do so. Owner shall give such Notice promptly after discovery of the condition. This period of one year shall be extended, with respect to portions of Work first performed after Substantial Completion, by the period of time between Substantial Completion and the actual performance of the Work. Contractor's duty to correct with respect to Work repaired or replaced shall run for one year from the date of repair or replacement. Obligations under this Section shall survive Final Acceptance and are in addition to other warranties provided by contract or law.
- E. Contractor to remove non-conforming Work: Contractor shall remove from the Project site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by Contractor nor accepted by Owner.
- F. Owner may charge Contractor for non-conforming Work: If Contractor fails to correct nonconforming Work within a reasonable time after written notice to do so, Owner may replace, correct, or remove the nonconforming Work and charge the cost thereof to the Contractor.
- G. Contractor to pay for damaged Work during correction: Contractor shall bear the cost of correcting destroyed or damaged Work, whether completed or partially completed, caused by Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.
- H. No Period of limitation on other requirements: Nothing contained in this Section shall be construed to establish a period of limitation with respect to other obligations which Contractor might have according to the Contract Documents. Establishment of the time period of one year as described in this Section relates only to the specific obligation of Contractor to correct the Work, and has no relationship to the time within which the Contractor's obligation to comply with the Contract Documents may be sought to be enforced, including the time within which such proceedings may be commenced and damages for failure to comply with the Contract Documents may be sought.
- I. Owner may accept non-conforming Work and charge Contractor: If Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, Owner may do so instead of requiring its removal and correction, in which case the Contract Sum may be reduced as appropriate and equitable.

## 5.9 SUBCONTRACTORS AND SUPPLIERS



- A. Subcontractor Responsibility: The Contractor shall include the language of this paragraph in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this Section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. Upon request of the Owner, the Contractor shall promptly provide documentation to the Owner demonstrating that the subcontractor meets the subcontractor responsibility criteria below. The requirements of this paragraph apply to all subcontractors regardless of tier. At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:
1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;
  2. Have a current Washington Unified Business Identifier (UBI) number;
  3. If applicable, have: Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW; a Washington Employment Security Department number, as required in Title 50 RCW; a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW; An electrical contractor license, if required by Chapter 19.28 RCW; an elevator contractor license, if required by Chapter 70.87 RCW, not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3), on a project subject to the apprenticeship utilization requirements in RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the date of the Owner's first advertisement of the project, and meet all supplemental responsibility criteria set forth in the Contract Documents.
- B. Provide names of Subcontractors and use qualified firms: Before submitting the first Application for Payment, Contractor shall furnish in writing to Owner the names, addresses, and telephone numbers of all Subcontractors, as well as suppliers providing materials in excess of \$2,500. Contractor shall utilize Subcontractors and suppliers which are experienced and qualified, and meet the requirements of the Contract Documents, if any. Contractor shall not utilize any Subcontractor or supplier to whom Owner has a reasonable objection, and shall obtain Owner's written consent before making any substitutions or additions.
- C. Coordination of Subcontractors; Contractor responsible for Work: Contractor shall schedule, supervise, and coordinate the operations of all Subcontractors. No Subcontracting of any of the Work shall relieve Contractor from its responsibility for the performance of the Work in accordance with the Contract Documents or any other obligations of the Contract Documents.
- D. Automatic assignment of subcontracts: Each subcontract agreement for a portion of the Work is hereby assigned by Contractor to Owner provided that (1) the assignment is



effective only after termination by Owner for cause pursuant to Section 9 and only for those Subcontracts which Owner accepts by notifying the Subcontractor in writing; (2) after the assignment is effective, Owner will assume all future duties and obligations toward the Subcontractor which Contractor assumed in the Subcontract; and (3) the assignment is subject to the prior rights of the surety, if any, obligated under any bond provided in accordance with the Contract Documents.

- E. Owner may award other contracts; Contractor to cooperate: Owner may undertake or award other contracts for additional work at or near the Project site. Owner shall help coordinate the activities of Owner's own forces and of each separate contractor engaged by Owner with the Work of Contractor, who shall reasonably cooperate and coordinate with the other contractors and with Owner's employees and shall carefully adapt scheduling and perform the Work in accordance with these Contract Documents to reasonably accommodate the other work.

#### 5.10 WARRANTY

- A. Contractor warranty of Work: In addition to any special warranties provided elsewhere in the Contract Documents, Contractor warrants that all Work conforms to the requirements of the Contract Documents and is free of any defect in equipment, material, or design furnished, or workmanship performed by Contractor.
- B. Contractor responsibilities: With respect to all warranties, express or implied, for Work performed or materials furnished according to the Contract Documents, Contractor shall:
1. Obtain warranties: Obtain, assign if requested, and furnish directly to Owner, all warranties that would be given in normal commercial practice or that are required by the Contract Documents, first executed by the applicable Subcontractor and those suppliers and manufacturers furnishing materials for the Work, and subsequently countersigned by Contractor, which shall extend to Owner all rights, claims, benefits and interests that Contractor may have under express or implied warranties or guarantees against the Subcontractor, supplier or manufacturer for defective or non-conforming Work;
  2. Warranties for benefit of Owner: Require all warranties to be executed, in writing, for the benefit of Owner;
  3. Enforcement of warranties: Enforce all warranties for the benefit of Owner, if directed by Owner; and
  4. Contractor responsibility for Subcontractor warranties: Be responsible to enforce any Subcontractor's, manufacturer's, or supplier's warranties should they extend beyond the period specified in the Contract Documents.
- C. Warranties beyond Final Acceptance: The obligations under this Section shall survive Final Acceptance.



## 5.11 INDEMNIFICATION

- A. Contractor to indemnify Owner: To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold Owner and A/E, their consultants, and agents and employees, directors, elected officials, officers, lenders, successors and assigns of any of them (collectively, the "Indemnified Parties"), harmless from and against all claims, demands, losses, damages, or costs, including but not limited to damages arising out of bodily injury or death to persons and damage to property, direct and indirect, or consequential (including but not limited to costs and attorneys' fees incurred on such claims or in proving the right to indemnification), arising out of, caused by or resulting from performance of the Work. Contractor's indemnity and defense obligations do not extend to liability resulting from: the sole negligence or willful misconduct of the Indemnified Parties. Contractor's duty to indemnify and defend Owner for liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the concurrent negligence of (a) the Indemnified Parties; and (b) Contractor or its agents, employees, and Subcontractors and suppliers of any tier, shall apply only to the extent of the negligence of Contractor, its agents, employees, and Subcontractors and suppliers of any tier. This indemnification obligation shall include, but is not limited to, all Claims against the Owner by an employee or former employee of the Contractor or any Subcontractor.
- B. Obligations: The obligations of Contractor under this Section shall survive completion, acceptance, final payment and termination of the Contract and shall not be construed to negate, abridge, or otherwise reduce any other right or obligations of indemnity that would otherwise exist as to any party or person described in this Section. To the extent the wording of this Section would reduce or eliminate the insurance coverage of Owner or Contractor, this Section shall be considered modified to the extent that such insurance coverage is not affected. To the extent that any portion of this Section is stricken by a court or arbitrator for any reason, all remaining provisions shall retain their vitality and effect.
- C. RCW Title 51: Employee action and RCW Title 51: In any action against Owner and any other entity indemnified in accordance with this section, by any employee of Contractor, its Subcontractors, Sub-subcontractors, agents, or anyone directly or indirectly employed by any of them, the indemnification obligation of this section shall not be limited by a limit on the amount or type of damages, compensation, or benefits payable by or for Contractor or any Subcontractor under RCW Title 51, the Industrial Insurance Act, or any other employee benefit acts. **In addition, Contractor waives immunity as to Owner and A/E only, in accordance with RCW Title 51.**
- D. Defense Costs. Defense cost recovery shall include all fees (of attorneys and experts), in costs and expenses incurred in good faith. In addition, Owner shall be entitled to recover compensation for all of its expenses (including materials and labor) consumed in its defense.



## PART 6 – PAYMENTS AND COMPLETION

### 6.1 CONTRACT SUM AND APPLICATION FOR PAYMENTS

- A. Owner shall pay Contract Sum: Owner shall pay Contractor the Contract Sum for performance of the Work, in accordance with the Contract Documents.
- B. Contractor to submit Schedule of Values: At least 7 Days prior to submitting its first Application for Payment, Contractor shall submit to Owner for approval a breakdown allocating the total Contract Sum to each principal category of work, in such detail as requested by Owner ("Schedule of Values"), but including a minimum of 30 line items. The approved Schedule of Values shall allocate appropriate amounts, not less than 5% of the total bid, to that portion of the Work between Substantial Completion and Final Completion to recognize not-yet-earned costs for demobilization, O&M manuals, and any other requirements for Project closeout and in advancing the Work from Substantial Completion to Final Completion. The approved Schedule of Values shall be used by Owner as a basis for reviewing progress payments. Payment for Work shall be made only for and in accordance with those items included in the Schedule of Values.
- C. Monthly Application for Payment with substantiation: At monthly intervals, unless determined otherwise by Owner, Contractor shall submit to Owner an itemized Application for Payment for Work completed in accordance with the Contract Documents and the approved Schedule of Values. Each application shall be supported by such substantiating data as Owner may require.
- D. Contractor certifies Subcontractors paid: By submitting an Application for Payment, Contractor is certifying that all Subcontractors have been paid, less earned retainage in accordance with RCW 60.28.011, as their interests appeared in the last preceding Application for Payment. By submitting an Application for Payment, Contractor is recertifying that the representations set forth in Section 1.3 are true and correct, to the best of Contractor's knowledge, as of the date of the Application for Payment. Owner has the right to request written evidence from Contractor that Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by Owner to Contractor for subcontracted Work. Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Owner shall not have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.
- E. Reconciliation of Work with Progress Schedule: At the time it submits an Application for Payment, Contractor shall analyze and reconcile, to the satisfaction of Owner, the actual progress of the Work with the Progress Schedule. The submission of an Application for Payment constitutes a certification that the Work is current on the Progress Schedule.
- F. Payment for material delivered to site or stored off-site: If authorized by Owner, the Application for Payment may include request for payment for material delivered to the Project site and suitably stored, or for completed preparatory work. Payment may similarly be requested for material stored off the Project site, provided Contractor complies with or furnishes satisfactory evidence of the following:



1. Suitable facility or location within 10 miles of the Project: The material will be placed in a facility or location that is within a 10-mile radius of the Project, structurally sound, secure (continuously under lock and key), dry, lighted and suitable for the materials to be stored or otherwise approved by Owner;
2. Insurance provided on materials in facility or location: Contractor furnishes Owner a certificate of insurance extending Contractor's insurance coverage for damage, fire, and theft to cover the full value of all materials stored, or in transit;
3. Owner right of access to facility or location: Owner shall at all times have the right of access to the Project site;
4. Contractor assumes total responsibility for stored materials: Contractor and its surety assume total responsibility for the stored materials; and
5. Contractor provides documentation and Notice when materials moved to site: Contractor furnishes to Owner certified lists of materials stored, bills of lading, invoices, and other information as may be required, and shall also furnish Notice to Owner when materials are moved from storage to the Project site.

## 6.2 PROGRESS PAYMENTS

- A. Owner to pay within 30 Days: Owner shall make progress payments, in such amounts as Owner determines are properly due, within 30 Days after receipt of a properly executed Application for Payment. Owner shall notify Contractor in accordance with chapter 39.76 RCW if the Application for Payment does not comply with the requirements of the Contract Documents.
- B. Withholding retainage; Options for retainage: Owner shall retain 5% of the amount of each progress payment until 45 Days after Final Acceptance and receipt of all documents required by law or the Contract Documents, including, at Owner's request, consent of surety to release of the retainage. In accordance with chapter 60.28 RCW, Contractor may request that monies reserved be retained in a fund by Owner, deposited by Owner in a bank or savings and loan, or placed in escrow with a bank or trust company to be converted into bonds and securities to be held in escrow with interest to be paid to Contractor. Owner may permit Contractor to provide an appropriate bond in lieu of the retained funds.
- C. Title passes to Owner upon payment: Title to all Work and materials covered by a progress payment shall pass to Owner at the time of such payment free and clear of all liens, claims, security interests, and encumbrances. Passage of title shall not, however, relieve Contractor from any of its duties and responsibilities for the Work or materials, or waive any rights of Owner to insist on full compliance by Contractor with the Contract Documents. A progress payment, or partial or entire use or occupancy of the Project by Owner, shall not constitute acceptance of Work.

## 6.3 PAYMENTS WITHHELD



- A. Owner's right to withhold payment: Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any payment to such extent as may be necessary to protect Owner from loss or damage for reasons including but not limited to: (1) Work not in accordance with the Contract Documents; (2) Reasonable evidence that the Work required by the Contract Documents cannot be completed for the unpaid balance of the Contract Sum; (3) Work by Owner to correct defective Work or complete the Work in accordance with Section 5; (4) Claims (except where an insurer has unconditionally accepted coverage) filed or reasonable evidence indicating probable filing of such claims unless Contractor provides security acceptable to Owner; (5) The failure of Contractor to make payments to Subcontractors for labor, materials or equipment; (6) Damage to Owner or a separate contractor (except where an insurer has unconditionally accepted coverage); (7) Failure to submit affidavits pertaining to wages paid or certified payrolls as requested or otherwise required by statute; (8) Contractor's failure otherwise to perform in accordance with the Contract Documents; or (9) Contractor's negligent acts or omissions: Cost or liability that may occur to Owner as the result of Contractor's fault or negligent acts or omissions.
- B. Owner to notify Contractor of withholding for unsatisfactory performance: In any case where part or all of a payment is going to be withheld for unsatisfactory performance, Owner shall notify Contractor in accordance with chapter 39.76 RCW.

#### 6.4 RETAINAGE, BOND CLAIM RIGHTS, AND LIENS

- A. Chapters 39.08 RCW and 60.28 RCW incorporated by reference: Chapters 39.08 RCW and 60.28 RCW, concerning the rights and responsibilities of Contractor and Owner with regard to the performance and payment bonds and retainage, are made a part of the Contract Documents by reference as though fully set forth herein.
- B. Liens: Contractor shall promptly pay (and secure the discharge of any liens asserted by) all persons properly furnishing labor, equipment, materials or other items in connection with the performance of the Work (including, but not limited to, any Subcontractors ) to the extent that Owner has paid Contractor for this Work. Owner may, at its option, withhold payment, in whole or in part, to Contractor until lien and claim releases are furnished. Contractor may provide other security acceptable to Owner, such as a bond, in lieu of paying disputed liens or claims. Contractor shall defend, indemnify, and hold harmless Owner from any liens, including all expenses and attorneys' fees, except to the extent a lien has been recorded because of a failure of payment by Owner for the Work implicated in any such lien.

#### 6.5 SUBSTANTIAL COMPLETION

- A. Substantial Completion defined: Substantial Completion is the stage in the progress of the Work (or portion thereof designated and approved by Owner) when the construction is sufficiently complete, in accordance with the Contract Documents, so Owner has full and unrestricted use and benefit of the facilities (or portion thereof designated and approved by Owner) for the use for which it is intended. All Work other than incidental corrective or punch list work shall be completed. Substantial Completion shall not have been achieved if the Work cannot achieve Final Completion within the time specified in the Agreement, if all systems and parts are not functional, if utilities are not connected



and operating normally, if all required occupancy permits have not been issued, or if the Work is not accessible by normal vehicular and pedestrian traffic routes. The date Substantial Completion is achieved shall be established in writing by Owner. Contractor may request an early date of Substantial Completion which must be approved by Change Order. Owner's occupancy of the Work or designated portion thereof does not necessarily indicate that Substantial Completion has been achieved.

- B. Owner to determine if Work is complete: Upon receipt of Contractor's list, Owner will make an inspection to determine whether the Work or designated portion thereof has achieved Substantial Completion. If Owner's inspection discloses any item, whether or not included on Contractor's list, that is not sufficiently complete in accordance with the Contract Documents so that Owner can occupy or utilize the Work or designated portion thereof for its intended use, Contractor shall, before the occurrence of Substantial Completion, complete or correct the item upon notification by Owner, and Contractor shall then submit a request for another inspection by Owner to determine Substantial Completion. If Owner determines that the Work or designated portion has not achieved Substantial Completion, Contractor shall expeditiously complete the Work or designated portion, again request an inspection, and pay the costs associated with the re-inspection.
- C. Contractor to complete punch list in timely manner: Contractor shall prepare, continue to monitor, and cause to be completed, all punch lists with respect to the activity of each Subcontractor and report weekly to Owner on outstanding punch list items.

## 6.6 PRIOR OCCUPANCY

- A. Prior Occupancy defined; Restrictions: Owner may, when legally permissible to do so and upon written Notice to Contractor, take possession of or use any completed or partially completed portion of the Work ("Prior Occupancy") at any time prior to Substantial Completion, and Contractor shall cooperate with such occupancy and use and the establishment of a punch list. Unless otherwise agreed in writing, Prior Occupancy shall not: be deemed an acceptance of any portion of the Work; accelerate the time for any payment to Contractor; prejudice any rights of Owner provided by any insurance, bond, guaranty, or the Contract Documents; relieve Contractor of the risk of loss or any of the obligations established by the Contract Documents; establish a date of Substantial or Final Completion; establish a date for termination or partial termination of the assessment of liquidated damages; or constitute a waiver of claims.
- B. Damage; Duty to repair and warranties: Notwithstanding anything in the preceding paragraph, Owner shall be responsible for loss of or damage to the Work resulting from Prior Occupancy. Contractor's one year duty to repair any system warranties shall begin on building systems activated and used by Owner as agreed in writing by Owner and Contractor.

## 6.7 FINAL COMPLETION, ACCEPTANCE, AND PAYMENT

- A. Final Completion defined: Final Completion shall be achieved when the Work is fully and finally complete in accordance with the Contract Documents. The date Final Completion



is achieved shall be established by Owner in writing, but in no case shall it constitute Final Acceptance, which is a subsequent, separate, and distinct action.

- B. Final Acceptance defined: Unless otherwise determined by Owner, Final Acceptance shall be achieved after Contractor has completed all the requirements of the Contract Documents. The date Final Acceptance is achieved shall be established by Owner in writing. Pursuant to RCW 60.28, "Lien for Labor, Materials, Taxes on Public Works," completion of the Contract Work shall occur upon Final Acceptance. Neither Final Acceptance nor final payment shall release Contractor or its sureties from any obligations of these Contract Documents or the payment and performance bonds, or constitute a waiver of any claims by Owner arising from Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Final payment waives Claim rights: Acceptance of final payment by Contractor or any Subcontractor shall constitute a waiver and release to Owner of all claims by Contractor or any such Subcontractor for an increase in the Contract Sum or the Contract Time, and for every act or omission of Owner relating to or arising out of the Work, except for those Claims made in accordance with the procedures, including the time limits, set forth in Section 8.

## PART 7 – CHANGES

### 7.1 CHANGE IN THE WORK

- A. Changes in the Work: Changes in the Work may be accomplished after execution of the Contract without invalidating the Contract. Changes in the Work are recognized and incorporated into the Contract solely by Change Order and are subject to the limitations stated in this Part 7 and elsewhere in the Contract Documents. A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone. Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.
- B. Change Order: A Change Order is a written instrument signed by the Owner, Contractor, and Architect that modifies or amends the Contract Documents by setting forth: (1) a change in the Work, (2) the amount of any adjustment in the Contract Sum, and (3) the extent of any adjustment in the Contract Time. The Change Order shall constitute full payment and final settlement of all claims for time and direct, indirect, and consequential costs, including costs of delays, inconvenience, disruption of schedule, or loss of efficiency or productivity, related to any Work either covered or affected by the Change Order, or related to the events giving rise to the Change Order.
- C. Change Order Proposal from Contractor: If Contractor at any time believes that a change in the Work has occurred that involves a change in the Contract Sum and/or Contract Time, Contractor shall provide written Notice to Owner in accordance with Section 8. Contractor's failure strictly to follow the procedure set forth in the Contract



Documents shall waive any right of Contractor to a change in the Contract Sum or Contract Time on account of any such change in the Work.

- D. Owner-Initiated Changes: For an Owner-initiated change or directive, Owner may
1. Request a written Change Order Proposal (COP) from Contractor. Contractor shall submit a COP within 14 Days of the request from Owner, or within such other period as mutually agreed. Contractor's COP shall be full compensation for implementing the proposed change in the Work, including any adjustment in the Contract Sum or Contract Time, and including compensation for all delays in connection with such change in the Work and for any expense or inconvenience, disruption of schedule, or loss of efficiency or productivity occasioned by the change in the Work. Upon receipt of the COP, Owner may accept the proposal and incorporate it into Change Order, reject the proposal, request further documentation, or negotiate acceptable terms with Contractor.
  2. Issue a Construction Change Directive (CCD). Pending execution of a Change Order, Owner may issue a CCD directing Contractor to proceed immediately with the Work. A CCD is a written order prepared by Owner that directs Contractor to perform Work prior to total agreement on an adjustment, if any, in the Contract Sum and/or Contract Time. Owner may direct Contractor through a CCD, at any time and without invalidating the Contract, to proceed with a change in the Work or to perform Work that Contractor contends to be a change in the Work, with or without the agreement of Contractor and prior to agreement of the basis for adjustment, if any, to the Contract. Owner's use of a CCD does not constitute agreement that the directive constitutes a change in the Work, the Contract Sum or the Contract Time. All Work done pursuant to an Owner-directed change in the Work shall be executed in accordance with the Contract Documents. Upon receipt of a CCD, Contractor shall promptly commence and proceed diligently with performance of the directed Work. Within 7 Days of its receipt of a CCD, Contractor shall notify Owner in writing either (a) of its acceptance of its terms, in which case the terms will become effective, and the CCD will be incorporated into a Change Order, or (b) of Contractor's rejection of the terms, in which case Contractor must submit a written Rejection within 14 Days after Contractor delivered written Notice to Owner as noted above. The written Rejection must fully explain the reasons for rejecting the CCD and include all necessary supporting documentation. Failure to submit written Notice within 7 Days of Contractor's receipt of a CCD or a written Rejection with 14 Days after delivery of written Notice shall constitute Contractor's acceptance of the terms of the CCD. Contractor's Rejection of a CCD shall not relieve Contractor of its obligation to comply promptly with the CCD.
- E. Contractor fault or negligence alleged as basis for change in Contract Sum: No change in the Contract Sum shall be allowed to the extent Contractor's changed cost of performance is due to the fault or negligence of Contractor or anyone for whose acts Contractor is responsible; or to the extent Contractor is responsible for change concurrently caused by Contractor and Owner; or to the extent the change is caused by an act of Force Majeure as defined in this Agreement.

## 7.2 CHANGE IN THE CONTRACT SUM



- A. Contract Sum changes only by Change Order: The Contract Sum shall only be changed by a Change Order. Contractor shall include any request for a change in the Contract Sum in its COP.
- B. Allowances: Any Allowances stated in the Contract Documents shall be included in the Contract Sum. Items covered by Allowances shall be supplied for such amounts and by such persons or entities as Owner may direct, but Contractor shall not be required to employ persons or entities to whom Contractor has made reasonable and timely objection. Owner shall select materials and equipment under an Allowance with reasonable promptness. Allowances shall cover the net cost to Contractor of materials and equipment delivered and/or installed at the site, as identified in the Allowance, and all required taxes, less applicable trade discounts. Whenever actual costs are more than or less than Allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect the difference between actual, reasonable costs and the Allowances.
- C. Methods for Calculating Change Order Pricing: The value of any Work covered by a Change Order or any adjustment to the Contract Sum shall be determined by fixed price, unless otherwise agreed to by Owner. The following procedures shall apply with respect to pricing:
- a. Breakdown and itemization of details on COP: Contractor's COP shall be accompanied by a complete itemization of the costs, including labor, material, subcontractor costs, and overhead and profit. The costs shall be itemized in the manner set forth below, and shall be submitted on breakdown sheets in a form approved by Owner. If the total cost of the change in the Work does not exceed \$2,000, Contractor shall not be required to submit a breakdown if the description of the change in the Work is sufficiently definitive for Owner to determine fair value.
  - b. Use of industry standards in calculating costs: All costs shall be calculated based upon appropriate industry standard methods of calculating labor, material quantities, and equipment costs such as R.S. Means or other standards acceptable to the Owner and Contractor.
  - c. Markups on additive and deductive Work: The cost of any additive or deductive changes in the Work shall be calculated as set forth below. Where a change in the Work involves additive and deductive work by the same Contractor or Subcontractor, small tools, overhead, profit, bond and insurance markups will apply to the net difference.
  - d. Components of Increased Costs: Any request for an adjustment of the Contract Sum shall include only the following
    - i. Craft labor costs: These are the labor costs determined by multiplying the estimated or actual additional number of craft hours needed to perform the change in the Work by the hourly labor costs. Craft hours should cover direct labor, as well as indirect labor due to trade inefficiencies. The hourly costs shall be based on the following:



1. Basic wages and benefits: Hourly rates and benefits as stated on the Department of Labor and Industries approved "statement of intent to pay prevailing wages" or a higher amount if approved by the Owner. Direct supervision shall be a reasonable percentage not to exceed 15% of the cost of direct labor. No supervision markup shall be allowed for a working supervisor's hours.
  2. Federal insurance: Direct contributions required by the Federal Insurance Compensation Act; Federal Unemployment Tax Act; and the State Unemployment Compensation.
  3. Travel allowance: Travel allowance and/or subsistence, if applicable, not exceeding those allowances established by regional labor union agreements, which are itemized and identified separately.
  4. Safety: Cost incurred due to the Washington Industrial Safety and Health Act, which shall be a reasonable percentage not to exceed 2% of the sum of the amounts calculated in (1), (2), and (3) above.
- ii. Material costs: This is an itemization of the quantity and cost of materials needed to perform the change in the Work. Material costs shall be developed first from actual known costs, second from supplier quotations or if these are not available, from standard industry pricing guides. Material costs shall consider all available discounts. Freight costs, express charges, or special delivery charges, shall be itemized.
- iii. Equipment costs: This is an itemization of the type of equipment and the estimated or actual length of time the construction equipment appropriate for the Work is or will be used on the change in the Work. Costs will be allowed for construction equipment only if used solely for the changed Work, or for additional rental costs actually incurred by the Contractor. Equipment charges shall be computed on the basis of actual invoice costs or if owned, from the current edition of one of the following sources:
1. The Equipment Watch Fleet Manager Estimator Package (digital). The maximum rate for standby equipment shall not exceed that shown in the Associated General Contractors Washington State Department of Transportation (AGC WSDOT) Equipment Rental Agreement, current edition on the Contract execution date.
  2. The National Electrical Contractors Association for equipment used on electrical work.
  3. The Mechanical Contractors Association of America for equipment used on mechanical work.

The Equipment Watch Rental Rate Blue Book shall be used as a basis for establishing rental rates of equipment not listed in the above sources. The maximum rate for standby equipment shall not exceed that shown in the AGC WSDOT Equipment Rental Agreement, current edition on the Contract execution date.



- iv. Allowance for small tools, expendables & consumable supplies: Small tools consist of tools which cost \$250 or less and are normally furnished by the performing contractor. The maximum rate for small tools shall not exceed the following:

1. 3% for Contractor: For Contractor, 3% of direct labor costs.
2. 5% for Subcontractors: For Subcontractors, 5% of direct labor costs.

Expendables and consumables supplies directly associated with the change in Work must be itemized.

- v. Allowance for overhead and profit: This is defined as costs of any kind attributable to direct and indirect delay, acceleration, or impact, added to the total cost to Owner of any change in the Contract Sum. This allowance shall compensate Contractor for all non-craft labor, temporary construction facilities, field engineering, schedule updating, as-built drawings, home office cost, B&O taxes, office engineering, estimating costs, additional overhead because of extended time, profit, and any other cost incidental to the change in the Work. It shall be strictly limited in all cases to a reasonable amount, mutually acceptable, not to exceed the rates below:

1. Additive or Deductive Change Orders Performed by Contractor: 7 percent overhead and profit
2. Additive or Deductive Change Order for Work performed by Subcontractor(s): 5 percent overhead and profit for Contractor and 10 percent overhead and profit for Subcontractor(s).

- vi. Insurance and bond premiums: Cost of change in insurance or bond premium, which shall be added after overhead and profit are calculated in accordance with paragraph (v) above: This is defined as:

1. Contractor's liability insurance: The cost of any changes in Contractor's liability insurance arising directly from execution of the Change Order; and
2. Payment and Performance Bond: The cost of the additional premium for Contractor's bond arising directly from the changed Work.

- D. Deductive Change or Credit: The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

### 7.3 CHANGE IN THE CONTRACT TIME

- A. Changes in Contract Time: The Contract Time shall only be changed by a Change Order. Claims relating to time shall be made in accordance with Section 8.



- B. Time extension permitted only if delay is not Contractor's fault: If Contractor is delayed at any time in the commencement or progress of the Work (1) by an act or neglect of Owner or anyone for whose acts Owner is responsible; or (2) by changes ordered by Owner in the Work; or (3) by Force Majeure; or (4) by delay authorized by Owner pending dispute resolution; or (5) by other causes that Owner determines may justify delay, then Contractor shall reasonably attempt to mitigate the delay, and the Contract Time shall be extended by Change Order for such reasonable time as Owner may reasonably determine consistent with the provisions of the Contract Documents. No adjustment in the Contract Time shall be allowed to the extent Contractor's changed time of performance is due to the fault or negligence of Contractor or anyone for whose acts Contractor is responsible.
- C. Contractor must demonstrate impact on critical path of schedule: Any change in the Contract Time covered by a Change Order or Claim shall be limited to the change in the critical path of the Work attributable to the change or event(s) giving rise to the Change Order or Claim. Contractor shall be responsible for showing clearly on the Progress Schedule that the change or event had a specific impact on the critical path and, except in case of concurrent delay, was the sole cause of such impact, and could not have been avoided by resequencing of the Work or other reasonable alternatives.
- D. Cost arising from change in Contract Time: Provided Contractor has strictly complied with the procedures set forth in Section 7 and Section 8, Contractor is entitled to compensation for the cost of a change in Contract Time only if all the following conditions are met:
1. Must be solely fault of Owner: The change in Contract Time must solely be caused by the fault or negligence of Owner or others for whom Owner is responsible;
  2. Demonstrate impact on critical path: Contractor must establish the extent of the change in Contract Time in accordance with Section 7.3C. Owner is not obligated directly or indirectly for damages or an increase in the Contract Sum for any delay suffered by a Subcontractor that does not increase the Contract Time; and
  3. Limitations on Costs: Neither Contractor nor a Subcontractor of any tier is entitled to payment for costs arising out of actual or alleged loss of efficiency; morale, fatigue, attitude, or labor rhythm; home office overhead; expectant underrun; trade stacking; reassignment of workers; rescheduling of work; concurrent operations; dilution of supervision; learning curve; beneficial or joint occupancy; logistics; ripple; season change; extended overhead; profit upon damages for delay; impact damages, including cumulative impact; or similar damages.

## PART 8 – CLAIMS AND DISPUTE RESOLUTION

### 8.1 CLAIMS

- A. Definition: A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of the Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract Documents. The term "Claim"



also includes other disputes and matters in question between Owner and Contractor arising out of or relating to the Contract Documents. Claims must be initiated in writing and be made in accordance with the Contract Documents.

- B. Continuing Contract performance: Pending final resolution of a Claim, including the dispute resolution process, and except as otherwise agreed in writing or in the Contract Documents, Contractor shall proceed diligently with performance of the Work and maintain the Progress Schedule, and Owner shall continue to make payments of undisputed amounts in accordance with the Contract Documents.
- C. Claims for additional cost: If Contractor wishes to make a Claim for an increase in the Contract Sum, written Notice as provided herein shall be given before proceeding to execute the Work, and written Notice and a written Claim must be made in accordance with this Part 8, or it will be waived.
- D. Claims for additional time: If Contractor wishes to make a Claim for an increase in the Contract Time, written Notice as provided herein shall be given, and a written Claim must be made in accordance with this Part 8, or it will be waived.
- E. Claims for consequential damages: Contractor and Owner waive certain Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes damages incurred by Owner for income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and damages incurred by Contractor for principal and home office overhead and expenses including but not limited to the compensation of personnel stationed there, for loss of financing, business and/or reputation, for losses on other projects, for loss of profit, and for interest or financing costs. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination. Nothing contained in this subparagraph, however, shall be deemed to preclude an award of Owner's liquidated or other Owner delay damages, when applicable, in accordance with the Contract Documents, or to preclude or limit Contractor's obligation to indemnify Owner for damages, including direct, indirect or consequential damages, alleged by a third party.

## 8.2 CLAIMS PROCESS

- A. Notice and Claims: Contractor shall provide Notice of any Claim within 14 Days of the event giving rise to the Claim. Contractor shall then provide its Claim, with substantiation as required in Paragraph B herein, no later than 20 Days after Contractor's submittal of its Notice of Claim. Any Notice and any Claim of Contractor, whether under the Contract or otherwise, must be made pursuant to and in strict accordance with the applicable provisions of the Contract Documents. No act, omission, or knowledge, actual or constructive, of Owner or anyone for whose acts Owner is responsible shall in any way be deemed to be a waiver of the requirement for timely written Notice and a timely written Claim unless Owner and Contractor sign an explicit, unequivocal written waiver. The fact that Owner and Contractor may consider, discuss, or negotiate a Claim that has or may have been procedurally or substantively defective or untimely under the Contract shall not constitute a waiver of the provisions of the Contract Documents unless Owner and Contractor sign an explicit, unequivocal written waiver. Contractor acknowledges and



agrees that Contractor's failure to timely submit required Notices and/or timely submit Claims has a substantial impact upon and prejudices Owner, including but not limited to its inability to fully investigate or verify the Claim, mitigate damages, choose alternative options, adjust the budget, delete or modify the impacted Work, and/or monitor time, cost and quantities, and shall result in waiver of Contractor's Claim.

- B. Claim must cover all costs and be documented: A Claim shall be deemed to cover all changes in cost and time (including direct, indirect, impact, and consequential) to which Contractor (and Subcontractors) may be entitled and may not contain reservations of rights without Owner's written approval; any such unapproved reservations of rights shall be without effect. At a minimum, a Claim shall contain the following information:
1. Factual statement of Claim: A detailed factual statement of the Claim for additional compensation and/or time, if any, providing all necessary dates, locations, and items of Work affected by the Claim and confirming the damages asserted (time and cost) are actually caused by and/or a result of the act, event, or condition complained of;
  2. Dates: The date on which event(s) arose which gave rise to the Claim;
  3. Individuals knowledgeable about Claim: The name of each individual, including but not limited to employees of Contractor, Subcontractors, Owner and/or A/E believed to be knowledgeable about the Claim;
  4. Support from Contract Documents: The specific provisions of the Contract Documents that support the Claim;
  5. Identification of other supporting information: The identification of any documents and the substance of any oral communications that support the Claim;
  6. Copies of supporting documentation: Data and copies of any identified documents, other than the Contract Documents, that support the Claim;
  7. Details on Claim for Contract Time: If an adjustment in the Contract Time is sought, the specific days and dates for which it is sought; the specific reasons Contractor believes an extension in the Contract Time should be granted, and Contractor's analysis of its Progress Schedule to demonstrate the reason for the extension in Contract Time.
  8. Details on Claim for adjustment of Contract Sum: If an adjustment in the Contract Sum is sought, the exact amount sought and a breakdown of that amount into the categories and with the detail required by Section 7; and
  9. Statement certifying Claim: A statement certifying, under penalty of perjury, that the Claim is made in good faith, that the supporting cost and pricing data are true and accurate to the best of Contractor's knowledge and belief, that the Claim is fully supported by the accompanying data, and that the amount requested accurately reflects the adjustment in the Contract Sum or Contract Time for which Contractor believes Owner is liable.



- C. Waiver of rights: Any Claim of Contractor against Owner shall be conclusively deemed to have been waived by Contractor unless made in accordance with the requirements of Part 8.
- D. Owner may investigate: To assist in the review of a Claim, Owner may at any time visit the Project site, communicate directly with Subcontractors, or request additional information (including requesting an audit as authorized below) in order to fully evaluate the issues raised by the Claim.
- E. Owner may audit Claims: All Claims filed against Owner shall be subject to audit at any time following the filing of the Claim. Failure of Contractor or Subcontractors of any tier to permit Owner access to the books and records of Contractor or Subcontractors of any tier, or to maintain and retain sufficient records to allow Owner to verify all or a portion of the Claim, shall constitute a waiver of the Claim and shall bar any recovery. The audit may be performed by employees or representatives of Owner. Contractor and its Subcontractors shall provide adequate facilities acceptable to Owner for the audit during normal business hours. Contractor and all Subcontractors shall make a good faith effort to cooperate with Owner's auditors.
- F. Reciprocal RCW 42.56 rights: Contractor agrees, on behalf of itself and Subcontractors, that any invocation of RCW 42.56 at any time by Contractor or a Subcontractor, or their respective representatives, shall initiate an equivalent right to disclosures from Contractor and Subcontractors for the benefit of Owner. Failure to fully comply with these requirements shall constitute a material breach of the Contract and shall constitute a waiver of all Claims by Contractor and any Subcontractor that does not fully comply.

### 8.3 FORMAL RESOLUTION OF CLAIMS

- A. Mediation Required: To the extent a Claim is not resolved by Owner and Contractor, Claims, disputes, or other matters in controversy arising out of or related to the Contract shall be subject to mediation as a condition precedent to the initiation of binding dispute resolution. This requirement cannot be waived except by an explicit written waiver signed by both Owner and Contractor. Unless Owner and Contractor mutually agree in writing otherwise, all unresolved Claims shall be considered at a single mediation session that shall occur after Substantial Completion and prior to Final Acceptance by Owner. A request for mediation shall be delivered in writing to the other party to the Contract, and the parties shall promptly attempt to mutually agree on a mediator. If the parties do not agree on a mediator within 30 Days of a party's demand, the mediation, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. Mediation shall proceed in advance of binding dispute resolution proceedings. The parties to the mediation shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction.
- B. Litigation: Contractor may not commence litigation on a Claim unless the Claim has been raised and considered in accordance with the procedures of this Part 8, including



mandatory mediation. Contractor shall have the burden to demonstrate in any litigation that it has complied with all requirements of this Part 8. All unresolved Claims of Contractor shall be waived and released unless Contractor has complied with the time limits of the Contract Documents, and litigation is served and filed within 180 Days after the Date of Substantial Completion approved in writing by Owner. This requirement cannot be waived except by an explicit, written waiver signed by Owner and Contractor. The pendency of a mediation, which shall mean the time period between a party's receipt of a written mediation demand and the date of the initial mediation session, shall stay this deadline for serving and filing a lawsuit. The deadline may also be stayed for an additional period by agreement of the parties or court order. Neither Contractor nor a Subcontractor, whether claiming under a bond or lien statute or otherwise, shall be entitled to attorneys' fees directly or indirectly from Owner (but may recover attorneys' fees from the bond or statutory retainage fund itself to the extent allowable under law).

