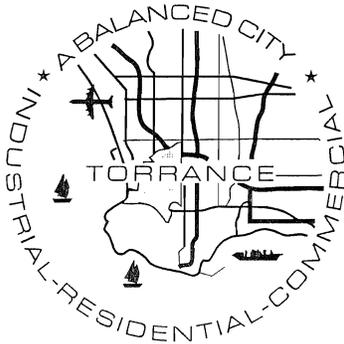


**PROJECT MANUAL FOR REPLACEMENT OF  
HVAC UNITS AT VARIOUS LOCATIONS  
B 2013-33**



**JULY 2013**

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**PART A**

**NOTICE INVITING BIDS**

**CITY OF TORRANCE  
CALIFORNIA**

**NOTICE INVITING BIDS**

Notice is hereby given that sealed proposals for performing the following described work will be received at the office of the City Clerk of the City of Torrance, California, until **2:00 p.m. on Thursday, August 22, 2013** after which time they will be publicly opened and read at 2:15 p.m. in the Council Chambers of said City:

**Bid for Replacement of the HVAC Units at Various Locations  
B2013-33**

Plans, Bid Proposal (for reference only) and Specifications are available for viewing and printing from the City's website at <http://www.torranceca.gov/25079.htm>.

**There will be a mandatory pre-bid conference held on Wednesday, July 31, 2013 at 9:00 a.m. commencing at the Main City Hall, 3031 Torrance Boulevard, Torrance, CA 90503.** The City of Torrance will consider the bidder as non-responsive if the bidder does not attend the mandatory pre-bid conference. **Addenda will be issued only by email and only to those attended the mandatory pre-bid conference.** All addenda must be acknowledged. Failure to acknowledge addenda on the bid forms provided may render the proposal non-responsive and cause it to be rejected.

An official bid proposal packet, which includes: bid proposal forms, and a bound Specifications booklet may be obtained at the Office of the City Clerk (310) 618-2870, \$35 if picked up at City Hall, or payment of \$45 if requested by mail. Both amounts include tax. Neither amount is refundable. A prospective bidder must provide to the City Clerk's office, the firm's name, address, telephone and fax number, a contact person and a valid email address.

If requesting any item(s) by mail, please send check to the following:

**CITY OF TORRANCE  
OFFICE OF THE CITY CLERK  
3031 TORRANCE BLVD  
TORRANCE, CA 90503-2970  
ATTN: B2013-33**

The engineer's estimate is \$550,000- \$650,000. The work shall be completed within one hundred eighty (180) calendar days of receipt of the Notice to Proceed (NTP). The one hundred eighty (180) calendar day schedule includes: completion of contractual paperwork, submittal review and onsite work. Bids are required for the entire work described herein.

The City has determined the bidder must have a valid "C-20" Warm-Air Heating, Ventilating and Air Conditioning Contractor. Bidder must have at least 5 years experience in projects of similar size and scope. References must reflect this experience.

Per Division 2, Chapter 2 of the Torrance Municipal Code, the Torrance City Council may reject any and all bids, waive any informality or irregularity in such bids, and determine the lowest responsible bidder.

No Facsimile Bids shall be accepted by the City.

Project is not subject to prevailing wage.

By order of the City Council of the City of Torrance, California.

For further information, please contact Diane Megerdichian, Business Manager General Services Department at 310-781-7151 or [dmegerdichian@torranceca.gov](mailto:dmegerdichian@torranceca.gov). If emailing questions, please put project title in the subject line.

**PART B**

**INSTRUCTIONS TO BIDDERS**

**CITY OF TORRANCE  
CALIFORNIA**

**INSTRUCTIONS TO BIDDERS**

A. QUALIFICATION OF BIDDERS

1. Competency of Bidders

The Bidder shall be thoroughly competent and capable of satisfactorily performing the Work covered by the Bid. As specified in the Bid Documents, the Bidder shall furnish statements of previous experience on similar work. When requested, the Bidder shall also furnish a plan of procedure proposed; organization, machinery, plant and other equipment available for the Work; evidence of financial condition and resources; and any other documentation as may be required by the City to determine if the Bidder is responsible.

2. Contractor's License

At the time of submitting the Bid, the Bidder shall be licensed as a contractor in accordance with the provisions of Chapter 9, Division 3, of the California Business and Professions Code. The required prime contractor license class for the Work is shown in the project Notice Inviting Bids. However, the City reserves the right to award the Contract to a contractor with another class if the City determines that the license is proper for the work.

B. BIDDER RESPONSIBILITY

A responsible Bidder is a Bidder who has demonstrated the attribute of trustworthiness, as well as ability, fitness, capacity and experience to satisfactorily perform the work.

Bidders are notified that, in accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council may determine whether the Bidder is responsible based on a review of the Bidder's performance on other contracts.

If, based on the provision and criteria in Division 2, Chapter 2 of the Torrance Municipal Code, the General Services Director proposes not to recommend the award of contract to the apparent low bidder, the Director shall notify the Bidder in writing of its intention to recommend to the City Council that the Council award the contract to the next lowest responsible bidder. If the Bidder presents evidence in rebuttal to the recommendation, the Director shall evaluate the merits of such evidence, and based on that evaluation, make a recommendation to the City Council.

C. ADDENDA TO THE CONTRACT DOCUMENTS

The City reserves the right to revise or amend these specifications prior to the date set for opening bids. Revisions and amendments, if any, will be announced by an addendum to this bid. If the revisions require additional time to enable Bidders to respond, the City may postpone the opening date accordingly. In such case, the addendum will include an announcement of the new opening date.

All addenda must be attached to the bid. Failure to attach any addendum may render the bid non-responsive and cause it to be rejected.

D. PREPARATION OF THE BID

1. Examination of Site, Plans and Specifications

Bidders shall examine the site of the work and acquaint themselves with all conditions affecting the work. By submitting a bid, the bidder shall be held to have personally examined the site and the drawings, to have carefully read the specifications, and to have satisfied itself as to its ability to meet all the difficulties attending the execution of the proposed contract before the delivery of this proposal, and agrees that if awarded the contract, will make no claim against the City based on ignorance or misunderstanding of the plans, specifications, site conditions and/or contract provisions.

The Contractor shall have included in the contract price a sufficient sum to cover all items, including labor, materials, tools, equipment and incidentals, that are implied or required for the complete improvements as contemplated by the drawings, specifications, and other contract documents.

2. Bid Instructions and Submissions

The Bid shall be submitted on the Bid Proposal forms included in the Specifications. All Bid Documents must be completed, executed and submitted with Bid by Bidder. Required seven (7) Bid Proposal Documents:

1. Bidder's Proposal
2. Addenda Acknowledgment
3. Contractor's Affidavit
4. Bid Bond (10% of Bid)
5. List of Subcontractors
6. References (1 pages)
7. Bidder's Information (2 pages)

All prices submitted will be considered as including any and all sales or use taxes. In case of a discrepancy between a unit bid price and total bid, the unit price shall prevail.

E. BID FORM/BOND

The Bid must be accompanied by cash, a certified or cashier's check, or a surety bond (bid bond) payable to the City of Torrance. Bids must be submitted on the proposal forms furnished by the City Clerk's office. The Bid Guaranty shall be in an amount equivalent to at least 10% of the Total Contract Bid Price.

Within ten (10) days after the award of the contract, the City Clerk will return the proposal guarantees accompanying those proposals, which are not to be considered in making the award. All other proposal guarantees will be held until the contract has been finally executed, after which they will be returned to the respective bidders whose proposals they accompany.

F. AFFIDAVIT

An affidavit form is enclosed. It must be completed signifying that the bid is genuine and not collusive or made in the interest or on behalf of any person not named in the bid, that the bid has not directly or indirectly induced or solicited any other Bidder to put in a sham bid or any other person, firm, or corporation to refrain from bidding, and that the Bidder has not in any manner sought by collusion to secure for itself an advantage over any other Bidder. Any bid submitted without an affidavit or in violation of this requirement will be rejected.

G. NONRESPONSIVE BIDS AND BID REJECTION

1. A Bid in which any one (1) of the required seven (7) Bid proposal documents are not completed, executed and submitted may be considered non-responsive and be rejected.
2. A Bid in which the Contract Unit Prices are unbalanced, which is incomplete or which shows alteration of form or irregularities of any kind, or which contains any additions or conditional or alternate Bids that are not called for, may be considered non-responsive and be rejected.

H. AWARD OF CONTRACT

In accordance with Division 2, Chapter 2 of the Torrance Municipal Code, the City Council reserves the right to reject any and all bids received, to take all bids under advisement for a period not-to-exceed sixty (60) days after date of opening thereof, to waive any informality or irregularity in the Bid, and to be the sole judge of the merits of material included in the respective bids received. This bid does not commit the City to award a contract or to pay any cost incurred in the preparation of a bid. All responses to this bid become the property of the City of Torrance.

I. NOTICE OF INTENT TO AWARD

Approximately two (2) weeks prior to the anticipated City Council meeting awarding a contract as a result of the RFP or bid, results will be posted on the City of Torrance Web site [www.Torranceca.gov](http://www.Torranceca.gov) and may be found by clicking on the following:

- Government
- Current Bids and RFPs
- View evaluated results of Bids and RFPs tentatively scheduled for recommendation of award to the City Council here.

J. BID PROTEST PROCEDURES

Please refer to City of Torrance website link below to obtain the City's Protest Procedures. [http://www.torranceca.gov/PDF/Bid\\_RFP\\_Protest\\_Procedures.pdf](http://www.torranceca.gov/PDF/Bid_RFP_Protest_Procedures.pdf)

K. EXECUTION OF CONTRACT

After the Contract is awarded, the awarded bidder shall execute the following six (6) documents:

1. Performance Bond (100% of Bid)
2. Labor and Material Bond (100% of Bid)
3. Contract – Contract Services Agreement
4. Verification of Insurance Coverage (Certificates and Endorsements)
5. Business License Application Form

The contract shall be signed by the successful bidder and returned, together with the contract bonds and evidence of required insurance coverage, **within ten (10) working days**, not including Sundays, after the bidder has received notice that the contract has been awarded. Failure to execute the contract as specified above shall be just cause for annulment of the award and forfeiture of the proposal guarantee. The Contract shall not be considered binding upon the CITY until executed by the authorized CITY officials.

Bond amounts shall be as provided in Section 2-4 of the Standard Specifications for Public Works Construction. The Performance Bond shall be required to remain in effect for one (1) year following the date specified in the City's Notice of Completion, or, if no Notice of Completion is recorded for one (1) year following the date of final acceptance by the City Manager.

L. PERMITS, LICENSES AND CONTRACT SERVICES AGREEMENT

The Contractor shall procure and execute all permits, licenses, pay all charges and fees, and give all notices necessary and incidental to completion of Work. The Contractor shall execute a Contract Services Agreement. No fee is charged for a permits issued by the City of Torrance Building and Safety Department for a public works project. The Contractor shall obtain a City of Torrance Business License. To obtain a Torrance Business License please call 310-618-5923.

M. INSURANCE

The Contractor shall maintain Automobile Liability, General Liability and Workers' Compensation Insurance as specified in the Contract Services Agreement included in the Project Specifications.

N. SUBCONTRACTS

Each Bidder shall comply with the Chapter of the Public Contract Code including sections 4100 through 4113. The Contractor shall perform, with its own organization, Contract work amounting to at least 50 percent of the Contract price. When a portion of an item is subcontracted, the value of the work subcontracted will be based on the estimated percentage of the Contract Unit Price, determined from information submitted by the Contractor, subject to approval by the City Manager.