## **PART 9 – TERMINATION OF THE WORK**

### **9.1 TERMINATION BY OWNER FOR CAUSE**

- A. Notice to Terminate for Cause: Owner may, upon 7 Days written notice to Contractor and to its surety, terminate (without prejudice to any right or remedy of Owner) the Work, or any part of it, for cause upon the occurrence of any one or more of the following events:
1. Contractor repeatedly refuses or fails to prosecute the Work or any portion thereof with sufficient diligence to ensure Substantial Completion of the Work within the Contract Time;
  2. Contractor is adjudged bankrupt, makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency;
  3. Contractor repeatedly refuses or fails in a material way to replace or correct Work not in conformance with the Contract Documents;
  4. Contractor repeatedly refuses or fails to supply skilled workers or proper materials or equipment;
  5. Contractor repeatedly refuses or fails to make prompt payment due to Subcontractors or for labor;
  6. Contractor materially disregards or fails to comply with laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction; or
  7. Contractor is otherwise in material breach of any provision of the Contract Documents.
- B. Owner's actions upon termination: Upon termination, Owner may at its option:
1. Exclude the Contractor from the Site and/or take possession of the Project site and take possession of or use all materials, equipment, tools, and construction



equipment and machinery thereon owned by Contractor to maintain the orderly progress of, and to finish, the Work;

2. Accept assignment of subcontracts pursuant to Section 5; and
  3. Finish the Work by whatever other reasonable method it deems expedient.
- C. Payment upon Termination: If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for A/E's services and expenses made necessary thereby and any other extra costs or damages incurred by Owner in completing the Work, or as a result of Contractor's actions, or any other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall survive termination of the Contract.
- D. Contractor and Surety still responsible for Work performed: Termination of the Work in accordance with this section shall not relieve Contractor or its surety of any responsibilities for Work performed.
- E. Conversion of "Termination for Cause" to "Termination for Convenience": If Owner terminates Contractor for cause and it is later determined that none of the circumstances set forth in paragraph 9.01A exist, then such termination shall be deemed a termination for convenience pursuant to Section 9.

## 9.2 SUSPENSION OR TERMINATION BY OWNER FOR CONVENIENCE

- A. Owner Notice of Suspension or Termination for Convenience: Owner may, upon written notice, suspend or terminate (without prejudice to any right or remedy of Owner) the Work, or any part of it, for the convenience of Owner.
- B. Contractor Response to Termination Notice: Unless Owner directs otherwise, after receipt of a written notice of suspension or termination for either cause or convenience, Contractor shall promptly:
1. Stop performing Work on the date and as specified in the notice of suspension or termination;
  2. Place no further orders or subcontracts for materials, equipment, services or facilities, except as may be necessary for completion of such portion of the Work as is not suspended or terminated;
  3. For Work terminated, cancel all orders and subcontracts, upon terms acceptable to Owner, to the extent that they relate to the performance of Work terminated;
  4. For Work terminated, assign to Owner all of the right, title, and interest of Contractor in all orders and subcontracts to the extent that they relate to the performance of Work terminated;



5. Take such action as may be necessary or as directed by Owner to preserve and protect the Work, Project site, and any other property related to this Project in the possession of Contractor in which Owner has an interest; and
  6. Continue performance only to the extent not terminated or suspended.
- C. Terms of adjustment in Contract Sum if Contract terminated or suspended: If Owner terminates or suspends the Work or any portion thereof for convenience, Contractor shall be entitled to make a request for an equitable adjustment for its reasonable direct costs incurred during the period of suspension or prior to the effective date of the termination, plus reasonable allowance for overhead and profit on Work performed prior to termination, plus the reasonable administrative costs of the termination, but shall not be entitled to any other costs or damages, whatsoever, provided however, the total sum payable upon termination shall not exceed the Contract Sum reduced by prior payments. Contractor shall be required to make its request in accordance with the provisions of Part 7. Failure of Contractor to comply with the requirements of Part 7 shall result in waiver of Contractor's claim.
- D. Owner to determine whether to adjust Contract Time: If Owner terminates the Work or any portion thereof for convenience, the Contract Time shall be adjusted as determined by Owner.

### 9.3 TERMINATION BY CONTRACTOR FOR CAUSE

- A. Contractor termination: Except as provided by RCW 60.28.080, Contractor may terminate the Contract for any of the following reasons:
1. Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped permanently;
  2. An act of government, such as a declaration of national emergency, that requires all Work to be stopped permanently; or
  3. The Work is stopped for a period of 60 consecutive Days through no act or fault of Contractor, a Subcontractor, or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with Contractor.
- B. Contractor termination procedure: If one of the above reasons exists, Contractor may, upon seven (7) Days' written Notice to Owner (during which period Owner has the opportunity to cure), terminate the Contract and recover from Owner payment for Work executed in accordance with the Contract Documents, including reasonable overhead and profit on Work executed and costs incurred by reason of such termination. The total recovery of Contractor shall not exceed the unpaid balance of the Contract Sum.

### 9.4 OWNER'S RIGHT TO STOP AND/OR CARRY OUT THE WORK FOR CAUSE

- A. Owner may stop Work for Contractor's failure to perform: If Contractor fails or refuses to perform its obligations in accordance with the Contract Documents, Owner may order



Contractor, in writing, to stop the Work, or any portion thereof, until Owner has accepted satisfactory corrective action.

- B. Owner may carry out the Work after Contractor's failure to perform: If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a 14- Day period after receipt of written Notice from Owner to commence and continue to make reasonable progress toward the correction of such default or neglect with diligence and promptness, Owner may, without prejudice to other remedies Owner may have, correct such deficiencies, and an appropriate Change Order shall be issued deducting from payments then or thereafter due Contractor the reasonable cost of correcting the deficiencies, including Owner's expenses and compensation for A/E's additional services made necessary by the default, neglect or failure. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall pay the difference to Owner.
- C. No equitable adjustment for Contractor's failure to perform: Contractor shall not be entitled to an equitable adjustment in the Contract Time or Contract Sum for any increased cost or time of performance attributable to Contractor's failure or refusal to perform or from any reasonable remedial action taken by Owner based upon such failure.

## PART 10 – MISCELLANEOUS PROVISIONS

### 10.1 MISCELLANEOUS PROVISIONS

- A. Applicable law and venue: The Contract Documents and the rights of the parties herein shall be governed by the laws of the state of Washington and the City of Kirkland, without regard to its choice-of-law provisions. Venue shall be in King County.
- B. Bound to successors; Assignment of Contract: Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to the partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party shall assign the Contract without written consent of the other, except that Contractor may assign the Work for security purposes to a bank or lending institution authorized to do business in the state of Washington and City of Kirkland. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations set forth in the Contract Documents.
- C. Meaning of words used in Contract Documents: Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Reference to standard Specifications, manuals, or codes of any technical society, organization, or association, or to the code of any governmental authority, whether such reference is specific or by implication, shall be to the latest standard specification, manual, or code in effect on the date for submission of bids, except as may be otherwise specifically stated. Wherever in the Drawings and Specifications an article, device, or piece of equipment is referred to in the singular manner, such reference shall apply to as many such items as are shown on the Drawings, or required to complete the installation.



- D. No waiver of rights: Waiver of any provisions of the Contract Documents must be in writing and authorized by Owner. No other waiver is valid on behalf of Owner. No action, delay in acting, or failure to act by Owner or A/E shall constitute a waiver of a right or duty afforded under the Contract Documents, nor shall action, delay in acting, or failure to act constitute approval or an acquiescence in a breach therein, or otherwise prejudice the right of Owner to enforce a right or remedy at any subsequent time, except as may be specifically agreed in writing.
- E. Rights under Contract do not limit other rights: Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.
- F. Severability: If any portion of this Contract is held to be void or unenforceable, the remainder of the Contract shall be enforceable without such portion.
- G. Contractor must be registered and licensed: Pursuant to RCW 39.06, Contractor shall be registered and licensed as required by the laws of the State of Washington, including but not limited to RCW 18.27. Contractor shall also have a current state unified business identifier number; have industrial insurance coverage for Contractor's employees working in Washington as required in Title 51 RCW; have an employment security department number as required in Title 50 RCW; have a state excise tax registration number as required in Title 82 RCW; and not be disqualified from bidding on any public works contract under RCW 39.06.010 (unregistered or unlicensed contractors) or RCW 39.12.065(3) (prevailing wage violations).
- H. Employer contributions: Pursuant to RCW 50.24, "Contributions by Employers," in general and RCW 50.24.130 in particular, Contractor shall pay contributions for wages for personal services performed under this Contract or arrange for a bond acceptable to the Commissioner.
- I. Apprenticeship requirements: If the Contract Sum for the Project exceeds one million dollars, Contractor shall comply with all applicable apprenticeship requirements, including but not limited to RCW 39.04.320. For each Project that has apprenticeship requirements, the Contractor shall submit a "Statement of Apprentice and Journeyman Participation" in a format approved by the City with every request for progress payment. The Contractor shall submit consolidated and cumulative data collected by the Contractor and collected from all subcontractors by the Contractor.
- J. Computing time: When computing any period of time, the day of the event from which the period of time begins shall not be counted. The last day is counted unless it falls on a weekend or legal holiday, in which event the period runs until the end of the next day that is not a weekend or holiday. When the period of time allowed is less than 7 days, intermediate Saturdays, Sundays, and legal holidays are excluded from the computation.
- K. Six year records retention period: The wage, payroll, and cost records of Contractor, and its Subcontractors, and all records subject to audit, shall be retained for a period of not less than 6 years after the date of Final Acceptance. The Contractor agrees to provide



access to and copies of any records related to this Agreement as required by the City to audit expenditures and charges and/or to comply with the Washington State Public Records Act.

- L. No third party relationships created: The Contract Documents shall not be construed to create a contractual relationship of any kind between: A/E and Contractor; Owner and any Subcontractor; or any persons other than Owner and Contractor.
- M. Contractor assigns overcharge amounts to Owner: Owner and Contractor recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, Contractor hereby assigns to Owner any and all claims for such overcharges as to goods, materials, and equipment purchased in connection with the Work performed in accordance with the Contract Documents, except as to overcharges which result from antitrust violations commencing after the Contract Sum is established and which are not passed on to Owner under a Change Order. Contractor shall put a similar clause in its Subcontracts, and require a similar clause in its sub- Subcontracts, such that all claims for such overcharges on the Work are passed to Owner by Contractor.
- N. Headings for convenience only: All headings and captions used in these General Conditions are only for convenience of reference, and shall not be used in any way in connection with the meaning, effect, interpretation, construction, or enforcement of the General Conditions, and do not define the limit or describe the scope or intent of any provision of these General Conditions.
- O. Contractor is independent contractor: Contractor shall be and operate as an independent contractor in the performance of the Work and shall have complete control over and responsibility for all personnel performing the Work. Contractor is not authorized to enter into any agreements or undertakings for or on behalf of Owner or to act as or be an agent or employee of Owner.
- P. Owner's role is limited. Owner will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely Contractor's responsibility under the Contract Documents. The presence of Owner at the Project site shall not in any manner be construed as assurance that the Work is being completed in compliance with the Contract Documents, nor as evidence that any requirement of the Contract Documents of any kind, including Notice, has been met or waived. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Owner will not have control over or charge of and will not be responsible for acts or omissions of Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

**END OF SECTION**



## SUPPLEMENTAL CONDITIONS

UNLESS EXPRESSLY OTHERWISE INDICATED, THE FOLLOWING REQUIREMENTS SUPPLEMENT THE REFERENCED ARTICLES OF THE "GENERAL CONDITIONS" SECTION 00 70 00 AND SUPERCEDE THEM WHERE THEY CONTRADICT THE SAME.

### 1.1 COVID-19 Health and Safety Plan (CHSP)

The Contractor shall prepare a project specific COVID-19 health and safety plan (CHSP). The CHSP shall be prepared and submitted prior to beginning physical Work. The CHSP shall be based on and in compliance with the most current State and Federal requirements and applicable guidelines. If the State or Federal requirements are revised, the CHSP shall be promptly updated as necessary to conform to the current requirements. Contractor is responsible for staying informed of applicable State and Federal updates regarding COVID-19 requirements.

The Contractor shall update and resubmit the CHSP as the work progresses and new activities appear on the Progress Schedules. If the conditions change on the project, or for a particular activity, the Contractor shall update and resubmit the CHSP. Work on any activity shall cease if conditions prevent full compliance with the CHSP.

The CHSP shall address the health and safety of all people associated with the project including Owner, workers in the field, Contractor personnel, consultants, project staff, subcontractors, suppliers and anyone on the project site, staging areas, or yards.

The CHSP shall address all applicable state and federal regulation requirements and at a minimum contain the following information before Work begins:

1. Identify Designated Representative (Title and/or Name) Responsible for Compliance
  - a. Identify Designated Representative's responsibilities
  - b. Identify procedure which the designated representative will implement to screen employees for potential COVID-19 exposure.
2. Employee Responsibilities: Company policy addressing employee hygiene, illness or COVID-19 exposure.
3. Social Distancing
4. Jobsite/Office Best Practices
  - a. Project site cleaning protocol.
  - b. Operation specific protocols as needed to comply with federal and state regulations and applicable guidelines.
5. Managing Sick Employees
  - a. Process addressing employees that develop potential COVID-19 symptoms while at work (fever, cough, shortness of breath).
  - b. Process for managing employees before returning to work.
  - c. Process for response to employee notifying employer of positive test result for COVID-19.
6. Material Deliveries and Anyone Entering the Jobsite: Process to assure all outside vendors, suppliers and subcontractors comply with CHSP



7. Training, Education, and Communication: Process to inform and educate all employees of information contained in the CHSP.

**COVID-19 Health and Safety Plan (CHSP) Inspection**

The Contractor shall grant full and unrestricted access to the Owner for CHSP Inspections. The Owner (or designee) will conduct periodic compliance inspections on the project site, staging areas, or yards to verify that any ongoing work activity is following the CHSP plan.

If the Owner becomes aware of a noncompliance incident either through a site inspection or other means, the Contractor will be notified immediately. The Contractor shall immediately remedy the noncompliance incident or suspend all or part of the associated work activity. The Contractor shall satisfy the Owner that the noncompliance incident has been corrected before the suspension will end.

END OF SECTION



**CONTRACTOR'S AFFIDAVIT OF RELEASE OF CLAIMS AND LIENS**

**To OWNER:** City of Kirkland  
123 5<sup>th</sup> Avenue  
Kirkland, WA 98033

**Project Name:** \_\_\_\_\_

**Project Number:** \_\_\_\_\_

**From CONTRACTOR:** [Contractor Name]  
[Address]  
[City, State, Zip Code]

**CONDITIONAL RELEASE**

The undersigned does hereby acknowledge and certify that upon receipt by the undersigned of a check from \_\_\_\_\_, in the sum of \$\_\_\_\_\_ and when the check has been properly endorsed and has been paid by the bank upon which it was drawn, this document shall become effective to release any and all claims for compensation, impacts, additional time, costs, and rights of Claim or lien which the undersigned has on the above referenced Project for labor, services, equipment, materials furnished and/or claims through (Date:) \_\_\_\_\_ except it does not cover any retention or items furnished thereafter. Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned. Items and Claims not waived and released by this Instrument:

I CERTIFY UNDER PENALTY OF PERJURY UNDER LAWS OF THE STATE OF WASHINGTON THAT THE ABOVE IS A TRUE AND CORRECT STATEMENT.

Signature: \_\_\_\_\_

(Authorized Corporate Officer/Partner/Owner)

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

DATED: \_\_\_\_\_ 20\_\_ at \_\_\_\_\_

\_\_\_\_\_  
(City, State)

**UNCONDITIONAL RELEASE**

The undersigned does hereby acknowledge and certify that the undersigned has been paid and has received progress payments in the sum of \$\_\_\_\_\_ for labor, services, equipment or materials furnished to the above referenced Project and does hereby release any and all claims for compensation, impacts, additional time, costs and rights of Claim or lien which the undersigned has on the above referenced Project, any state or federal statutory bond right and private bond right, any claim for payment. This release covers all payment for labor services, equipment, materials furnished and/or claims on the above referenced Project through (Date:) \_\_\_\_\_ only and does not cover any retention or items furnished after that date. Items and Claims not waived and released by this Instrument:

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

I CERTIFY UNDER PENALTY OF PERJURY UNDER LAWS OF THE STATE OF WASHINGTON THAT THE ABOVE IS A TRUE AND CORRECT STATEMENT.

Signature: \_\_\_\_\_

(Authorized Corporate Officer/Partner/Owner)

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

DATED: \_\_\_\_\_ 20\_\_ at \_\_\_\_\_

\_\_\_\_\_  
(City, State)

**END OF SECTION**



**DEPARTMENT OF LABOR WAGE RATES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Prevailing wage rates for the locality or localities of the Work, as described by the Industrial Statistician of the Department of Labor and Industries, are required for this contract. Contractor remains solely responsible for verifying that the rates are accurate, current, and inclusive for all parts of this Work. Any off-site prefabrication may also require prevailing wages and the Contractor should contact the Department of Labor and Industries to ascertain those rates.
- B. Contractor to provide the "Notice of Intent to Pay Prevailing Wage Rates", as required by RCW 39.04, 39.12, 43.19, and 49.28 as amended. All paperwork regarding "Notice of Intent to Pay Prevailing Wage Rates" shall be sent directly to the Owner. The rules and regulations of the Department of Labor and Industries and the schedule of prevailing wage rates for the locality or localities where this Contract will be performed as determined by the Industrial Statistician of the Department of Labor and Industries, are by reference made a part of this Contract as though fully set forth herein.

Current prevailing wage rates for King County will apply to this project.  
Current prevailing wage data are available online or at the following:

ADDRESS: Department of Labor and Industries  
Prevailing Wage Section  
P.O. Box 44540  
Olympia, Washington 98504-4540

<http://www.lni.wa.gov/TradesLicensing/PrevailingWage/RateDatabase/default.asp>

The General Contractor and his sub-contractors are to pay for all filing fees for Statements of Intent to Pay Prevailing Wages and Affidavits. Pay for any change in rate during the course of construction.

Submit forms to: Department of Labor and Industries  
Prevailing Wage Section  
P.O. Box 44540  
Olympia, Washington 98504-4540

**END OF SECTION**



**SUMMARY**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Access to site.
  - 4. Coordination with occupants.
  - 5. Work restrictions.
  - 6. Specification and drawing conventions.
  - 7. Miscellaneous provisions.
- B. Related Requirements:
  - 1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

**1.03 PROJECT INFORMATION**

- A. Project Identification: City Hall Annex Building VRF HVAC Installation.
  - 1. Project Location: 310 1<sup>st</sup> Street, Kirkland Washington 98033.
- B. Owner: City of Kirkland.
  - 1. Owner's Representative: Michael B. Lehner, Wood Harbinger, mlehner@woodharbinger.com, 425-628-6094.
- C. Project Web Site: A project Web site administered by Contractor will be used for purposes of managing communication and documents during the construction stage.
  - 1. See Division 01 Section "Project Management and Coordination" for requirements for establishing, administering and using the Project Web site.

**1.04 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Work of Project is defined by the Contract Documents and consists of the following:
  - 1. Variable Refrigerant Flow (VRF) system as shown on the mechanical drawings. Includes one condensing unit with heat recovery and eight terminal units within the building. Includes VRF refrigerant piping, control system, devices and associated wiring for a complete system.
  - 2. Two ceiling fans in large office area.
  - 3. Pre-TAB and duct cleaning of existing exhaust fans and associated ductwork.
  - 4. Refrigerant piping, insulation and condensate drain piping as shown on Drawings.
  - 5. Commissioning of new VRF system and existing exhaust fans including a post - installation TAB of both systems.
  - 6. Electrical power to serve new VRF system units and ceiling fans.



7. Rotary phase converter to provide 3 phase power to VRF condensing unit.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

**1.05 WORK BY OWNER**

Not Used.

**1.06 OWNER-FURNISHED PRODUCTS**

Not Used.

**1.07 CONTRACTOR-FURNISHED, OWNER-INSTALLED PRODUCTS**

Not Used.

**1.08 ACCESS TO SITE**

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to building interior and exterior construction areas as indicated on Drawings.

2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

**1.09 COORDINATION WITH OCCUPANTS**

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.

1. Occupants will be working offsite, but desks and materials will remain. Contractor to protect occupant work areas from construction debris, including dust, water and other hazardous materials where used.

2. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.

3. Provide not less than 72 hours' notice to Owner's Representative of activities that will affect Owner's operations.



**1.10 WORK RESTRICTIONS**

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building in compliance with Kirkland Zoning Code limitations on Development Activity KZC 115.25. Hours of 7:00 a.m. to 8:00 p.m., Monday through Friday.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Owner's Representative not less than three days in advance of proposed utility interruptions.
  - 2. Obtain Owner's Representative's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner's Representative.
  - 1. Notify Owner's Representative not less than three days in advance of proposed disruptive operations.
  - 2. Obtain Owner's Representative's written permission before proceeding with disruptive operations.
- E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- H. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
  - 1. Maintain list of approved screened personnel with Owner's representative.

**1.11 SPECIFICATION AND DRAWING CONVENTIONS**

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.



- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
  3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
  - 2. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

#### 1.03 DEFINITIONS

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

#### 1.04 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use CSI Form.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.



- e. Samples, where applicable or requested.
  - f. Certificates and qualification data, where applicable or requested.
  - g. List of similar installations for completed projects with project names and addresses and names and addresses of engineers and owners.
  - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - j. Cost information, including a proposal of change, if any, in the Contract Sum.
  - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Owner's Representative's Action: If necessary, Owner's Representative will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Owner's Representative will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

#### 1.05 QUALITY ASSURANCE

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

#### 1.06 PROCEDURES

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

### PART 2 - PRODUCTS

#### 2.01 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Owner's Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner's Representative will return requests without action, except to record noncompliance with these requirements:



- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - b. Requested substitution provides sustainable design characteristics that specified product provided.
  - c. Substitution request is fully documented and properly submitted.
  - d. Requested substitution will not adversely affect Contractor's construction schedule.
  - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - f. Requested substitution is compatible with other portions of the Work.
  - g. Requested substitution has been coordinated with other portions of the Work.
  - h. Requested substitution provides specified warranty.
  - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Owner's Representative will consider requests for substitution if received within 60 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Owner's Representative.
- 1. Conditions: Owner's Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner's Representative will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Requested substitution provides sustainable design characteristics that specified product provided.
    - e. Substitution request is fully documented and properly submitted.
    - f. Requested substitution will not adversely affect Contractor's construction schedule.
    - g. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - h. Requested substitution is compatible with other portions of the Work.
    - i. Requested substitution has been coordinated with other portions of the Work.
    - j. Requested substitution provides specified warranty.
    - k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.



**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

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

#### 1.03 MINOR CHANGES IN THE WORK

- A. Owner's Representative will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

#### 1.04 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Owner's Representative will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Work Change Proposal Requests issued by Owner are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within 10 working days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    - e. Quotation Form: Use forms acceptable to Owner.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Owner's Representative.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.



2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Owner.

**1.05 CHANGE ORDER PROCEDURES**

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

**1.06 CONSTRUCTION CHANGE DIRECTIVE**

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

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

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

#### 1.03 DEFINITIONS

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

#### 1.04 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with continuation sheets.
    - b. Submittal schedule.
    - c. Items required to be indicated as separate activities in Contractor's construction schedule.
  - 2. Submit the schedule of values to Owner's Representative at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
  - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
  - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:



- a. Project name and location.
  - b. Name of Owner's Representative.
  - c. Owner's Representative's project number.
  - d. Contractor's name and address.
  - e. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
  - a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that affect value.
  - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
    - 1) Labor.
    - 2) Materials.
    - 3) Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.05 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Owner's Representative and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.



- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Owner's Representative by the 25th of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
  - 1. Submit draft copy of Application for Payment seven days prior to due date for review by Owner's Representative.
- D. Application for Payment Forms: Use forms acceptable to Owner's Representative for Applications for Payment. Submit forms for approval with initial submittal of schedule of values.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner's Representative will return incomplete applications without action.
  - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
  - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
  - 1. Provide certificate of insurance, evidence of transfer of title to Owner's Representative, and consent of surety to payment, for stored materials.
  - 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
  - 3. Provide summary documentation for stored materials indicating the following:
    - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- G. Transmittal: Submit electronic copy of Application for Payment to Owner's Representative by a method ensuring receipt within 24 hours. Copy shall include waivers of lien and similar attachments if required.
  - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.



1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  5. Waiver Forms: Submit executed waivers of lien on forms, acceptable to Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors including subcontractor's acknowledgement of project prevailing wage requirements.
  2. Schedule of values.
  3. Contractor's construction schedule (preliminary if not final).
  4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
  5. Products list (preliminary if not final).
  6. Submittal schedule (preliminary if not final).
  7. List of Contractor's staff assignments.
  8. List of Contractor's principal consultants.
  9. Copies of building permits.
  10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  11. Copies of intent to perform prevailing wage project.
  12. Initial progress report.
  13. Report of preconstruction conference.
  14. Certificates of insurance and insurance policies.
  15. Performance and payment bonds.
  16. Data needed to acquire Owner's insurance.
- J. Application for Payment at Substantial Completion: After Owner's Representative issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to, the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  6. AIA Document G707, "Consent of Surety to Final Payment."
  7. Evidence that claims have been settled.



8. Evidence of L&I intent & affidavit documents for prevailing wage for all work performed.
9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Coordination drawings.
  - 3. Requests for Information (RFIs).
  - 4. Project Web site.
  - 5. Project meetings.
- B. Related Requirements:
  - 1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
  - 2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.
  - 4. Division 01 Section "Commissioning" for coordinating the Work with Owner's Commissioning Authority.

**1.03 DEFINITIONS**

- A. RFI: Request from Owner, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.



1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

**1.05 GENERAL COORDINATION PROCEDURES**

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.



- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
  - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

#### **1.06 COORDINATION DRAWINGS**

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
  - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
    - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
    - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
    - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
    - f. Indicate required installation sequences.
    - g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
  - 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  - 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
  - 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
  - 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.



5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  6. Mechanical and Plumbing Work: Show the following:
    - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    - c. Fire-rated enclosures around ductwork.
  7. Electrical Work: Show the following:
    - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
    - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
    - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
  8. Review: Engineer will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Engineer determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Engineer will so inform Contractor, who shall make changes as directed and resubmit.
  9. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Division 01 Section "Submittal Procedures."
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
  2. File Preparation Format: DWG.
  3. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
  4. Engineer will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
    - a. Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
    - b. Digital Data Software Program: Mechanical and Electrical Drawings are available in AutoCAD.
    - c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Engineer.

#### **1.07 REQUESTS FOR INFORMATION (RFIS)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Owner's Representative will return RFIs submitted to Engineer by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.



- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Owner's Representative.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: Form acceptable to Owner's Representative.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Engineer's Action: Engineer will review each RFI, determine action required, and respond. Allow seven working days for Engineer's response for each RFI. RFIs received by Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for approval of Contractor's means and methods.
    - d. Requests for coordination information already indicated in the Contract Documents.
    - e. Requests for adjustments in the Contract Time or the Contract Sum.
    - f. Requests for interpretation of Engineer's actions on submittals.
    - g. Incomplete RFIs or inaccurately prepared RFIs.
  2. Engineer's action may include a request for additional information, in which case Engineer's time for response will date from time of receipt of additional information.
  3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log with not less than the following:
1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Owner's Representative.
  4. RFI number including RFIs that were returned without action or withdrawn.
  5. RFI description.



6. Date the RFI was submitted.
  7. Date Engineer's response was received.
- F. On receipt of Owner's Representative's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

#### **1.08 PROJECT WEB SITE**

- A. Provide, administer, and use Project Web site for purposes of hosting and managing project communication and documentation until Final Completion. Project Web site shall include the following functions:
1. Project directory.
  2. Project correspondence.
  3. Meeting minutes.
  4. Contract modifications forms and logs.
  5. RFI forms and logs.
  6. Task and issue management.
  7. Photo documentation.
  8. Schedule and calendar management.
  9. Submittals forms and logs.
  10. Payment application forms.
  11. Drawing and specification document hosting, viewing, and updating.
  12. Online document collaboration.
  13. Reminder and tracking functions.
  14. Archiving functions.
- B. Provide up to seven Project Web site user licenses for use of the Owner, Owner's Commissioning Authority, and Engineer. Provide eight hours of software training for Project Web site users.
- C. On completion of Project, provide one complete archive copy of Project Web site files to Owner and to Engineer in a digital storage format acceptable to Engineer.
- D. Contractor, subcontractors, and other parties granted access by Contractor to Project Web site shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Engineer.

#### **1.09 PROJECT MEETINGS**

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Engineer of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to



everyone concerned, including Owner and Engineer, within three days of the meeting.

- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
  2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Lines of communications.
    - f. Procedures for processing field decisions and Change Orders.
    - g. Procedures for RFIs.
    - h. Procedures for testing and inspecting.
    - i. Procedures for processing Applications for Payment.
    - j. Distribution of the Contract Documents.
    - k. Submittal procedures.
    - l. Preparation of record documents.
    - m. Use of the premises and existing building.
    - n. Work restrictions.
    - o. Working hours.
    - p. Owner's occupancy requirements.
    - q. Responsibility for temporary facilities and controls.
    - r. Procedures for moisture and mold control.
    - s. Procedures for disruptions and shutdowns.
    - t. Construction waste management and recycling.
    - u. Parking availability.
    - v. Office, work, and storage areas.
    - w. Equipment deliveries and priorities.
    - x. First aid.
    - y. Security.
    - z. Progress cleaning.
  4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Engineer, and Owner's Commissioning Authority of scheduled meeting dates.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.



- b. Options.
  - c. Related RFIs.
  - d. Related Change Orders.
  - e. Purchases.
  - f. Deliveries.
  - g. Submittals.
  - h. Review of mockups.
  - i. Possible conflicts.
  - j. Compatibility requirements.
  - k. Time schedules.
  - l. Weather limitations.
  - m. Manufacturer's written instructions.
  - n. Warranty requirements.
  - o. Compatibility of materials.
  - p. Acceptability of substrates.
  - q. Temporary facilities and controls.
  - r. Space and access limitations.
  - s. Regulations of authorities having jurisdiction.
  - t. Testing and inspecting requirements.
  - u. Installation procedures.
  - v. Coordination with other work.
  - w. Required performance results.
  - x. Protection of adjacent work.
  - y. Protection of construction and personnel.
  - 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
  - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Engineer, but no later than 30 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  - 2. Attendees: Authorized representatives of Owner, Owner's Commissioning Authority, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Requirements for delivery of material samples, attic stock, and spare parts.
    - f. Requirements for demonstration and training.
    - g. Preparation of Contractor's punch list.



- h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
      - i. Submittal procedures.
      - j. Coordination of separate contracts.
      - k. Owner's partial occupancy requirements.
      - l. Installation of Owner's furniture, fixtures, and equipment.
      - m. Responsibility for removing temporary facilities and controls.
    - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at biweekly intervals.
  - 1. Coordinate dates of meetings with preparation of payment requests.
  - 2. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Resolution of BIM component conflicts.
      - 4) Status of submittals.
      - 5) Deliveries.
      - 6) Off-site fabrication.
      - 7) Access.
      - 8) Site utilization.
      - 9) Temporary facilities and controls.
      - 10) Progress cleaning.
      - 11) Quality and work standards.
      - 12) Status of correction of deficient items.
      - 13) Field observations.
      - 14) Status of RFIs.
      - 15) Status of proposal requests.
      - 16) Pending changes.
      - 17) Status of Change Orders.
      - 18) Pending claims and disputes.
      - 19) Documentation of information for payment requests.
  - 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
    - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made



or recognized. Issue revised schedule concurrently with the report of each meeting.

- F. Coordination Meetings: Conduct project coordination meetings at biweekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner, Owner's Commissioning Authority and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    - c. Review present and future needs of each contractor present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Resolution of BIM component conflicts.
      - 4) Status of submittals.
      - 5) Deliveries.
      - 6) Off-site fabrication.
      - 7) Access.
      - 8) Site utilization.
      - 9) Temporary facilities and controls.
      - 10) Work hours.
      - 11) Hazards and risks.
      - 12) Progress cleaning.
      - 13) Quality and work standards.
      - 14) Change Orders.
  3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

## PART 2 - PRODUCTS

Not Used.



**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

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

#### 1.03 DEFINITIONS

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



- 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
- 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

**1.04 INFORMATIONAL SUBMITTALS**

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



**1.05 QUALITY ASSURANCE**

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

**1.06 COORDINATION**

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

**PART 2 - PRODUCTS**

**2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 10 working days, unless specifically allowed by Owner's Representative.
  - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
    - a. VRF condensing unit



- b. VRF Terminal unit
    - c. Rotary phase converter
    - d. Circuit Breakers
  - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  - 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
  - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner's Representative's administrative procedures necessary for certification of Substantial Completion.
  - 6. Punch List and Final Completion: Include not more than 10 working days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
- 1. Phasing: Arrange list of activities on schedule by phase.
  - 2. Work under More Than One Contract: Include a separate activity for each contract.
  - 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
  - 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  - 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  - 6. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. Partial occupancy before Substantial Completion.
    - e. Use of premises restrictions.
    - f. Provisions for future construction.
    - g. Seasonal variations.
    - h. Environmental control.
  - 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.
    - d. Fabrication.
    - e. Deliveries.
    - f. Installation.
    - g. Tests and inspections.
    - h. Adjusting.
    - i. Curing.
    - j. Building flush-out.
    - k. Startup and placement into final use and operation.
  - 8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
    - a. Structural completion.



- b. Temporary enclosure and space conditioning.
  - c. Permanent space enclosure.
  - d. Completion of mechanical installation.
  - e. Completion of electrical installation.
  - f. Substantial Completion.
- 9. Other Constraints: Occupants will occupy the building during construction. Occupants will vacate specific areas for a limited time to allow installation of equipment in that area. Coordinate with Owner to schedule specific work times. Occupants will be working offsite, but desks and materials will remain.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Material Delivery, Procurement and Subcontracting, Mobilization, Substantial Completion, and final completion.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
  - 1. See Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
  - 1. Unresolved issues.
  - 2. Unanswered Requests for Information.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.
  - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 10 working days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

## **2.02 STARTUP CONSTRUCTION SCHEDULE**

- A. Bar-Chart Schedule: Submit startup, horizontal, bar-chart-type construction schedule within ten working days of date established for the Notice of Award.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

## **2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)**

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 10 working days of date established for the Notice of Award. Base schedule on the startup construction schedule and additional information received since the start of Project.



- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
  - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

#### 2.04 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

Not Used.

#### 2.05 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
  - 1. List of subcontractors at Project site.
  - 2. List of separate contractors at Project site.
  - 3. Approximate count of personnel at Project site.
  - 4. Equipment at Project site.
  - 5. Material deliveries.
  - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
  - 7. Accidents.
  - 8. Meetings and significant decisions.
  - 9. Unusual events (see special reports).
  - 10. Stoppages, delays, shortages, and losses.
  - 11. Meter readings and similar recordings.
  - 12. Emergency procedures.
  - 13. Orders and requests of authorities having jurisdiction.
  - 14. Change Orders received and implemented.
  - 15. Change Directives received and implemented.
  - 16. Services connected and disconnected.
  - 17. Equipment or system tests and startups.
  - 18. Partial completions and occupancies.
  - 19. Substantial Completions authorized.
- B. Material Location Reports: At biweekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
  - 1. Material stored prior to previous report and remaining in storage.
  - 2. Material stored prior to previous report and since removed from storage and installed.
  - 3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.



**2.06 SPECIAL REPORTS**

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

**PART 3 - EXECUTION**

**3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. Contractor's Construction Schedule Updating: At biweekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule 3 days before each regularly scheduled progress meeting.
  - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  - 3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Owner's Representative, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
  - 1. Post copies in Project meeting rooms and temporary field offices.
  - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

**END OF SECTION**



**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
  - 2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
  - 3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

**1.03 DEFINITIONS**

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

**1.04 ACTION SUBMITTALS**

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



1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for Engineer's final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

#### **1.05 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Engineer's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Engineer for Contractor's use in preparing submittals.
  1. Engineer will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
    - a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD drawing format.
    - c. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Engineer.
    - d. The following digital data files will be furnished for each appropriate discipline:
      - 1) Mechanical and Electrical plans.
      - 2) Backgrounds based on as-built drawings.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.



- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 7 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 7 working days for review of each resubmittal.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
  - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  - 2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  - 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Engineer.
  - 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Engineer.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number, numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
  - 5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
    - a. Project name.
    - b. Number and title of appropriate Specification Section.
    - c. Manufacturer name.
    - d. Product name.
- E. Options: Identify options requiring selection by Engineer.



- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's action stamp.

## **PART 2 - PRODUCTS**

### **2.01 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project.
    - a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Submit electronic submittals via email as PDF electronic files.
    - a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 3. Action Submittals: Submit electronic copy unless otherwise indicated.
  - 4. Informational Submittals: Submit electronic copy unless otherwise indicated.
  - 5. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.



- c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  - 4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  - 5. Submit Product Data before or concurrent with Samples.
  - 6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Engineer's digital data drawing files is otherwise permitted.
  - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 24 by 36 inches.
  - 3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  - 2. Manufacturer and product name, and model number if applicable.
  - 3. Number and name of room or space.
  - 4. Location within room or space.
  - 5. Submit product schedule in the following format:
    - a. PDF electronic file.
- E. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."



- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.



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

### **PART 3 - EXECUTION**

#### **3.01    CONTRACTOR'S REVIEW**

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

#### **3.02    ENGINEER'S ACTION**

- A.     Action Submittals: Engineer will review each submittal, make marks to indicate corrections or revisions required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B.     Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- C.     Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.
- D.     Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.



- E. Submittals not required by the Contract Documents may be returned by the Engineer without action.

**END OF SECTION**



**QUALITY REQUIREMENTS**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

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

**1.03 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.



- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### **1.04 CONFLICTING REQUIREMENTS**

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

#### **1.05 INFORMATIONAL SUBMITTALS**

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



7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

**1.06 REPORTS AND DOCUMENTS**

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  1. Name, address, and telephone number of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
  1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.



**1.07 QUALITY ASSURANCE**

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- F. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

**1.08 QUALITY CONTROL**

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
  - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.



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



- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

#### **1.09 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying Owner's Representative, Commissioning Authority, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Owner's Representative and Commissioning Authority with copy to Contractor and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected work.

#### **PART 2 - PRODUCTS**

Not Used.

#### **PART 3 - EXECUTION**

##### **3.01 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to Owner's Representative.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Owner's Representative's, Commissioning Authority's, reference during normal working hours.

##### **3.02 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."



- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION**



**REFERENCES**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 DEFINITIONS**

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

**1.03 INDUSTRY STANDARDS**

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



- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

#### 1.04 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

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

##### PRIVATE tbl1

AA	Aluminum Association, Inc. (The) www.aluminum.org	(703) 358-2960
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ABAA	Air Barrier Association of America www.airbarrier.org	(866) 956-5888
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	American Concrete Institute www.concrete.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700



AGA	American Gas Association <a href="http://www.aga.org">www.aga.org</a>	(202) 824-7000
AGC	Associated General Contractors of America (The) <a href="http://www.agc.org">www.agc.org</a>	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers <a href="http://www.aham.org">www.aham.org</a>	(202) 872-5955
AI	Asphalt Institute <a href="http://www.asphaltinstitute.org">www.asphaltinstitute.org</a>	(859) 288-4960
AIA	American Institute of Architects (The) <a href="http://www.aia.org">www.aia.org</a>	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction <a href="http://www.aisc.org">www.aisc.org</a>	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute <a href="http://www.steel.org">www.steel.org</a>	(202) 452-7100
AITC	American Institute of Timber Construction <a href="http://www.aitc-glulam.org">www.aitc-glulam.org</a>	(303) 792-9559
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)	
ALSC	American Lumber Standard Committee, Incorporated <a href="http://www.alsc.org">www.alsc.org</a>	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. <a href="http://www.amca.org">www.amca.org</a>	(847) 394-0150
ANSI	American National Standards Institute <a href="http://www.ansi.org">www.ansi.org</a>	(202) 293-8020
AOSA	Association of Official Seed Analysts, Inc. <a href="http://www.aosaseed.com">www.aosaseed.com</a>	(405) 780-7372
APA	Architectural Precast Association <a href="http://www.archprecast.org">www.archprecast.org</a>	(239) 454-6989
APA	APA - The Engineered Wood Association <a href="http://www.apawood.org">www.apawood.org</a>	(253) 565-6600
APA EWS	APA - The Engineered Wood Association; Engineered Wood Systems (See APA - The Engineered Wood Association)	



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API	American Petroleum Institute <a href="http://www.api.org">www.api.org</a>	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute <a href="http://www.ari.org">www.ari.org</a>	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association <a href="http://www.asphaltroofing.org">www.asphaltroofing.org</a>	(202) 207-0917
ASCE	American Society of Civil Engineers <a href="http://www.asce.org">www.asce.org</a>	(800) 548-2723 (703) 295-6300
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)	
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers <a href="http://www.ashrae.org">www.ashrae.org</a>	(800) 527-4723 (404) 636-8400
ASME	ASME International (American Society of Mechanical Engineers International) <a href="http://www.asme.org">www.asme.org</a>	(800) 843-2763 (973) 882-1170
ASSE	American Society of Sanitary Engineering <a href="http://www.asse-plumbing.org">www.asse-plumbing.org</a>	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) <a href="http://www.astm.org">www.astm.org</a>	(610) 832-9500
AWCI	Association of the Wall and Ceiling Industry <a href="http://www.awci.org">www.awci.org</a>	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (Now WCMA)	
AWI	Architectural Woodwork Institute <a href="http://www.awinet.org">www.awinet.org</a>	(571) 323-3636
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association) <a href="http://www.awpa.com">www.awpa.com</a>	(205) 733-4077
AWS	American Welding Society <a href="http://www.aws.org">www.aws.org</a>	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association <a href="http://www.awwa.org">www.awwa.org</a>	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association <a href="http://www.buildershardware.com">www.buildershardware.com</a>	(212) 297-2122



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BIA	Brick Industry Association (The) <a href="http://www.bia.org">www.bia.org</a>	(703) 620-0010
BICSI	BICSI, Inc. <a href="http://www.bicsi.org">www.bicsi.org</a>	(800) 242-7405 (813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) <a href="http://www.bifma.com">www.bifma.com</a>	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee <a href="http://www.bissc.org">www.bissc.org</a>	(866) 342-4772
BWF	Badminton World Federation (Formerly: IBF - International Badminton Federation) <a href="http://www.internationalbadminton.org">www.internationalbadminton.org</a>	6-03-9283 7155
CCC	Carpet Cushion Council <a href="http://www.carpetcushion.org">www.carpetcushion.org</a>	(610) 527-3880
CDA	Copper Development Association <a href="http://www.copper.org">www.copper.org</a>	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association <a href="http://www.canelect.ca">www.canelect.ca</a>	(613) 230-9263
CEA	Consumer Electronics Association <a href="http://www.ce.org">www.ce.org</a>	(866) 858-1555 (703) 907-7600
CFFA	Chemical Fabrics & Film Association, Inc. <a href="http://www.chemicalfabricsandfilm.com">www.chemicalfabricsandfilm.com</a>	(216) 241-7333
CGA	Compressed Gas Association <a href="http://www.cganet.com">www.cganet.com</a>	(703) 788-2700
CIMA	Cellulose Insulation Manufacturers Association <a href="http://www.cellulose.org">www.cellulose.org</a>	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association <a href="http://www.cisca.org">www.cisca.org</a>	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute <a href="http://www.cispi.org">www.cispi.org</a>	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute <a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a>	(301) 596-2583
CRRC	Cool Roof Rating Council <a href="http://www.coolroofs.org">www.coolroofs.org</a>	(866) 465-2523 (510) 485-7175
CPA	Composite Panel Association <a href="http://www.pbmdf.com">www.pbmdf.com</a>	(301) 670-0604



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CPPA	Corrugated Polyethylene Pipe Association <a href="http://www.cppa-info.org">www.cppa-info.org</a>	(800) 510-2772 (202) 462-9607
CRI	Carpet and Rug Institute (The) <a href="http://www.carpet-rug.com">www.carpet-rug.com</a>	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute <a href="http://www.crsi.org">www.crsi.org</a>	(847) 517-1200
CSA	Canadian Standards Association	(800) 463-6727 (416) 747-4000
CSA	CSA International (Formerly: IAS - International Approval Services) <a href="http://www.csa-international.org">www.csa-international.org</a>	(866) 797-4272 (416) 747-4000
CSI	Cast Stone Institute <a href="http://www.caststone.org">www.caststone.org</a>	(717) 272-3744
CSI	Construction Specifications Institute (The) <a href="http://www.csinet.org">www.csinet.org</a>	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau <a href="http://www.cedarbureau.org">www.cedarbureau.org</a>	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) <a href="http://www.cti.org">www.cti.org</a>	(281) 583-4087
DHI	Door and Hardware Institute <a href="http://www.dhi.org">www.dhi.org</a>	(703) 222-2010
EIA	Electronic Industries Alliance <a href="http://www.eia.org">www.eia.org</a>	(703) 907-7500
EIMA	EIFS Industry Members Association <a href="http://www.eima.com">www.eima.com</a>	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee <a href="http://www.ejdc.org">www.ejdc.org</a>	(703) 295-5000
EJMA	Expansion Joint Manufacturers Association, Inc. <a href="http://www.ejma.org">www.ejma.org</a>	(914) 332-0040
ESD	ESD Association (Electrostatic Discharge Association) <a href="http://www.esda.org">www.esda.org</a>	(315) 339-6937
ETL SEMCO	Intertek ETL SEMCO (Formerly: ITS - Intertek Testing Service NA) <a href="http://www.intertek.com">www.intertek.com</a>	(800) 967-5352
FM Approvals	FM Approvals LLC <a href="http://www.fmglobal.com">www.fmglobal.com</a>	(781) 762-4300



FM Global	FM Global (Formerly: FMG - FM Global) <a href="http://www.fmglobal.com">www.fmglobal.com</a>	(401) 275-3000
FMRC	Factory Mutual Research (Now FM Global)	
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. <a href="http://www.floridarooof.com">www.floridarooof.com</a>	(407) 671-3772
FSA	Fluid Sealing Association <a href="http://www.fluidsealing.com">www.fluidsealing.com</a>	(610) 971-4850
FSC	Forest Stewardship Council <a href="http://www.fsc.org">www.fsc.org</a>	49 228 367 66 0
GA	Gypsum Association <a href="http://www.gypsum.org">www.gypsum.org</a>	(202) 289-5440
GANA	Glass Association of North America <a href="http://www.glasswebsite.com">www.glasswebsite.com</a>	(785) 271-0208
GRI	(Part of GSI)	
GS	Green Seal <a href="http://www.greenseal.org">www.greenseal.org</a>	(202) 872-6400
GSI	Geosynthetic Institute <a href="http://www.geosynthetic-institute.org">www.geosynthetic-institute.org</a>	(610) 522-8440
HI	Hydraulic Institute <a href="http://www.pumps.org">www.pumps.org</a>	(973) 267-9700
HI	Hydronics Institute <a href="http://www.gamanet.org">www.gamanet.org</a>	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association <a href="http://www.hpva.org">www.hpva.org</a>	(703) 435-2900
HPW	H. P. White Laboratory, Inc. <a href="http://www.hpwhite.com">www.hpwhite.com</a>	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation (Now BWF)	



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ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IENT	Institute of Environmental Sciences and Technology www.ient.org	(847) 255-1561
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
	Available from ANSI www.ansi.org	(202) 293-8020
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(877) 464-7732 (702) 567-8150
ITS	Intertek Testing Service NA (Now ETL SEMCO)	
ITU	International Telecommunication Union www.itu.int/home	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association (Now part of CPA)	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333



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MFMA	Maple Flooring Manufacturers Association, Inc. <a href="http://www.maplefloor.org">www.maplefloor.org</a>	(888) 480-9138
MFMA	Metal Framing Manufacturers Association, Inc. <a href="http://www.metalframingmfg.org">www.metalframingmfg.org</a>	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America <a href="http://www.mhia.org">www.mhia.org</a>	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America <a href="http://www.marble-institute.com">www.marble-institute.com</a>	(440) 250-9222
MPI	Master Painters Institute <a href="http://www.paintinfo.com">www.paintinfo.com</a>	(888) 674-8937 (604) 298-7578
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. <a href="http://www.mss-hq.com">www.mss-hq.com</a>	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers <a href="http://www.naamm.org">www.naamm.org</a>	(630) 942-6591
NACE	NACE International (National Association of Corrosion Engineers International) <a href="http://www.nace.org">www.nace.org</a>	(800) 797-6623 (281) 228-6200
NADCA	National Air Duct Cleaners Association <a href="http://www.nadca.com">www.nadca.com</a>	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport  <a href="http://www.aahperd.org/nagws/">www.aahperd.org/nagws/</a>	(800) 213-7193, ext. 453
NAIMA	North American Insulation Manufacturers Association <a href="http://www.naima.org">www.naima.org</a>	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. <a href="http://www.nbgqa.com">www.nbgqa.com</a>	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) <a href="http://www.ncaa.org">www.ncaa.org</a>	(317) 917-6222
NCMA	National Concrete Masonry Association <a href="http://www.ncma.org">www.ncma.org</a>	(703) 713-1900
NCPI	National Clay Pipe Institute <a href="http://www.ncpi.org">www.ncpi.org</a>	(262) 248-9094
NCTA	National Cable & Telecommunications Association <a href="http://www.ncta.com">www.ncta.com</a>	(202) 775-2300



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NEBB	National Environmental Balancing Bureau <a href="http://www.nebb.org">www.nebb.org</a>	(301) 977-3698
NECA	National Electrical Contractors Association <a href="http://www.necanet.org">www.necanet.org</a>	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association <a href="http://www.nelma.org">www.nelma.org</a>	(207) 829-6901
NEMA	National Electrical Manufacturers Association <a href="http://www.nema.org">www.nema.org</a>	(703) 841-3200
NETA	InterNational Electrical Testing Association <a href="http://www.netaworld.org">www.netaworld.org</a>	(888) 300-6382 (269) 488-6382
NFHS	National Federation of State High School Associations <a href="http://www.nfhs.org">www.nfhs.org</a>	(317) 972-6900
NFPA	NFPA (National Fire Protection Association) <a href="http://www.nfpa.org">www.nfpa.org</a>	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council <a href="http://www.nfrc.org">www.nfrc.org</a>	(301) 589-1776
NGA	National Glass Association <a href="http://www.glass.org">www.glass.org</a>	(866) 342-5642 (703) 442-4890
NHLA	National Hardwood Lumber Association <a href="http://www.natlhardwood.org">www.natlhardwood.org</a>	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority <a href="http://www.nlga.org">www.nlga.org</a>	(604) 524-2393
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association) <a href="http://www.nofma.com">www.nofma.com</a>	(901) 526-5016
NOMMA	National Ornamental & Miscellaneous Metals Association <a href="http://www.nomma.org">www.nomma.org</a>	(888) 516-8585
NRCA	National Roofing Contractors Association <a href="http://www.nrca.net">www.nrca.net</a>	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association <a href="http://www.nrmca.org">www.nrmca.org</a>	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) <a href="http://www.nsf.org">www.nsf.org</a>	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association <a href="http://www.nssga.org">www.nssga.org</a>	(800) 342-1415 (703) 525-8788



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NTMA	National Terrazzo & Mosaic Association, Inc. (The) <a href="http://www.ntma.com">www.ntma.com</a>	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc. (Now ITS)	
PCI	Precast/Prestressed Concrete Institute <a href="http://www.pci.org">www.pci.org</a>	(312) 786-0300
PDCA	Painting & Decorating Contractors of America <a href="http://www.pdca.com">www.pdca.com</a>	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute <a href="http://www.pdionline.org">www.pdionline.org</a>	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute <a href="http://pgi-tp.ce.uiuc.edu">http://pgi-tp.ce.uiuc.edu</a>	(217) 333-3929
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America) <a href="http://www.landcarenetwork.org">www.landcarenetwork.org</a>	(800) 395-2522 (703) 736-9666
PTI	Post-Tensioning Institute <a href="http://www.post-tensioning.org">www.post-tensioning.org</a>	(602) 870-7540
RCSC	Research Council on Structural Connections <a href="http://www.boltcouncil.org">www.boltcouncil.org</a>	
RFCI	Resilient Floor Covering Institute <a href="http://www.rfci.com">www.rfci.com</a>	(301) 340-8580
RIS	Redwood Inspection Service <a href="http://www.redwoodinspection.com">www.redwoodinspection.com</a>	(888) 225-7339 (415) 382-0662
SAE	SAE International <a href="http://www.sae.org">www.sae.org</a>	(877) 606-7323 (724) 776-4841
SDI	Steel Deck Institute <a href="http://www.sdi.org">www.sdi.org</a>	(847) 458-4647
SDI	Steel Door Institute <a href="http://www.steeldoor.org">www.steeldoor.org</a>	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association <a href="http://www.sefalabs.com">www.sefalabs.com</a>	(877) 294-5424 (516) 294-5424
SEI/ASCE	Structural Engineering Institute/American Society of Civil	



	Engineers (See ASCE)	
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(866) 817-8888 (703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association www.smacentral.org	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SMPTE	Society of Motion Picture and Television Engineers www.smpte.org	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPRI	Single Ply Roofing Industry www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
STI	Steel Tank Institute www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
TCA	Tile Council of America, Inc. (Now TCNA)	



TCNA	Tile Council of North America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	The Masonry Society www.masonrysociety.org	(303) 939-9700
TPI	Truss Plate Institute, Inc. www.tpinst.org	(703) 683-1010
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 649-5555
TRI	Tile Roofing Institute www.tilerroofing.org	(312) 670-4177
UL	Underwriters Laboratories Inc. www.ul.com	(877) 854-3577 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902
USAV	USA Volleyball www.usavolleyball.org	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council www.usgbc.org	(800) 795-1747
USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association www.wcmanet.org	(212) 297-2122
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) www.windowcoverings.org	(800) 506-4636 (212) 297-2109
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (847) 299-5200



WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association www.wsrca.com	(800) 725-0333 (650) 570-5441
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

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

PRIVATE tbl2

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

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

PRIVATE tbl3

CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOE	Department of Energy www.energy.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322



GSA	General Services Administration <a href="http://www.gsa.gov">www.gsa.gov</a>	(800) 488-3111
LBL	Lawrence Berkeley National Laboratory <a href="http://www.lbl.gov">www.lbl.gov</a>	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology <a href="http://www.nist.gov">www.nist.gov</a>	(301) 975-6478
OSHA	Occupational Safety & Health Administration <a href="http://www.osha.gov">www.osha.gov</a>	(800) 321-6742 (202) 693-1999
PBS	Public Buildings Service (See GSA)	
PHS	Office of Public Health and Science <a href="http://www.osophs.dhhs.gov/ophs">www.osophs.dhhs.gov/ophs</a>	(202) 690-7694
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	State Department <a href="http://www.state.gov">www.state.gov</a>	(202) 647-4000
TRB	Transportation Research Board <a href="http://gulliver.trb.org">http://gulliver.trb.org</a>	(202) 334-2934
USDA	Department of Agriculture <a href="http://www.usda.gov">www.usda.gov</a>	(202) 720-2791
USPS	Postal Service <a href="http://www.usps.com">www.usps.com</a>	(202) 268-2000

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

PRIVATE tbl4		
ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board <a href="http://www.access-board.gov">www.access-board.gov</a>	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office <a href="http://www.gpoaccess.gov/cfr/index.html">www.gpoaccess.gov/cfr/index.html</a>	(866) 512-1800 (202) 512-1800



**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

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

#### 1.03 DEFINITIONS

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

#### 1.04 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
  - 2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product



request. Engineer will notify Contractor of approval or rejection of proposed comparable product request within 7 working days of receipt of request.

- a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
  - b. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

#### 1.05 QUALITY ASSURANCE

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

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

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



**1.07 PRODUCT WARRANTIES**

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

**PART 2 - PRODUCTS**

**2.01 PRODUCT SELECTION PROCEDURES**

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



3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
    - b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
  4. Manufacturers:
    - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
    - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
  5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match Engineer's sample", provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.02 COMPARABLE PRODUCTS

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



4. List of similar installations for completed projects with project names and addresses and names and addresses of engineers and owners, if requested.
5. Samples, if requested.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**



## EXECUTION

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of Owner-installed products.
  - 6. Progress cleaning.
  - 7. Starting and adjusting.
  - 8. Protection of installed construction.
  - 9. Correction of the Work.
- B. Related Requirements:
  - 1. Division 01 Section "Summary" for limits on use of Project site.
  - 2. Division 01 Section "Submittal Procedures" for submitting surveys.
  - 3. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

#### 1.03 DEFINITIONS

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

#### 1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer.
- B. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
- C. Cutting and Patching Plan: Submit plan describing procedures at least 10 working days prior to the time cutting and patching will be performed. Include the following information:
  - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
  - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.



3. Products: List products to be used for patching and firms or entities that will perform patching work.
  4. Dates: Indicate when cutting and patching will be performed.
  5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
- D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

#### 1.05 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: Do not cut and patch structural elements. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
  2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Mechanical systems piping and ducts.
    - b. Control systems.
    - c. Electrical wiring systems.
  3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Engineer for the visual and functional performance of in-place materials.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

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



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

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.02 PREPARATION

- A. Existing Utility Information: Furnish information to Owner's representative that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer according to requirements in Division 01 Section "Project Management and Coordination."

### 3.03 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  2. Establish limits on use of Project site.



3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  4. Inform installers of lines and levels to which they must comply.
  5. Check the location, level and plumb, of every major element as the Work progresses.
  6. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
  7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

#### **3.04 FIELD ENGINEERING**

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer before proceeding.
  2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

#### **3.05 INSTALLATION**

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.



2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated. Where refrigerant piping is routed exposed, install in a neat manner with straight sections and mount tight to ceiling.
  4. Mount equipment tight to structure where headroom clearance is less than 84 inches.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
  2. Allow for building movement, including thermal expansion and contraction.
  3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.



**3.06 CUTTING AND PATCHING**

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.



2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### 3.07 OWNER-INSTALLED PRODUCTS

Not Used.

### 3.08 PROGRESS CLEANING

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



use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

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

### **3.09 STARTING AND ADJUSTING**

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

### **3.10 PROTECTION OF INSTALLED CONSTRUCTION**

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

**END OF SECTION**



**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

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

**1.03 ACTION SUBMITTALS**

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

**1.04 CLOSEOUT SUBMITTALS**

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

**1.05 MAINTENANCE MATERIAL SUBMITTALS**

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



**1.06 SUBSTANTIAL COMPLETION PROCEDURES**

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  - 4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Engineer's signature for receipt of submittals.
  - 5. Submit test/adjust/balance records.
  - 6. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.
  - 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 working days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Advise Owner of pending insurance changeover requirements.
  - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  - 3. Complete startup and testing of systems and equipment.
  - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
  - 6. Advise Owner of changeover in heat and other utilities.
  - 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  - 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  - 9. Complete final cleaning requirements, including touchup painting.
  - 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.



- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 working days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### **1.07 FINAL COMPLETION PROCEDURES**

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### **1.08 LIST OF INCOMPLETE ITEMS (PUNCH LIST)**

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Engineer.
    - d. Name of Contractor.
    - e. Page number.
  4. Submit list of incomplete items in the following format:
    - a. MS Excel electronic file. Engineer will return annotated file.
    - b. PDF electronic file. Engineer will return annotated file.



**1.09 SUBMITTAL OF PROJECT WARRANTIES**

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

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

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

**PART 3 - EXECUTION**

**3.01 FINAL CLEANING**

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:



- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Remove snow and ice to provide safe access to building.
  - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - h. Sweep concrete floors broom clean in unoccupied spaces.
  - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

### **3.02 REPAIR OF THE WORK**

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.



1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
  - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION**



## OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product maintenance manuals.
  - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
  - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
  - 2. Division 01 Section "Commissioning" for verification and compilation of data into operation and maintenance manuals.
  - 3. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

#### 1.03 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

#### 1.04 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Owner's Representative and Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
  - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Engineer.
    - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    - b. Enable inserted reviewer comments on draft submittals.



- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Owner's Representative and Commissioning Authority will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Owner's Representative and Commissioning Authority will return copy with comments.
  - 1. Correct or revise each manual to comply with Owner's Representative and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Owner's Representative and Commissioning Authority's comments and prior to commencing demonstration and training.

## **PART 2 - PRODUCTS**

### **2.01 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY**

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

### **2.02 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS**

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Subject matter included in manual.
  - 2. Name and address of Project.
  - 3. Name and address of Owner.



4. Date of submittal.
  5. Name and contact information for Contractor.
  6. Name and contact information for Owner's Representative.
  7. Name and contact information for Commissioning Authority.
  8. Names and contact information for major consultants to the Owner's Representative that designed the systems contained in the manuals.
  9. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

## **2.03 EMERGENCY MANUALS**

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



**2.04 OPERATION MANUALS**

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

**2.05 PRODUCT MAINTENANCE MANUALS**

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address,



and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- C. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

## **2.06 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS**

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  - 1. Test and inspection instructions.
  - 2. Troubleshooting guide.
  - 3. Precautions against improper maintenance.



4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  5. Aligning, adjusting, and checking instructions.
  6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

### **PART 3 - EXECUTION**

#### **3.01 MANUAL PREPARATION**

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.



1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
  2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
- G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

**END OF SECTION**



## PROJECT RECORD DOCUMENTS

### PART 1 - GENERAL

#### 1.01 RELATED DOCUMENTS

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

#### 1.02 SUMMARY

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

#### 1.03 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set(s) of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit one paper-copy set of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and one of file prints.
      - 3) Submit record digital data files and one set of plots.
      - 4) Owner's Representative will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit one paper-copy set of marked-up record prints.
      - 2) Submit record digital data files and three set(s) of record digital data file plots.
      - 3) Plot each drawing file, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.



- C. Record Product Data: Submit one paper copy paper copy and annotated PDF electronic files and directories of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy and annotated PDF electronic files and directories of each submittal.
- E. Reports: Submit written report biweekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

## **PART 2 - PRODUCTS**

### **2.01 RECORD DRAWINGS**

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



5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Engineer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  2. Format: DWG.
  3. Format: Annotated PDF electronic file with comment function enabled.
  4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  5. Refer instances of uncertainty to Owner's Representative for resolution.
  6. Owner's Representative will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
    - a. See Division 01 Section "Submittal Procedures" for requirements related to use of Engineer's digital data files.
    - b. Owner's Representative will provide data file layer information. Record markups in separate layers.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Owner's Representative determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
  2. Consult Owner's Representative for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Format: Annotated PDF electronic file with comment function enabled.
  3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  4. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Owner's Representative.
    - e. Name of Contractor.



## **2.02 RECORD SPECIFICATIONS**

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
  - 5. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file.

## **2.03 RECORD PRODUCT DATA**

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file.
  - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

## **2.04 MISCELLANEOUS RECORD SUBMITTALS**

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

## **PART 3 - EXECUTION**

### **3.01 RECORDING AND MAINTENANCE**

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



- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative reference during normal working hours.

**END OF SECTION**



## COMMISSIONING

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Work of this Section includes commissioning process and relationships of Owner, Engineer, Contractor, and Certified Commissioning Professional.
- B. Mention of a subcontractor is not meant to usurp Contractor's responsibility to assign work. Commissioning team is assigned tasks to be completed to demonstrate completion and operation of systems. Tasks described in this Section will be performed by commissioning team. Contractor shall ensure the responsible subcontractor performs the assigned Commissioning tasks.
  - 1. Ensure subcontractor's scope includes commissioning tasks outlined in this Section.
  - 2. If Contractor delegates work to a subcontractor, Contractor shall ensure that the subcontractor designates a representative to the Commissioning Team.

#### 1.02 REFERENCES, ABBREVIATIONS, AND ACRONYMS

- A. Abbreviations and Acronyms: Refer to Division 01 for abbreviations and acronyms. Additional abbreviations are as follows.

BCA	Building Commissioning Association
Cx	Commissioning
CCP	Certified Commissioning Professional
DDC	Direct Digital Control
ETO	Electrical Test Organization
O&M	Operation and Maintenance
QA	Quality Assurance
QC	Quality Control

- B. Definitions: Refer to Division 01 for definitions. Additional definitions are as follows.
  - 1. Commissioning: Systematic process of verifying and documenting that building systems have been installed and perform according to design intent, code requirements, and Owner's operational needs in order to maximize efficiency and stability. Commissioning is also used to ensure that Owner is provided with useful and clear training and documentation necessary to operate and maintain the building systems.
  - 2. Certified Commissioning Professional: An entity who leads, plans, schedules, and coordinates commissioning team to implement Commissioning Process.
  - 3. Commissioning Team: Includes Owner, CCP, Engineer, Contractor, and, subcontractor's designated representatives.
  - 4. Commissioning Plan: See Article in this Section, Duties of CCP.
  - 5. Commissioning Binder: A binder that contains documentation associated with commissioning process.
  - 6. Functional Testing: Set of repeatable, step-by-step testing procedures.
  - 7. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "As-Built" systems, subsystems, equipment, and components.



**1.03 COMMISSIONING MEETINGS**

- A. Commissioning Kick-Off Meeting: CCP shall schedule and conduct meeting at Project site. Meeting shall be held after equipment submittals have been substantially completed.
  - 1. Attendees: Commissioning team.
  - 2. Agenda:
    - a. Commissioning team shall review roles and responsibilities.
    - b. CCP shall distribute commissioning plan to commissioning team at this time.
  - 3. Minutes: CCP shall record, prepare, and distribute meeting minutes electronically to attendees.
  
- B. Commissioning Design Intent Clarification Meeting: CCP shall schedule and conduct meeting at Project site. Meeting shall be scheduled after commissioning kick-off meeting, but before the controls submittals have been submitted, and before equipment has been installed. There shall be at least 2 separate sessions held, 1 for mechanical and 1 for electrical.
  - 1. Attendees:
    - a. CCP and Contractor.
    - b. Engineer and design team.
    - c. Contractor shall also take steps to ensure attendance by mechanical subcontractor, controls subcontractor, TAB subcontractor, and electrical subcontractor.
    - d. Contractor shall also take steps to ensure attendance by other low voltage electrical subcontractors as determined by Cx Team.
  - 2. Agenda:
    - a. Align interpretation and facilitate implementation of the design.
    - b. Recommendations for Changes: Any recommendations for changes, as a result of these meetings, shall not be considered a part of Contract Documents until confirmed by Contract change process.
  - 3. Minutes: CCP shall record, prepare, and distribute meeting minutes electronically to attendees.
  
- C. O&M Documentation Review Meeting: CCP shall schedule and conduct meeting at Project site. Meeting shall be scheduled after preliminary draft O&M Manual documentation is prepared and submitted.
  - 1. Attendees: Commissioning team.
  - 2. Agenda: Review portions of preliminary draft O&M Manual associated with commissioned systems to ensure that manual is complete and organized.
  - 3. Minutes: CCP shall record, prepare, and distribute meeting minutes electronically to attendees.
  
- D. Weekly Commissioning Meetings: CCP shall schedule and conduct meetings at Project site. Meetings shall continue until commissioning process is complete and issues have been resolved.
  - 1. Attendees:
    - a. At a minimum, CCP, Engineer, and Contractor shall attend.
    - b. Contractor shall take steps to ensure attendance by mechanical subcontractor, electrical subcontractor, and controls subcontractor.
    - c. Mechanical and electrical design engineers may be asked to participate as required to help resolve issues.



- d. Contractor shall ensure that other subcontractors, such as TAB and low voltage subcontractors, shall attend when their involvement is required to resolve issues or deficiencies.
- 2. Agenda:
  - a. Track progress and discuss system issues.
  - b. CCP shall identify to Engineer and Contractor which team members are needed to participate in upcoming meeting.
  - c. CCP shall also give notice to Owner of upcoming activities they may want to witness.
- 3. Minutes: CCP shall record, prepare, and distribute meeting minutes electronically to attendees.

#### 1.04 QUALITY ASSURANCE

- A. Commissioning is a QA process of a QA/QC program as it is applied to the construction process. Provide QA in the form of the commissioning process for the Project, as led by the CCP. Provide QC through ensuring that installed systems comply with Project Contract Documents and minimum code requirements. Also provide QC through performing specified quality control requirements, such as duct leakage testing, manufacturer's startup requirements, DDC point-to-point testing, and ETO testing.
- B. Commissioning shall comply with requirements of "permitted" Washington State Energy Code.

#### 1.05 RELATED SECTIONS

- A. Division 01-Submittal Procedures.
- B. Division 01-Closeout Procedures.

#### 1.06 COMMISSIONING GOALS

- A. Execute commissioning process to meet the following goals.
  - 1. Clarify operational design intent where there are different interpretations among commissioning team members.
  - 2. Integrate commissioning activities into Project Construction Schedule such that commissioning activities meet Substantial Completion date.
  - 3. Ensure that equipment is installed correctly per Contract Documents and in a manner that maximizes efficiency and performance, and provides sufficient access for maintenance and operation utilizing manufacturer's guidelines as minimum criteria.
  - 4. Provide oversight of equipment/system startup and testing requirements as defined in Contract Documents.
  - 5. Develop functional tests in order to demonstrate system compliance with design intent and to provide a format for future re-commissioning.
  - 6. Ensure that systems are optimized to operate with minimal energy usage.
  - 7. Identify system installation and operational deficiencies and ensure that resolution to those deficiencies occurs in a timely manner.
  - 8. Ensure that O&M documentation submitted to Owner is complete, clearly organized, and useful.
  - 9. Ensure that as-built drawing information has been completed and submitted to Owner.



10. Ensure that Owner's operating personnel are effectively trained in order to achieve technical, safety, operational, and maintenance knowledge before time of building systems turnover to Owner.

**1.07 COMMISSIONING SCOPE OF WORK**

- A. The following equipment/systems shall be commissioned. Five columns at right side of matrix below represent 5 major commissioning activities and how they apply to each of the commissioned equipment and systems. Refer to Article "Commissioning Process" of this Section for further description of each of the 5 major commissioning activities.

Equipment and Systems to be Commissioned	Installation Checklist	Startup Oversight	Functional Test	O&M/ As-Built	Owner Training Oversight	Current Facilities Requirements and Operations and Maintenance Plan
Division 20: Common Work Results for Plumbing and HVAC						
Testing, Adjusting, and Balancing for Plumbing and HVAC		√	√			√
Division 23: Heating, Ventilation, and Air Conditioning						
HVAC Refrigerant Piping	√	√	√	√	√	√
Liquid-to-Liquid Heat Exchangers	√	√	√	√	√	√
Direct-Digital Control System	√	√	√	√	√	√
HVAC Air Distribution	√	√	√	√	√	√

**1.08 CCP**

- A. Obtain the services of a CCP to perform commissioning as required in this Section and elsewhere in the Contract Documents.
- B. CCP shall have experience, totaling at least 10 years, in startup and troubleshooting HVAC and other systems of similar complexity to those contained in this Project. Qualifications shall also include the following.
- CCP shall be a "certified commissioning professional" who has been certified by an ANSI/ISO/IEC 17024 accredited organization.
  - Current and demonstrated working knowledge of complex direct digital control systems; be capable of understanding control system manufacturer's operating system and control code; be capable of troubleshooting control code and recommending necessary modifications.
  - Knowledgeable in test and balance of both air and hydronic systems.



- C. Submit resume of candidate for position of CCP within 30 calendar days after receipt of Notice to Proceed. Include the following.
  - 1. Present Employment:
    - a. Company name, address, and phone number.
    - b. Current title and job description.
  - 2. History of employment with present and past firms for the past 10 years.
  - 3. Relevant Work Experience: Position name and description of responsibilities including name and current telephone number of immediate supervisor or reporting entity.
  - 4. Include a sample commissioning plan previously produced for a similar project.
  - 5. Education and Technical Training: List relevant degrees, certifications, and professional affiliations.
  - 6. Reference names of at least 3 former clients.
- D. Owner reserves right to interview candidates for position of CCP prior to accepting placement in position.
- E. CCP shall not be financially associated with Engineer of Record or Contractor.
- F. Owner reserves right to interview candidates for position of CCP prior to accepting placement in position.

**1.09 CCP RESPONSIBILITIES**

- A. Develop a detailed Commissioning Plan which includes activities to be performed, sequence, scheduling, documentation, and verification procedures.
- B. Develop test procedures and forms for documentation of equipment tests, system functional tests, and cross system functional tests. Test procedures shall be in accordance with equipment manufacturer's recommendations, where applicable. Test procedures shall fully describe system configuration and steps required for each test; appropriately documented so that another party can repeat tests with virtually identical results.
- C. Coordinate testing schedules with Contractor. Contractor shall integrate testing durations into Project Construction Schedule and coordinate testing requirements with subcontractors of commissioned systems.
- D. Develop Installation Checklists and startup documentation to be placed in commissioning binder.
- E. Review submittals of installation and startup documents for accuracy and completeness. This includes controls point-to-point checklists and testing, adjusting, and balancing (TAB) preliminary TAB report prior to initiation of functional testing.
- F. Schedule and conduct commissioning meetings and distribute commissioning meeting minutes electronically to attendees within 3days of meeting.
- G. Prepare and distribute "Commissioning Activity Reports" to commissioning team within 3days of site visit to keep commissioning team informed of progress for the different commissioning activities.



- H. Observe functional tests and results. Review documentation required by Contract Documents.
- I. Document inconsistencies and deficiencies in system operations and system compliance.
- J. Provide Preliminary and Final Commissioning Reports as required for code compliance.

**1.10 MECHANICAL SUBCONTRACTOR COMMISSIONING RESPONSIBILITIES**

- A. Coordinate commissioning Work with Work provided in Divisions 20 through 23. Verify that coordination, quality control, and final mechanical systems installation testing have been completed such that installed systems and equipment comply with Contract Documents.
- B. Notify Owner and CCP as soon as possible of any issues identified during construction that may affect commissioning process or final system performance.
- C. Provide CCP with proposed startup and testing documentation to be used for test documentation specified in Divisions 20 through 23.
- D. Review functional test procedures and submit comments to Owner and CCP to allow finalization of procedures.
- E. Perform startup and testing of mechanical equipment and systems and document as required with startup reports and completion of Installation Checklists.
- F. Operate equipment and systems as required for functional tests.
- G. Perform functional tests and document results with reports.
- H. Participate in fine-tuning and troubleshooting of system performance if either of these measures becomes necessary.
- I. Provide complete operation and maintenance information and as-built drawings to Contractor for verification, organization, and distribution.

**1.11 ELECTRICAL SUBCONTRACTOR COMMISSIONING RESPONSIBILITY**

- A. Coordinate commissioning Work with Work provided in Divisions 26 through Division 27. Verify that coordination, installation, quality control, and final testing have been completed such that installed systems and equipment comply with Contract Documents.
- B. Notify Owner and CCP immediately of any issues identified during construction that may affect commissioning process or final system performance.

**1.12 TESTING, ADJUSTING, AND BALANCING SUBCONTRACTOR COMMISSIONING RESPONSIBILITIES**

- A. Coordinate testing, adjusting, and balancing activities with other Work of Divisions 20 through Division 23. Verify that coordination, installation, quality control, and final testing have been completed to allow proper balancing work to be performed.