O. TRAFFIC CONTROL PLAN Not applicable

P. PRE-BID INQUIRIES

Bidders with pre-bid inquiries must submit questions in writing to the General Services Department. Any and all questions must be emailed to Diane Megerdichian, Business Manager at [DMegerdichian@torranceca.gov](mailto:DMegerdichian@torranceca.gov). Please list **“Replacement of HVAC Units at Various Locations (question-topic)”** in the subject line of the email. For questions of a general nature, bidders may contact Diane Megerdichian directly at 310-781-7151

Q. RESPONSIBILITY OF CITY.

The City of Torrance shall not be held responsible for the care or protection of any material or parts of the work prior to final acceptance, except as expressly provided in these specifications.

R. CONSTRUCTION SCHEDULE AND PRECONSTRUCTION CONFERENCE.

The office staff of the City is currently operating on a 9/80 work week; therefore, City Hall is closed every other Friday.

In accordance with the herein Special Provisions, after notification of award and prior to start of any work, **the Contractor shall submit to the City Manager for approval its proposed Construction Schedule within ten (10) working days from the date of Notice of Proceed.** At least two (2) days, exclusive of Saturdays, Sundays and holidays, prior to commencement of work, the Contractor shall attend a pre-construction conference.

**The Contractor will provide all product and equipment submittals to the City of Torrance or designated consultant within ten (10) working days from the date of Notice to Proceed.** The Contractor shall immediately order materials requiring a delivery delay upon receipt of a written notice from the City that the City Council has approved an Award of Contract. Contractor shall provide written proof(s) of timely material order(s) and shall include any delivery delays in the Construction Schedule.

S. PROGRESS OF THE WORK AND TIME FOR COMPLETION

The Contractor shall begin work after the mailing, from the City Manager to the Contractor, by first class mail, postage prepaid, of a Notice to Proceed. **The Contractor shall diligently prosecute the same to completion within one hundred eighty (180) calendar days of the start date specified in said Notice.** The one hundred eighty calendar day schedule includes, completion of contractual paper work, equipment/material submittal review, the lead time for materials and equipment, and on site work.

During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose acceptable quality or efficiency will be affected by any unfavorable conditions shall be constructed while those conditions exist. It is expressly understood and agreed by and between the Contractor and the City that the Contract time for completion of the work described herein is a reasonable time taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

T. LIQUIDATED DAMAGES

The Contractor agrees that failure to complete work within the time allowed will result in damages being sustained by the City. Contractor and City agree that failure to complete the project will result in inconvenience to the citizens of Torrance and the City of Torrance and their customers using the affected areas. Such delay will also result in the necessity of several inspections each day to ensure that the project is properly progressing. The parties also agree that failure to complete the project on time will prevent the City from having the use of the facility. Therefore, the parties agree such damages among others are, and will continue to be, impracticable and extremely difficult to determine, but that Five Hundred (\$500) a calendar day is the minimum value of such costs to the City and is a reasonable amount that the Contractor agrees to reimburse the City for each calendar day of delay in finishing the work in excess of the time specified for completion, plus any authorized time extensions.

Execution of the contract under these specifications shall constitute agreement by the Contractor and the City that Five Hundred Dollars (\$500) per calendar day is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs. Said amount may be reduced by the City if work is sufficiently completed within the allotted time so that the damages are minimized.

The Contractor will not be assessed liquidated damages for any delay in completion of the work when such delay was caused by the failure of the City or the owner of a utility to provide for removal or relocation of the existing utility facilities; provided, however, that the Contractor shall have given the City and the owner of a utility timely notice of the interference. "Timely notice" shall be defined as a verbal notice (to be followed up in writing) no later than one (1) hour after initial discovery of the interference unless the City Representative is present, in which case notice shall be given immediately in writing to the City Manager.

U. GENERAL PREVAILING WAGE RATE- Not applicable

V. PRELIMINARY NOTICES

Preliminary Notices should be mailed to the following address.

Diane Megerdichian  
General Services Department  
3350 Civic Center Drive  
Torrance, CA 90503

**PART C**

**SPECIAL PROVISIONS**

## **SECTION A. GENERAL**

The Project Specifications for all work on this project are the specifications contained in the “**Project Manual for Replacement of the HVAC Units at Various Locations**”, prepared by Bartef Yoosephiance & Associates and the City of Torrance.

These Specifications are intended to govern all aspects of the appurtenant construction including, but not limited to, materials, methods and details, except as modified herein or as inconsistent with the provisions hereof.

### DEFINITIONS

Whenever the following terms are used, they shall be understood to mean and refer to the following:

Agency or City - City of Torrance.

Board- The City Council of the City of Torrance herein referred to as City Council.

City Manager - The City Manager of the City of Torrance, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Consulting Architect – Bartev Hovsepien  
Bartef Yoosephiance & Associates  
Consulting Mechanical Engineers  
Carlsbad, CA 92008  
818-345-8614  
818-345-8615 Fax  
[byaeng@pacbell.net](mailto:byaeng@pacbell.net)

Laboratory - The designated laboratory authorized by the City of Torrance to test materials and work involved in the contract.

## **SECTION B. REFERENCE TO STANDARDS OR PUBLICATIONS**

Any reference made in the Contract Documents to any specification, standard, or publication of any organization shall, in the absence of a specific designation to the contrary, be understood to refer to the latest edition of the specification, standard, or publication in effect as of the date of advertising the work, except to the extent that said standard or publication may be in conflict with applicable laws, ordinances, or governing codes. Contractors should be aware of all new code requirements (such as Cal-Green) when dealing with HVAC and other general building work. No requirements of these specifications or the drawings shall be waived because of any provisions of, or omission from, said standards or publications.

## SECTION C. DESCRIPTION OF THE WORK

1. Scope of the Work. The work to be done consists of furnishing all labor, materials, tools, equipment and incidentals complete the replacement of the HVAC units at various locations as shown in the plans and specifications prepared by Bartef Yoosephiance & Associates and the City of Torrance.

## SECTION D. GENERAL PROCEDURES

1. Specifications and Drawings Complementary. The Specifications and Drawings are complementary, and what is called for in one shall be as binding as if called for in both.
2. Order of Precedence of Contract Documents. In resolving conflicts resulting from conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:
  - a. Change Orders (Including Plans and Specifications attached thereto).
  - b. Contract Services Agreement
  - c. Addenda
  - d. Special Provisions
  - e. Plans
  - f. Standard Plans
  - g. Instructions to Bidders
  - h. Standard Specifications

Within the Specifications the order of precedence is as follows:

- a. Addenda/Change Orders
- b. Permits from other agencies/supplemental agreements
- c. Special Provisions
- d. Instructions to Bidders
- e. Referenced Standard Drawings
- f. Referenced Standard Specifications

With reference to the Drawings the order of precedence is as follows:

- a. Change Orders drawings govern over Addenda and Contract Drawings
- b. Addenda drawings govern over Contract drawings
- c. Contract drawings govern over shop drawings and standard drawings
- d. Detail drawings govern over general drawings
- e. Figures govern over scaled dimensions

3. Discrepancies in the Contract Documents. Any discrepancies, conflicts, errors or omissions found in the Contract Documents shall be promptly reported in writing to the City Manager, who will issue a correction in writing. The Contractor shall not take advantage of any such discrepancies, conflicts, errors or omissions, but shall comply with any corrective measures regarding the same prescribed by the City Manager, and no additional payment or time shall be allowed therefor.

If discrepancies are discovered between the drawings and the specifications, and no specific interpretation is issued prior to bidding, the decision regarding this interpretation shall rest with the City Manager. The Contractor shall be compelled to act on the City Manager's decision as directed. In the event the installation is not in compliance with the direction of the City Manager, the installation shall be corrected by and at the expense of the Contractor at no additional cost to the City.

See Section C of these Special Provisions for "Claims".

4. Errors and Omissions. If the Contractor, in the course of the work, becomes aware of any claimed errors or omissions in the contract documents or in the City's field work, he shall immediately inform the City Manager. The City Manager shall promptly review the matter, and if the City Manager finds an error or omission has been made the City Manager shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the Contract, the City shall issue an appropriate Change Order. After discovery of an error or omission by the Contractor, any related work performed by the Contractor shall be done at its risk unless authorized by the City Manager.
5. Changed Conditions. The plans for the work show conditions as they are believed by the City Manager to exist, but it is not intended or to be inferred that the conditions as shown thereon constitute a representation by the City that such conditions are actually existent, nor shall the City be liable for any loss sustained by the Contractor as a result of any variance of the conditions as shown on the plans and the actual conditions revealed during the progress of the work or otherwise. The word "conditions" as used in this paragraph includes, but is not limited to, site conditions, both surface and subsurface.

The Contractor shall examine the site, compare it with the drawings and specifications and shall satisfy itself as to the conditions under which the work is to be performed. The Contractor shall ascertain and check the location of all existing structures, utilities and equipment, which may affect its work. The Contractor shall be responsible to re-examine the site, as necessary, for performance of change orders or other proposed changes, which may affect its work. No allowance shall subsequently be made on the Contractor's behalf for any extra expense or loss of time, which is incurred due to failure or negligence on its part to make such examination.
6. As-built Drawings. The Contractor shall maintain a control set of Plans and Specifications on the Work site at all times. All final locations determined in the field, and any deviations from the Plans and Specifications, shall be marked in red on this control set to show as-built conditions. Upon completion of the Work, the Contractor shall submit the control set to the Engineer for approval. Final payment will not be made until this requirement is met.
7. Construction Staking. The Contractor is responsible for all construction staking and shall be responsible for the cost of any restaking required due to disturbance caused by its operations, failure to protect the work site from vandalism or other causes of loss.

8. Notice to Proceed. Notwithstanding any other provisions of the Contract, the Contractor shall not be obligated to perform any work and the City shall not be obligated to accept or pay for any work performed by the Contractor prior to delivery of a Notice to Proceed. The City's knowledge of work being performed prior to delivery of the Notice to Proceed shall not obligate the City to accept or pay for such work. The Contractor shall provide all required contract bonds and evidences of insurance prior to commencing work at the site.
9. Delay in Obtaining Materials. No extension of time will be granted for a delay caused by the inability to obtain materials unless the Contractor either obtains advance written approval from the City Manager or obtains from the supplier and furnishes to the City Manager documentary proof that such materials could not be obtained due to war, government regulations, labor disputes, strikes, fires, floods, adverse weather necessitating the cessation of work, or other similar action of the elements. The Contractor is required to order materials in a timely manner as specified in the "Instruction to Bidders".
10. Inspection and Testing. The Work is subject to inspection and approval by the CITY. The Contractor shall notify the CITY a minimum of 48 hours in advance of the required inspection.

The CITY will make, or have made, such inspections and tests, as he deems necessary to see that the Work is in conformance with the Contract Documents. In the event such inspections or tests reveal noncompliance with the Contract Documents, the Contractor shall bear the cost of such corrective measures as deemed necessary by the CITY, as well as the cost of subsequent re-inspection and re-testing.

Work done in the absence of inspection by the CITY may be required to be removed and replaced under the inspection of the CITY, and the entire cost of removal and replacement, including the cost of all materials which may be furnished by the CITY and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered without the approval of the CITY shall, if so directed, be uncovered to the extent required by the CITY, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, including all costs for additional inspection.

The CITY and any authorized representatives shall at all times have access to the Work during its construction at shops and yards as well as the Work site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with the Contract Documents.

Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

11. Project Schedule
  - 12.1 The Contractor shall submit a Construction Schedule in accordance with the project manual to the City Manager prior to beginning construction. No work may be started until the Schedule has been approved in writing. The work shall be scheduled to assure that construction will be completed within the

specified time. The Contractor shall be responsible for coordination of all phases of the operation so that the time schedule can be met.

- 12.2 If the Contractor desires to make a major change in its method or operations after commencing construction or if their Schedule fails to reflect the actual progress, the Contractor shall submit to the City Manager a revised Construction Schedule in advance of beginning revised operations.

12. Mobilization

- 13.1 Scope. Mobilization shall include the provision of the Construction Schedule; site review; obtaining all permits, insurance, and bonds; moving onto the site all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities, and removal of same at completion of the project; all as required for the proper performance and completion of the work.

Mobilization shall include, but not be limited to, the following principle items.

- (a) Submittal and modification, as required, of the Construction Schedule.
- (b) All associated documentation and submittals required by Exhibit A of the contract.
- (c) Installing temporary construction power and wiring.
- (d) Establishing fire protection system.
- (e) Developing construction water supply.
- (f) Providing on-site sanitary facilities and portable water facilities, as required.
- (g) Arranging for and erection of Contractor's work and storage yard.
- (h) Submittal of all required insurance certificates and bonds, including subcontractors.
- (i) Obtaining all required permits.
- (j) Posting all OSHA required notices and establishment of safety programs.
- (k) Have the Contractor's superintendent at the job site full-time.
- (l) Pot-holing and other research and review as necessary to verify site conditions and utility locations, including research and review as necessary for change orders.
- (m) Demobilization.

13. Markup. The following percentages shall apply for additional work:

Profit	5% maximum
Overhead	5% maximum

The markups mentioned hereinafter shall include, but are not limited to, all costs for the services of superintendents, project managers, timekeepers and other personnel not working directly on the change order, and pickup or yard trucks used by the above personnel, and other vehicles and/or equipment present at the jobsite but not directly used in actual construction activities. Incidental movements of labor, materials, supplies or equipment shall not be considered as use in actual construction activities. These costs shall not be reported as labor or equipment elsewhere, except when actually performing work directly on the change order and then shall only be reported at the labor classification of the work performed.

The City shall not pay for the cost of foremen or a superintendent unless authorized in advance by the City Manager. To the sum of the costs and markups provided for in this subsection, one (1) percent shall be added as compensation for bonding.

14. Utilities. The Contractor shall provide coordination with all the utility companies involved and shall provide protection from damage to their facilities. The Contractor shall be responsible for repair or replacement to said facilities made necessary by its failure to provide required protection. The Contractor is required to include utility requirements in the Construction Schedule.

The Contractor shall be solely responsible to check all utility record maps, books, and/or other data in the possession of the CITY, other agencies, and/or all utility companies, and no allowance shall be made for any failure to have done so.

The Contractor shall utilize the services of "Underground Service Alert - Southern California" for utility locating in all public right-of-ways by calling 1-800-227-2600 at least 48 hours prior to any excavation.

15. Completion, Acceptance and Warranty. If, in the CITY's judgment, the Work has been completed and is ready for acceptance, the CITY will so certify and will determine the date when the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect the Work. The CITY may cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office. At the CITY's option, the CITY may certify acceptance to the City Council who may then cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office.

Manufacturer's warranties and guaranties furnished for materials used in the Work and instruction sheets and parts listed supplied with materials shall be delivered to the CITY prior to acceptance of the Work. The duration of the warranty or guaranty shall be the standard of the industry with a minimum of 1 year from the date of Notice of Completion.

Manufacturer's warranties shall not relieve the Contractor of liability under these Specifications. Such warranties only shall supplement the Contractor's responsibility.

The CITY may require a manufacturer's warranty on any product offered for use.

16. Contractor's Representative. The Contractor's Representative shall be approved by the CITY prior to the start of the Work. If the designated representative is rejected, the Contractor shall immediately designate another representative in writing and submit to the City for consideration. The CITY shall have the authority to require the Contractor to remove its representative and/or alternate representative at any time and at no cost to the CITY.

## **SECTION E. PAYMENTS TO CONTRACTOR AND CLAIMS**

1. Breakdown of Contract Prices. The Contractor shall, within ten (10) working days of receipt of a request from the City, submit a complete breakdown of lump sum bid prices showing the value assigned to each part of the work, including an allowance for profit and overhead. The breakdown shall include separate line for each subcontractor's bid and/or contract amount. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents its estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the City Manager as one of the bases for evaluating requests for payment. No extra costs shall be allowed for these breakdowns.
2. Payment for Labor and Materials. The Contractor shall pay and cause the subcontractors to pay any and all accounts for labor, including Worker's Compensation premiums, State Unemployment and Federal Social Security payments and all other wage and salary deductions required by law. The Contractor also shall pay and cause the subcontractors to pay any and all accounts for services, equipment and materials used by it and the subcontractors during the performance of work under this contract. All such accounts shall be paid as they become due and payable. If requested by the City Manager, the Contractor shall immediately furnish the City with proof of payment of such accounts.
3. Additional Work. Payment for additional work and all expenditures in excess of the bid amount must be authorized in writing by the City Manager. Such authorization shall be obtained by the Contractor prior to engaging in additional work. It shall be the Contractor's sole responsibility to obtain written approval from the City Manager for any change(s) in material or in the work proposed by suppliers or subcontractors. No payment shall be made to the Contractor for additional work which has not been approved in writing, and the Contractor hereby agrees that it shall have no right to additional compensation for any work not so authorized.
4. Claims. The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the City, or the happening of any event, thing or occurrence, unless he shall have given the City due written notice of potential claim as hereinafter specified.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. Said notice shall be submitted on a form approved by the City at least forty-eight (48) hours (two working days) in advance of performing said work, unless the work is of an emergency nature, in

which case the Contractor shall notify and obtain approval from the Inspector prior to commencing the work. The City Manager may require the Contractor to delay construction involving the claim, but no other work shall be delayed, and the Contractor shall not be allowed additional costs for any said delay but may be allowed on extension of time if the City Manager agrees that the work delayed is a controlling element of the Construction Schedule. The Contractor shall be required to submit any supporting data (or a detailed written explanation justifying further delay) within five (5) Work Days of a request from the City Manager and shall be responsible for any delays resulting from late and/or incomplete submittals. By submitting a Bid, the Contractor hereby agrees that this Section shall supersede Sections 6-6.3 and 6-6.4 of the Standard Specifications.