- B. Review functional test procedures and submit comments to Owner and CCP to allow finalization of procedures.
- C. Notify CCP and Owner immediately of any system installation or performance issues that may compromise ability of system to be balanced.
- D. Participate in startup and functional tests to demonstrate compliance with Contract Documents.
- E. Complete Installation Checklists to verify completion of system balancing tasks. Reports shall be stored in Contractor's field office.
- F. Provide preliminary TAB report data, indicating actual field values recorded, to CCP prior to initiation of functional testing.
- G. Participate in fine-tuning and troubleshooting of system performance if either of these measures becomes necessary.

## **PART 2 - PRODUCTS**

Not Used.

## **PART 3 - EXECUTION**

### **3.01 COMMISSIONING PROCESS**

- A. Installation Checklists: Install building systems to meet Contract Document requirements, meet applicable code requirements, and meet manufacturer's installation instructions. Provide equipment that maximizes equipment and system performance, and provides adequate space for maintenance of equipment. Complete commissioning Installation Checklists. These shall be back-checked by the CCP to verify that equipment/systems have been completed and are ready for equipment/system startup and functional testing.
- B. Equipment/System Startup Oversight: Perform startup activities required through Contract Documents and as per manufacturer's instructions. CCP shall provide oversight of Contractor's startup activities to ensure that they have been completed and equipment is operational. CCP shall verify interoperability with equipment and building systems. Continuously update commissioning schedule and maintain commissioning binder.
- C. Functional Testing: Demonstrate proper operation of each commissioned equipment/system for all equipment/system features and operating modes as well as demonstrate specified equipment/system capacities. Make all corrections in a timely manner until system(s) fully comply with test procedures.

### **3.02 COMMISSIONING ISSUES LOG**

- A. Track issues discovered during commissioning activities or during commissioning meetings on the "Commissioning Issues Log" as developed, updated, and distributed by CCP.
- B. Correct items on Commissioning Issues Log in a timely manner to adhere to commissioning schedule.



- C. Keep Commissioning Issues Log separate from Owner's preliminary closeout review document (punch list).

**3.03 SEASONAL AND OCCUPIED FUNCTIONAL TESTING**

- A. Some commissioning functional testing shall require certain ambient or occupied conditions be present in order to complete. Provide qualified personnel to participate in these tests which may occur up to 6 months after Substantial Completion.

**3.04 COMMISSIONING REPORTS**

- A. Commissioning Activity Reports: CCP shall produce and distribute Commissioning Activity Reports to keep commissioning team informed of results of commissioning activities and commissioning progress.
- B. Commissioning Reports: CCP shall provide 1 Preliminary Commissioning Report and 1 Final Commissioning Report to Owner.
  - 1. Preliminary Commissioning Report: CCP shall furnish Preliminary Commissioning Report to Owner prior to time of final mechanical and electrical inspections and prior to time of obtaining a certificate of occupancy for Project. This Report shall include commissioning Installation Checklists, startup forms/reports, and testing documentation completed to that date. This Report shall also identify outstanding tests and unresolved issues yet to be scheduled.
  - 2. Final Commissioning Report: CCP shall furnish Final Commissioning Report to Owner within 90 days of date of receipt of certificate of occupancy. This Report shall include the following.
    - a. Results of functional tests.
    - b. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
    - c. Functional test procedures used during commissioning process including measurable criteria for test acceptance, provided herein for repeatability.
- C. Final Commissioning Reports: CCP shall provide Final Commissioning Report to Owner. CCP shall furnish Final Commissioning Report after testing has been completed, issues have been resolved

**3.05 COMMISSIONING COMPLIANCE CHECKLIST**

- A. CCP shall prepare and furnish a Commissioning Compliance Checklist per the "permitted" Washington State Energy Code to Owner prior to time of final mechanical and electrical inspections and prior to time of obtaining a certificate of occupancy for Project.

**END OF SECTION**



**GENERAL PROVISIONS FOR HVAC**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Work under Divisions 20 and 23 includes furnishing materials, equipment, labor, supervision, tools and items necessary for construction, installation, connection, testing and operation of mechanical work for this project, as shown on Drawings and defined in Divisions 20 and 23 of Specifications.

**1.02 QUALITY ASSURANCE**

- A. Tests: Demonstrate that equipment operates as indicated, as specified, and in accordance with manufacturer's recommendations. Perform tests in presence of Owner. Provide instruments and personnel required to conduct tests.
- B. Qualifications: Use sufficient journeymen and competent supervisors in execution of Work to ensure proper and adequate installation throughout. In acceptance of installed work, no allowance will be made for lack of skill on part of workmen.

**1.03 COMMISSIONING**

- A. Certified Commissioning Professional: A Certified Commissioning Professional (CCP) has been contracted directly with Owner for this project. CCP has overall responsibility for planning and coordinating commissioning process. However, commissioning involves all parties to design and construction process, including Contractor.
- B. Contractor's responsibilities are defined in Division 01. Review Division 01 and perform Work described for Divisions 20 and 23.

**1.04 WORK OF OTHER TRADES**

- A. Drawings do not show complete details of building construction. Refer to architectural, structural, civil, and electrical Drawings for those details which may affect execution of this Work. Obtain specific locations of structural or architectural features or equipment items from existing Drawings, field measurements or trade providing material or equipment. No extra payments will be allowed for failure to obtain this information.
- B. Coordination: Conform to requirements of Division 01. Plan and execute Work including, but not limited to, piping and ductwork, in cooperation with other trades. Make every reasonable effort to provide timely notice of work affecting other trades to prevent conflicts or interference as to space requirements, dimensions, openings, block-outs, sleeving or other matters which will cause delays or necessitate work-around methods. Failure to coordinate Work will be considered sufficient cause for Work to be altered at Contractor's expense, as directed by Owner.

**1.05 EXISTING CONDITIONS**

- A. Demolition work required is noted on Drawings. Verify specific scope of demolition work and operating conditions to be encountered from on-site review and coordination with Owner. Maintain service to existing equipment and devices to be retained in area



adjacent to existing areas scheduled for renovation. Provide temporary services as necessary to meet these conditions.

- B. Special Protection: Exercise maximum precaution to provide positive protection for existing building and equipment from damage of any kind, and in particular prevent any water and dust seepage into existing building.

#### **1.06 CODES, PERMITS, INSPECTIONS, AND FEES**

- A. Conform to requirements of Division 01.
- B. Obtain permits and inspections and pay fees required by National, State and Local authorities. Make arrangements for inspections by Owner or other authority as required. Submit 3 copies of certificates of compliance to Owner.
- C. Work and materials shall be in accordance with requirements of latest adopted edition of applicable codes, regulations, ordinances, and local amendments including, but not limited to, the following.
  - 1. International Building Code.
  - 2. International Mechanical Code.
  - 3. International Fire Code.
  - 4. International Fuel Gas Code.
  - 5. Uniform Plumbing Code.
  - 6. Washington State Energy Code.
  - 7. National Electrical Code.
  - 8. State of Washington standards, WAC-296-24, General Safety and Health Standards.
  - 9. NFPA 13, Sprinkler Systems.
  - 10. NFPA 30, Flammable and Combustion Liquids Code.
  - 11. NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
  - 12. American National Standard Code for Pressure Piping, Chapter V (ANSI B31.1).
  - 13. Washington Boilers and Unfired Pressure Vessel Laws, RCW 70.79 and WAC 296, Chapter 104, as published by Washington State Department of Labor and Industries, Division of Boiler Inspection.
  - 14. Americans with Disabilities Act (ADA).
  - 15. Puget Sound Air Pollution Control Agency.
- D. Nothing in Drawings and Specifications shall be construed to permit Work not in conformance with these rules and regulations.
- E. Where Drawings or Specifications call for material or construction of a better quality or larger sizes than required by above-mentioned rules and regulations, provisions of Drawings or Specifications shall take precedence over requirements of rules and regulations.
- F. Utilities: Comply with rules and requirements of local utility companies; coordinate and pay for connections.

#### **1.07 EQUIPMENT AND MATERIALS APPROVALS**

- A. Whenever UL listed standards exist for equipment with electrical components, provide UL listed equipment. Otherwise provide equipment certified by manufacturer as complying with UL standards for similar items.



- B. Label materials, equipment, and processes requiring approval of Washington State Department of Labor and Industries or other nationally-recognized testing agency as so approved in accordance with provisions of Washington Administrative Code.

#### **1.08 INTENT OF DRAWINGS**

- A. Drawings are diagrammatic and show only approximate locations of piping, ducts, fixtures, and equipment. Take measurements from building or site and verify with Drawings. Because of small scale of Drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate plumbing, fire protection, electrical, structural, and finish conditions that would affect Work to be performed and arrange such work accordingly, providing required ductwork and piping offsets, fittings, and accessories to meet such conditions.
- B. Provide equipment that fits into space allotted and allow adequate acceptable clearances for installation, replacement, entry, servicing, and maintenance. When motors furnished are larger than sizes indicated, provide any required changes to electrical services as may be necessary and related work as a part of Work for Section specifying that motor.
- C. Report any conflict to Owner prior to proceeding with Work. Failure to follow this instruction is considered sufficient cause to alter Work, at no cost to Owner, as directed by Owner.
- D. Plans and sections generally do not show all isolating valves, control valves, instruments, or other components; refer to diagrams to obtain a more complete description of systems.

#### **1.09 DETAIL DRAWINGS**

- A. Wherever Work is of sufficient complexity to warrant additional detailing, prepare additional detail drawings to scale 1/4 inch = 1 foot, prepared on AutoCAD Version 2016 or later same size as Contract Drawings; with layouts, coordinate work with work of other trades. Identify such detailing work on drawings as to area to which it applies.
- B. Do not submit these drawings to Owner for approval. At completion, however, include a set of such drawings with each set of as-built drawings for Owner's record purposes.

#### **1.10 SUBMITTALS**

- A. Conform to requirements of Division 01.
- B. List of Manufacturers: Submit within 30 days after award of Contract a Bill of Materials containing items to be used on this project, listing manufacturer's name and catalog numbers (where applicable) and referenced to applicable Specification paragraph.
- C. Submit Shop Drawings, descriptive bulletins, data sheets, diagrams, catalog cuts or other additional information as required for items specified hereinafter in other Sections.
- D. Acceptance: Acceptance of a manufacturer's name or product by Owner does not relieve Contractor of responsibility for providing materials and equipment which comply in details with requirements of Contract Documents.



**1.11 SUBMITTAL SCHEDULE**

- A. Refer to Division 01 for Submittal Schedule requirements. In addition to requirements in Division 01, include the following additional requirements for a Submittal Schedule for Divisions 20 and 23.
- B. Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Owner and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, schedule of values, and Contractor's construction schedule.
  - 2. Final Submittal: Submit concurrently with first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
  - 3. Format: Prepare and submit submittal schedule in Microsoft Excel format. Arrange the following information in tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
      - 1) Identify submittals that are required by a Specification Section by listing items and paragraph numbers under which they are specified.
      - 2) Submit submittals within a Specification Section that require approval prior to installation together one time. Partial submittals within a Specification Section that require approval prior to installation are not acceptable and will be returned by Owner without action.
      - 3) Submit a draft copy of the portion of mechanical and electrical operation and maintenance manual for products within a Specification Section within 30 days after Owner's approval of product submittals for that Section.
    - c. Submittal Category: Action; informational.
    - d. Name of subcontractor.
    - e. Description of Work covered.
    - f. Scheduled date for Owner's final release or approval.
    - g. Scheduled date of fabrication.
    - h. Scheduled dates for purchasing.
    - i. Scheduled dates for installation.
    - j. Activity or event number.

**1.12 SUBMITTAL LOG**

- A. Refer to Division 01 for Submittal Log requirements. In addition to requirements in Division 01, include the following additional requirements for a Submittal Log for Divisions 20 and 23.
- B. Prepare and maintain a submittal log for all submittals. Prepare and submit submittal log in Microsoft Excel format. Update submittal log on a minimum of a monthly basis and submit copies of updated submittal log to Owner to track status of all submittals. Submittal log shall contain the following information as a minimum.
  - 1. Project name.
  - 2. Owner name.



3. Contractor project number.
4. Submittal number.
5. Specification section number.
6. Specification paragraph number.
7. New submittal.
8. Resubmittal.
9. Item description.
10. Identity of Originator: Contractor, subcontractor, supplier.
11. Date Contractor received submittal from originator.
12. Date Contractor sent submittal to Owner.
13. Date Owner returned submittal to Contractor.
14. Action taken by Owner.
15. Date Contractor returned submittal to originator.

**1.13 MATERIALS**

- A. Conform to requirements of Division 01.
- B. Quality: Materials, products, and equipment shall be in strict accordance with governing codes and ordinances.
- C. Quantity: Equipment and items of any one classification which are used in quantity, such as accessories, valves, specialties, cleanouts, drains, fittings, fans, air handling units etc., shall be products of one manufacturer and shall be used only for services recommended by manufacturer.

**1.14 SUBSTITUTIONS**

- A. Conform to requirements of Division 01.

**1.15 ABBREVIATIONS, DEFINITIONS, AND REFERENCE STANDARDS**

- A. Refer to Division 01 for definitions and abbreviations. Additional reference standards, definitions, and abbreviations are as follows.

AASHTO	American Association of State Highway Transportation Officials
AGA	American Gas Association
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
AHRI	Air-Conditioning, Heating, and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
as shown	as shown on Drawings
CAGI	Compressed Air and Gas Institute
CISPI	Cast Iron Soil Pipe Institute
CSA	Canadian Standards Institute
F	Degrees Fahrenheit
FRP	Fiberglass reinforced plastic
FM	FM Global
ICBO	International Conference of Building Officials



IBC	International Building Code
mA	milliamps
iwc	inches water column
MSS	Manufacturer's Standardization Society
mV	millivolts
NEMA	National Electrical Manufacturer's Association
NEC	National Electrical Code
NFPA	National Fire Protection Association
provide	furnish and install
psig	pounds per square inch gage pressure
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPDT	Single Pole, Double Throw
UL	Underwriters Laboratories, Inc.
V	Volts
VAC	Volts, Alternating Current
VDC	Volts, Direct Current
wp	Working Pressure (psig)
wg	Water Gage

**1.16 OPERATION AND MAINTENANCE MANUALS**

- A. Time of submittals, quantity of copies for submittals, binding, content, and other requirements shall conform to requirements of Division 01.
- B. Prepare an operation and maintenance manual for each component, device, piece of equipment, and system requiring operation instructions or maintenance requirements provided under Divisions 20 and 23; conform to requirements of Division 01.
- C. Operation and maintenance manuals shall comply with requirements of the Washington State Energy Code.
  - 1. Prepare and submit an operating and maintenance manual for each component, device, piece of equipment, and system required to be commissioned by the Washington State Energy Code. Operation and maintenance manual shall include the following code requirements.
    - a. Submittal data indicating all selected options for each piece of equipment.
    - b. Manufacturer's operation manuals and maintenance manuals for each device, piece of equipment, and system requiring maintenance, except equipment not furnished as part of project. Identify required routine maintenance actions and cleaning.
    - c. Name and address of at least one service agency.
    - d. Controls system inspection schedule, maintenance and calibration information, wiring diagrams, schematics, and control sequence descriptions. Permanently record desired or field-determined setpoints on control drawings at control devices or, for digital control systems, on graphic where settings may be changed.

**1.17 OPERATION AND MAINTENANCE MANUALS**

- A. Prepare an operation and maintenance manual for each component, device, piece of equipment, and system requiring maintenance provided under Divisions 20 and 23.



- B. Operation and maintenance manuals shall comply with requirements of the Washington State Energy Code.
  - 1. Prepare and submit an operating and maintenance manual for each component, device, piece of equipment, and system required to be commissioned by the Washington State Energy Code. Operation and maintenance manual shall include the following code requirements.
    - a. Submittal data indicating all selected options for each piece of equipment.
    - b. Manufacturer's operation manuals and maintenance manuals for each device, piece of equipment, and system requiring maintenance, except equipment not furnished as part of project. Identify required routine maintenance actions and cleaning.
    - c. Name and address of at least one service agency.
    - d. Controls system inspection schedule, maintenance and calibration information, wiring diagrams, schematics, and control sequence descriptions. Permanently record desired or field-determined setpoints on control drawings at control devices or, for digital control systems, on graphic where settings may be changed.
- C. Draft Copy: Prior to final copies, submit a single draft copy to Owner for approval.
- D. Final Copy:
  - 1. Submit 1 PDF electronic file.
  - 2. Submit 3 copies in paper format.
- E. Format for Operation and Maintenance Manuals:
  - 1. Compile Product Data and related information appropriate for maintenance and operation. Prepare data in instructional manual form for use by Owner's personnel. Modify data as required to accurately represent completed installations.
  - 2. Paper Format:
    - a. Binders: Commercial quality, 3 hole punched, vinyl covered hardboard binder, secured with aluminum screw posts, sized for 8-1/2 by 11 inch sheet format. Do not exceed 3-1/2 inch binder width.
    - b. Binder Cover: Identify each Manual with printed title, "OPERATION AND MAINTENANCE INSTRUCTIONS", Project Title, identification of subject matter contained in manual, and completion date of Project. Include names of Owner, General Contractor, and major suppliers.
    - c. Binder Edge: Imprint binder edge with name of job, Owner, and completion date of Project.
    - d. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
    - e. Text: Manufacturer's printed data, or neatly typewritten information on 20 pound white or off-white paper.
    - f. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.
  - 3. PDF Electronic File:
    - a. Assemble same content as paper format in the form of a multiple file composite electronic PDF file.
    - b. Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
    - c. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation



and maintenance directory. Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

**F. Contents of Manuals:**

1. Project Directory: Indicate Project title and Project number. List Owner, Consultants, and Contractor with addresses, telephone numbers, and name of responsible parties.
2. Product Directory: List names, addresses, and telephone numbers of subcontractors and suppliers. Included local sources of supplies and replacement parts. Provide information for re-ordering custom manufactured products.
3. Product Data: Submit original product literature. Photo-copies are not acceptable. Mark each sheet to clearly identify specific products, models numbers, components parts, and data applied to installation. Delete inapplicable information by marking out, striking out, or by notation.
4. Drawings and Diagrams: Include as necessary to supplement Product Data. Illustrate relations or components parts or equipment and systems. Show wiring, control, and flow diagrams. Do not use Project Record Documents as maintenance Drawings.
5. Written Text: Include as necessary to supplement Product Data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
6. Provide information sheet for Owner's personnel indicating proper procedures in event of failure. Include instances which may affect validity of warranties.
7. Each Item of Equipment and Each System: Include description of system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include complete nomenclature and model number of replaceable parts.
8. Operating Procedures: Provide manufacturer's printed operation and maintenance instructions. Include the following.
  - a. Startup, break-in, and routine normal operating instructions and sequences.
  - b. Regulation, control, stopping, shutdown, and emergency instructions.
9. Maintenance Requirements: Include routine procedures and guide for preventive maintenance and troubleshooting; disassembling, repair, and reassemble instructions; and adjusting and checking instructions.
10. Controls: Provide manufacturer's sequence of operation and control diagrams as installed.
11. All Warranty Information:
  - a. Contractor/labor warranty (to include names and phone numbers).
  - b. Parts/system/equipment specific warranties (to include complete list of components).
12. All "pre" and "post" balancing documents on HVAC systems, both Air and Water sides.
13. As-built system drawings, diagrams, etc.
14. Additional Requirements: As specified in individual product Specification Sections.



**1.18 RECORD DOCUMENTS**

- A. Furnish record documents conforming to requirements of Division 01.
- B. Record documents shall conform to requirements of the Washington State Energy Code .
- C. Furnish record drawings and specifications. Show location of equipment and size of piping. Locate valves (with tag numbers), dampers, and similar equipment. Keep drawings and specifications continuously updated during progress of project and ready for reference. Make available to Owner at site for review prior to each pay request. At completion of project, turn over record AutoCAD Disks of updated drawings to Owner.

**1.19 PRESSURE VESSEL CERTIFICATES**

- A. Construct and label to conform with the Boiler and Unfired Pressure Vessels Laws of the State of Washington. Provide, for each item, a framed certificate under glass. Mount where directed by Owner.

**1.20 SITE CONDITIONS AND METHODS**

- A. Cutting and Patching: Conform to requirements of Division 01. Keep cutting and patching to a minimum. If required, patching shall conform to Specifications for new general construction work. Finish to match existing work.
- B. Measurements: Verify space availability by field measurement prior to submitting Shop Drawings for approval.
- C. Roughing-In Dimensions: Obtain roughing-in dimensions for equipment from approved Shop Drawings or actual equipment measurements.
- D. Manufacturer's Installation Instructions: Follow manufacturer's written instructions where furnished. If details are in conflict with Drawings, notify Owner for resolution.
- E. Accessibility: Install products which require periodic servicing or repair so that products are readily accessible. Otherwise, obtain Owner's approval of location.
- F. Provision for Light Fixtures: In laying out piping and ductwork, provide a minimum of 8 inches above ceilings to allow clearance for light fixtures. If interferences occur, move piping or ducts and, if not possible, notify Owner.
- G. Rejected Materials: Remove damaged or rejected materials from site.
- H. Operation of Equipment and Systems: Contractor is responsible during periods of balancing and testing.
- I. Delivery, Storage, and Handling: Conform to requirements of Division 01.
  - 1. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with manufacturer's recommendations and as approved by Owner. Replace damaged or defective items.
  - 2. Refinish equipment with damaged factory applied finishes as required to bring equipment to a like-new condition in accordance with manufacturer's recommendations.



3. Maintain ductwork clean and dry from fabrication through field installation. Seal open ends with plastic at end of each workday. Maintain sealing procedure until installation is completed. Remove damaged, wet, and dirty ductwork from site.
4. Maintaining Cleanliness of Ductwork and Equipment:
  - a. Maintain ductwork clean and dry from fabrication through field installation. Seal open ends with plastic at all times except when ductwork is in the process of being modified or extended. Maintain sealing procedure from fabrication until installation is completed. Remove damaged, wet, and dirty ductwork from site.
  - b. Maintain components of equipment that will be exposed to airflow clean and dry from fabrication through field installation. Seal open ends exposed to airflow with plastic at all times except when equipment is in the process of being connected to ductwork. Maintain sealing procedure from fabrication until installation is completed with ductwork connected to equipment.

#### **1.21 TESTING AND DEMONSTRATION**

- A. Conform to requirements of Division 01.
- B. Submit a startup procedure for Owner to review and approve. Document testing with test procedures, results, and initials of witnessing personnel.
- C. Perform hydrostatic tests required in codes and ordinances. Owner will be present during operational testing. Give sufficient notice before performing such tests. Additional tests may be required under balancing and testing.
- D. Systems Operation Demonstration: Subject systems to such operating tests as are required to demonstrate that equipment installed will operate within specified limits through normal ranges and sequences including simulation of possible abnormal conditions. Operate every device manually and automatically, in accordance with its purpose. Operating test duration; not less than 6 hours after major corrections have been made. If tests do not demonstrate satisfactory system performance, correct deficiencies and retest systems.
- E. If Work is completed during heating season, perform final tests of cooling equipment the following summer. If completed during summer, perform test of heating system the following winter.

#### **1.22 INSTRUCTION FOR OWNER'S PERSONNEL**

- A. Conform to requirements of Division 01.
- B. Training for Owner's personnel shall conform to requirements of the Washington State Energy Code . Training shall include the following.
  1. Review of operation and maintenance manual and permanent certificate.
  2. Hands-on demonstration of normal maintenance procedures, normal operating modes, and emergency shutdown and start-up procedures.
  3. Training completion report.
- C. Scope: Following initial operation of mechanical equipment and prior to acceptance of mechanical work, conduct demonstrations of equipment operation and instruction periods for Owner's personnel during time balancing work is being performed.



- D. Contractor's representatives, in general, who conduct these instructions and demonstrations shall be qualified foremen or superintendents acquainted with this project and from trade involved. For control systems, representative shall be the control engineer who performs testing and adjustment. For major equipment, representative shall be manufacturer's representatives with operating experience and substantial design experience on this project. Submit their qualifications to Owner before conducting instruction period.
- E. Representatives of Owner who will be present at these meetings may include Owner's administrative, operating, and maintenance personnel; and for fire protection systems, representatives of City Fire Department.
- F. General Description of Instruction Periods: Each period shall include preliminary discussion and presentation of information from operation and maintenance manuals with appropriate references to Drawings, followed by tours of equipment spaces explaining maintenance requirements, access methods, servicing, and maintenance procedures, temperature settings, and available system and equipment adjustments.
- G. Duration of Instruction Periods:  
Air Handling Systems 4 hours
- H. Scheduling of Instruction Periods: Give notice of Contractor's readiness to conduct such instruction and demonstration periods to Owner at least 2 weeks prior to each instruction period and agreement reached on date of each instruction period.

#### 1.23 INSPECTION

- A. When requesting final inspection, submit written certification that Work has been fully completed in strict accordance with Drawings and Specifications.
- B. Submit written certification of inspection from governing building authority stating that Work has been inspected, accepted, and approved as complying with existing governing ordinances and codes.

#### 1.24 FINAL PUNCHLIST

- A. Conform to requirements of Division 01. When Owner is completing punchlist during final inspection, provide access to devices as requested by Owner, including ceiling tile removal and replacement. Provide ladders, scaffolds, staging, and accessories required to gain access to devices.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 - EXECUTION

Not Used.

**END OF SECTION**



**BASIC MATERIALS AND METHODS FOR HVAC**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Work of this Section includes anchor bolts; support channels; structural attachments to wood structure; grating; housekeeping pads; protective coatings; mechanical identification; cored openings; seals; vermin-resistant sealing components; sealing of mechanical penetrations through fire resistive floors, walls, and partitions; firestopping; earthwork; seismic restraints; ceiling fans and miscellaneous other basic materials.

**1.02 SUBMITTALS**

- A. Product Data:
  - 1. Anchor bolts.
  - 2. Support channels.
  - 3. Structural attachments to wood structure.
  - 4. Grating.
  - 5. Housekeeping pads.
  - 6. Protective coatings.
  - 7. Equipment, piping, and valve identification.
  - 8. Pipe seals.
  - 9. Firestopping.
  - 10. Grout.
  - 11. Ceiling Fans
- B. Shop Drawings:
  - 1. Housekeeping pad sizes and locations.
- C. Samples: Nameplates and valve tags.
- D. Seismic Design: Submit calculations, details, Shop Drawings, Product Data, and statement of special inspections for seismic restraint design of mechanical and electrical nonstructural components in Divisions 20 and 23 to Owner for Owner's review. After Owner's review, Owner will submit Owner's notification with calculations, details, Shop Drawings, Product Data, and statement of special inspections to Building Official per 2018 International Building Code section 107.3.4.1. No Work shall be started until calculations, details, Shop Drawings, Product Data, and statement of special inspections have been approved by Building Official. If Contractor hired professional engineer licensed in the State of Washington determines that the 2018 International Building Code does not require some of the mechanical and electrical nonstructural components in Divisions 20 and 23 to be seismically restrained, then submit a stamped and signed statement from professional engineer to that effect.
  - 1. Submit a written "Contractor's Statement of Responsibility", where such statement is required by Section 1704.4 of the 2018 International Building Code, to Owner and to Building Official for mechanical nonstructural components listed in statement of special inspections per 2018 International Building Code prior to commencement of Work on system or component.
- E. Submit seismic certification of mechanical nonstructural components and designated seismic systems where such certification is required by Section 1705.13 of 2018 International Building Code.



**PART 2 - PRODUCTS**

**2.01 MISCELLANEOUS MATERIALS**

- A. Pipe Sleeves: Schedule 40 galvanized steel pipe with unthreaded ends.
- B. Anchor Bolts:
  - 1. Anchor Bolts (Cast-In-Place): Hot-dip galvanized steel bolts conforming to requirements of ASTM A307 and hot-dip galvanized steel nuts conforming to requirements of ASTM A194. Number and size per manufacturer's recommendations or as shown. In concrete construction, provide bolts set in formwork before pouring concrete. In building floors where equipment bases are cast iron over 18 inches maximum dimension, provide a pipe sleeve around each bolt to allow for positioning.
  - 2. Anchor Bolts (Expansion Type): Molly "Parabolt" or Hilti "Kwik-Bolt III"; Type 304 stainless steel construction; with impact section on end of bolt.
  - 3. Anchor Bolts (Epoxy Type): Hilti "Type HIT-RE-500-V3 Epoxy Adhesive" or equivalent; two part anchoring epoxy conforming to requirements of ASTM C881 Type IV; Grades 2 and 3; Classes A, B, and C except for gel time. Hot-dip galvanized steel bolts conforming to requirements ASTM A307 and hot-dip galvanized steel nuts conforming to requirements of ASTM A194; IBC compliant.
- C. Support Channels: Unistrut, Cooper B-Line, or Powerstrut; manufacturers shall be members of MFMA; steel support channels shall conform to MFMA "Metal Framing Standards Publication"; non-perforated channels, 12 gage (0.105 inch) minimum, 1-5/8 inch by 1-5/8 inch minimum cross-section size; with hex-head bolt, nut, and spring; hot-dip galvanized finish unless indicated otherwise.
- D. Structural Attachments To Wood Structure: Lag screws, wood rod hanger threaded rod hanger system, wood drive screws, steel side beam connectors, or approved equal; carbon steel, plain inside building and galvanized outside building. Structural attachments shall be rated for weight of item that is being supported.
- E. Grating: Manufacturer and Type. McNichols "GCM-2" Series close mesh grating or approved equal; 4 inch by 1/2 inch bar spacing; 2-1/2 inch height; 3/16 inch bar thickness; aluminum material; press locked construction.
- F. Concrete Housekeeping Pads: Pads shall be 6 inches larger than equipment footprint and supports in all directions. Concrete pads shall be 4 inches thick unless noted otherwise. Provide 6 inch long No. 4 anchors drilled and epoxy grouted 3 inches into floor slab at each corner and at 4 feet on center around perimeter. Provide No. 4 reinforcing bars at 12 inches on center each way. Provide 1 inch beveled edge all around. Use 2500 psi concrete conforming to ASTM C94.

**2.02 NEW EQUIPMENT, PIPING, AND VALVE IDENTIFICATION**

- A. Valve Tags: 19 gage brass with stamped, black-enamel-filled characters. Provide with brass chain and brass S-hook. At Contractor's option, valve tags may be black and white laminated plastic with lettering engraved through black cover to white backing.
- B. Nameplates: Laminated black and white plastic with lettering cut through to white background.



- C. Pipe Markers and Directional Flow Arrows: Semi-rigid plastic or adhesive identification markers and directional flow arrows. Markers shall conform to requirements of ASME A13.1, unless specified otherwise.

### 2.03 GROUT

- A. Hydraulic cement-based metallic-aggregate non-shrink grout conforming to requirements of CRD-C-621 Grades B and C and ASTM C1107.

### 2.04 CEILING FANS

- A. Manufacturer: Big Ass Fans "Haiku" or approved equal.
  - 1. Electrical: 240 VAC, 60 Hz
  - 2. Airfoils: 3 wood airfoils, 60 inch diameter.
  - 3. Light: Uplight LED
  - 4. Finish: Natural Bamboo wood airfoil, Satin Nickel hardware.
  - 5. Prime Mover: Gearless direct drive.
  - 6. Downrod: 32 inch
  - 7. Sound Level at Maximum Speed: Less than 35 dBA.
  - 8. Controller: Fixed Wall mounted wireless control switch.
  - 9. Fan Speeds: Fully adjustable.
  - 10. Warranty: 5 years

## PART 3 - EXECUTION

### 3.01 CONCRETE FLOORS

- A. Use ground penetrating radar, pacometer, X-ray, or other suitable means to locate existing rebar, embedded conduit, post-tensioning cables, and other imbedded obstructions prior to drilling or saw-cutting in concrete floors. Determine location, size, and orientation of obstructions at each drilling or saw-cutting location. Locate drilling or saw-cutting to avoid obstructions. Locate each drilled hole to provide a minimum of 3 inches of concrete cover over all adjacent post-tensioning tendons.

### 3.02 ANCHOR BOLTS

- A. Existing Concrete Construction:
  - 1. Anchor Bolts (Expansion Type): Use only where necessary to support piping, ductwork, and anchor non-rotating equipment from existing concrete slabs and walls and for rotating equipment with anchor bolts in tension. Install expansion type anchor bolts in holes drilled in concrete. Install anchor bolts through concrete equipment pads, installed into existing structural concrete slabs.
  - 2. Anchor Bolts (Epoxy Type): Use only where necessary to anchor rotating equipment from existing concrete slabs and walls. Install adhesive type anchor bolts in holes drilled in concrete. Install anchor bolts through concrete equipment pads, installed into existing structural concrete slabs. Do not use adhesive type anchor bolts in tension.
  - 3. Powder actuated inserts are not acceptable.

### 3.03 SUPPORT CHANNELS

- A. Attachment of Hangers to Channels: Provide manufacturer's standard locking type inserted nuts, of same manufacturer as channel.



**3.04 GUY WIRES, FITTINGS, AND HARDWARE**

- A. Stress guy wires until taut.

**3.05 PROTECTIVE COATING APPLICATION**

- A. Surface Preparation:
1. Remove grease and oil with suitable solvent.
  2. Wire brush and scrape to remove loose mill scale, rust, corrosion products, old coatings, dirt, or other foreign materials.
- B. Pipe Wrapping Application:
1. Wrap exterior surface of underground black steel pipe and fittings with specified wrapping material. Provide wrapping up to 6 inches above exterior grade or slab level.
  2. Factory-Applied Wrapping (Required for Straight Lengths of Pipe): Spirally-wound with half-overlapping and a hold-back of not less than 4 inches on each end for field fitting.
  3. Field-Applied Wrapping (Required for Fittings and Field Joints): Complete pressure testing prior to wrapping. Initially stretch tape to conform with surface while spirally half-overlapping; apply a second wrapping, half-overlapping and spiraled with spirals opposite to first wrapping. Overlap factory-wrapped pipe wrapping a minimum of 6 inches.
  4. Inspect wrapped surfaces for film thickness and uniformity of tape application. Test these surfaces in their entirety for presence of flaws with an electrical flaw and holiday detector at crest voltage of 5,000 volts. Instrument shall be approved type and incapable of field adjustment, with calibration within past 6 months certified by manufacturer or by an approved testing laboratory (e.g., National Bureau of Standards). Perform test before and after installation. Repair defects and repeat test on affected areas.

**3.06 NEW EQUIPMENT, PIPING, AND VALVE IDENTIFICATION**

- A. Valve Tags, General: Install valve tags on new piping where destination is not visible from valve. Valve tags shall contain the following information.
1. Valve numbers with a description of function.
  2. Include a typewritten list in each operation and maintenance manual of valve tag numbers, showing specific valve location and specific list of rooms affected by valve operation.
  3. Number each valve tag chronologically by system and applicable tag number shall be indicated on as-built drawings.
- B. Nameplates: Install on each piece of new equipment, controller, and other device including any special instruction for its use. Each equipment nameplate shall have equipment identification number.
- C. Identification of New Piping:
1. Identify piping which is accessible for maintenance operations, including piping concealed above suspended ceilings, with pipe markers.
  2. Include direction of flow arrows on each identification marker. Wrap directional flow arrow tape full circumference of pipe over each end of identification marker.
  3. Locations for Pipe Markers, General:
    - a. Adjacent to each valve.
    - b. At 20 foot centers maximum for length of pipe, but at least one per room.



- c. At least one marker between any two partitions.
- d. Pipe markers shall be visible from floor level.

**D. Labeling Schedule:**

Outside Diameter of Pipe or Covering	Minimum Length of Color Band	Minimum Size of Letter
1/2 inch to 1-1/4 inch	8 inch	1/2 inch
1-1/2 inch to 2 inch	8 inch	3/4 inch
2-1/2 inch to 6 inch	12 inch	1-1/4 inch
8 inch to 10 inch	24 inch	2-1/2 inch
Over 10 inch	32 inch	3-1/2 inch

**E. Identification Marker Color Coding and Marking:**

Pipe Contents	Band Color	Letter Color	Marker Wording
Indirect Drain	Green	White	D
Refrigerant Discharge	Yellow	Black	RD
Refrigerant Suction	Yellow	Black	RS

**3.07 SLEEVES, CORED OPENINGS, AND SEALING OF PIPING**

- A. Size of Sleeve or Cored Opening: Unless specified otherwise, provide an annular clear space of approximately 1/4 inch for bare pipe sleeves; 1/2 inch for sealed sleeves. Provide insulation and covering continuous through sleeve.
- B. Existing Interior Construction:
  - 1. Install sleeves for piping passing through floors, roofs, and walls that are not concrete or concrete masonry unit.
  - 2. Core drill or saw cut concrete where piping penetrates concrete walls and above grade concrete floor slabs. Sleeves are not required.
    - a. For floor slabs, provide a galvanized sheet metal dam around opening on top of floor where piping penetrates concrete floor slabs except when pipe is located in a finished area. Sheet metal dams shall be water-tight welded construction; seal welded areas with corrosion resistant coating; seal and anchor dams water-tight to floor; minimum 1 inch projection above floor; and shall have a minimum 1/2 inch flange width on floor or spigot end with 3/16 inch bead.
  - 3. Core drill or saw cut walls where piping penetrates concrete masonry unit walls. Provide sleeves and grout in place.
- C. Exterior Concrete Walls Below Grade: Where non-insulated pipes pass through openings in concrete walls, install a segmented flexible, leakproof seal in annular space between wall and pipe. Size of sleeve or cored opening shall be determined by manufacturer.
- D. Exterior Concrete Walls Above Grade:



1. Where non-insulated pipes pass through openings in concrete walls, install a segmented flexible, leakproof seal in annular space between wall and pipe. Size of sleeve or cored opening shall be determined by manufacturer.
  2. Where insulated pipes pass through openings in concrete walls, seal annular space between aluminum jacket over insulated pipe and sleeve in exterior wall with an ultraviolet resistant, elastic waterproof cement that dries to a firm but pliable mass.
- E. Exterior Metal Walls Above Grade: Where pipes pass through exterior metal walls, install a prefabricated penetration flashing unit. Check with metal wall manufacturer to determine if any special preparations are required and for type of adhesive to use.
- F. Exterior Walls Above Grade: Where pipes pass through openings in walls, seal annular space between pipe and sleeve in exterior wall with an ultraviolet resistant, elastic waterproof cement which will dry to a firm but pliable mass.
- G. Unless specified otherwise, annular space between pipe and sleeve or between insulation jacket and sleeve does not require sealing in interior walls or pipe chase areas which are not designated as fire, smoke, or acoustical rated.
- 3.08 SLEEVES AND SEALING OF MECHANICAL PENETRATIONS THROUGH FIRE RESISTIVE FLOORS, WALLS, AND PARTITIONS
- A. Sleeves and Sealing through Fire Resistive Floors, Walls, and Partitions:
1. Provide firestopping of mechanical penetrations (e.g. insulated and non-insulated piping, tubing, conduit, and wiring) through fire resistive floors, walls, and partitions in accordance with requirements of International Building Code.
  2. Provide sleeves for mechanical penetrations through fire resistive floors, walls, and partitions. Sleeves shall be of same material and thickness as was used when firestopping material was tested in accordance with standards stated in International Building Code.
  3. Annular space between sleeve or cored opening and insulated or non-insulated surfaces of mechanical penetrations shall be same dimensions as annular space used when firestopping material was tested in accordance with standards stated in International Building Code.
- 3.09 EARTHWORK
- A. Provide as required for installation of mechanical work in ground as specified herein.
- B. Trench Excavation: Provide as necessary for installation of work, with trenches of necessary width for proper laying of pipe, with banks as nearly vertical as possible. Accurately grade trench bottoms to provide uniform undisturbed bedding for each section of pipe along its entire length; form holes and depressions for joints after trench bottom has been graded. Provide temporary pumping equipment to keep excavation free from water. Provide pipe bedding in rock excavation consisting of not less than 6 inches of sand or equivalent material.
- C. Bracing and Shoring: Provide as necessary to maintain stability of excavation.
- D. Backfilling: Backfill trenches only after completion of pressure tests and inspection by Owner. Use sand, under, around and to 6 inches above top of piping. Fill spaces between pipe and sides of trench by hand and shovel-tamp in place; cover in 6 inch layers to thickness of 6 inches over top of pipe. Fill and tamp remainder of backfill



material in 6 inch layers. Provide backfill materials generally of clean earth or sand relatively free of clods or stones.

- E. Compacting: Perform compacting individually for each 6 inch layer (maximum) loose thickness of backfill. Where roadway or parking area surfaces will be placed over backfill, provide a moisture condition which will produce a compacted density of 95 percent of maximum density; elsewhere, 90 percent. Measure in accordance with Method D of AASHTO T-180.
- F. Surplus Earth: Haul off site and dispose of legally.
- G. Barricades: Locate and maintain barricades, construction signs, warning lights and guards, as required during periods of open excavation to protect persons from injury and to avoid property damage.
- H. Clean-up: Leave premises thoroughly clean at completion.
- I. Installation of Piping in Backfilled Areas: Wherever any piping is to be installed in areas which have been excavated below pipe inverts, for any purpose, install piping in a manner which will prevent subsequent settlement. Do not install piping until backfill is to full compaction and completed up to a level of 18 inches or more above level of installed pipe; install piping in trenches which have been re-excavated through backfill.
- J. Bury underground warning tape above piping during trench backfilling. Bury approximately 12 inches deep. Tape shall be 0.004 inch thick polyethylene tape for metallic pipe and polyethylene tape with metallic core for plastic pipe. Tape shall be 6 inches wide and be printed with repetitive caution warnings along its length. Tapes shall be yellow in color with black letters. Tape color and lettering shall not be affected by moisture or other substances contained in backfill material.
- K. Restore to original condition existing vegetation and landscape at areas inside and outside limits of construction which have been damaged or disturbed by Contractor's operations including excavation and earthwork.
  - 1. Topsoil shall be separately excavated, stored, and used for surface finish in preparation for seeding and planting or provide new topsoil for seeding and planting. Strip topsoil to a depth of 3 inches. Keep topsoil separate from other excavated materials.
  - 2. Provide soil preparation and reseed grass. Immediately before seeding, restore soil to proper grade and thoroughly moisten soil to a depth of 6 inches. Do not seed when ground is muddy, frozen, or in an unsatisfactory condition for seeding. Apply seed within 24 hours after seedbed preparation. Sow seed with sowing equipment. Sow one-half of the seeds in one direction, and sow remainder at right angles to first sowing.

### **3.10 EQUIPMENT, DUCTWORK, AND PIPING INSTALLATION**

- A. Welding to Building Structural Members: Not allowed except where approved and as indicated on Drawings.
- B. Provide supports for equipment, piping, and appurtenances as required, including braces as required for seismic restraint; these include frames or supports for pumps and fans. Steel framework exposed to weather shall be hot-dip galvanized after fabrication.



- C. Hangers and supports shall be hot-dip galvanized where located outside.
- D. Manufacturer's Instructions: Install equipment, including ductwork and piping appurtenances, in strict accordance with manufacturer's instructions.
- E. Floor-Mounted Equipment, General:
  - 1. Provide machine and floor or foundation fastenings; set equipment on concrete pads. Provide equipment base drawings, bolt-setting information, and anchor bolts for floor mounted equipment.
  - 2. Install equipment at locations and to dimensions indicated. Set equipment accurately with principal centerlines, and level using manufacturer's leveling screws, blocks, shims, or wedges. Do not distort equipment or baseplates.
- F. Floor-Mounted Equipment without Vibration Isolation Mountings:
  - 1. Install shims and blocks that are to remain in place on both sides of anchor bolts, sealed in grout on grouted foundations
  - 2. Roughen surface of concrete to receive grout and remove laitance and other loose materials. Set elevation to top of concrete to allow 1/2 to 1-1/2 inches of grout between machine or structure base and concrete. Thoroughly moisten concrete surface immediately before grouting. Leave no free water on surface.
  - 3. Place non-shrink grout prior to connecting equipment to piping. Mix grout in accordance with manufacturer's recommendations. Dry-Pack or flow grouting may be used depending on size and configuration of equipment to be grouted.
  - 4. Work grout in under every part of equipment base to ensure a complete bearing surface free from air pockets and cavities. Finish outside edges smooth to allow drainage to drain away from equipment base.
  - 5. Do not remove forms and shims and do not tighten anchor bolts for at least 24 hours after applying grout. Do not attach piping to equipment until after anchor bolts are tightened.
- G. Suspended Equipment, Piping, and Ductwork: Supporting elements shall be suitable for stresses imposed by systems, with a safety factor of not less than 5.0.
  - 1. Do not anchor supports to metal decking.
  - 2. Supporting elements not shown or specified shall be provided in accordance with SMACNA and NFPA standards. Piping and equipment supports, not otherwise detailed, shall conform to applicable provisions of MSS SP-58.
  - 3. Where it is necessary to frame structural members between existing members or where structural members are used in lieu of commercially rated supports, such supplementary steel shall be provided in accordance with AISC Specification for Design, Fabrication and Erection of Structural Steel for Buildings.
  - 4. Welding of structural members, where approved, shall be in accordance with AWS D.1.1.
  - 5. Vibration isolation provisions shall be as indicated or specified.

### **3.11 SEISMIC**

- A. Seismic Restraints: Seismically restrain mechanical and electrical nonstructural components in Divisions 20 and 23 in accordance with requirements of 2018 International Building Code. Mechanical and electrical nonstructural components in Divisions 20 and 23 shall be as defined by ASCE 7. Design of seismic restraints shall allow for stress of piping and thermal expansion of piping.
  - 1. Obtain the services of a professional engineer licensed in the State of Washington to prepare seismic restraint design for mechanical and electrical nonstructural components in Divisions 20 and 23. The professional engineer



licensed in the State of Washington shall also prepare a statement of special inspections per requirements of the 2018 International Building Code where such statement is required by Code. Submit calculations, details, Shop Drawings, Product Data, and statement of special inspections for seismic restraint design of mechanical and electrical nonstructural components in Divisions 20 and 23. If the professional engineer determines that the 2018 International Building Code does not require some of the mechanical and electrical nonstructural components in Divisions 20 and 23 to be seismically restrained, then submit a stamped and signed statement from the professional engineer to that effect.

2. Seismic restraints shall be hot-dip galvanized where located outside.
- B. Seismic Certification of Mechanical Nonstructural Components: Submit manufacturer's certification by analysis, testing, or experience for mechanical nonstructural components and designated seismic systems in accordance with Section 13.2 of ASCE 7, where such certification is required by Section 1705.13 of the 2018 International Building Code
- C. The professional engineer obtained by Contractor shall prepare seismic design.

**END OF SECTION**



**PIPE, VALVES, AND FITTINGS FOR HVAC**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Work of this Section includes piping, fittings, valves, supports, hangers, and miscellaneous system accessories.

**1.02 SUBMITTALS**

- A. Product Data: Manufacturer's data for each product used.
- B. Test and Evaluation Reports:
  - 1. Flushing procedures.
  - 2. Pressure tests.
- C. Certificates: Submit manufacturer's current certification sheets stating that pipe, tubing, fittings, valves, gaskets, and strainers are from an ISO 9000 certified manufacturer.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. General: Pipe, tubing, fitting, valve, gasket, and strainer manufacturers listed below are acceptable unless indicated otherwise.
  - 1. Steel Pipe: U.S. Steel, Wheatland, California Steel, Northwest Pipe, IPSCO, Koppel, or Sharon.
  - 2. Steel Fittings: Grabler, Stockham, Walworth, Tube Forgings, Crane, Bonney Forge, Victaulic, Anvil International, Grinnell Mechanical Products, Wheatley, Metraflex, Weld Bend, Capitol, Ameriforge, Boltex, Mills Iron Works, Penn Machine, Commercial Flanges, Ward, or Aeroquip.
  - 3. Copper Tubing: Mueller, Elkhart Products Corporation, Cerrotube, or Cambridge-Lee Industries.
  - 4. Copper Fittings: Nibco, Mueller, Elkhart Products Corporation.
  - 5. Valves: Apollo, Centerline, Victaulic, Jenkins, Walworth, Kennedy, Stockham, Anvil International, Nibco, Milwaukee, Powell, Dezurick, Homestead, Watts Regulator, Rockwell-McCanna, Kitz, Red-White, Wheatley, Worcester, FNW, or Mueller.
  - 6. Gaskets: Crane, Garlock, U. S. Rubber, Anchor, or Flexitallic.
- B. Substitutions: When requesting a substitution for pipe, tubing, fitting, valve, gasket, and strainer manufacturers, submit a current certification sheet with substitution request stating that pipe, tubing, fittings, valves, gaskets, and strainers are from an ISO 9000 certified manufacturer.

**2.02 COPPER PIPING - GENERAL**

- A. Pressure Ratings: Provide pipe, tubing, fittings, accessories, and other components with minimum pressure rating of 150 psig at 230 degrees F.
- B. Tubing (Pipe), Aboveground: ASTM B88 Type L copper water tube, hard drawn.



- C. Flanges and Flanged Fittings: Cast bronze, 125 psig Class, ASME Standards.
- D. Bolting: Hex head bolts, ASTM A307, Grade B; hexagon nut, ASTM A194; dimensions per ANSI B18.2.1 and ANSI B18.2.2; coarse type threads per ANSI B1.1; bronze plated.
- E. Gaskets: ANSI B16.21 nonmetallic 1/16 inch thick. Garlock Style 3000.
- F. Joint Compound:
  - 1. 1 Inch and Smaller: Polytetrafluoroethylene (PTFE) pipe thread tape conforming to requirements of ASTM D3308 and NSF 61.
  - 2. 1-1/4 Inches and Larger: Lead free, non-toxic, non-hardening, pipe joint compound conforming to requirements of NSF 61 and Federal Specification TT-S-1732. Hercules Megaloc, or equivalent of Rectorseal, La-Co, or Oatey.
- G. Solder: 95 percent tin, 5 percent antimony solder, ASTM B32 Harris "Bridgit" acceptable; certified to NSF 61. Laco flux or similar not permitted.
- H. Brazing Alloy: Silver brazing; Handy and Harmon "Sil-Fos" or equal of Harris, 1190 degrees F minimum melting temperature.
- I. Valves:
  - 1. Gate: MSS SP80, 150-psig bronze, threaded end connections, union bonnet, rising stem, solid bronze disc, repackable under pressure.
  - 2. Globe or Angle: MSS SP80, 150-psig bronze, threaded end connections, union bonnet, rising stem, solid bronze 500 BHN disc and seat ring or Teflon disc, repackable under pressure.
  - 3. Check: MSS SP80, 150-psig bronze threaded end connections, threaded cap, Y-pattern, swing disc of Teflon, renewable seat and disc.
  - 4. Ball: Two-piece body conforming to requirements of MSS SP-110; full port; solid ball; bronze body; chrome plated brass ball; brass stem; threaded end connections conforming to requirements of ASME B1.20.1; polytetrafluoroethylene (PTFE) seat and seal. Provide stem extension for use in insulated piping. Valve shall meet minimum pressure rating of 150 psig at 230 degrees F. Submit pressure-temperature rating table or graph.
  - 5. Butterfly: Victaulic Series 608 with ductile iron disk with elastomeric coating, wrought copper or cast bronze body; bubble tight shutoff to 300 psi.

## **2.03 ESCUTCHEONS**

- A. Chrome-plated escutcheons; provide spring clip type at ceilings.
- B. Provide 2 inch deep escutcheons for lavatory and sink drains where required.
- C. Manufacturer: Brass Craft, Chicago Specialties, or approved equal.

## **2.04 HOSE END DRAIN VALVES**

- A. 125 psig working pressure, bronze body, composition seat, threaded or solder joint ends, with 3/4 inch hose thread adapter; lockshield and removable handle, Nibco Figure 72 or 74 or approved equal.



2.05 PIPE HANGERS AND SUPPORTS

- A. Conform to requirements of MSS SP 58.
- B. Manufacturers: Anvil International, Tolco, Basic Engineering Inc., B-Line, ERICO/Michigan Hanger, PHD, or Pipe Shields.
- C. Materials:
1. Hanger Material: Match piping material at point of contact with piping.
    - a. Black Steel Pipe: Carbon steel, cast iron, or malleable iron.
    - b. Galvanized Steel Pipe: Carbon steel, cast iron, or malleable with zinc coating.
    - c. Copper Tubing: Carbon steel or malleable iron with copper finish or carbon steel or malleable iron with plastic coating.
    - d. Cast Iron Pipe: Carbon steel, cast iron, or malleable iron.
  2. Pipe hangers and hanger rods exposed to weather shall be hot-dip galvanized.
- D. Hanger Rods: Hot rolled steel rod, ASTM A36; size to "Code for Pressure Piping", ANSI B31.1, with safety factor of 5; hanger rod size and maximum load listed below.
- | Rod Diameter<br>(Inches) | Pipe Size<br>(Inches) | Load<br>(Pounds) |
|--------------------------|-----------------------|------------------|
| 3/8                      | 2 and smaller         | 610              |
| 1/2                      | 2-1/2 and 3-1/2       | 1,130            |
| 5/8                      | 4 and 5               | 1,810            |
| 3/4                      | 6                     | 2,710            |
| 7/8                      | 8 to 12               | 3,770            |
| 1                        | 14 and 16             | 4,960            |
| 1-1/4                    | 18 to 20              | 8,000            |
| 1-1/2                    | 24                    | 11,630           |
- E. Insulation Inserts:
1. Inserts for Refrigerant Piping: Armacell "Armafix" insulation pipe hanger; inserts shall consist of closed-cell polyisocyanurate or polyurethane foam insert embedded in closed-cell elastomeric foam pipe insulation meeting requirements of Section 20 07 00, with integral painted aluminum jacket and longitudinal self-adhesive closure.
- F. Hanger Selection:
1. Bare Pipe: Select to fit outside diameter of pipe.
  2. Insulated Pipe: Select to fit outside diameter of insert.
- G. Ring Hangers: Anvil International Figure 69 or 104.
- H. Clevis Hangers: Anvil International Figure 260.
- I. Roller Hangers: Single pipe roll hanger, Anvil International Figure 171.
- J. Pipe Roll Assembly: Single roller, adjustable, Anvil International Figure 274.
- K. Pipe Stanchions: Anvil International Figure 63 or equal of Tolco, Basic Engineering Inc., B-Line, ERICO/Michigan Hanger, or PHD; galvanized steel construction.



- L. Pipe Hangers at Wall:
  - 1. Pipe 2-1/2 Inches and Smaller: Malleable iron one-hole clamp Anvil International Figure 126.
  - 2. Pipe 3 Inches and Larger: Wall bracket, Anvil International Figure 194, 195, or 199 for pipe rings and rod hangers specified herein.
  - 3. Loads not to exceed ratings shown in manufacturer's catalog.
- M. Pipe Hangers for Vertical Piping:
  - 1. Pipe 1 Inch and Smaller: Steel preformed metal framing, Unistrut P1100 Series with Series P2024 clamps for outside diameter tubing and P2558 Series for pipe; galvanized finish unless indicated otherwise.
  - 2. Pipe 2-1/2 Inches and Smaller: Steel preformed metal framing, Unistrut P1100 Series framing with P2558 Series pipe straps; galvanized finish unless indicated otherwise.
  - 3. Pipe 3 Inches and Larger: Anvil International Figure 261 riser clamp at each floor penetration, intermediate supports Figure 256 pipe alignment guide.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. General:
  - 1. Diagrams: Diagrams showing pipe connections are schematic only. Do not use for calculating lineal runs or numbers and types of fittings.
  - 2. Headroom:
    - a. At ceilings, maintain maximum possible headroom. Employ carefully planned arrangements to give best results.
    - b. In areas of egress, maintain a headroom of 7 feet from floor to bottom of an obstruction.
  - 3. Install piping promptly, capping or plugging open ends and making pipe generally level and plumb, free from traps, and in a manner to conserve space for other work.
  - 4. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions; promptly remove defective material from jobsite.
  - 5. Install pipes to clear beams and obstructions; do not cut into or reduce size of load carrying members.
  - 6. Use long radius elbows wherever possible.
  - 7. Install piping in accordance with ASME B31.9 "Building Services Piping" and as specified herein.
- B. Location of Pipe: Piping layout as shown is diagrammatic indicating general arrangement. Determine measurements at jobsite, accurately cutting pipe to suit. Locate piping to avoid interference with building structural members, equipment, and building openings; provide access for operation, service, disconnection, removal and replacement of valves, fixtures, and equipment. Within buildings, conceal piping in walls and above ceiling except where indicated to remain exposed.
- C. Cleaning: Clean interior of piping before making joints and placing in position by blowing clean with steam or compressed air. Maintain cleanliness of piping throughout installation; provide caps or plugs on open ends of cleaned piping.
- D. Unions, Flanges, and Fittings: Provide unions or flanges at valves, fixtures, and equipment if a means of disconnection is not otherwise provided. Provide reducing



fittings for changes in pipe size; bushings are not acceptable. Use fittings for changes in direction of piping.

- E. Routing: Run parallel to column lines and perpendicular to floor unless shown otherwise on Drawings.
- F. Leaks: Correct immediately, using new materials; leak-sealing compounds not permitted.
- G. Position of Gate Valves and Globe Valves: Install stem horizontal or above.
- H. Concealed Piping: Install piping as concealed Work in finished areas, unless indicated otherwise. Do not cover up or enclose Work until properly and completely inspected and reviewed. Should Work be covered up or enclosed prior to inspections and reviews, uncover Work as required and, after completely inspected and reviewed, make repairs and replacements with materials as necessary and at no additional cost to Owner.
- I. Hose End Drain Valves: Provide at low points of systems and as indicated. This shall include points upstream and downstream of shutoff valves.
- J. Pipe Hangers and Supports:
  - 1. Unless specified or indicated otherwise, install hangers, supports, anchors, bolts, and mounting accessories for piping and equipment in accordance with MSS SP 58.
  - 2. Spacing of Horizontal Pipe Hangers:
    - a. Unless specified or indicated otherwise, comply with spacing requirements of MSS SP 58 and install a support not over 1 foot from pipe fitting joint at each change in direction of piping.
    - b. Provide additional supports at concentrated loads, such as flanges, valves, and similar items.
  - 3. Vertical Piping: Route vertical piping in a manner such that it can be attached to adjacent walls or columns.
  - 4. Piping at Ceiling: Suspend piping at ceiling using steel rod hangers, with individual rods for each hanger, except where 2-rod suspension pipe roll supports are specified or indicated on Drawings.
  - 5. Roller Type Hangers: Provide for hot piping 6 inches and larger.
  - 6. Piping Supports:
    - a. Support piping to route expansion and contraction in required direction.
    - b. Use flexible connectors to prevent vibrations and eliminate undue strain on equipment.
    - c. Use hangers for supporting pipe 2 inches and larger that are fabricated to permit adjustment after erection while still supporting its load.
    - d. Use wall brackets where pipes are adjacent to walls or other vertical surfaces which may be used for support.
    - e. Install supports to adequately carry load and still maintain proper alignment.
    - f. Set inserts and sleeves for supports in concrete where necessary before concrete is poured.
    - g. Riser clamps shall not be supported on floor sleeves. Provide means to support riser clamps from floor slab.
  - 7. Beam clamps shall be complete with retaining straps.
- K. Insulation Saddles and Inserts:
  - 1. Insulated Piping 6 Inches and Larger: Provide saddles between hangers and bottom quadrant of pipe; weld to pipe.



2. All Other Insulated Piping: Provide factory fabricated insulation inserts with split metal jacket. Install inserts prior to installing insulation.
- L. Joints:
  1. Brazed and Soldered: Cut ends square and remove fins and burrs. Replace dents and damaged tubing with new tubing. Remove grease and oil from joints by wiping with clean cloth saturated with a suitable chemical solvent and then clean with emery cloth. After cleaning apply non-corrosive flux, apply heat and solder and hold joint rigidly until solder or brazing alloy has hardened. Wipe excess solder from exterior of joint before hardening. Before soldering or brazing, remove stems and washers of solder joint valves.
- M. Escutcheon Plates: Provide where exposed piping passes through walls, floors, and ceilings of finished rooms. Omit plates where sleeves project above floor.

### **3.02 CLEANING**

- A. Flush new piping after fabrication and prior to pressure tests.
- B. Remove strainer screens during flushing except those protecting control equipment. Clean screens protecting control equipment during flushing if necessary and after flushing is completed.

### **3.03 FIELD TESTS**

- A. General:
  1. Test piping systems and connected equipment. Test after lines have been cleaned and prior to insulation.
  2. Furnish test equipment. Install a calibrated test pressure gage in piping being tested.
  3. Prior to testing, remove or valve-off gages, traps, and other apparatus which may be damaged by testing.
  4. Rectify defects which develop during testing and retest until approved by Owner at no additional charge to Owner.
  5. Provide vents and drain valves as required to drain piping after testing.
- B. Test Requirements: Follow test requirements unless requirements are specified in individual Specification Sections.
  1. Refrigerant piping test requirements are specified in Section 23 23 00.
- C. Submit a complete report of testing procedures.

**END OF SECTION**



## HVAC INSULATION

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Work of this Section includes insulation and accessories for piping systems, air distribution systems, and designated equipment.

#### 1.02 DEFINITIONS

- A. Thickness: Normal thickness of insulation is defined as thickness of basic insulating medium not including finishing coats.
- B. Exposed Versus Concealed Insulation:
  - 1. Exposed is defined as Work exposed to view of occupants in normally occupied areas and in equipment rooms.
  - 2. Concealed is defined as Work located in ceiling spaces, chases, and other locations not exposed to view.
- C. Thermal conductivity is defined as Btu-inch/hour-square feet-degree F.
- D. Cold Piping: Domestic cold water, nonpotable water, nonpotable rainwater, rain leader, overflow rain leader, storm drain, storm drain overflow, chilled water, secondary chilled water, glycol chilled water, laboratory cold water, condensate drip pan drain indirect drain piping, condensate drip pan pumped waste piping, spray cold water, refrigerated water, service water, combined fire and domestic water service water, and refrigerant suction.

#### 1.03 SUBMITTALS

- A. Product Data: All materials.

#### 1.04 QUALITY ASSURANCE

- A. Fire Resistance:
  - 1. Insulation, Tape, Adhesives, Vapor Barrier Materials, and Jackets: Flame spread and smoke developed ratings shall conform to requirements of ASTM E84; not more than 25/50.
    - a. Duct coverings shall meet requirements of IMC.

### PART 2 - PRODUCTS

#### 2.01 INSULATION CHARACTERISTICS

- A. Manufacturer: Owens-Corning, Certainteed, Johns Manville, Armacell, or Knauf.
- B. Pipe Insulation:
  - 1. Closed Cell Elastomeric: Suitable for pipe temperature from minus 40 degrees F to plus 220 degrees F; one piece type with only one longitudinal joint; thermal conductivity not greater than 0.25 Btu-inch/hour-square feet-degree F at 75 degrees F mean temperature.



- C. Insulation for Valves 2 Inches and Smaller, Fittings, Flanges, Grooved Joint Pipe Couplings, and Unions:
  - 1. Closed Cell Elastomeric: Same as specified for pipe.
- D. Equipment Insulation:
  - 1. Elastomeric: Closed cell elastomeric sheet insulation; thermal conductivity not greater than 0.27 Btu-inch/hour-square feet-degree F at 75 degrees F mean temperature. Smoke developed rating 50 for 1/2 inch thickness.

## 2.02 METAL JACKETS

- A. Metal Jackets: 0.016 inch thick stucco embossed aluminum with integral vapor barrier. Interior of jacket shall be protected by a factory heat sealed co-extruded polysurlyn film consisting of three layers for a total thickness of 3 mils.
  - 1. Metal jackets shall be factory pre-molded wherever possible.

## 2.03 INSULATION SPECIALTIES

- A. Vapor Barrier Adhesive: Vapor barrier lap sealing adhesive, Foster 85-20, Childers CP-82, or approved equal.
- B. Vapor Barrier Coating: Foster 30-80, Childers CP-38, or Vimasco 749 water based vapor barrier coating, or approved equal. Maximum perm rating of 0.08 perms or less at 37 mils dry tested at 100 degrees F and 90 percent RH per ASTM F1249.
- C. Metal Jacketing Sealant: Sealant used in metal jacketing seams to prevent water entry, Foster 95-44 or approved equal.
- D. Insulation Inserts: Conform to requirements of Section 20 04 00.
- E. Insulation Bands: 3/4 inch wide, 26 gage stainless steel.
- F. Wire: Soft annealed stainless steel, 16 or 18 gage.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install with joints tightly butted. Tuck and tuft edges of insulation. Maintain vapor barrier when butting insulation to inserts.
- B. Install insulation to allow easy access to equipment for inspection and repairs.
- C. Bevel and seal insulation around equipment nameplates. Seal raw edges of insulation at flanges, etc.
- D. Remove loose dirt, rust, other loose foreign material, moisture and frost from surfaces prior to installing insulation.
- E. Apply insulation only after piping has been tested, except as specified otherwise for elastomeric insulation.



- F. Repair and/or replace damaged or removed covering on existing piping where damaged by Work under this Contract.
- G. Piping, General:
  - 1. Provide insulation continuous through floor, wall, and ceiling openings and sleeves.
  - 2. In order to prevent condensation formation under normal operation, apply insulation with continuous, unbroken vapor seal throughout each entire cold piping system. Refer to definition of cold piping in PART 1 of this Section. Adequately insulate and vapor seal hangers, supports, and anchors that are secured directly to cold surfaces to prevent condensation.
  - 3. Apply specific adhesives, mastics, and coatings at manufacturer's recommended minimum coverage per gallon.
  - 4. Provide insulation in space between pipe and pipe saddle.
  - 5. Inserts: Overlap adjacent insulation jacket a minimum of 1 inch on insulation inserts and securely cement in place.
- H. Elastomeric Insulation:
  - 1. Slip insulation on pipe prior to connection wherever possible, and seal butt joints with adhesive. Where slip-on technique is not possible, slit and snap insulation over pipe, and seal seams and butt joints with adhesive.
  - 2. Fabricate and install fitting insulation according to manufacturer's recommended procedures. Insulate sweat fittings with miter-cut pieces of pipe insulation same size as on adjacent piping. Seal joints and miter-cut pieces with adhesive.
- I. Equipment:
  - 1. General:
    - a. Form or fabricate insulation to fit equipment. Closely conform to round surfaces; to ensure tight fit, tightly butt and stagger joints.
    - b. Use a vapor barrier adhesive on equipment in cold piping systems.

### 3.02 ITEMS TO BE INSULATED

- A. Piping:
  - 1. New Cold Piping: Refrigerant suction.

### 3.03 ITEMS NOT TO BE INSULATED

- A. Piping:
  - 1. Valve stems, handwheels, and operators.

### 3.04 INSULATION TYPE AND THICKNESS

- A. Pipe: Except where shown otherwise on Drawings or specified otherwise, insulate piping to thickness listed in following table. For piping located outside or in outdoor air conditions, increase thickness shown in table by 1/2 inch.

Service	Type	Insulation Thickness for Pipe Sizes Shown (Inches)				
		Less Than 1	1 to Less Than 1-1/2	1-1/2 to Less Than 4	4 to Less Than 8	8 and Over
Refrigerant Suction Piping	E	0.5	1.0	1.0	1.0	1.5



Service	Type	Insulation Thickness for Pipe Sizes Shown (Inches)				
		Less Than 1	1 to Less Than 1-1/2	1-1/2 to Less Than 4	4 to Less Than 8	8 and Over
Refrigerant Discharge Piping	E	1.0	1.0	1.5	1.5	1.5

- B. Abbreviations:  
1. E - Elastomeric.

**END OF SECTION**



## COMMISSIONING FOR HVAC

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Work of this Section includes commissioning process requirements for HVAC systems, assemblies, and equipment.

### PART 2 - PRODUCTS

Not Used.

### PART 3 - EXECUTION

#### 3.01 TESTING PREPARATION

- A. Prepare systems, subsystems, and equipment for testing by submitting completed documentation of the following to CCP.
  - 1. Certification that systems, subsystems, and equipment to be commissioned are installed, calibrated, and operating according to Contract Documents.
  - 2. Certification that instrumentation and control systems to be commissioned are installed, calibrated, and programmed according to Contract Documents.
  - 3. Certification of recorded pretest set points.
  - 4. Certification that systems to be commissioned are balanced, tested, and adjusted in accordance with specified procedures.

#### 3.02 TESTING

- A. Operate systems, subsystems, and equipment for testing in accordance with Functional Performance Test Procedures included in Cx Plan.
- B. Provide technicians, instrumentation, and tools to verify testing of commissioned systems in coordination with approved test plan.
  - 1. Notify CCP in advance of date of field verification conforming to requirements of Section 01 91 00-Commissioning. Include systems and data points to be verified.
  - 2. Use same calibrated instruments (by model and serial number) for testing that were used when original data was collected.
- C. Perform Functional Testing using design conditions whenever possible.
  - 1. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by CCP and document simulated conditions and methods of simulation. After testing, return settings to normal operating conditions.
  - 2. Test plan may require that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical. After testing, return settings to normal operating conditions.



- D. If test plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests with CCP.
- E. Functional Test Issues:
  - 1. An item that does not meet requirements of Functional Test shall be recorded as an "issue" in Commissioning Issues Log. Correct issues discovered during testing and reschedule Functional Test.
  - 2. Notify CCP after issues have been corrected so Functional Test can be performed.
- F. If tests cannot be completed because of a deficiency outside scope of work, document deficiency and report it to Owner. After deficiencies are resolved, notify CCP so Functional Test can be performed.

**END OF SECTION**



## REFRIGERANT PIPING

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. Work of this Section includes refrigerant piping, refrigerant vent piping, and piping specialties and accessories.

#### 1.02 SUBMITTALS

- A. Product Data:
  - 1. Piping.
  - 2. Piping specialties and accessories.
- B. Shop Drawings:
  - 1. Layout and installation of refrigerant piping. Obtain approval of system design and accessories from condensing unit manufacturer prior to submittal to Owner. Manufacturer shall submit certification that the condensing units will perform in accordance with capacity listed and provide stable operation through all partial load conditions. Submit calculations for sizing of refrigerant piping. Prepare detailed drawings on "AutoCAD" Release 2016 or latest version same size as Contract Drawings, coordinating the Work of other trades so as to make all parts fit together. These drawings shall be approved by Owner prior to fabrication.
  - 2. Variable Capacity, Heat Pump Heat Recovery Air Conditioning System Shop Drawings: Layout and installation of refrigerant piping. Manufacturer shall submit certification that the variable capacity, heat pump heat recovery air conditioning system will perform in accordance with capacity listed and provide stable operation through all partial load conditions. Submit calculations for sizing of refrigerant piping. Prepare detailed drawings on "AutoCAD" Release 2016 or latest version same size as Contract Drawings, coordinating the work of other trades so as to make all parts fit together. These drawings shall be approved by Owner prior to fabrication.
- C. Test and Evaluation Reports:
  - 1. Testing plan.
  - 2. Field test.
  - 3. Startup test.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. Refrigerant piping, valves, fittings, and accessories shall be compatible with fluids used and be capable of withstanding pressures and temperatures of the service. Refrigerant piping, valves, fittings, and accessories used for refrigerant service shall be cleaned, dehydrated, and sealed (capped or plugged) prior to shipment from manufacturer's plant.



**2.02 REFRIGERANT PIPING**

- A. Pipe: Unless specified otherwise, pipe shall be hard-drawn temper ACR copper tubing conforming to requirements of ASTM B280. Tubing shall be cleaned and sealed to requirements of ASTM B280.
  - 1. In sizes 5/8 inch and smaller, where bending is required, use soft annealed temper ACR copper tubing conforming to requirements of ASTM B280. Tubing shall be cleaned and sealed to requirements of ASTM B280.
- B. Fittings: In sizes 5/8 inch and under, where soft annealed tubing is used, short shank flare fittings are acceptable. All other fittings shall be wrought copper conforming to requirements of ASME B16.22, with depth of socket and annular tolerances suitable for specified filler metal. Cast fittings are not acceptable. Fittings shall be cleaned, purged, and bagged according to CGA G-4.1.

**2.03 PIPING SPECIALTIES AND ACCESSORIES**

- A. Piping specialties and accessories shall be suitable for a refrigerant minimum working pressure of 600 psi.
- B. Valves:
  - 1. Shutoff Valves: Mueller Industries "Cyclemaster" ball valves; maximum working pressure of 700 psig; UL listed; compatible with all CFC, HCFC and HFC refrigerants and oils; full port construction to match line size inside diameter; internally equalized ball design; rupture-proof encapsulated stem.
  - 2. Thermostatic Expansion Valves: AHRI 750 diaphragm spring-loaded type with external temperature and pressure sensor bulb and tubing, and external superheat adjustment with seal cap. Provide with removable inlet strainer. Alco, Henry or Sporlan.
  - 3. Solenoid Valves: AHRI 760, UL listed, 2-position, direct-acting or pilot-operated type.
  - 4. Hot Gas By-Pass Valves: Electric pilot operated, externally equalized type, UL listed.
- C. Refrigeration Specialties:
  - 1. Manufacturer: Alco, Henry or Sporlan.
  - 2. Filter/Dryers: AHRI 710, brass or steel construction; rated for 650 psig service pressure.
  - 3. Moisture/Liquid Indicator Sight Glasses: Brass or bronze construction, rated for 650 psig service pressure.
- D. Flexible Connectors: Connector shall be a composite of interior corrugated phosphor bronze or Type 300 Series stainless steel, as required for fluid service, with exterior reinforcement of bronze, stainless steel or monel wire braid. Assembly shall be constructed with a safety factor of not less than 4 at 300 degrees F. Unless otherwise indicated, length of a flexible connector shall be as recommended by manufacturer for the service intended.
- E. Brazing Alloy: Wolverine Joining Technologies "Silvaloy 15", equivalent of Harris, or approved equal brazing rod, with 15 percent silver and a 1190 degrees F melting temperature, except use Brownells "Silvaloy 355", equivalent of Harris, or approved equal silver solder with 56 percent silver and a 1145 degrees F melting temperature at equipment connections.



**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. Unless specified otherwise, conform to requirements of Section 20 04 00.
- B. Size refrigerant pipe per air conditioning unit manufacturer's recommendations.
- C. Variable Capacity, Heat Pump Heat Recovery Air Conditioning System: Provide refrigerant piping for variable capacity, heat pump heat recovery air conditioning system. Variable capacity, heat pump heat recovery air conditioning system manufacturer shall design and size refrigerant piping.
  - 1. In addition to components shown on Drawings, provide all required components necessary to make refrigerant system for variable capacity, heat pump heat recovery air conditioning system operational.
  - 2. Provide a shutoff valve on refrigerant suction and liquid piping at each indoor variable refrigerant flow unit for the purpose of isolating refrigerant piping at indoor variable refrigerant flow units during maintenance.
- D. If manufacturer precleaned pipe and fittings must be recleaned because of exposure, perform the following procedures.
  - 1. Clean pipe and fittings of oil, grease, and other readily oxidizable materials as required for oxygen service according to CGA G-4.1.
  - 2. Wash pipe and fittings in hot, alkaline-cleaner-water solution of sodium carbonate or trisodium phosphate in proportion of 1 pound of chemical to 3 gallons of water.
    - a. Scrub to ensure complete cleaning.
    - b. Rinse with clean, hot water to remove cleaning solution.
- E. Braze joints. Use wrought copper fittings for joints, except bending with suitable bending tool approved by Owner. Brazing in accordance with AWS Brazing Handbook. Perform brazing with a scavenging flow of inert gas through the tubing, as recommended by filler metal manufacturer. Maintain inert gas in tubing when work is discontinued.
- F. In order to remove traces of particulate matter deposited in piping as a result of installation, perform a heavy, intermittent purging of piping. Apply purge rates of at least 8 scfm on each outlet. After purge is started, rapidly interrupt purge several times until purge produces no discoloration in a white cloth held loosely over outlet during purge.
- G. Arrange tubing trim and square to building.
- H. Provide pipe supports conforming to requirements of Section 20 04 00. except use hydrazorb clamps with anchor channels for hot gas lines.