The City shall be the sole authority to interpret all plans, specifications and contract documents, and no claim shall be accepted which is based on the Contractor's ignorance, misunderstanding or noncompliance with any provision or portion thereof. The Contractor shall be responsible to provide all data and to obtain all approvals required by said Specifications. No claims or extras shall be approved by the City unless all work was done under the direction of and subject to the approval of the Inspector.

It is the intention of this Subsection that differences between the parties arising under and by virtue of the Contract be brought to the attention of the City Manager at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that it shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was filed.

5. Noncompliance with Plans and Specifications. Failure of the Contractor to comply with any requirement of the Plans and Specifications, and/or to immediately remedy any such noncompliance upon notice from the City Manager, may result in suspension of Contract Progress Payments. Any Progress Payments so suspended shall remain in suspension until the Contractor's operations and/or submittals are brought into compliance to the satisfaction of the City Manager. No additional compensation shall be allowed as a result of suspension of Progress Payments due to noncompliance with the plans or specifications. The Contractor shall not be permitted to stop work due to said suspension of Progress Payments.

6. Request for Payment. Contractor shall submit all requests for payment on AIA Document G702 – Application and Certificate for Payment and G703- Continuation Sheet. For each item provide a column for listing: Item Number; Description of Work; Scheduled Value, Previous Application; Authorized Change Orders; Total completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.

Prior to submittal of said form, all items for which payment is requested shall be checked and approved in writing by the City Manager. No payments will be made unless all back-up data is submitted with the payment request and the Progress Payment Invoice is signed by both Contractor and Manager.

The City will retain 5 percent of the value of all work done and materials installed as part security for fulfillment of the contract by Contractor. The full 5 percent retention will be retained on all payments for 35 days after the filing of the Notice of Completion.

There shall be no separate payment for any relocations, barriers or forms, grading or temporary construction required to construct the improvements herein. Payment for these items shall be absorbed in the Bid Prices for the applicable work to which they are appurtenant, and no extra costs shall be allowed.

The payment of amounts due to the Contractor shall be contingent upon the Contractor furnishing the City with a release of all claims against the City arising by virtue of the Contract related to said amounts. It is the contractor's responsibility to provide the correct releases in order to obtain payment by the City. The Contractor shall provide the City with Unconditional Lien Release on Final Payment with a zero balance is required from all material suppliers and subcontractors with the request for final payment.

**PART D**  
**BID DOCUMENTS**

BIDDER'S PROPOSAL

**BID FOR REPLACEMENT OF HVAC UNITS AT VARIOUS LOCATIONS  
B2013-33**

In accordance with the Notice Inviting Bids pertaining to the receiving of sealed proposals by the City Clerk of the City of Torrance for the above titled improvement, the undersigned hereby proposes to furnish all work to be performed in accordance with the Plans, Specifications and Contract Documents, prepared by Bartef Yoosephiance & Associates and City of Torrance for the bid as set forth in the following schedules.

Assignment of Contractor's values:

Item	Description	Total Amount In Figures*
01	1339 Post Avenue-, AC-13	
02	Fire Station #1, CU-1, FAU-1, AC-8 & AC-9	
03	Historical Museum, AC-10 and AC -11	
04	E. Annex Bldg & Safety, FC-1	
05	Fire Station #2, AC-7	
06	Fire Station #3, AC- 2	
07	Fire Station #6, AC-1	
08	General Aviation Center, AC-3, AC-4, AC-5, AC-6	
09	City Services Bldg., HV-1 through HV-8	
10	Cultural Arts Center, MU-1	
11	Greenwood Center, FAU-4 through FAU-11	
12	El Retiro Library, CU-2 and CU-3, FAU-2 and FAU-3	
13	E. Annex Fire Prevention, AC-12	
14	Benstead Plunge , WH-1 and B-1	

Item	Description	Total Amount In figures*
15	B2013-33 -BID TOTAL- in figures*	

**BID TOTAL:** \_\_\_\_\_  
(Words)\*

**\*BID MAY BE REJECTED IF TOTAL IS NOT SHOWN IN FIGURES AND WORDS.**

The undersigned furthermore agrees to enter into and execute a contract, with necessary bonds, at the prices set forth herein and in case of default in executing such contract, with necessary bonds, the check or bond accompanying this bid and the money payable thereon shall be forfeited thereby to and remain the property of the City of Torrance.

The above prices include all work appurtenant to the various items as outlined in the specifications and all work or expense required for the satisfactory completion of said item.

The undersigned declares that it has carefully examined the Specifications, and Contract Documents, and has investigated the site of the work and is familiar with the conditions thereon.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Signature of principal in company

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name and Title of Signer

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

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

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

License No. & Classification \_\_\_\_\_

**ACKNOWLEDGMENT OF ADDENDA RECEIVED**

B2013-33

The Bidder shall acknowledge the receipt of addenda by placing an "X" by each addendum received.