**3.02 STARTUP**

- A. Refrigeration System Evacuation:
  - 1. After refrigerant piping has been pressure tested and proven tight and before pipe insulation is applied, evacuate entire system with a vacuum pump to remove air and moisture in any of existing components. Perform evacuation with all spaces containing refrigerant piping or equipment at no less than 50 degrees F.
  - 2. Open manual valves, except those open to atmosphere. Manually open controls such as solenoid valves and suction pressure regulators. Valve off any gages or



- pressure controls, which could be damaged by a deep vacuum. Seal caps on valves shall be in place and tight. Close and plug valves to atmosphere.
3. Evacuate entire system to 500 microns.
  4. Confirm evacuated pressure with an electronic thermistor vacuum gage in accordance with accepted evacuation practices. With vacuum pump off and system piping isolated, specified vacuum shall hold for a minimum of one hour.
  5. If vacuum does not hold, repeat leak test and evacuation until vacuum can be maintained. Owner will witness vacuum test.

- B. Charging: Charge systems with dry refrigerant and oil. Provide additional refrigerant if the pre-charged refrigerant furnished with the Variable Refrigerant system is not sufficient for length of refrigerant piping installed. Replace lost refrigerant for a period of 1 year after date of certificate of final payment.

### **3.03 FIELD TESTS**

- A. Develop a testing plan including all administrative procedures and submit for review and approval.
- B. Perform tests in presence of Owner.
- C. Field Testing: After installation and before operation, field test system in accordance with the Washington State Mechanical Code. Tests shall include both high-pressure side and low-pressure side. Leak test with halide torch or electronic leak detector. Prepare a report indicating results of test.
- D. Refrigerant Systems Startup Test: Operate with high-side and low-side pressures and corresponding refrigerant temperatures, at design or improved values. At startup and after 2 weeks of operation, inspect with electronic leak detector. Check system pressures and temperatures for deviation from startup values. Prepare a report indicating results of test.

**END OF SECTION**



**VARIABLE REFRIGERANT FLOW UNITS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work of this Section includes variable refrigerant flow (VRF) units.

1.02 SUBMITTALS

- A. Product Data:
1. Variable refrigerant flow units.
    - a. Detailed manufacturer sequence of operations.
    - b. List of points available to DDC via control interface.
    - c. Certification that variable refrigerant flow unit will perform in accordance with capacity listed and provide stable operation through all partial load conditions.
    - d. Qualifications of startup and DDC integration personnel.
      - 1) Submit information on a minimum of 3 projects involving startup and interface of variable refrigerant flow systems with DDC systems locally or submit information on a minimum of 10 projects involving startup and interface of variable refrigerant flow systems with DDC systems nationally. Include name and phone number of maintenance personnel at the facilities that can be contacted by the Owner.
- B. Performance Data: Submit fan performance curves showing static pressure versus flow rate, efficiency, and brake horsepower.
- C. Sound Power Data: Provide data plotting octave band frequencies from 63 Hz to 8000 Hz versus octave band sound power level, dB re 10 to the -12 watts.
- D. Shop Drawings: Submit shop drawings of the layout and installation of variable capacity, heat pump heat recovery air conditioning system including all equipment and controllers. Coordinate with refrigerant piping shop drawings in Section 23 23 00. Manufacturer shall submit certification that variable refrigerant flow unit will perform in accordance with capacity listed and provide stable operation through all partial load conditions. Prepare detailed drawings on "Auto CAD" Release 2016 or latest version same size as Contract Drawings, coordinating work of other trades so as to make all parts fit together. These drawings shall be approved by Owner prior to fabrication.
- E. Schematic Wiring Drawings: Submit schematic wiring drawings of the layout and installation of variable capacity, heat pump heat recovery air conditioning system.
- F. Design of Support Structure for the Variable Refrigerant Flow Outdoor Units: Submit design drawings, specifications, and calculations for design of support structure to Engineer for Engineer's review. After Engineer's review, Engineer will submit Engineer's notification with drawings, specifications, and calculations to Building Official per IBC Section 107.3.4.2. No work shall be started until drawings, specifications, and calculations have been approved by Building Official.



**1.03 QUALITY ASSURANCE**

- A. Fans shall have been tested in accordance with latest revision of AMCA 300, "Test Code for Sound Rating", in a testing laboratory certified by AMCA to perform test. Submit sound power levels, both radiated and discharge, for review. Submittals should include description of test procedure and test results for review.
- B. Startup and interface of Variable Refrigerant Flow System with the DDC System shall be by local manufacturer's representative, or by a firm regularly engaged in startup and interface of variable refrigerant flow systems with DDC systems. Work shall be performed by personnel who are factory trained and qualified for the Work they perform, and directly supervised by local representative of component manufacturer. Personnel shall have performed a minimum of 3 projects involving startup and interface of variable refrigerant flow systems with DDC systems locally or a minimum of 10 projects involving startup and interface of variable refrigerant flow systems with DDC systems nationally.
- C. Qualifications:
  - 1. Variable refrigerant flow system shall be installed by a contractor that has successfully completed the Daikin three day service course.
  - 2. Variable refrigerant flow system shall be verified with required materials submitted to and approved by the Daikin Service Department, which include the following.
    - a. As built Daikin System Builder file.
    - b. A one hour maintenance tool record with system information, in Ordinary Control Mode (not initial).
    - c. Outdoor and indoor unit dip switch settings.
    - d. Outdoor unit function settings.

**1.04 WARRANTY**

- A. Variable Refrigerant Flow Units:
  - 1. Units shall be covered by manufacturer's limited warranty for a period of 10 year parts and 10 years compressor from date of installation.
  - 2. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at discretion of manufacturer.
  - 3. This warranty shall not include labor.

**PART 2 - PRODUCTS**

**2.01 VARIABLE REFRIGERANT FLOW UNITS**

- A. Manufacturer and Type: Variable capacity, heat pump heat recovery air conditioning system shall be a Daikin VRV-HR (Variable Refrigerant Flow Zoning) System or equivalent of Mitsubishi, Sanyo, LG Electronics, or approved equal. VRV system shall include simultaneous cooling, heating with heat recovery. System shall consist of an outdoor unit, Branch Circuit (BC) Controllers, multiple indoor units (FCU) with factory packaged controls. Design and provide a complete variable capacity, heat pump heat recovery air conditioning system. Manufacturer shall train installing contractor in installation of system including wiring.
  - 1. Refrigerant piping between units is specified in Section 23 23 00.
  - 2. Units shall be listed by ETL and bear the ETL label.
  - 3. All wiring shall be in accordance with National Electrical Code.



4. A full charge of R-410A for condensing unit only shall be provided in condensing unit.
- B. Variable Refrigerant Flow Outdoor Units:
  1. General: Outdoor unit shall be equipped with multiple circuit boards that interface to factory control system and shall perform all functions necessary for operation. Unit shall have a powder coated finish. Unit shall be completely factory assembled, piped and wired. Each unit shall be run tested at factory.
    - a. Sum of connected capacity of all indoor air handlers shall range from 50 percent to 150 percent of outdoor rated capacity.
    - b. Outdoor unit shall have a sound rating no higher than 63 dB(A).
    - c. Both refrigerant lines from outdoor unit to the BC (Branch Circuit) Controller (Single or Main) shall be insulated.
    - d. Outdoor unit shall have an accumulator with refrigerant level sensors and controls.
    - e. Outdoor unit shall have a high pressure safety switch, over-current protection and DC bus protection.
    - f. Outdoor unit shall have the ability to operate with a maximum height difference of 164 feet and have total refrigerant tubing length of 984 - 1312 feet. Greatest length shall not exceed 492 feet between outdoor unit and indoor units without need for line size changes or traps.
    - g. Outdoor unit shall be capable of operating in heating down to minus 4 degrees F ambient temperature without additional low ambient controls.
    - h. Outdoor unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in compressor is maintained.
  2. Unit Cabinet: Casing shall be fabricated of galvanized steel, bonderized and finished with a powder coated baked enamel.
  3. Fan:
    - a. Outdoor unit shall be furnished with 2 direct drive, variable speed propeller type fans.
    - b. Fan motors shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.
    - c. Fan motors shall be mounted for quiet operation.
    - d. Fans shall be provided with a raised guard to prevent contact with moving parts.
    - e. Outdoor unit shall have vertical discharge airflow.
  4. Refrigerant: R410A refrigerant shall be provided for outdoor unit system.
  5. Coil:
    - a. Nonferrous construction with lanced or corrugated plate fins on copper tubing.
    - b. Coil shall be protected with an integral metal guard.
    - c. Refrigerant flow from outdoor unit shall be controlled by means of an inverter driven compressor.
    - d. Coil shall include 4 circuits with 2-position valves for each circuit, except for last stage.
  6. Compressor:
    - a. Outdoor units shall be equipped with one inverter driven scroll hermetic compressor and one scroll hermetic compressor.
    - b. A crankcase heaters shall be factory mounted on compressors.
    - c. Compressor shall have an inverter to modulate capacity. Capacity shall be completely variable down to 16 percent of rated capacity.
    - d. Compressor will be equipped with an internal thermal overload.



- e. Compressor shall be mounted to avoid transmission of vibration.
  - 7. Electrical:
    - a. Outdoor unit shall be controlled by integral microprocessors.
    - b. Control circuit between indoor units, Branch Circuit Controller, and outdoor unit shall be 24 VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of system.
- C. Branch Circuit Controllers:
  - 1. General: All zones shall have independent capability for heating and cooling.
    - a. These units shall be equipped with a circuit board that interfaces to the M-NET controls system and shall perform all functions necessary for operation. Unit shall have a galvanized steel finish. Branch Circuit Controller shall be completely factory assembled, piped, and wired. Each unit shall be run tested at factory. Unit shall be mounted indoors. Sum of connected capacity of all indoor air handlers shall range from 50 percent to 150 percent of rated capacity.
    - b. There shall 1 type of BC Controller which shall connect one outdoor unit to multiple indoor units.
    - c. Each Branch Circuit Controller branch shall connect to indoor units not exceeding 54,000 Btu/h per branch.
  - 2. Unit Cabinet:
    - a. Casing shall be fabricated of galvanized steel.
    - b. Each cabinet shall house a liquid-gas separator and multiple refrigeration control valves.
    - c. Unit shall house two tube-in-tube heat exchangers.
  - 3. Refrigerant: R410A refrigerant shall be provided for Branch Circuit Controllers in conjunction with outdoor unit systems.
  - 4. Refrigerant Valves:
    - a. Unit shall be furnished with multiple two position refrigerant valves.
    - b. Each circuit shall have one (54,000 Btu/h or smaller indoor unit section) two-position liquid line valve and a two-position suction line valve.
    - c. When connecting a 54,000 Btu/h or larger indoor unit section, two branch circuits shall be joined together at branch controller to deliver an appropriate amount of refrigerant. Two refrigerant valves shall operate simultaneously.
    - d. Linear electronic expansion valves shall be used to control variable refrigerant flow.
  - 5. Integral Drain Pan: An integral condensate pan and drain shall be provided.
  - 6. Electrical:
    - a. Branch Circuit Controller shall be controlled by integral microprocessors.
    - b. Control circuit between indoor units and outdoor unit shall be 24 VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of system.
- D. Variable Refrigerant Flow Wall and Ceiling Mounted Indoor Units:
  - 1. General: Wall-mounted indoor unit section and shall have a modulating linear expansion device and a flat front. Ceiling mounted indoor unit shall have single directional adjustable airflow. Units shall be used with the outdoor unit and BC Controller. Unit shall support individual control using factory packaged controls.
  - 2. Indoor Unit: Factory assembled, wired and run tested. Contained within unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. Unit shall have a self-diagnostic function, 3 minute time delay mechanism, an auto restart function, and a test run switch.



- Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from factory.
3. Unit Cabinet:
    - a. All casings, regardless of model size, shall have same white finish.
    - b. Multi directional drain and refrigerant piping offering 4 directions for refrigerant piping and 2 directions for draining.
    - c. There shall be a separate back plate which secures unit firmly to wall.
  4. Fan:
    - a. Fan shall be an assembly with 1 or 2 line-flow fan(s) direct driven by a single motor.
    - b. Fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
    - c. A manual adjustable guide vane shall be provided with ability to change airflow from side to side (left to right).
    - d. Wall mounted unit: A motorized air sweep louver shall provide an automatic change in airflow by directing air up and down to provide uniform air distribution.
  5. Filter: Return air shall be filtered by means of an easily removable, washable filter.
  6. Coil:
    - a. Nonferrous construction with smooth plate fins on copper tubing.
    - b. tubing shall have inner grooves for high efficiency heat exchange.
    - c. All tube joints shall be brazed with phos-copper or silver alloy.
    - d. Coils shall be pressure tested at factory.
    - e. A condensate pan and drain shall be provided under coil.
    - f. Unit shall include a condensate lift pump that will be able to raise drain water above condensate pan.
  7. Controls: Unit shall use controls provided by Daikin to perform functions necessary to operate system.
- E. Controls:
1. General:
    - a. Provide controls to obtain the following sequence of operations.
      - 1) Occupied Mode: Enable VRF system based on time schedule. Enable all indoor and outdoor VRF units to operate based on its zone temperature setpoint. Turn on heat recovery unit supply and exhaust fans. Open supply and exhaust isolation dampers. Enable electric duct heater for operation.
      - 2) Unoccupied Mode: Disable VRF system based on time schedule. Disable all indoor and outdoor VRF units. Turn off heat recovery unit supply and exhaust fans. Shut supply and exhaust isolation dampers. Disable electric duct heaters.
      - 3) VRF installer shall provide field wiring and conduit for all of the VRF system components; conform to requirements of Division 26. Provide interlocking control wiring in accordance with manufacturer's written instructions.
      - 4) VRF installer shall provide field wiring and conduit for interface to heat recovery unit supply and exhaust fans, supply and exhaust isolation dampers, and electric duct heaters; conform to requirements of Division 26.
  2. Wiring: Control wiring shall be installed in a system daisy chain configuration from indoor unit to ME remote controller to indoor unit, to the Branch Circuit controller (main and subs, if applicable) and to outdoor unit. Control wiring to remote controllers shall be run from indoor unit terminal block to controller



- associated with that unit. Control wiring for schedule timers, system controllers, and centralized controllers shall be installed in a daisy chain configuration from outdoor unit to outdoor unit, to system controllers, to power supply.
3. Wiring Type: Wiring shall be 2-conductor (16 AWG or 18 AWG), twisted shielded pair. Network wiring shall be CAT-5e with RJ-45 connection.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. General: Conform to requirements of Section 20 03 00 and manufacturer's installation instructions.
- B. Variable Refrigerant Flow Units:
1. Outdoor Units: Provide on a housekeeping pad in accordance with manufacturer's instructions.
  2. Wall Mounted Indoor Units: Anchor to wall.
  3. Branch Circuit Controllers: Install controllers in accessible locations. Provide isolation valves on each refrigerant piping inlet and outlet to each branch circuit controller.
  4. Provide field wiring and conduit as required between system components; conform to requirements of Division 26. Provide interlocking control wiring in accordance with manufacturer's written instructions.

#### **3.02 PROTECTION OF IN-PLACE CONDITIONS**

- A. Provide temporary filters for fans operated during construction, and after construction dirt has been removed from building, install new filters. Temporary filters shall be equivalent to permanent filters. Resistance of temporary filters shall be as scheduled for permanent filters.
1. Provide a spare set of filters for all units. Deliver spare sets of filters to location in building as directed by Owner .

#### **3.03 CLEANING AND ADJUSTING**

- A. Thoroughly clean plenums and casings of debris and blow free of small particles of rubbish and dust before installing and making final duct connections. Wipe equipment clean, with all traces of oil, dust, dirt, or paint spots removed.
- B. Provide temporary filters for fans that are operated during construction, and after construction dirt has been removed from building, install new filters. Provide a spare set of filters for units.
- C. Lubricate bearings with oil or grease as recommended by manufacturer. Tighten belts to proper tension with no audible belt slippage during fan acceleration from stand still to operating rpm and during operation of fan. Adjust control valves and other equipment requiring adjustment to setting indicated or directed. Adjust fans to speed indicated by manufacturer to meet specified conditions, ready for air balancing.

#### **3.04 DEMONSTRATION**

- A. Systems Operation Demonstration: Upon completion and prior to acceptance of Work, perform pre-operational checkout, calibration, and adjustment of all system components



to ensure stable, accurately, reproducible, energy efficient operation and optimum performance. Demonstration shall be under direction of manufacturer's representative who shall attest to installed systems and equipment compliance with requirements of the Specification. Demonstrations shall include operation of systems equipment and controls through normal ranges and sequences and simulation of abnormal conditions. Operate systems for 48 hours after major corrections have been made. If tests do not demonstrate satisfactory system performance, correct deficiencies and retest system.

**3.05 TRAINING**

- A. Variable refrigerant flow unit manufacturer shall instruct operating personnel in operation of the system as follows.
  - 1. Provide a minimum of 16 hours of classroom and on-site training in operation and maintenance of installed systems. Training shall address the following subjects.
    - a. System log-on procedures.
    - b. Review of sequence of operations.
    - c. System troubleshooting.
    - d. Emergency service support.
    - e. System restart after power failure.
    - f. Replacement procedures of each system component.
    - g. Calibration and initialization procedures.
  - 2. Provide manufacturer's standard training (at minimum, 40 classroom hours) to prepare Owner's staff to understand and maintain VRF system.
    - a. This training shall be provided for 6 employees of Owner at the manufacturing facility or (at Owner's option) by manufacturer's regularly employed instructors at Owner's location for up to 6 employees of Owner.
    - b. Include all travel and lodging expenses for instructors and Owner's employees.
    - c. Personnel shall be capable of making changes to system, expanding system by adding other indoor units, and performing troubleshooting.
  - 3. Provide 1 set of special tools, reference materials (manuals), test instruments, and software manufactured or modified by manufacturer for use in installation, troubleshooting, and repair of installed devices.

**END OF SECTION**



## ELECTRICAL PROVISIONS

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. The Work under this Division includes furnishing materials, equipment, labor, supervision, tools and items necessary for the construction, installation, connection, testing and operation of electrical work for this project, as shown on the Drawings and defined in this Division of the Specifications.

#### 1.02 REFERENCES

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. ASHRAE Standard 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- D. IEEE C2 (Institute of Electrical and Electronics Engineers) – National Electrical Safety Code.
- E. NECA 1000 (National Electrical Contractors Association) – National Electrical Installation Standards Specification System.
- F. NFPA 70 (National Fire Protection Association) – National Electrical Code.
- G. NFPA 70A/70E (National Fire Protection Association) – Electrical Safety in the Workplace.
- H. Manufacturer's installation and operating instructions.

#### 1.03 QUALITY ASSURANCE

- A. Substitutions: Conform to the requirements of Division 01.
  - 1. The Architect will be the sole and final judge as to quality and acceptability of substitutions.
  - 2. The Contractor shall be liable for costs incurred by the Owner and Engineer of Record for architectural and engineering services resulting from substitutions.
- B. Tests: Demonstrate that equipment operates as indicated as specified, and in accordance with the manufacturer's recommendations. Perform tests in the presence of the Architect. Provide instruments, personnel, and utilities required to conduct the tests.
- C. Commissioning is the process to verify to the Owner that systems, equipment, mechanical, electrical, controls, and special systems function together properly to meet performance requirements and design intent as described in the Contract Documents. Minimum functional performance tests are specified the technical Sections. The Certified Commissioning Professional will develop a Commissioning Plan which will have final



functional performance tests. The Contractor shall be responsible for participation in the commissioning process as outlined the Commissioning Plan. The Contractor shall furnish labor and materials sufficient to meet requirements of building/systems commissioning.

- D. Commissioning: Conform to the requirements of Division 01.
- E. Qualifications: Use sufficient number of qualified, competent, journeymen and supervisors in the execution of the Work to ensure complete, functioning installation compliant with the Contract Documents. In the acceptance of installed work, no allowance will be made for lack of skill on the part of the workmen.

#### **1.04 WORK OF OTHER TRADES**

- A. The Drawings do not show complete details of the building construction. Refer to the architectural, structural, civil, and mechanical Drawings for those details which may affect the execution of this work. Specific locations of structural or architectural features or equipment items shall be obtained from reference drawings, field measurements or the trade providing the material or equipment. No extra payments will be allowed for failure to obtain this information.
- B. Coordination: Conform to the requirements of Division 01. Failure to coordinate work will be considered sufficient cause for work to be altered at Contractor's expense, as directed by Architect.
  - 1. Plan and execute Work including, but not limited to, ducts, conduit, raceways, pathways, and cable trays, in cooperation with other trades and local serving utilities.
  - 2. Make every reasonable effort to provide timely notice of work affecting other trades to prevent conflicts or interference as to space requirements, dimensions, openings, block-outs, sleeves, firestopping, painting, finishing, or other matters which will cause delays or necessitate work-around methods.
  - 3. Yield right-of-way to piping installed at required slope.
  - 4. Provide electrical materials and installation work required to connect, test and operate systems, devices, or equipment shown or described in the Drawings or Specifications of other Divisions.

#### **1.05 EXISTING CONDITIONS**

- A. Demolition work required is noted on the Drawings. Specific scope of demolition work and operating conditions to be encountered shall be verified from on-site review and coordination with the Owner. Maintain service to existing equipment and devices to be retained in area adjacent to the existing areas scheduled for renovation. Provide temporary services to meet these conditions.
- B. Special Protection: Exercise maximum precaution to provide positive protection for the existing building and equipment from damage of any kind, and in particular prevent any water and dust seepage into the existing building. Mark and protect equipment and systems from the activities of other trades.
- C. Utilities and Services:
  - 1. Do not disturb existing utilities without Owner's written consent. Notify the Owner and Engineer not less than 10 days prior to the scheduled work date.
  - 2. Prior to demolition, field-verify and document existing area, conduits, ducts, manholes, and handholes shown for demolition.



3. Where the area, ducts, conduits, manholes, and handholes contain utilities not shown for permanent demolition, submit a re-routing plan to the Architect showing the ducts, conduits, manholes, handholes, conductors, boxes, wiring, and connections required to re-route the utilities outside of the area affected by the demolition. Upon receiving written approval of the re-routing plan, re-route existing utilities and systems in accordance with the approved work plan.
4. Prior to trenching and excavation, use a utility locator to locate existing underground utilities. Excavate to avoid underground utilities.
5. Prior to core drilling or saw-cutting, use ground penetrating radar, pacometer, X-ray or other suitable means to locate existing rebar, embedded conduit, post tensioning cables and other imbedded obstructions. Locate core drill to avoid obstructions.
6. Where the Drawings show existing services to be abandoned, terminate in conformance with requirements of the utility and Authority Having Jurisdiction.
7. Install and test new services prior to demolishing existing services unless otherwise shown.
8. Failure to verify the existing conditions or submit re-routing plan will be considered sufficient cause for work to be altered at Contractor's expense, as directed by Architect.

**1.06 CODES, PERMITS, INSPECTIONS, AND FEES**

- A. Conform to the requirements of Division 01.
- B. Obtain permits and inspections and pay fees required by National, State and Local authorities.
- C. Make arrangements for inspections by the Architect, Owner and other authority. Submit 3 copies of certificates of compliance to the Architect.
- D. Work and materials shall be in accordance with requirements of the latest adopted edition of applicable codes and amendments, regulations, ordinances, and local amendments including, but not limited to, the following.
  1. National Electric Code, NFPA 70.
  2. Electrical Safety in the Workplace, NFPA 70E.
  3. National Electrical Safety Code, IEEE C2.
  4. International Building Code.
  5. International Fire Code.
  6. National Fire Alarm and Signaling Code, NFPA 72.
  7. The Americans with Disabilities Act (ADA).
  8. Washington State Energy Code (WSEC) WAC 51-11C.
  9. Washington Cities Electrical Code.
  10. Washington Administrative Code, Chapter 296-24 WAC – General Safety and Health Standards.
  11. Washington Administrative Code, Chapter 296-46B WAC – Electrical Safety Standards, Administration, and Installation.
- E. Nothing in Drawings and Specifications shall be construed to permit Work not in conformance with these rules and regulations.
- F. Thoroughly examine the Drawings and the Specifications prior to procuring or installing products. Notify Engineer within 72 hours of discovery of work shown on the Drawings or in the Specifications that is not compliant with the codes, ordinances, or regulations. Notice shall describe the conflict and shall cite the specific title and paragraph of the



code, ordinance, or regulation. Contractor shall be responsible for removal, re-installation, re-testing, and re-commissioning of work that is found to be non-compliant with the codes, ordinances, or regulations.

- G. Where Drawings or Specifications call for material or construction of a better quality or larger sizes than required by the above-mentioned rules and regulations, the provisions of the Drawings or Specifications shall take precedence over requirements of the rules and regulations.
- H. Changes in the work after initial installation due to requirements of code enforcing agencies shall be performed by the Contractor at no additional cost to the Owner.
- I. Coordination: Coordinate with the appropriate "Authorities Having Jurisdiction" for this project.
  - 1. Arrange plans and shop drawing reviews.
  - 2. Schedule inspections in a timely manner.
  - 3. Notify the Architect of non-conformance issues.
  - 4. Proceed with changes suggested by the Authorities Having Jurisdiction only with written authorization by the Architect.
  - 5. Make necessary corrections required by the Authorities Having Jurisdiction.
- J. Utilities: Comply with rules and requirements of local utility companies; coordinate and pay for connections.

#### **1.07 SAFETY**

- A. Contractor shall be responsible for conditions of the job site, including safety of persons and property during performance of the Work.
- B. Provide safety policies, training, retraining, equipment, safeguards, restraints, permit systems, and other safety measures required by federal, state, local, and the Owner's site rules and regulations and for the safe performance of the Work.
- C. Comply with the "Safety and Health Regulations for Construction," 29 CFR 1926, by the U.S. Department of Labor.
- D. Provide safety measures continuously during work and off work hours.
- E. Consult with the state or federal safety inspector for interpretation whenever in doubt as to whether safe conditions do or do not exist or whether the Contractor is or is not in compliance with state or federal regulations.
- F. Perform safety audits, inspections, meetings, and personnel interviews in accordance with federal, state, local, and Owner site safety rules and regulations.
- G. Do not use the Architect's construction observations as a substitute for Contractor's safety audits and inspection responsibilities.

#### **1.08 EQUIPMENT AND MATERIALS APPROVALS**

- A. Whenever UL standards exist for electrical equipment and materials, provide UL listed equipment and materials. Otherwise provide equipment and materials labeled by a Nationally Recognized Testing Laboratory (NRTL) in accordance with the provisions of



the Revised Code of Washington and the Washington Administrative Code. NRTL shall be one that is acceptable to the Authority Having Jurisdiction (AHJ).

1. Submit UL listing with Product Data submittals for UL listed equipment and materials.
2. Submit proof of AHJ's approval of the NRTL's qualifications to the Engineer not less than 14 calendar days prior to NRTL field evaluation.
3. Submit NRTL test and evaluation reports not less than 14 calendar days prior to requesting electrical inspection.

#### **1.09 INTENT OF DRAWINGS**

- A. Drawings are diagrammatic and show only approximate locations of ducts, conduits, cable trays, pathways, raceways, devices, and equipment. Take measurements from building or site and verify with Drawings. Because of the small scale of the Drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the plumbing, fire protection, mechanical, structural, and finish conditions that would affect the Work to be performed and arrange such work accordingly, providing required ducts, conduits, cable trays, pathways, raceways, devices, fittings, conduit bodies, and accessories to meet such conditions.
- A. It is the responsibility of the Contractor to provide equipment that fits into the space allotted and allows adequate acceptable clearances for installation, replacement, entry, servicing, and maintenance. When motors furnished are larger than sizes indicated, provide any required changes to the electrical services as may be necessary and related work as a part of the Work for the Section specifying that motor.
- B. Report any conflict to Architect prior to proceeding with the Work. Failure to follow this instruction is considered sufficient cause to alter the Work, at no cost to the Owner, as directed by the Architect.
- C. Plans and sections generally do not show all conduits, conductors, conductor sizes, junction boxes, conduit bodies, grounding conductors, control devices, instruments, or other components; refer to diagrams or schematics to obtain a more complete description of systems.
- D. Provide work shown on the Drawings and provide work described in the Specifications.
- E. Submit questions regarding interpretation of the Contract Documents no later than 48 hours prior to the bid date to allow reasonable time for resolution of questions.

#### **1.10 DETAIL DRAWINGS BY CONTRACTOR**

- A. Wherever the Work is of sufficient complexity to warrant additional detailing, prepare additional detail drawings to scale 1/4 inch = 1 foot, prepared on tracing paper the same size as Contract Drawings; with these layouts, coordinate work with the work of other trades. All such detailing work shall be clearly identified on the drawings as to the area to which it applies.
- B. Do not submit these drawings to the Architect for approval. At completion, however, include a set of such drawings with each set of as-built drawings for Owner's record purposes.



**1.11 SUBMITTALS**

- A. Comply with requirements of Division 01.
- B. Do not use the submittal process to request substitutions. Make requests for substitution in accordance with Division 01.
- C. Acceptance: Checking is only for general conformance with the design concepts of the information given in the Contract Documents. Any action shown is subject to the requirements of the Drawings and Specifications, which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of the Contractor's work with that of all other trades; and the satisfactory performance of the Contractor's work. The acceptance of a manufacturer's name or product by the Architect does not relieve the Contractor of the responsibility for providing materials and equipment which comply in details with the requirements of the Contract Documents.
- D. Bill of Materials: Submit, within 30 days after award of Contract, a Bill of Materials containing items to be used on this project, listing manufacturer's name and catalog numbers and referenced to the applicable Specification paragraph.
- E. Product Data: Submit manufacturer's descriptive product information including catalog cuts, performance curves, ratings, accessories, features, time-current curves, standards (i.e. ANSI, IEEE, UL, MIL, NEMA) and other information required to confirm compliance with the Drawings and Specifications. Include complete ordering numbers showing prefixes and suffixes identified for the specified product. Submittals showing generic model numbers, part numbers, product line, or other generalized information will be returned without review or rejected.
- F. Shop Drawings: Submit manufacturer's shop drawings including plans, elevations, sections, schedules, wiring diagrams, schematics, seismic installation instructions, and other information required to confirm compliance with the Drawings and Specifications. Shop drawings shall accurately represent the specified product, including specified options and accessories. Show the specified included options and accessories as included. Show connections to specified options and accessories. Show interconnections including shipping splits, remote wiring, fuel system, exhaust systems, and other coordination items. Submittals showing generic product-line information will be returned without review or rejected.
- G. Detail and Coordination Drawings: Submit Contractor prepared drawings to show how multiple systems and interdisciplinary work will be coordinated.
- H. Calculations: Submit calculations where specified. Include input variables, constants, formulas, assumptions, temperatures, resistances, capacitances, inductances, and other information to confirm compliance with the Drawings and Specifications.
- I. Test Reports: Submit factory test reports and field quality control acceptance test reports.
  - 1. Test reports shall include a cover sheet having the following information.
    - a. Project title as shown on the Drawings.
    - b. Signature of person reviewing the test report.
    - c. Printed name and title of person reviewing the test report.
    - d. Date reviewed.



- e. Company name and contact information for the company performing the test.
    - f. Contractor name and contact information.
  - 2. Test report data sheets shall show the following information.
    - a. Project title, location, testing company name, date the test is performed, name of person performing the test.
    - b. Test equipment model, serial number, and actual date the test equipment was last calibrated. Do not show the date that calibration is due.
    - c. Test conditions including ambient temperature, humidity, and short description of weather during the test (example: raining). Show date of last rainfall for ground and earth resistance measurements.
    - d. Show test parameters in numeric form including but not limited to voltages, currents, times, resistance, distances, and temperatures.
    - e. Show test results in numeric form for electrical tests and mechanical measurements. Show manufacturer's minimum and maximum acceptable tolerances in numeric form for tests such as minimum pickup, time delays, contact travel, wipe, and other measurable tests.
    - f. Show function test results. Show the input action (example: "Turned breaker control switch to "Close"") and the resultant action (example: "Breaker 52-1 closed and recharged."), and the expected reaction described in the sequence of operations shown or specified. Terms such as "Pass", "Fail", "Sat", "OK" are not to be used.
- J. Certificates: Submit statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Shall be dated after award of project contract and clearly name the project.
- K. Thoroughly review vendor-assembled shop drawings, catalog cuts, etc. to ensure that these documents are complete and comply with the Drawings and Specifications. The Architect reserves the right to reject the complete submittal without review when documents are not complete or do not comply with the Drawings and Specifications.
- L. Communicate the Architect's review comments to the supplier and manufacturer. Work found to be not in conformance with the Architect's comments will be rejected, shall be removed from the job site and replaced with conforming work at no additional cost to the Owner.

#### 1.12 TESTING

- A. Acceptance Testing: Engage the services of a third party, independent testing organization to perform acceptance testing in accordance with ANSI/NETA ATS and as specified.
  - 1. Testing shall be performed prior to equipment energization.
  - 2. The testing organization shall be an independent, third party entity which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing firm.
  - 3. The testing organization shall be regularly engaged in the testing of electrical equipment devices, installations, and systems for a minimum of 5 years.
  - 4. Technicians shall be certified in accordance with ANSI/NETA ETT, Standard for Certification of Electrical Testing Personnel. Each on site crew leader shall hold a



- current certification, Level III or higher, in electrical testing. The crew leader shall be on-site whenever testing is performed.
5. The testing organization shall use technicians who are regularly employed for testing services.
  6. An organization having a "Full Membership" classification issued by the International Electrical Testing Association meets these criteria.
  7. Furnish appropriate documentation of the above qualifications prior to testing.
  8. The testing organization shall have a calibration program that assures that all applicable test instruments are maintained within rated accuracy for each test instrument calibrated.
  9. The testing organization providing calibration service shall maintain up-to-date instrument calibration instructions and procedures for each test instrument calibrated.
  10. The accuracy shall be directly traceable to the National Institute of Standards and Technology. (NIST).
  11. Instruments shall be calibrated in accordance with the following frequency schedule.
    - a. Field Instruments: Analog, 6 months maximum; Digital, 12 months maximum.
    - b. Laboratory Instruments: 12 months maximum.
    - c. Leased Specialty Equipment: 12 months maximum.
  12. Dated calibration labels shall be visible on all test equipment.
  13. Records, which show date and results of instruments calibrated or tested, shall be kept up to date.
  14. Calibrating standard shall be of higher accuracy than that of the instrument tested.
  15. Furnish test reports and data sheets complying with the requirements of Article SUBMITTALS, paragraph "Test Reports" of this Section.
- B. Prerequisites: Comply with the following prerequisites prior to scheduling factory witness tests and on-site system level tests and system commissioning. The Contractor is responsible for all costs incurred by the Owner including the Owner's Representative, Engineer of Record, Certified Commissioning Professional, and other persons required to re-witness these tests due to any failure of the Contractor, subcontractors, vendors, manufacturer's and equipment to pass the tests.
1. Submit test plans and checklists demonstrating compliance with the Contract Documents and specified references including, but not limited to National Electrical Testing Association (NETA), and National Electrical Code (NEC). Include manufacturer's written instructions. Include space on the checklist for signatories and dates for each test procedure line-item. Signatories include the Contractor, Owner's Representative, Architect, Electrical Testing Organization (ETO), Certified Commissioning Professional (CCP), and Engineer of Record. Include the following additional information for each test.
    - a. Signoff that affected trades, personnel, and jurisdictions have been notified and that affected machinery has been shut down and is secure.
    - b. Signoff that a pre-test safety meeting has been performed and that all safety hazards and accident prevention requirements have been met.
    - c. Signoff that a pre-test technical procedure review meeting has been performed and that all team members are familiar with the procedures.
    - d. Signoff that acceptance testing has been completed for the affected system and components.
    - e. Signoff that test equipment calibration is in accordance with the Contract Documents.



- f. Signoff that operation and maintenance manuals have been submitted to and accepted by the Owner's Representative.
  - g. Signoff that dimensional clearances such as working space about electrical equipment have been met.
  - h. Signoff that maintenance features and accessory equipment functions in accordance with the Specifications.
  - i. Signoff that protective device settings are set in accordance with the Contract Documents and the coordination study.
  - j. Include spaces to record critical time, delays, durations, and sequence information.
  - k. Include spaces to record critical test values such as volts (V, kV), current (A, kW), kilo-watts (kW), kilowatt-hours (kWh), frequency (Hz) and similar information.
- C. Test wiring and electrical equipment installed in this Contract to verify wiring insulation integrity, absence of grounds and short circuits and verify proper operation, rotation, and phase relationship.
- D. Perform tests in the presence of the Owner and Engineer, or their representatives unless the witnessing requirement is waived in writing by the Owner and Engineer.
- E. Provide instruments, load banks, controls and protection settings, and personnel required to conduct the tests.
- F. Provide test reports, waivers, calibration certificates, and drawings. The documents shall become the property of the Owner upon completion of construction.
- G. Record the settings of adjustable breakers and overcurrent relays and submit the record as part of the closeout submittals.
- H. Provide acceptance testing of each adjustable breaker, electronic trip breaker, protective relay, and overcurrent relay in accordance with NETA ATS and applicable ANSI standards.
- I. Replace equipment not meeting the test result evaluation criteria. Perform tests on the replacement equipment.
- J. Place a sticker on each piece of tested equipment indicating the date of the test and the name of the testing agency.
- K. Record the results of the tests and submit the record as part of the closeout submittals.

#### **1.13 INSPECTIONS**

- A. Observations will be conducted periodically throughout the construction by the Engineer.
- B. On-site meetings or reviews of construction by the Engineer or Owner shall not be construed as acceptance by these parties as related to quantities, rough-in locations, and compliance with code enforcing authorities unless specific exceptions have been brought to the attention of the Architect and have been accepted in writing.
- C. When requesting final inspection, provide 10 day notice. Submit written certification that the work has been fully completed in strict accordance with plans and Specifications.



- D. Notify the Owner and Engineer upon completion of the following tasks.
  - 1. Equipment labeling.
  - 2. Conduit marking.
  - 3. Wire and cable identification.
  - 4. Replacement of damaged equipment.
  - 5. Touch-up painting.
  - 6. Posting of completed panel schedules.
  - 7. Resolution of previously noted comments.
  - 8. Installation of previously missing equipment.
- E. Obtain a Certificate of Final Electrical Inspection from the local Authority Having Jurisdiction stating that work had been inspected, accepted, and approved as complying with existing governing ordinances and codes.
- F. Submit Certificate of Final Electrical Inspection to the Owner upon completion of the project as part of project closeout.

**1.14 FINAL PUNCHLIST**

- A. Conform to the requirements of Division 01.
- B. When Architect is completing punchlist during final inspection, provide access to devices as requested by the Architect, including ceiling tile removal and replacement.
- C. Provide ladders, scaffolds, staging, safe opening of equipment, and accessories required to access the devices and work.
- D. Demonstrate the operation of equipment upon request of the Architect.

**1.15 WARRANTY**

- A. Conform to the requirements of Division 01.
- B. Provide a warranty for electrical work in accordance with the provisions of the General Conditions. Submit the warranty in written form in accordance with Division 01.
- C. Furnish the originals of manufacturers' warranties for the Owner's records.

**1.16 ABBREVIATIONS, DEFINITIONS, AND REFERENCE STANDARDS**

- A. Refer to Division 01 for reference standards. Refer to Division 01 for definitions and abbreviations. Additional reference standards, definitions, and abbreviations are as follows.

A	Amperes
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
as shown	as shown on the Drawings
C	Degrees Celsius
DPDT	Double Pole, Double Throw
F	Degrees Fahrenheit
FRP	Fiberglass reinforced plastic



Hz	Hertz (frequency)
IBC	International Building Code
kVA	Kilovolt-Ampere
kVAR	Kilovolt-Ampere Reactive
kW	Kilowatt
kWH	Kilowatt-Hour
mA	Milliamperes
mV	Millivolts
MVA	Megavolt Amperes
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NETA	InterNational Electrical Testing Association
NFPA	National Fire Protection Association
provide	furnish and install
psig	pounds per square inch gage pressure
SPDT	Single Pole, Double Throw
UL	Underwriters Laboratories, Inc.
V	Volts
VAC	Volts Alternating Current
VDC	Volts Direct Current

**1.17 OPERATION AND MAINTENANCE MANUALS**

- A. Time of submittals, quantity of copies for submittals, binding, content, and other requirements shall be as specified in Division 01.
- B. Prepare an operation and maintenance manual for equipment provided.

**1.18 RECORD DOCUMENTS**

- A. Furnish record documents in conformance with the requirements of Division 01.
- B. Record drawings shall conform to the requirements of the Seattle Supplement to the Washington State Energy Code.
- C. Duct banks and conduits installed below grade shall be shown with both horizontal and vertical dimensions at an accuracy of plus or minus 6 inches.
- D. Show the actual dimensions of equipment installed. Dimensions on plans, elevations, and sections shall match exactly as installed.
- E. Approved modifications to equipment in the field shall be shown on the record drawings to reflect the "as-built" conditions.
- F. Record drawings shall be consistent. Changes made to plans, elevations, sections, wiring diagrams, schematics, or functional diagrams shall be made to related or otherwise affected plans, elevations, sections, wiring diagrams, schematics, or functional diagrams.



**1.19 SITE CONDITIONS AND METHODS**

- A. Cutting and Patching: Conform to the requirements of Division 01. Keep cutting and patching to a minimum. Patching shall conform to Specifications for the new general construction work unless otherwise indicated. Finish materials to match existing work.
- B. Measurements: Verify space availability by field measurement prior to submitting Shop Drawings for approval.
- C. Roughing-In Dimensions: Obtain roughing-in dimensions for equipment from approved Shop Drawings or actual equipment measurements.
- D. Manufacturer's Installation Instructions: Follow manufacturer's written instructions where furnished. If the details are in conflict with the Drawings, notify Architect for resolution.
- E. Accessibility: Install products which require periodic servicing or repair so that products are readily accessible. Otherwise, obtain Architect's approval of location.
- F. Rejected Materials: Remove damaged or rejected materials from the site.
- G. Delivery, Storage, and Handling: Conform to the requirements of Division 01.
  - 1. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations and as approved by the Architect. Replace damaged or defective items.
  - 2. Equipment with damaged factory applied finishes shall be refinished to bring the equipment to a like-new condition in accordance with manufacturer's recommendations.
  - 3. All components and equipment shall be maintained clean, free of debris, and dry from fabrication through field installation. Openings shall be sealed with plastic at all times except when the equipment is in the process of being connected to conduits and connected equipment. Maintain sealing procedure from fabrication until installation is completed with conduits connected to the equipment.

**1.20 INSTRUCTION FOR OWNER'S PERSONNEL**

- A. Conform to the requirements of Division 01.
- B. Training for Owner's personnel shall conform to requirements of the Washington State Energy Code.
- C. Contractor's representatives, in general, who conduct these instructions and demonstrations shall be qualified foremen or superintendents acquainted with this project and from the trade involved. Vendor representatives shall be manufacturer's personnel having operating experience and substantial knowledge of the design for this project. Their qualifications shall be submitted to the Architect before conducting the instruction period.
- D. Representatives of Owner who will be present at these meetings may include Owner's administrative, operating, and maintenance personnel; and for fire alarm systems, representatives of authorities having jurisdiction.
- E. General Description of Instruction Periods: Each period shall include preliminary discussion and presentation of information from operation and maintenance manuals with



appropriate references to Drawings, followed by tours of equipment spaces explaining maintenance requirements, access methods, servicing, and maintenance procedures, temperature settings, and available system and equipment adjustments.

- F. Utilize visual aids such as handouts, books, tutorials, slides, video or movies in the training. Furnish the visual aids to the Architect as part of the Owner's permanent files to be used for reference, refresher, and retraining.
- G. Training Agenda:
  - 1. Operator training shall provide a complete overview of equipment, components, and systems with an emphasis on the following.
    - a. Documentation in the final operations and maintenance manuals.
    - b. How to use the operations and maintenance manuals.
    - c. System operational procedures for all modes of operation, including warm-up, cool-down, occupied, unoccupied, startup, shutdown, etc.
    - d. Acceptable tolerances for system adjustments in all operating modes including voltage, current, frequency, and efficiency adjustments.
    - e. Procedures for dealing with abnormal conditions including emergency operations, retrieving event reports, and resetting relay targets.
    - f. Hazards and safety.
    - g. Control sequences.
    - h. Review of maintenance and operations in relation with applicable warranties, agreements, to maintain and service, and similar continuing commitments.
  - 2. Include hands-on training for equipment operation including normal and emergency procedures. Show locations and demonstrate the use and adjustment of certain components including mode selector switches, control switches, overcurrent protection devices, and maintenance equipment. Demonstrate lock-out and tag-out features.
  - 3. Show the locations of protective relays, relay test switches, current transformer shorting terminals. Emphasize the knowledge requirements and qualifications needed adjust, change settings, or these devices.
- H. Retraining: After final commissioning, electrical operation and maintenance personnel shall be instructed by the Contractor on changes and reconfiguration which may have occurred during the commissioning process.
- I. Duration of Instruction Periods: Training periods shall be in increments of 4 hours. Training for a particular subject below shall not exceed eight hours (2 periods) in a single day. The minimum durations required are specified in the technical Section for the equipment, component, or system affected.
- J. Future Training: Provide 40 hours of training to the Owner post contract acceptance. Training topics and schedule shall be provided by the Owner at the time of acceptance.

#### **1.21 CLOSEOUT SUBMITTALS**

- A. Conform to the requirements of Division 01.
- B. Submit warranties, record drawings, certificates, inspections, punch lists, test reports, and operations and maintenance manuals for electrical equipment installed on this project.



- C. Submit acceptances by the inspecting Authorities Having Jurisdictions for electrical equipment installed on this project.

## **PART 2 - PRODUCTS**

### **2.01 SOFTWARE**

- A. Where a product or system specified in Division 26 rely on software for setup, commissioning, programming, adjusting, monitoring, or operating, provide software and licenses for the product or system. License shall be transferrable to the Owner.
- B. License Quantity: 2.

## **PART 3 - EXECUTION**

### **3.01 DEMOLITION EXAMINATION**

- A. Verify measurements are as shown on the Drawings.
- B. Demolition Drawings are based on field observation and existing record documents. Report discrepancies to Architect before disturbing existing installation.
- C. Contractor accepts existing conditions upon beginning the Work.
- D. Provide temporary connections to maintain existing systems in service during construction. When work must be performed on energized equipment, use personnel experienced in such operations and perform the work in accordance with laws, rules, and regulations.
- E. Where conduit is indicated on Drawings to be abandoned, remove conductors, remove debris from inside the conduit, and seal the conduit openings unless indicated otherwise.
- F. Repair adjacent construction and finishes damaged during demolition and extension work.
- G. Maintain access to existing installations which remain active. Maintain NEC required working space around and above electrical equipment.

### **3.02 EQUIPMENT CONNECTIONS**

- A. Coordinate and provide raceway, wiring, junction boxes, switches, receptacles, overcurrent protection, anchors, supports, and connections required by equipment manufacturers to make the equipment and systems completely functional. This includes, but is not limited to, items between equipment or components of same or different manufacturers, whether or not the items are shown on Drawings, Specifications, shop drawings, or product data. It is the Contractor's responsibility to ensure that the shop drawings show the required connections and associated devices.
- B. Test continuity and insulation resistance of conductors in accordance with Section 26 05 20.
- C. Test overcurrent protective devices in accordance with Section 26 24 16.



- D. Test interconnection functionality and demonstrate that the interconnections function in accordance with the Contract Documents.

**3.03 SOFTWARE INSTALLATION**

- A. Where a product or system specified in Division 26 relies on software for initial programming, factory witness testing, acceptance testing, field quality control, commissioning, or energization, install the software and perform the programming.
- B. Furnish software license and software to the Owner prior to energization.

**END OF SECTION**



**COMMON WORK RESULTS FOR ELECTRICAL**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes supports, anchors, fasteners, nameplates, labels, wire markers, raceway markers, vibration isolators, equipment housekeeping pads, sealing, firestopping, seismic restraints, wind restraints, and earthwork.

**1.02 DEFINITIONS**

- A. Equipment: General term including fittings, devices, appliances, apparatus, machinery, generators, switchgear, switchboards, transformers, and other items used as parts of or in connection with an electrical installation.
- B. Raceway. An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this Code. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquidtight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

**1.03 REFERENCES**

- A. ANSI C80.1 (American National Standards Institute) – Rigid Steel Conduit, Zinc Coated.
- B. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- D. ASTM A153/A153M (ASTM International) – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- E. ASTM A193/A193M-12b (ASTM International) – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
- F. ASTM A240/A240M (ASTM International) – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- G. ASTM A276-13 (ASTM International) – Standard Specification for Stainless Steel Bars and Shapes.
- H. ASTM B633 (ASTM International) – Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.



- I. ASTM F593 – 13 (ASTM International) – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- J. ASTM F594 – 09e1 (ASTM International) – Standard Specification for Stainless Steel Nuts.
- K. ASTM C1107 (American Society for Testing Materials) – Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- L. NECA (National Electrical Contractors Association) – Standard of Installation.
- M. NEMA TC 14.XW (National Electrical Manufacturers Association) – Extra heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- N. NFPA 70E (National Fire Protection Association) – IEEE NFPA 70E Standard for Electrical Safety in the Workplace.
- O. UL 6 (Underwriters Laboratories) – Electrical Rigid Metal Conduit – Steel.
- P. UL 2515A (Underwriters Laboratories) – Standard for Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.

#### **1.04 DESIGN REQUIREMENTS**

- A. Select materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and raceway, including weight of wire and cable in raceway.

#### **1.05 SUBMITTALS**

- A. Product Data:
  - 1. Submit product data and tabulated lists of nameplate, label, and marker types for equipment, devices, and wiring. Group the list by type of equipment, device, and wiring. Include material type and thickness, font type, size, vertical and horizontal spacing (tracking), number of rows, colors, and other specified features.
  - 2. Submit product data for sealants. Identify the specific application for which the sealant is being submitted. Include manufacturer's instructions showing approved and prohibited installation methods.
  - 3. Submit product data for firestopping. Identify the specific application for which the firestopping is being submitted. Include manufacturer's instructions showing approved and prohibited installation methods.
  - 4. Submit product data for anchors and fasteners. Include rated load and pull-out strengths.
- B. Seismic Design: Submit calculations, details, Shop Drawings, Product Data, and statement of special inspections for the seismic restraint design of electrical nonstructural components in Division 26 to Architect for Architect's review. After Architect's review, Architect will submit the Architect's notification with the calculations, details, Shop Drawings, Product Data, and statement of special inspections to the Building Official per International Building Code section 107.3.4.1. No Work shall be started until the calculations, details, Shop Drawings, Product Data, and statement of special inspections have been approved by the Building Official. If the Contractor-hired professional engineer licensed in the State of Washington determines that the International Building Code does not require some of the electrical nonstructural components in Division 26 to



be seismically restrained, then submit a stamped and signed statement from the professional engineer to that effect.

1. Submit a written "Contractor's Statement of Responsibility", where such statement is required by Section 1704.4 of the International Building Code, to Architect and to Building Official for electrical nonstructural components listed in the statement of special inspections per International Building Code prior to the commencement of Work on the system or component.
- C. Submit seismic certification of electrical nonstructural components and designated seismic systems where such certification is required by Section 1705.13 of the International Building Code.
- D. Wind Restraints: Submit calculations, details, Shop Drawings, and Product Data for the wind restraint design for electrical equipment located outside. After Architect's review, Architect will submit the Architect's notification with the calculations, details, Shop Drawings, and Product Data to the Building Official per IBC section 107.3.4.1. No Work shall be started until the calculations, details, Shop Drawings, and Product Data have been approved by the Building Official.
- E. Earthwork Design: Submit calculations, details, plans, and specifications signed and sealed by a professional engineer licensed in the State of Washington for earthwork required by this Section.

#### 1.06 CLOSEOUT SUBMITTALS

- A. Include product data for firestopping and sealing products in the Operations and Maintenance manuals.

#### 1.07 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years documented experience and with service facilities within 100 miles of project.

#### 1.08 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

### PART 2 - PRODUCTS

#### 2.01 ANCHORS AND FASTENERS

- A. Anchor Bolts:
  1. Anchor Bolts (Expansion Type): Hilti "Kwik-Bolt 3" Molly or "Parabolt"; Type hot-dip galvanized steel construction; with impact section on the end of the bolt.
  2. Anchor Bolts (Epoxy Type): Hilti "Type HIT-RE-500-V3 Epoxy Adhesive" or equivalent; two part anchoring epoxy conforming to requirements of ASTM C881 Type IV; Grades 2 and 3; Classes A, B, and C except for gel time. Galvanized steel bolts conforming to requirements ASTM A307 and galvanized steel nuts and washers conforming to requirements of ASTM A194; IBC compliant.



**2.02 FORMED CHANNEL STRUT**

- A. Manufacturers:
  - 1. B-Line.
  - 2. Globestrut.
  - 3. Unistrut.
- B. Description: Strut-type support and fittings.
  - 1. Provide ASTM A153/A153M hot-dip galvanized steel. Minimum thickness shall be 4.7 mils.

**2.03 SPRING STEEL CLIPS**

- A. Manufacturer: Erico Caddy (nVent).

**2.04 NAMEPLATES**

- A. Provide three-layer laminated melamine plastic nameplates for each item specified in the technical Sections and for those shown on the drawings. Items requiring nameplates include, but are not limited to the following.
  - 1. Equipment enclosures.
  - 2. Relays.
  - 3. Switches.
  - 4. Devices.
- B. Colors:
  - 1. Matte black background with white letters for normal power.
- C. Letter Size: Provide letters with equipment name utilizing ½ inch high letters and voltage and fed from with 3/16 inch high letters.
- D. Legend: Provide nameplates with identification and other information as shown on the Drawings.

**2.05 MANUFACTURER INSTALLED EQUIPMENT NAMEPLATES**

- A. Provide nameplates on the exterior of equipment enclosures in addition to any standard nameplates installed.

**2.06 WARNING SIGNS**

- A. Comply with NFPA 70.

**2.07 LABELS**

- A. Description: Embossed adhesive tape, with 3/8 inch letters on white background.
- B. Colors: Black letters for normal power circuits. Red letters for emergency power circuits.

**2.08 ARC FLASH LABELS**

- A. Comply with NFPA 70E.



**2.09 WIRE MARKERS**

- A. Description: Cloth tape, split sleeve or tubing type wire markers.
- B. Legend:
  - 1. Power and Lighting Circuits: Branch circuit or feeder number.
  - 2. Control Circuits: Control wire number as indicated on shop drawings.

**2.10 CIRCUIT DIRECTORIES**

- A. Provide typewritten circuit directories for all switchboards and panelboards, including breaker/fuse identification and size, equipment or system served and location(s).
- B. Place directories inside doors under transparent plastic covers.

**2.11 VIBRATION AND NOISE ISOLATORS**

- A. Neoprene Pad:
  - 1. Manufacturers:
    - a. Mason Industries Model "Super W".
    - b. Kenetics Noise Control Model "RSP".
    - c. California Dynamics Corporation (CALDYN) Model "ECP".
  - 2. Product Description: Neoprene Pad.
  - 3. Isolator shall consist of 3/4 inch thick molded neoprene.
  - 4. Pad shall be either a ribbed or waffle type construction.
  - 5. Isolator shall have a 50-durometer rating.
  - 6. Isolator shall be loaded to limit surface pressure to a maximum of 50 psi.
  - 7. Isolator shall be equipped with a steel plate bonded to the neoprene pad if required for proper load distribution.

**2.12 SLEEVES**

- A. Round: Rigid galvanized steel conduit (RGS).
- B. Rectangular: Galvanized sheet steel.
  - 1. Perimeter less than 50 inches with no side greater than 16 inches: 18 gage.
  - 2. Perimeter equal to or greater than 50 inches or with a side greater than 16 inches: 10 gage.

**2.13 GROUT**

- A. ASTM C1107.
- B. Mix with water for 30 minutes of working time.

**2.14 SEALING AND FIRESTOPPING**

- A. General:
  - 1. Furnish UL 1479 products and systems listed for the application.
  - 2. Select products with rating not less than rating of wall or floor being penetrated.



- B. Fire and Smoke Rated Surfaces:
  - 1. Manufacturers:
    - a. 3M FS 195+ Fire Barrier Wrap Strips.
    - b. 3M CS 195+ Composite Sheet.
    - c. 3M IC 15WB+ Intumescent Sealant.
    - d. Nelson Firestop Products LBS3 Intumescent Sealant.
    - e. Tremco TREMstop IA Intumescent Acrylic Sealant.
- C. Non-Rated Surfaces:
  - 1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
  - 2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.
  - 3. For interior wall or floor openings, furnish one of the following to effect seal.
    - a. BASF MasterSeal NP1.
    - b. Tremco Dymonic.
    - c. Sika Corp. Sikaflex 1A.
    - d. Tremco Vilken 116 urethane caulk.

## 2.15 PULL STRINGS

- A. 200 Pound Pull String: Nylon pull string having minimum tensile strength of 200 pounds.
- B. 500 Pound Pull String: Nylon pull string having minimum tensile strength of 500 pounds.
- C. 1500 Pound Pull String: Polypropylene pull rope having minimum tensile strength of 1500 pounds.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify final backfill and compaction has been completed before driving rod electrodes.
- B. Verify wiring and equipment that are about to be demolished are no longer required for the facility.

### 3.02 EXISTING WORK

- A. Demolition drawings may not show all existing conditions. Report discrepancies to Architect before disturbing existing installation. Protect existing systems not designated for removal or demolition from damage. Repair or replace any systems inadvertently damaged.
- B. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- C. Remove, relocate, and extend existing installations to accommodate new construction.
- D. Install temporary wiring and connections to maintain existing systems in service during construction.



- E. Repair adjacent construction and finishes damaged during demolition and extension work.

### **3.03 ANCHOR BOLTS**

- A. Existing Concrete Construction:
  - 1. Anchor Bolts (Expansion Type): Use only to support raceways and anchor non-rotating equipment from existing concrete slabs and walls and for rotating equipment with anchor bolts in tension. Install expansion type anchor bolts in holes drilled in concrete. Install anchor bolts through concrete equipment pads, installed into existing structural concrete slabs.
  - 2. Anchor Bolts (Adhesive Type): Use only where necessary to anchor rotating equipment from existing concrete slabs and walls. Install adhesive type anchor bolts in holes drilled in concrete. Install anchor bolts through concrete equipment pads, installed into existing structural concrete slabs. Do not use adhesive type anchor bolts in tension.
  - 3. Powder actuated inserts are not acceptable.

### **3.04 INSTALLATION**

- A. Supports:
  - 1. Install electrical systems and equipment attached directly to structure and to dedicated supports attached directly to structure. Attach supports to structure, independent of all other equipment and systems. Do not fasten electrical equipment to pipes, ducts, mechanical equipment, other equipment or the supports for such equipment or systems.
  - 2. Fabricate supports from structural steel or formed steel members. Rigidly weld members or install hex-head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
  - 3. Locate and install anchors, fasteners, and supports in accordance with seismic requirements.
  - 4. Install surface mounted cabinets and panelboards with minimum of 4 anchors.
  - 5. Install stainless steel channel supports in wet and damp locations to anchor cabinets and panelboards a minimum of 3/4 inch off the wall.
  - 6. Install sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
  - 7. Do not use spring steel clips and clamps.
  - 8. Do not use powder-actuated anchors.
  - 9. Do not drill or cut structural members.
- B. Identification Components:
  - 1. Degrease and clean surfaces to receive nameplates and labels.
  - 2. Install nameplate and label parallel to equipment lines.
  - 3. Secure nameplate to equipment front using screws or rivets.
  - 4. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
  - 5. Conduit Marker Spacing: 20 feet on center.
- C. Raceway Painting: Paint surface mounted conduit with color to match Identify conduit using field painting.

### **3.05 WARNING SIGNS**

- A. Provide arc-flash hazard warning labels on electrical equipment.



- B. Provide working clearance warning signs on electrical equipment.

**3.06 EQUIPMENT HOUSEKEEPING PADS**

- A. Provide concrete housekeeping pads for equipment. Pads shall be 4" thick and extend 4" beyond equipment footprint.
- B. Verify surfaces of housekeeping pads are level within 0.3 percent (1/8 inch in 42 inches) and are suitable for switchboard installation.
- C. Provide cast-in-place anchors in accordance with this Section.

**3.07 PULL STRINGS**

- A. 200 Pound Pull String: Provide 200 pound pull string in empty conduits leaving panelboards, switchboards, and motor control centers.
- B. 500 Pound Pull String: Provide 500 pound pull string in empty conduits leaving switchgear.
- C. 1500 Pound Pull String: Provide 1500 pound pull string in empty ducts underground.

**3.08 VIBRATION AND NOISE ISOLATION**

- A. Provide vibration and noise isolation for vibrating or rotating equipment including, but not limited to transformers, uninterruptible power supplies, and generators.

**3.09 SEISMIC AND WIND**

- A. Seismic Restraints: Seismically restrain electrical nonstructural components in Division 26 in accordance with the requirements of the International Building Code. Electrical nonstructural components in Division 26 shall be as defined by ASCE 7.
  - 1. Obtain the services of a professional engineer licensed in the State of Washington to prepare the seismic restraint design for electrical nonstructural components in Division 26. The professional engineer licensed in the State of Washington shall also prepare a statement of special inspections per requirements of the International Building Code where such statement is required by Code. Submit calculations, details, Shop Drawings, Product Data, and statement of special inspections for the seismic restraint design of electrical nonstructural components in Division 26. If the professional engineer determines that the International Building Code does not require some of the electrical nonstructural components in Division 26 to be seismically restrained, then submit a stamped and signed statement from the professional engineer to that effect.
- B. Wind:
  - 1. Restrain electrical equipment located outside in accordance with the wind requirements of the International Building Code.
  - 2. Obtain the services of a professional engineer licensed in the State of Washington to prepare wind restraint design for electrical equipment located outside. Submit calculations, details, Shop Drawings, and Product Data for wind restraints for electrical equipment.
  - 3. Wind restraints shall be hot-dip galvanized where located outside.



- C. The professional engineer obtained by the Contractor shall prepare both seismic and wind designs.
- 3.10 SLEEVES AND SEALING OF ELECTRICAL PENETRATIONS THROUGH FIRE RESISTIVE FLOORS, WALLS, AND PARTITIONS
- A. Sleeves and Sealing Through Fire Resistive Floors, Walls, and Partitions:
    - 1. Firestopping of electrical penetrations (e.g. tubing, conduit, and wiring) through fire resistive floors, walls, and partitions is provided under this Section.
    - 2. Provide sleeves for electrical penetrations through fire resistive floors, walls, and partitions. Sleeves shall be of the same material and thickness as was used when the firestopping material was tested in accordance with the standard specified in this Section.
    - 3. The annular space between the sleeve or cored opening and the electrical penetrations shall be the same dimensions as the annular space used when the firestopping material was tested in accordance with the standard specified in this Section.
- 3.11 SLEEVES AND SEALING OF ELECTRICAL PENETRATIONS THROUGH NON-FIRE RESISTIVE FLOORS, WALLS, AND PARTITIONS
- A. Concrete Floors:
    - 1. In existing construction and pre-poured construction, coordinate work with existing conditions and verify locations of encased obstructions and reinforcing steel prior to core drilling in existing concrete in accordance with Section 26 00 10 using ground penetrating radar, pacometer, X-Ray or other suitable means to locate encased obstructions and reinforcing steel.
    - 2. In new construction, coordinate work and set sleeves in place prior to pouring concrete.
    - 3. Core drill and install rigid galvanized sleeves sized to leave 1/4 inch for bare conduit sleeves or 1/2 inch for sealed sleeves.
    - 4. Install conduit through sleeve, permanently support conduit below and above the penetration, and install watertight seals.
    - 5. Install continuous or welded steel dams around conduit penetrations. Dams shall be a minimum of 1 inch above the floor and shall be impervious to water, oils, refrigerants, and other liquid substances used in this project. Anchor dam to floor and install minimum of 1/2 inch width of grouting around outside edge of the dam.
  - B. Concrete Walls:
    - 1. In existing construction and pre-poured construction, coordinate work with existing conditions and verify locations of encased obstructions and reinforcing steel prior to core drilling in existing concrete in accordance with Section 26 00 10 using ground penetrating radar, pacometer, X-Ray or other suitable means to locate encased obstructions and reinforcing steel.
    - 2. In new construction, coordinate work and set sleeves in place prior to pouring concrete.
    - 3. Core drill and install rigid galvanized sleeves sized to leave 1/4 inch for bare conduit sleeves or 1/2 inch for sealed sleeves.
    - 4. Install conduit through sleeve, permanently support conduit on both sides of the wall penetration and install seals.
  - C. Exterior Walls:
    - 1. Install conduit seals on conduits penetrating exterior walls.



2. Slope underground conduits down and away from the building.
  3. Install flashing and penetration systems for work above grade. Penetration systems shall be watertight, sunlight resistant, and oil resistant.
- D. Roof Penetrations:
1. Coordinate with architectural and structural rooftop elements.
  2. Provide prefabricated penetration flashing unit engineered for conduit penetrations through roof systems and wall penetrations. Use materials and methods specifically recommended by the roofing system manufacturer unless otherwise specified or shown on Drawings.
- E. Coordination with Architectural and Structural Elements:
1. Coordinate penetrations and finishes with architectural and structural work.
  2. Notify the Architect immediately where the sealing and finishing of conduit penetrations specified in this Section conflict with the building construction material or finish.

### 3.12 EARTHWORK

- A. Provide earthwork for the installation of electrical work in the ground as specified herein.
- B. Trench Excavation: Provide for the installation of the work, with trenches of the necessary width for proper laying of conduit. Accurately grade and compact trench bottoms to provide uniform undisturbed bedding for each section of conduit along its entire length; form holes and depressions for joints after trench bottom has been graded. For trenches running from buildings to manholes or hand holes, slope trenches away from buildings toward manholes or hand holes. For trenches between manholes or hand holes, slope trenches from a high point at the center of the trench toward each manhole or hand hole. Sloping for trenches shall be not less than 4 inches in 100 feet. Keep excavation free from water. Provide conduit bedding in rock excavation consisting of not less than 6 inches of sand or equivalent material.
- C. Bracing and Shoring: Maintain stability of excavation. Provide forms where soil is not self-supporting and where soil inclusion during the placing of controlled density fill or sand cannot otherwise be prevented.
- D. Backfilling: Backfill trenches only after completion of inspection by the Architect.
- E. Sand Encasement: Use sand encasement under and around and to 6 inches above top of conduit. Fill spaces between conduit and sides of trench by hand and shovel-tamp in place; cover in 6 inch lifts to thickness of 6 inches over top of conduit. Fill and hand tamp remainder of backfill material in 6 inch lifts. Provide backfill materials generally of clean earth or sand free of clods and stones. In addition, wherever paving or future paving is indicated over backfill, provide the remainder of the backfill of granular subgrade backfill material.
- F. Compacting: Perform compacting individually for each 6 inch layer (maximum) loose thickness of backfill. Where roadway or parking area surfaces will be placed over backfill, provide a moisture condition which will produce a compacted density of 95 percent of maximum density; elsewhere, 90 percent. Measure in accordance with Method D of AASHTO T-180.
- G. Surplus Earth: Haul off site and dispose of legally.



H. Barricades: Locate and maintain barricades, construction signs, warning lights and guards, during periods of open excavation to protect persons from injury and to avoid property damage.

I. Clean-up: Leave premises thoroughly clean at completion.

**3.13 CLEAN UP**

A. Continually remove debris, cuttings, crates, cartons, etc., created by Work. Clean daily and at sufficient frequency to eliminate hazard to public, other workmen, the building or Owner staff.

B. Perform final cleaning including the following.

1. Carefully clean equipment, enclosures, cabinets, junction boxes, wiring devices, cover plates, etc. to remove dirt, dust, lubricant, cuttings, paint, plaster, mortar, concrete, etc.
2. Touch-up scratched or damaged finished surfaces to match factory finish.

**END OF SECTION**



**WIRE AND CABLE (600 VOLTS AND LESS)**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes wiring, splices, connectors, and testing for electrical generation and distribution wiring rated 600 volts and less.

**1.02 REFERENCES**

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. NECA (National Electrical Contractors Association) – Standard of Installation.
- D. NEMA WC 70 (National Electrical Manufacturers Association) – Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
- E. NFPA 70 (National Fire Protection Association) – National Electrical Code.
- F. UL 4 (Underwriters Laboratories) – Armored Cable.
- G. UL 44 (Underwriters Laboratories) – Thermoset-Insulated Wires and Cables.
- H. UL 83 (Underwriters Laboratories) – Thermoplastic-Insulated Wires and Cables.
- I. UL 486A-486B (Underwriters Laboratories) – Wire Connectors.
- J. UL 486C (Underwriters Laboratories) – Splicing Wire Connectors.
- K. UL 2196 (Underwriters Laboratories) – Tests for Fire Resistive Cables.

**1.03 SYSTEM DESCRIPTION**

- A. Conductors for wiring electrical power, lighting, and control circuits. Provide conductors, conduits, boxes, conduit bodies, fittings, wiring devices, terminations, splices, connections, identification, and testing.

**1.04 SUBMITTALS**

- A. Product Data: Submit for building wire and each cable assembly type.
  - 1. Insulation type, conductor material, conductor strands, voltage, ampacity, and UL listing.

**1.05 CLOSEOUT SUBMITTALS**

- A. Field Quality Control Test Reports: Submit test reports in accordance with Section 26 00 10.



- B. Project Record Documents: Record actual locations of components and circuits.

**1.06 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years documented experience.

**1.07 FIELD MEASUREMENTS**

- A. Verify field measurements are as indicated on Drawings.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Apply shrink-to-fit sealing caps on wire and cable reels for conductors 250 kcmil and larger.
- B. Deliver conductors 250 kcmil and larger on recyclable or returnable reels.

**1.09 COORDINATION**

- A. Determine routes and lengths where not indicated on the Drawings. Coordinate route with structural members, architectural requirements, and with work by other trades. Pay for costs of routing and rerouting circuits.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Conductors shall be copper.
- B. Conductors for installation in a cable tray shall be UL listed and marked for cable tray use.
- C. Conductor For Feeders and Branch Circuits 10 AWG and Smaller shall be solid or stranded conductor. Wiring devices connected to stranded conductors shall provide containment for all strands in the termination.
- D. Conductors For Control Circuits: Stranded conductors.
- E. Power and lighting circuits shall not be smaller than 12 AWG.
- F. Control circuits shall not be smaller than 16 AWG.
- G. Furnish 12 AWG conductors for 20 A, 120 V branch circuits not exceeding 50 feet in conductor length.
- H. Furnish 10 AWG conductors for 20 A, 120 V branch circuits longer than 50 feet but not exceeding 100 feet in conductor length.
- I. Wire coloring shall be integral to the jacket or insulation for wires 6 AWG and smaller. For wires 4 AWG and larger, furnish colored tape or colored shrink-to-fit sleeves.



- J. Wire Colors, 120/240 V Single-Phase Systems:
  - 1. L1 shall be black.
  - 2. L2 shall be red.
  - 3. Neutral shall be white.
- K. Wire Colors, 120/208 V Three-Phase Systems:
  - 1. A-Phase shall be black.
  - 2. B-Phase shall be red.
  - 3. C-Phase shall be blue.
  - 4. Neutral shall be white.
- L. Neutral Conductors: When two or more neutrals are located in one conduit, individually identify each with proper circuit number using shrink-to-fit wire sleeve.
- M. Branch Circuit Conductors: Install three-wire and four-wire home runs with each phase uniquely color coded.
- N. Feeder Circuit Conductors: Uniquely color code each phase.
- O. Equipment Ground Conductors:
  - 1. For 6 AWG and smaller: Green.
  - 2. For 4 AWG and larger: Identify with green tape or shrink-to-fit sleeves at both ends and at visible points including junction boxes.

## **2.02 BUILDING WIRE**

- A. Product Description: UL 44 thermoset insulated single conductors and UL 83 thermoplastic insulated single conductors.
- B. Insulation Types: Furnish the following insulation types unless shown otherwise on Drawings. Refer to Part 3 of this Section for installation methods and additional requirements.
  - 1. Feeders 2 AWG and Larger: NFPA 70; Type XHHW-2.
  - 2. Feeders Smaller than 2 AWG: NFPA 70; Type XHHW-2.
  - 3. Branch Circuits 2 AWG and Larger: NFPA 70; Type XHHW-2.
  - 4. Branch Circuits Smaller than 2 AWG, Installed Indoors: NFPA 70; Type THHN/THWN, XHHW, or XHHW-2.
  - 5. Branch Circuits Smaller than 2 AWG, Installed Outdoors or Below Ground: NFPA 70; Type XHHW-2.
- C. Conductor: Copper.

## **2.03 WIRE CONNECTORS, COMPRESSION TYPE**

- A. Product Description: UL 486A-486B wire connectors, mechanical set-screw, split-bolt, and high-pressure type.
- B. Manufacturers:
  - 1. 3M.
  - 2. Thomas & Betts (T&B).
- C. Construction: Plated copper connector without insulation. With or without set-screws.



- D. Operating Temperature: Rated not less than the higher of the wire or equipment terminal temperature.
- E. Color: Manufacturer's standard colors, coded by wire size and quantity application.
- F. Use Restrictions:
  - 1. Use same manufacturer for each type and size installed.
  - 2. Use on conductors at equipment terminal pads. Used for in-line splices when included in a UL listed splice kit.
  - 3. Crimp type connectors shall be installed using manufacturer-approved ratcheting, hydraulic, or air-powered crimping tool and die.

#### **2.04 SPlicing WIRE CONNECTORS, SOLDERLESS CRIMP TYPE**

- A. Product Description: UL 486A-B and 486C splicing wire connectors; insulated, crimp-type connectors, splices, and terminals.
- B. Manufacturers:
  - 1. 3M.
  - 2. Stakon.
- C. Construction: Vinyl or nylon insulation covering tin or silver-plated annealed copper connector.
- D. Operating Temperature: Rated for use up to 105 degrees C.
- E. Voltage Rating: 600 V.
- F. Color: Manufacturer's standard colors, coded by wire size.
- G. Use Restrictions:
  - 1. Crimp type connectors shall be installed using manufacturer-approved ratcheting crimping tool and die.
  - 2. Use same manufacturer for each type and size installed.
  - 3. In-line splices shall only be used for extending existing circuits where specifically called out on drawings.
  - 4. End-cap solderless crimp type shall be used only for permanent, non-maintenance applications.
  - 5. Insulation-displacing splices and connectors shall not be used.
  - 6. Terminal connectors for current transformer secondary circuits, relays, meters, test blocks, and shorting blocks shall be ring type. Spade terminals shall be rejected.

#### **2.05 SPlicing WIRE CONNECTORS, SPRING TYPE**

- A. Product Description: UL 486C splicing wire connectors.
- B. Manufacturers:
  - 1. 3M Performance Plus.
  - 2. Substitutions: Approved equal.
- C. Construction: Spring steel, corrosion resistant coating with flame retardant, polypropylene and thermoplastic elastomeric insulator.



- D. Operating Temperature: Rated for use up to 105 degrees C.
- E. Voltage Rating: 600 V when used as building wire splices. 1000 V when used for signs and luminaires.
- F. Flammability: UL 94 V-2.
- G. Color: Manufacturer's standard colors, coded by wire size and quantity application.
- H. Use Restriction: Conductors 16 AWG to 8 AWG, in receptacle, switch, and rotating equipment termination boxes only.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify interior of building has been protected from weather.
- B. Verify mechanical work likely to damage wire and cable has been completed.
- C. Verify raceway installation is complete and supported.

#### **3.02 PREPARATION**

- A. Completely and thoroughly swab raceway before installing wire.
- B. Protect exposed cable from damage and moisture. Apply shrink-to-fit sealing caps on wire and cable reels when stored outdoors.