Addendum No. 1 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_

Addendum No. 3 \_\_\_\_\_

Addendum No. 4 \_\_\_\_\_

Addendum No. 5 \_\_\_\_\_

Addendum No. 6 \_\_\_\_\_

Addendum No. 7 \_\_\_\_\_

Addendum No. 8 \_\_\_\_\_

If an addendum or addenda have been issued by the City and not noted above as being received by the Bidder, the Bid Proposal may be rejected.

\_\_\_\_\_  
Bidder's Signature

\_\_\_\_\_  
Date



**CONTRACTOR'S AFFIDAVIT B2013-33 (CONTINUED)**

7. That the Contractor did not, directly or indirectly, submit the Contractor's bid price or any breakdown thereof, or the contents thereof, or divulge information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any individual or group of Individuals, except to the City of Torrance, or to any person or persons who have a partnership or other financial interest with said Contractor in its business.

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

Subscribed and Sworn to  
before me this \_\_\_\_\_ (Contractor)  
of \_\_\_\_\_, 20\_\_\_\_\_ (Title)

\_\_\_\_\_  
Notary Public in and for said  
County and State.  
(Seal)

**BID BOND**

B2013-33

**KNOW ALL MEN BY THESE PRESENTS:** That we, \_\_\_\_\_  
\_\_\_\_\_

as principal, and \_\_\_\_\_  
as sureties, are held and firmly bound unto the City of Torrance, State of California, in the penal sum of \_\_\_\_\_ dollars (\$ \_\_\_\_\_), for the payment whereof we hereby bind ourselves, our successors, heirs, executors or administrators jointly and severally, firmly by these presents.

The condition of this obligation is such that, whereas the above bounded principal is about to file with and submit to the City of Torrance a bid or proposal for the performance of certain work as required in the City of Torrance, Project No. B2013-33, said work being: Replacement of HVAC Units at Various Locations, in compliance with the Specifications therefore under an invitation of said City contained in a notice or advertisement for bids or proposals; now if the bid or proposal of said principal shall be accepted and if said work be thereupon awarded to the principal by said City and if the said principal shall enter into a contract with the said City in accordance with said bid or proposal, or if the bid or proposal of the said principal is rejected, then this bond shall be void and of no effect and otherwise in full force and effect.

**WITNESS** our hands this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety/Attorney-in-Fact

\_\_\_\_\_  
Signature

Name: \_\_\_\_\_  
Local Address: \_\_\_\_\_  
Phone No.: \_\_\_\_\_  
Fax No.: \_\_\_\_\_

## LIST OF SUBCONTRACTORS

The Bidder is required to fill in the following blanks in accordance with the provisions of the Subletting and Subcontracting Fair Practices Act (Chapter 2 of Division 5, Title 1 of the Government Code of the State of California) and should familiarize itself with Section 2-3 of the Standard Specifications.

1. Name Under Which Subcontractor is Licensed: \_\_\_\_\_

Subcontractor's Address: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

License Number: \_\_\_\_\_ CA License Classification/Type: \_\_\_\_\_

2. Name Under Which Subcontractor is Licensed: \_\_\_\_\_

Subcontractor's Address: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

License Number: \_\_\_\_\_ CA License Classification/Type: \_\_\_\_\_

3. Name Under Which Subcontractor is Licensed: \_\_\_\_\_

Subcontractor's Address: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

License Number: \_\_\_\_\_ CA License Classification/Type: \_\_\_\_\_

4. Name Under Which Subcontractor is Licensed: \_\_\_\_\_

Subcontractor's Address: \_\_\_\_\_

Specific Description of Sub-Contract: \_\_\_\_\_

License Number: \_\_\_\_\_ CA License Classification/Type: \_\_\_\_\_

Subcontractors listed in accordance with the provisions of Section 2-3 must be properly licensed under the laws of the State of California for the type of work which they are to perform. Do not list alternate subcontractors for the same work.

## REFERENCES

(List work similar in magnitude and degree of difficulty completed by Contractor within the past five (5) years.)

1. Name (Firm/Agency): \_\_\_\_\_

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

Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

Title of Project: \_\_\_\_\_

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

Date of Completion \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_

2. Name (Firm/Agency): \_\_\_\_\_

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

Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

Title of Project: \_\_\_\_\_

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

Date of Completion \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_

3. Name (Firm/Agency): \_\_\_\_\_

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

Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

Title of Project: \_\_\_\_\_

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

Date of Completion \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_

4. Name (Firm/Agency): \_\_\_\_\_

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

Contact Person: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

Title of Project: \_\_\_\_\_

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

Date of Completion \_\_\_\_\_ Contract Amount: \$ \_\_\_\_\_

**Bidder's Information**

The bidder must provide a detailed list of the trades and the description of the work they will perform with their own company for this project.

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

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

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

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

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

Contractor's License No.: \_\_\_\_\_ Class: \_\_\_\_\_

Date first obtained: \_\_\_\_\_

Has License ever been suspended or revoked? \_\_\_\_\_

If yes, describe when and why \_\_\_\_\_

Any current claims against License or Bond? \_\_\_\_\_

If yes, describe claims: \_\_\_\_\_

Type of entity (check one)

\_\_\_\_\_ Incorporated \_\_\_\_\_ Partnership \_\_\_\_\_ Sole Proprietorship

If incorporated, in what state \_\_\_\_\_

Federal Tax ID Number # \_\_\_\_\_

Principals in Company (List all - attach additional sheets if necessary):

<u>NAME</u>	<u>TITLE</u>	<u>LICENSE NO.</u> (If Applicable)
_____	_____	_____
_____	_____	_____
_____	_____	_____