#### **3.03 INSTALLATION**

- A. Metal Clad (MC) Cable: Type MC cable shall not be permitted. Requests to substitute type MC cable will not be considered.
- B. Feeder Circuits:
  - 1. Provide feeder circuits in conduit unless otherwise shown on Drawings.
  - 2. Provide feeder conductors in continuous lengths, without splices, unless otherwise shown on the Drawings.
- C. Branch Circuits:
  - 1. Provide branch circuits in conduit unless otherwise shown on Drawings.
- D. Dedicated Neutral: Provide dedicated neutral conductors for 120 V and 277 V circuits.
- E. Above Accessible Ceilings: Provide wiring above accessible ceilings in conduit unless otherwise shown on the Drawings.
- F. Class 1 and Class 2 Control Circuits: Provide Class 1 and Class 2 wiring in conduit unless otherwise shown on the Drawings.
- G. Neatly train and lace wiring inside boxes, equipment, and panelboards.



- H. Identify circuits under provisions of Section 26 05 00. Identify each conductor with its circuit number or other designation indicated.
- I. Pull conductors into raceway at same time.
- J. Use wire-pulling equipment including fish-tape, rope, or cable appropriate for the size of wire, conduit, and circuit length. Use basket-weave wire/cable grips for multiple conductors over 2 AWG.
- K. Use manufacturer-approved pulling compound or lubricant where necessary. Compound used shall not deteriorate conductors or insulation.
- L. Pull wire in accordance with the wire manufacturer's recommended pulling tensions and side wall pressure values.
- M. Wiring Connections:
  - 1. Clean conductor surfaces before installing lugs and connectors.
  - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
  - 3. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
  - 4. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
  - 5. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
    - a. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger except where in-line splices are specified.
    - b. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
    - c. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
  - 6. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.
  - 7. Install solid conductors for feeders and branch circuits 10 AWG and smaller. If, however, special conditions require stranded conductors in lieu of solid, then install crimp on locking (barbed) fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

### **3.04 FIELD QUALITY CONTROL**

- A. Performance of Acceptance Checks and Tests: Perform in accordance with the manufacturer's recommendations and perform the visual and mechanical inspections and electrical tests in accordance with ANSI/NETA ATS.
- B. Perform insulation resistance (Megger) test on conductors 2 AWG and larger. Measure resistance phase to phase and phase to ground for one minute. Test voltage shall be 1000 VDC. Record results. Minimum acceptable insulation resistance shall be 100 megohms in accordance with ANSI/NETA ATS, Table 100.1.
- C. Remove and replace defective conductors, splices, and terminations until test results meet the specified requirements.

**END OF SECTION**



**GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes electrodes, conductors, connections, and testing for bonding and grounding of electrical equipment and systems.

**1.02 REFERENCES**

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. ASTM F2281 (ASTM International) – Standard Specification for Stainless Steel and Nickel Alloy Bolts, Hex Cap Screws, and Studs, for Heat Resistance and High Temperature Applications.
- D. IEEE Std. 81 (Institute of Electrical and Electronics Engineers) – IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System Part 1: Normal Measurements.
- E. IEEE Std. 142 (Institute of Electrical and Electronics Engineers) – IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems.
- F. IEEE Std. 837 (Institute of Electrical and Electronics Engineers) – IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding.
- G. NECA (National Electrical Contractors Association) – Standard of Installation.
- H. UL 467 (Underwriters Laboratories) – Grounding and Bonding Equipment.

**1.03 SUBMITTALS**

- A. Product Data:
  - 1. Equipment grounding conductors.

**PART 2 - PRODUCTS**

**2.01 COMPRESSION CONNECTORS**

- A. Manufacturers:
  - 1. Burndy (Hubbell) HYGROUND.
  - 2. DMC Power SWAGE.
  - 3. Thomas and Betts (ABB).
- B. Product Description: IEEE 837 Compression connectors, suitable for grounding and bonding applications, in configurations required for particular installation.



**2.02 MECHANICAL CONNECTORS**

- A. Manufacturers:
  - 1. Burndy (Hubbell).
  - 2. DMC Power.
  - 3. Harger.
  - 4. Thomas and Betts (ABB).
- B. Product Description: Bronze mechanical connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

**2.03 WIRE**

- A. Material: Stranded copper unless otherwise indicated.

**2.04 EQUIPMENT GROUNDING CONDUCTORS**

- A. Insulation Types: Furnish the following insulation types unless shown otherwise on Drawings.
  - 1. Service Entrance Conductors: NFPA 70, Type XHHW-2.
  - 2. Feeders 2 AWG and Larger: NFPA 70; Type XHHW-2.
  - 3. Feeders Smaller than 2 AWG: NFPA 70; Type THHN/THWN, XHHW, or XHHW-2.
  - 4. Branch Circuits 2 AWG and Larger: NFPA 70; Type XHHW-2.
  - 5. Branch Circuits Smaller than 2 AWG, Installed Indoors: NFPA 70; Type THHN/THWN, XHHW, or XHHW-2.
  - 6. Branch Circuits Smaller than 2 AWG, Installed Outdoors or Below Ground: NFPA 70; Type XHHW-2.
- B. Conductor: Copper.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Verify final backfill and compaction has been completed before driving rod electrodes.
- B. Verify wiring and equipment that are about to be demolished are no longer required for the facility.

**3.02 EXISTING WORK**

- A. Disconnect power sources and test for ground current prior to disconnecting and removing bonding, equipment grounding, and ground electrode conductors.
- B. Remove exposed abandoned grounding wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.
- C. Disconnect abandoned grounding wires or cables.
- D. Provide access to existing grounding wiring connections remaining active and requiring access. Modify installation or install access panel.



- E. Extend existing grounding wires or cables using materials and methods as specified.
- F. Clean and repair existing grounding wire or cable remaining.

### **3.03 INSTALLATION – GENERAL**

- A. Provide bonding in accordance with the National Electrical Code as adopted by the Authority Having Jurisdiction.
- B. Install grounding connections in accordance with their UL listing.
- C. Where the grounding materials and methods specified and shown exceed that of the National Electrical Code and the Authority Having Jurisdiction, the materials and methods specified and shown shall be used.
- D. Mechanical connections shall be accessible.
- E. Stranded grounding or bonding conductors larger than 8 AWG shall be connected using exothermal or die-crimped compression terminals.
- F. Tighten accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or ANSI/NETA ATS. Bolt torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use ANSI/NETA ATS.

### **3.04 INSTALLATION - EQUIPMENT GROUNDING CONDUCTORS**

- A. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- B. Identify each ground conductor by circuit number in panelboards and switchboards.

### **3.05 FIELD QUALITY CONTROL**

- A. Performance of Acceptance Checks and Tests. Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with ANSI/NETA ATS.
  - 1. Visual and Mechanical Inspection:
    - a. Verify ground system is in compliance with Drawings, Specifications, and NFPA 70 National Electrical Code Article 250.
    - b. Inspect physical and mechanical condition. Grounding system electrical and mechanical connections shall be free of corrosion.
    - c. Inspect anchorage.
  - 2. Electrical Tests:
    - a. Perform resistance measurements through bolted connections with a digital, low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    - b. Perform fall of potential or alternative test in accordance with IEEE 81 and IEEE 81.2 on the main grounding electrode or system.
    - c. Perform point-to-point tests to determine the resistance between the main grounding system and all electrical equipment frames, ground



busses, telecommunications ground busses, system neutral, and derived neutral points. Investigate point-to-point resistance values that exceed 0.5 ohm.

**END OF SECTION**



**RACEWAY AND BOXES**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes the following items.
  - 1. Conduit.
  - 2. Tubing.
  - 3. Surface Metal Raceway.
  - 4. Wireways.
  - 5. Outlet boxes.
  - 6. Pull and junction boxes.

**1.02 REFERENCES**

- A. ANSI C80.1 (American National Standards Institute) – Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 (American National Standards Institute) – Electrical Metallic Tubing, Zinc Coated.
- C. ANSI C80.5 (American National Standards Institute) – Rigid Aluminum Conduit.
- D. ANSI C80.6 (American National Standards Institute) – Electrical Intermediate Metal Conduit (EIMC).
- E. ANSI/SCTE 77 (Society of Cable Telecommunications Engineers) – Underground Enclosure Integrity.
- F. NEMA FB 1 (National Electrical Manufacturers Association) – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- G. NEMA FB 2.40 (National Electrical Manufacturers Association) – Installation Guidelines for Expansion and Expansion/Deflection Fittings.
- H. NEMA OS 1 (National Electrical Manufacturers Association) – Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- I. NEMA OS 2 (National Electrical Manufacturers Association) – Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- J. NEMA RN 1 (National Electrical Manufacturers Association) – Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
- K. NEMA TC 2 (National Electrical Manufacturers Association) – Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
- L. NEMA TC 3 (National Electrical Manufacturers Association) – Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
- M. NEMA WD 1 (National Electrical Protection Association) – General Purpose Wiring Devices.



- N. NEMA WD 6 (National Electrical Protection Association) – Wiring Devices – Dimensional Requirements.
- O. NEMA 250 (National Electrical Manufacturers Association) – Enclosures for Electrical Equipment (1000 Volts Maximum).
- P. UL 1 (Underwriters Laboratories) – Flexible Metal Conduit.
- Q. UL 6 (Underwriters Laboratories) – Electrical Rigid Metal Conduit – Steel.
- R. UL 6A (Underwriters Laboratories) – Electrical Rigid Metal Conduit – Aluminum and Stainless Steel.
- S. UL 360 (Underwriters Laboratories) – Liquid-Tight Flexible Steel Conduit.
- T. UL 514A (Underwriters Laboratories) – Metallic Outlet Boxes.
- U. UL 514B (Underwriters Laboratories) – Conduit, Tubing and Cable Fittings.
- V. UL 651 (Underwriters Laboratories) – Schedule 40 and 80 Rigid PVC Conduit.
- W. UL 797 (Underwriters Laboratories) – Electrical Metallic Tubing – Steel.
- X. UL 870 (Underwriters Laboratories) – Wireways, Auxiliary Gutters and Associated Fittings.
- Y. UL 1203 (Underwriters Laboratories) –Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations.
- Z. UL 1242 (Underwriters Laboratories) – Electrical Intermediate Metal Conduit – Steel.
- AA. UL 1660 (Underwriters Laboratories) – Liquid-Tight Flexible Nonmetallic Conduit.
- BB. UL 2420 (Underwriters Laboratories) – Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- CC. UL 2515 (Underwriters Laboratories) – Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- DD. UL 2515A (Underwriters Laboratories) – Standard for Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
- EE. UL 120101 (Underwriters Laboratories) – Definitions and Information Pertaining to Electrical Equipment in Hazardous Locations.

#### **1.03 SYSTEM DESCRIPTION**

- A. System description consists of raceway and boxes located as indicated on Drawings, and other locations required for splices, taps, wire pulling, equipment connections, and at locations required to be in compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.



**1.04 SUBMITTALS**

- A. Product Data:
  - 1. Raceway.
  - 2. Flexible metal conduit.
  - 3. Liquidtight flexible metal conduit.
  - 4. Nonmetallic conduit and adhesives/joint compound.
  - 5. Raceway fittings.
  - 6. Conduit bodies.
  - 7. Wireway.
  - 8. Pull and junction boxes.
- B. Manufacturer's Installation Instructions: For adhesives, wireway, and fiberglass conduit, submit instructions for storage, handling, protection, examination, preparation, and installation of the product.

**1.05 CLOSEOUT SUBMITTALS**

- A. Project Record Documents:
  - 1. Record actual routing of conduits of 1-1/2 inch trade size and larger.
  - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.
  - 3. Record actual locations, sizes, and configurations of equipment connections.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

**1.07 COORDINATION**

- A. Coordinate installation of outlet boxes for equipment connected under Section 26 07 26.
- B. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.
- C. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other Sections.
- D. Determine connection locations and requirements.
- E. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- F. Sequence electrical connections to coordinate with start-up of equipment.

**PART 2 - PRODUCTS**

**2.01 RIGID METAL CONDUIT (RMC)**

- A. Rigid Steel Conduit: ANSI C80.1 and UL 6.
- B. Fittings and Conduit Bodies: NEMA FB 1; threaded, all steel fittings.



**2.02 ELECTRICAL METALLIC TUBING (EMT)**

- A. Product Description: ANSI C80.3 and UL 797; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1.
  - 1. Steel.
  - 2. Compression type.
  - 3. Insulated throat.
  - 4. Listed as rainproof.

**2.03 FLEXIBLE METAL CONDUIT**

- A. Product Description: UL 1; interlocked steel construction.
- B. Fittings: NEMA FB 1.

**2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT**

- A. Product Description: UL 360; interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1 and UL 514B; cadmium-or zinc-plated.

**2.05 METALLIC CONDUIT BODIES**

- A. Product Description: UL 514B.

**2.06 NONMETALLIC CONDUIT**

- A. Product Description.
  - 1. NEMA TC 2 and UL 651; Schedule 40 and 80 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3 and TC 14 series.

**2.07 SURFACE METAL RACEWAY**

- A. Manufacturers:
  - 1. Thomas & Betts.
  - 2. Walker.
  - 3. Wiremold.
- B. Description: UL 5, single compartment sheet metal channel, with fitted cover, suitable for use as surface metal raceway.
- C. Dimensions: 3/4 inches wide by 21/32 inches deep minimum.
- D. Finish: White enamel.
- E. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories.



**2.08 OUTLET BOXES**

- A. Sheet Metal Outlet Boxes: NEMA OS 1; galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.
- B. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy; gasketed cover by box manufacturer.
- C. Wall Plates for Finished Areas: Conform to the requirements of Section 26 27 26.
- D. Wall Plates for Unfinished Areas: Gasketed cover.

**2.09 PULL AND JUNCTION BOXES**

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel for interior locations. NEMA 3R for exterior locations.
- B. Hinged Enclosures:
  - 1. Provide continuous steel hinges on boxes 24 inches tall by 24 inches wide.
  - 2. Provide continuous steel hinges on boxes having covers larger than 576 square inches in surface area.
  - 3. Provide continuous steel hinges on boxes having covers weighing more than 10 pounds.
- B. Captive Cover Hardware: Provide captive hardware for boxes which to be installed with the box opening facing downward or where dropping the hardware have the potential to present a safety or equipment hazard.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Verify equipment is ready for electrical connection, for wiring, and to be energized.
- B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

**3.02 EXISTING WORK**

- A. Disconnect and remove abandoned system components below and above accessible ceiling finishes.
- B. Cut abandoned raceways to sufficient depth behind wall and floor surfaces to allow patching and finishing to be flush with wall or floor surfaces. Install blank cover for remaining abandoned boxes.
- C. Remove concealed abandoned raceway to its source.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.



- E. Remove exposed abandoned equipment wiring connections, including abandoned connections above accessible ceiling finishes.
- F. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.
- G. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel. Mark and protect all raceway not designated for modification or demolition. Replace any raceway not designated for modification or demolition that becomes damaged during the project.
- H. Extend existing raceway and box installations using materials and methods as specified.
- I. Clean and repair existing raceway and boxes to remain or to be reinstalled.

### **3.03 INSTALLATION**

- A. Equipment Connections:
  - 1. Make conduit connections to motors, transformers, rotary phase converters and equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations. Install flexible conduit with enough length to provide at least a ninety degree bend in the flexible conduit.
  - 2. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- B. Penetrate firewalls and fire-rated floors with rigid galvanized steel conduit. Extend a minimum of six inches beyond the firewall. Provide firestopping. Ground and bond raceway and boxes.
- C. Fasten raceway and box supports to structure and finishes.
- D. Identify raceway and boxes.
- E. Arrange raceway and boxes to maintain headroom and present neat appearance.

### **3.04 INSTALLATION – RACEWAY**

- A. Raceway Selection and Location Criteria:
  - 1. Underground, Outside Foundation: For direct-buried conduit, provide schedule 80 PVC.
  - 2. Outdoor Locations, Above Grade: Provide rigid steel conduit. Provide cast metal outlet, pull, and junction boxes.
  - 3. Wet and Damp Locations Above Grade: Provide rigid steel conduit. Provide cast metal or nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
  - 4. Exposed Interior Dry Locations: Provide electrical metallic tubing for exterior rotary phase converter/exterior VRF mechanical unit. Provide surface metal raceway for all other circuits.
  - 5. Concealed locations not otherwise specified: EMT or rigid steel conduit.
- B. Install raceway parallel and perpendicular to walls, floors, and ceilings.



- C. Arrange raceway supports to prevent misalignment during raceway and wiring installation.
- D. Provide seismic supports in accordance with Section 26 05 00.
- E. Support raceway using coated steel or malleable lay-in adjustable hangers, clevis hangers, and split hangers.
- F. Do not support raceway with wire or perforated pipe straps for permanent installations. Remove wire and perforated pipe straps prior to inspection when they are used for temporary supports.
- G. Group related raceway; support using conduit rack attached to structure. Construct rack using galvanized channel; provide space on each for 25 percent additional raceways.
- H. Do not attach raceway to ceiling support wires or other piping systems.
- I. Route conduit underground from point-to-point. Provide RMC elbows for all bends. Provide RMC for all concrete penetrations.
- J. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb, square and level.
- K. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.
- L. Close ends of raceway and unused conduit openings.
- M. Maintain clearance between raceway and piping for maintenance purposes.
- N. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- O. Cut conduit square using saw or pipecutter; de-burr cut ends.
- P. Bring conduit to shoulder of fittings; fasten securely.
- Q. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- R. Install conduit hubs to fasten conduit to cast boxes.
- S. Install no more than equivalent of three 90 degree bends between conduit bodies and boxes. Install conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or install factory elbows for bends in metal conduit 2 inch trade size and larger.
- T. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
- U. Install deflection fittings between buildings, equipment, and other structures as shown on Drawings and required by the Authorities Having Jurisdiction and per NEMA FB 2.40.



- V. Install expansion fittings between buildings, equipment, and other structures as shown on Drawings and required by the Authorities Having Jurisdiction and per NEMA FB 2.40.
- W. Install expansion fittings for thermal expansion of raceways and deflection where raceway crosses seismic, control and expansion joints and per NEMA FB 2.40.
- X. Provide pull string sized in accordance with Section 26 05 00 in each empty conduit except sleeves and nipples. Furnish informational submittals showing pull calculations used to size pull strings. Provide label with information where the other end of string is located. Install caps to protect installed conduit against entrance of dirt and moisture.
- Y. Close ends and unused openings in wireway.
- Z. Provide insulated throat box connectors where raceway terminates at sheet steel in boxes, panels, switchboards, and equipment. Connector material shall match raceway.
- AA. Provide screw terminal type grounding bushings for metal conduits on circuits greater than 600 VAC.
- BB. Paint EMT conduit to match existing walls.

**3.05 INSTALLATION – BOXES**

- A. Install boxes used for equipment and luminaire attachment directly to structure or to supports provided under Section 26 05 00. Do not use supports for non-electrical equipment or systems for electrical system attachment.
- B. Install wall mounted boxes at elevations to accommodate mounting heights specified for outlet device. Use 4 inch square boxes for receptacles.
- C. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- D. Orient boxes to accommodate wiring device orientation.
- E. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- F. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- G. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- H. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- J. Install adjustable steel channel fasteners for hung ceiling outlet box.
- K. Do not fasten boxes to ceiling support wires or other piping systems.
- L. Support boxes independently of conduit.



- M. Close unused openings in box.

**3.06 INTERFACE WITH OTHER PRODUCTS**

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with 26 05 00.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

**3.07 ADJUSTING**

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.
- C. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

**3.08 CLEANING**

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

**END OF SECTION**



## PANELBOARDS

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. The Work of this Section includes panelboards and molded case circuit breakers.

#### 1.02 REFERENCES

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. NECA 1 (National Electrical Contractors Association) – Good Workmanship in Electrical Contracting.
- D. NECA 407 (National Electrical Contractors Association) – Installing and Maintaining Panelboards.
- E. NEMA AB 3 (National Electrical Manufacturers Association) – Molded-Case Circuit Breakers and Their Applications.
- F. NEMA PB 1 (National Electrical Manufacturers Association) – Panelboards.
- G. NEMA PB 1.1 (National Electrical Manufacturers Association) – Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- H. NEMA 250 (National Electrical Manufacturers Association) – Enclosures for Electrical Equipment (1000 Volts Maximum).
- I. UL 67 (Underwriters Laboratories) – Panelboards.
- J. UL 489 (Underwriters Laboratories) – Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.
- K. UL 1449 (Underwriters Laboratories) – Surge Protective Devices.
- L. UL 1699 (Underwriters Laboratories) – Arc-Fault Circuit Interrupters.

#### 1.03 SUBMITTALS

- A. Product Data:
  - 1. Features.
  - 2. Performance.
  - 3. Electrical Characteristics.
  - 4. Ratings.
- B. Shop Drawings:
  - 1. Outline and support point dimensions.



2. Voltage.
3. Main bus ampacity.
4. Integrated short circuit ampere rating.
5. Circuit breaker and fusible switch arrangement and sizes.

#### **1.04 CLOSEOUT SUBMITTALS**

- A. Field Quality Control Test Reports: Submit test reports in accordance with Section 26 00 10.
  1. Procedures used.
  2. Test and inspection results that comply with Specifications.
  3. Test and inspection results that failed to comply and corrective action taken to achieve results that comply with Specifications.
- B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- C. Operation and Maintenance Data:
  1. Spare parts listing.
  2. Source and current prices of replacement parts and supplies.
  3. Recommended maintenance procedures and intervals.

### **PART 2 - PRODUCTS**

#### **2.01 PANELBOARDS**

- A. Existing
  1. Eaton.
- B. Product Description: NEMA PB 1 and UL 67, circuit breaker type panelboard.

#### **2.02 MOLDED CASE CIRCUIT BREAKERS**

- A. Product Description: NEMA AB 1 and UL 489, bolt-on type circuit breakers with integral trip units in each pole and common trip handle for all poles.
- B. Ratings: Circuit breakers shall be 80 percent rated.
- C. Trip Units: Provide trip units based on the following frame and amperage ratings.
  1. 0 to 100 Amperes: Fixed thermal and fixed instantaneous functions.
  2. 250 Amp Frame: Interchangeable trip units with adjustable inverse time overcurrent and adjustable instantaneous trip functions.
- D. Manufacturer: To match existing panelboard in which they are mounted.

### **PART 3 - EXECUTION**

#### **3.01 EXISTING WORK**

- A. Maintain access to existing panelboard remaining active and requiring access. Modify installation or provide access panel.



- B. Protect existing panelboards remaining in service from damage during demolition and construction.
- C. Clean and repair existing panelboards to remain or to be reinstalled.

**3.02 EXAMINATION**

- A. Receive, inspect, handle, and store panelboards in accordance with to NECA 407 and NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.03 INSTALLATION**

- A. Install filler plates for unused spaces in panelboards.
- B. Install circuit breakers in existing panelboard.
- C. Provide typed circuit directory for each panelboard.
- D. Install engraved plastic nameplates in accordance with Section 26 05 00.

**3.04 FIELD QUALITY CONTROL**

- A. Performance of Acceptance Checks and Tests. Perform in accordance with the manufacturer's recommendations and include the following visual and mechanical inspections and electrical tests, performed in accordance with ANSI/NETA ATS.
- B. Molded Case Circuit Breakers:
  - 1. Compare nameplate data with the Drawings and Specifications.
  - 2. Inspect physical and mechanical condition.
  - 3. Perform contact-resistance tests on each breaker.
  - 4. Perform insulation-resistance tests phase to phase, phase to ground, and across open poles.
  - 5. Determine the following settings by primary current injection for all circuit breakers rated 100 amperes and higher.
    - a. Long-time minimum pickup current.
    - b. Long-time delay.
    - c. Short-time pickup and delay.
    - d. Instantaneous pickup.
    - e. Ground fault pickup and delay.
- C. Prepare and submit report of findings.

**3.05 ADJUSTING**

- A. Set field-adjustable circuit-breaker trip ranges.



- B. Measure steady state load currents at each panelboard feeder; rearrange circuits in panelboard to balance phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

**3.06 CLEANING**

- A. Remove dirt and debris from enclosures.
- B. Clean finishes and touch up damage.

**END OF SECTION**



**WIRING DEVICES**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section Includes:
  - 1. Receptacles.
  - 2. Device plates and decorative box covers.

**1.02 REFERENCES**

- A. NECA (National Electrical Contractors Association) – Standard of Installation.
- B. NEMA FB 11 (National Electrical Manufacturers Association) – Plugs, Receptacles and Connectors of the Pin-and Sleeve Type for Hazardous Locations.
- C. NEMA WD 1 (National Electrical Manufacturers Association) – General Requirements for Wiring Devices.
- D. NEMA WD 6 (National Electrical Manufacturers Association) – Wiring Device-Dimensional Requirements.
- E. UL 20 (Underwriters Laboratories) – General Use Snap Switches.
- F. UL 498 (Underwriters Laboratories) – Attachment Plugs and Receptacles.
- G. UL 943 (Underwriters Laboratories) – Ground-Fault Circuit-Interrupters.
- H. UL 1449 (Underwriters Laboratories) – Surge Protective Devices.
- I. Washington State Energy Code.

**1.03 SUBMITTALS**

- A. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
- B. Operation and Maintenance Data: Submit manufacturer's wiring diagrams, installation instructions and operating instructions.

**1.04 CLOSEOUT SUBMITTALS**

- A. Field Quality Control Test Reports: Submit test reports in accordance with Section 26 00 10.
- B. Operations and Maintenance Data: Complete cut sheets showing model numbers of materials actually used.



**1.05 COMMISSIONING**

- A. Furnish commissioning duties in accordance with Division 01, Sections 26 00 10, and the Washington State Energy Code.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Devices provided under this Section shall be of the same manufacturer for each type of device specified. Do not mix manufacturers.
- B. Damp Location Receptacles:
  - 1. Receptacles identified on the Drawings as damp location receptacles are in addition to the NEC. Where the Drawings do not identify receptacle type, use the NEC definition of wet location.
  - 2. Receptacles shall be UL listed as weather resistant in accordance with NEC Article 406.
  - 3. Wall plates shall be NEMA 250 Type 3R when the covers are closed.
  - 4. Wall plates shall be constructed of corrosion resistant cast metal with spring-loaded covers. They shall have gaskets between the wall plate and box.
- C. Wet Location Receptacles:
  - 1. Receptacles identified on the Drawings as wet location receptacles are in addition to the NEC. Where the Drawings do not identify receptacle type, use the NEC definition of wet location.
  - 2. Receptacles shall be UL listed as weather resistant in accordance with NEC Article 406.
  - 3. Wall plates shall be NEMA 250 Type 3R when the in-use cover is closed.
  - 4. Wall plates shall be constructed of corrosion resistant cast metal with self-closing covers. They shall have gaskets between the wall plate and box.
  - 5. In-use covers shall be lockable in the "in-use" position using off the shelf padlocks having shank diameters not less than 1/4 inch.
  - 6. Wall plates for 20 amp receptacles shall be UL listed for "in-use" operation.
  - 7. Wall plates for other than 20 amp receptacles shall be UL listed for "in-use" operation where this requirement is shown on Drawings or otherwise required by the NEC.
- D. Color: All devices and plates shall be as indicated below, unless otherwise noted.
  - 1. White for normal power circuits.

**2.02 GFCI RECEPTACLES**

- A. GFCI Convenience Receptacles:
  - 1. Manufacturers:
    - a. Eaton.
    - b. Hubbell.
    - c. Leviton.
    - d. Pass & Seymour (Legrand).
    - e. Substitutions: Not permitted.
  - 2. Product Description: NEMA WD 1, UL 498 and UL 943 Class A Industrial grade, hard use GFCI receptacles.
    - a. Configuration: NEMA WD 6, Type 5-20R.
    - b. Voltage: 125 V.



- c. Amperage: 20 A.
- d. Wiring Terminals: Side-wired, screw-type, with strand containment for stranded conductor applications.
- e. Face: Nylon.
- f. Body: Nylon.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify outlet boxes are installed at proper height.
- B. Verify wall openings are neatly cut and completely covered by wall plates.
- C. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

#### **3.02 PREPARATION**

- A. Clean debris from outlet boxes.

#### **3.03 EXISTING WORK**

- A. Disconnect and remove abandoned wiring devices.
- B. Modify installation to maintain access to existing wiring devices to remain active.
- C. Mark and protect wiring devices which are to remain. Replace any wiring devices damaged during the project.
- D. Clean and repair existing wiring devices to remain or to be reinstalled.

#### **3.04 INSTALLATION**

- A. Install in accordance with NECA "Standard of Installation."
- B. Install devices plumb, square and level.
- C. Vertical mounting heights and horizontal spacing dimensions for wiring devices are measured to the vertical and horizontal centerlines of the device plate, respectively.
- D. Install receptacles with grounding pole on bottom, unless required otherwise the AHJ.
- E. Provide identification labels for receptacles showing panelboard and circuit in accordance with Section 26 05 00.
- F. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.
- G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Connect solid conductors to wiring devices by wrapping solid conductor around screw terminal.



- I. Connect stranded conductors to wiring devices using code compliant methods that secure all strands in the termination. Do not place bare stranded conductors directly under device screws.

**3.05 INTERFACE WITH OTHER PRODUCTS**

- A. Coordinate locations of outlet boxes provided under Section 26 05 30.
- B. Install convenience receptacle 18 inches above finished floor.

**3.06 MANUFACTURER'S FIELD SERVICES**

- A. Program controls, adjust sensors, and set timers.
- B. Measure lighting system energy consumption levels.

**3.07 FIELD QUALITY CONTROL**

- A. Inspect each wiring device for defects.
- B. Verify each receptacle device is energized.
- C. Test each receptacle device for proper polarity; record results of tests.
- D. Test each GFCI receptacle device for proper operation.
- E. Test each GFCI serving equipment by primary current injection.

**3.08 ADJUSTING**

- A. Adjust devices and wall plates to be flush and level.

**3.09 CLEANING**

- A. Clean exposed surfaces to remove splatters and restore finish.

**END OF SECTION**



## FUSES

### PART 1 - GENERAL

#### 1.01 SECTION INCLUDES

- A. The Work of this Section includes the following.
  - 1. Fuses.

#### 1.02 REFERENCES

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. NEMA FU 1 (National Electrical Manufacturers Association) – Low Voltage Cartridge Fuses.

#### 1.03 FUSE PERFORMANCE REQUIREMENTS

- A. Motor Branch Circuits: Class RK5.

#### 1.04 SUBMITTALS

- A. Product Data:
  - 1. Fuse classification.
  - 2. Voltage rating.
  - 3. Current rating.
  - 4. Interrupting rating.
  - 5. Current limiting and let-through characteristics for fuse classes and sizes used.
  - 6. Time-current curves for fuse classes and sizes used.
  - 7. Dimensions.

#### 1.05 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual sizes, ratings, and locations of fuses.

#### 1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

#### 1.07 MAINTENANCE MATERIALS

- A. Furnish two fuse pullers.

#### 1.08 EXTRA MATERIALS

- A. Furnish ten percent of the quantity of each type, size and rating of fuse installed, but not less than three spare fuses.



PART 2 - PRODUCTS

2.01 FUSES

- A. Manufacturers:
  - 1. Bussmann.
  - 2. Mersen (formerly Ferraz Shawmut).
  - 3. Littlefuse.
- B. Dimensions and Performance: NEMA FU 1, Class as specified or as indicated on Drawings.
- C. Voltage: Rating suitable for circuit phase-to-phase voltage.
- D. Class Rk5 Fuses:
  - 1. Voltage: Rating suitable for circuit phase-to-phase voltage.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install fuse with label oriented so manufacturer, type, and size are easily read.

**END OF SECTION**



**SAFETY SWITCHES**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes: Fused and non-fused safety switches.

**1.02 REFERENCES**

- A. ANSI/NETA ATS (InterNational Electrical Testing Association) – Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. ANSI/NETA ETT (InterNational Electrical Testing Association) – Standard for Certification of Electrical Testing Technicians.
- C. NECA (National Electrical Contractors Association) – Standard of Installation.
- D. NEMA FU1 (National Electrical Contractors Association) – Low Voltage Cartridge Fuses.
- E. NEMA KS 1 (National Electrical Contractors Association) – Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- F. NEMA 250 (National Electrical Contractors Association) – Enclosures for Electrical Equipment (1000 Volts Maximum).
- G. UL 98 (Underwriters Laboratory) – Enclosed and Dead-Front Switches.

**1.03 SUBMITTALS**

- A. Product Data:
  - 1. Short circuit rating.
  - 2. Voltage.
  - 3. Continuous current.
  - 4. Horsepower rating.
  - 5. Cable terminal sizes.
- B. Shop Drawings:
  - 1. Dimensioned outline drawing.
  - 2. Conduit entry/exit locations.

**1.04 CLOSEOUT SUBMITTALS**

- A. Field Quality Control Test Reports: Submit test reports in accordance with Section 26 00 10.
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- B. Operation and Maintenance Data:
  - 1. Product Data and Shop Drawings per above.



- 2. Spare parts listing.
- 3. Source and current prices of replacement parts and supplies.
- 4. Recommended maintenance procedures and intervals.
- C. Project Record Documents: Record actual locations of safety switches and ratings of installed fuses.

## **PART 2 - PRODUCTS**

### **2.01 SWITCHES**

- A. Manufacturers:
  - 1. Square D.
  - 2. Eaton.
  - 3. General Electric (ABB).
  - 4. Siemens.
  - 5. Substitutions: Not Permitted.
- B. Product Description: NEMA KS 1, Type HD, enclosed load interrupter knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Provide defeat for interlock. Handle lockable in ON or OFF position.
- C. Enclosure:
  - 1. Interior Dry Locations: NEMA 250 Type 1, fabricated from steel finished with manufacturer's standard gray enamel.
  - 2. Exterior Locations: NEMA 250, Type 3R finished with manufacturer's standard gray enamel.
- D. Furnish switches with entirely copper current carrying parts.
- E. Fuses: Provide fuse holders and fuses where switches are shown as fused.
- F. Switch Rating: Horsepower rated for AC or DC as shown on Drawings.
- G. Short Circuit Current Rating: UL listed for 200,000 rms symmetrical amperes when used with or protected by Class R fuses (30-600 ampere switches employing appropriate fuse rejection schemes). 200,000 rms symmetrical amperes when used with or protected by Class L fuses (800-1200 ampere).

## **PART 3 - EXECUTION**

### **3.01 EXISTING WORK**

- A. Disconnect and remove abandoned safety switches.
- B. Maintain access to existing safety switches and other installations remaining active and requiring access. Modify installation or provide access panel.
- C. Clean and repair existing safety switches to remain or to be reinstalled.

### **3.02 INSTALLATION**

- A. Install in accordance with NECA "Standard of Installation."



- B. Install safety switches plumb, square and level. Provide supports in accordance with Section 26 05 00.
- C. Height: 78 inches, maximum, to operating handle.
- D. Install fuses for fusible disconnect switches. Refer to Section 26 28 13 for product requirements.
- E. Install engraved plastic nameplates in accordance with Section 26 05 00.
- F. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

**3.03 FIELD QUALITY CONTROL**

- A. Perform the following inspections and tests in accordance with Section 26 00 10.
  - 1. Visually inspect switch for physical damage.
  - 2. Inspect paint condition on painted switches. Apply touch-up paint matching switch manufacturer's specification.
  - 3. Perform insulation resistance tests phase to phase and phase to ground with switch in the closed position and power conductors disconnected. Perform insulation resistance tests on each pole from line terminals to load terminals with the switch in the open position and power conductors disconnected. Test voltage shall be 1000 VDC. Test durations shall be 1 minute.
  - 4. Perform continuity tests across each pole with the switch in the closed position. Perform test using digital low-resistance ohmmeter capable of reading resistances as low as 1 micro-ohm.

**3.04 CLEANING**

- A. Remove dirt and debris from enclosures.
- B. Clean finishes and touch up damage.

**END OF SECTION**



**ROTARY PHASE CONVERTER**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. The Work of this Section includes rotary phase converters.

**1.02 SUBMITTALS**

- A. Product Data:
  - 1. Features.
  - 2. Performance.
  - 3. Electrical Characteristics.
  - 4. Ratings.
- B. Shop Drawings:
  - 1. Outline and support point dimensions.
  - 2. Voltage.
  - 3. Main bus ampacity.
  - 4. Integrated short circuit ampere rating.
  - 5. Circuit breaker and fusible switch arrangement and sizes.

**1.03 CLOSEOUT SUBMITTALS**

- A. Field Quality Control Test Reports: Submit test reports in accordance with Section 26 00 10.
  - 1. Procedures used.
  - 2. Test and inspection results that comply with Specifications.
  - 3. Test and inspection results that failed to comply and corrective action taken to achieve results that comply with Specifications.
- B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- C. Operation and Maintenance Data:
  - 1. Spare parts listing.
  - 2. Source and current prices of replacement parts and supplies.
  - 3. Recommended maintenance procedures and intervals.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURER**

- A. Kay Industries Phasemaster MA-R-3.
- B. Product Description: 15 HP Motor generator rotary phase converter to convert 240 Volt -1 Phase to 240 Volt – 3 Phase provided with integral disconnect switch, fuses and terminals and NEMA 3R outdoor weatherproof enclosure.



**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine elements and surfaces to receive equipment for compliance with installation tolerances and other conditions affecting performance, including but not limited to, ambient temperature, cooling air circulation, contaminants, and disassembly and maintenance space.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 INSTALLATION**

- A. Provide 4-inch deep concrete housekeeping pad that extends 4 inch beyond equipment footprint.
- B. Verify anchorage complies with seismic design requirements.
- C. Verify integrity of equipment grounding conductor.

**3.03 IDENTIFICATION**

- A. Provide labels for enclosures.
- B. Identify equipment designation, primary and secondary voltages, primary source, and secondary loads and locations.

**3.04 FIELD QUALITY CONTROL**

- A. Prior to energizing, test installed wire for continuity and faults. Record initial settings of breakers.
- B. Functional performance testing: Each piece of equipment and component of the 400 Hz central systems shall be tested as specified herein.
  - 1. Check phase rotation.
    - a. Verify proper operation of motor generator controls, alarms and metering devices, and proper operation.

**3.05 DEMONSTRATION AND TRAINING**

- A. Provide a factory-authorized service representative for training.
- B. Train Owner Personnel a minimum of two hours on procedures and schedules for energizing and de-energizing, troubleshooting, servicing, and maintaining equipment and schedules.

**END OF SECTION**