**PART E**

**DOCUMENTS TO BE COMPLETED  
AND DELIVERED TO CITY AS PART  
OF CONTRACT WITH THE CITY**

**PERFORMANCE BOND**

**KNOW ALL MEN BY THESE PRESENTS:**

That we, \_\_\_\_\_ as Principal(s) and \_\_\_\_ a \_\_\_\_\_ corporation, incorporated, organized, and existing under the laws of the State of \_\_\_\_\_, and authorized to execute bonds and undertakings and to do a general surety business in the State of California, as Surety, are jointly and severally held and firmly bound unto the City of Torrance, a municipal corporation, located in the County of Los Angeles, State of California, in the full and just sum of: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves and our respective heirs, executors, administrators, representative, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH**, that: WHEREAS, said Principal(s) have/has entered into, or are/is about to enter into, a certain written contract or agreement, dated as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, with the said City of Torrance for the REPLACEMENT OF HVAC UNITS AT VARIOUS LOCATIONS B2013-33, all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

**NOW, THEREFORE**, if the said Principal(s) shall faithfully and well and truly do, perform and complete, or cause to be done, performed and complete, each and all of the covenants, terms, conditions, requirements, obligations, acts and things, to be met, done or performed by said Principal(s), including any guarantee period as set forth in, or required by, said contract or agreement, all at and within the time or times, and in the manner as therein specified and contemplated, then this bond and obligation shall be null and void; otherwise it shall be and remain in full force, virtue and effect.

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration or addition to said contract or agreement, or of any feature or item or items of performance required therein or there under, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or there under.

**PERFORMANCE BOND B2013-33 (CONTINUED)**

In the event any suit, action or proceedings is instituted to recover on this bond or obligation, said Surety will pay, and does hereby agree to pay, as attorney's fees for said City, such sum as the Court in any such suit, action or proceeding may adjudge reasonable.

**EXECUTED, SEALED AND DATED** this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

CORPORATE SEAL

PRINCIPAL(S):

BY \_\_\_\_\_

BY \_\_\_\_\_

CORPORATE SEAL

SURETY:

BY \_\_\_\_\_

Name: \_\_\_\_\_  
Local Address: \_\_\_\_\_  
Phone No.: \_\_\_\_\_  
Fax No.: \_\_\_\_\_

**LABOR AND MATERIAL BOND**  
B2013-33

**KNOW ALL MEN BY THESE PRESENTS:**

That we, \_\_\_\_\_  
As Principal(s) and \_\_\_\_\_ a  
corporation, incorporated, organized, and existing under the laws of the State of  
\_\_\_\_\_, and authorized to execute bonds and undertakings and to do a general  
surety business in the State of California, as Surety, are jointly and severally held and firmly  
bound unto:

- (a) The State of California for the use and benefit of the State Treasurer, as ex-officio Treasurer and custodian of the Unemployment Fund of said State; and
- (b) The City of Torrance, California; and
- (c) Any and all persons who do or perform or who did or performed work or labor upon or in connection with the work or improvement referred to in the contract or agreement hereinafter mentioned; and
- (d) Any and all materialmen, persons, companies, firms, association, or corporations, supplying or furnishing any materials, provisions, provender, transportation, appliances or power, or other supplies used in, upon, for or about or in connection with the performance of the work or improvement contracted to be executed, done, made or performed under said contract or agreement; and
- (e) Any and all persons, companies, firms, associations, or corporations furnishing, renting, or hiring teams, equipment, implements or machinery for, in connection with, or contributing to, said work to be done or improvement to be made under said contract or agreement; and
- (f) Any and all persons, companies, firms, associations, or corporations who supply both work and materials;

and whose claim has not been paid by said Principal(s), in full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which will and truly to be made, said Principal(s) and said Surety do hereby bind themselves and their respective heirs, executors, administrators, representatives, successors and assigns, jointly and severally, firmly by these presents.

**LABOR AND MATERIAL BOND (CONTINUED)**

**THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, THAT: WHEREAS,** said Principal(s) have/has entered into or are/is about to enter into a certain written contract or agreement, dated as of the \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_, with the City of Torrance for the REPLACEMENT OF HVAC UNITS AT VARIOUS LOCATIONS, B2013-33, all as is more specifically set forth in said contract or agreement, a full, true and correct copy of which is hereunto attached, and hereby referred to and by this reference incorporated herein and made a part hereof;

**NOW, THEREFORE,** if the said Principal(s) (or any of his/her, its, or their subcontractors) under said contract or agreement fails or fail to pay:

- (1) For any materials, provisions, provender, transportation, appliances, or power, or other supplies; or
- (2) For the hire of any teams, equipment, implements, or machinery; or
- (3) For any work or labor; supplies, furnished, provided, used, done or performed in, upon, for or about or in connection with the said work or improvement; or
- (4) For amounts due under the Unemployment Insurance Act of the State of California with respect to such work or improvement;

the Surety on this bond will pay the same in an amount not exceeding the sum hereinabove specified in this bond; and, also, in case suit is brought upon this bond, said Surety will (and does hereby agree to) pay a reasonable attorney's fee, to be fixed and taxed as costs, and included in the judgment therein rendered.

This bond shall (and it is hereby made to) insure to the benefit of any and all persons entitled to file claims under Section 1192.1 of the Code of Civil Procedure of the State of California, so as to give a right of action to them or their assigns in any suit brought upon this bond, all as contemplated under the provisions of Section 4205 of the Government Code, and of Chapter 1 of Title 4 of Part 3 of the Code of Civil Procedure, of the State of California.

This bond is executed and filed in connection with said contract or agreement hereunto attached to comply with each and all of the provisions of the laws of the State of California above mentioned or referred to, and of all amendments thereto, and the obligors so intend and do hereby bind themselves accordingly.

**LABOR AND MATERIAL BOND B2013-33 (CONTINUED)**

The said Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration, or addition to said contract or agreement, or of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said Surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract or agreement, and of any feature or item or items of performance required therein or thereunder.

**EXECUTED, SEALED AND DATED** this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_

CORPORATE SEAL

PRINCIPAL:

BY \_\_\_\_\_

CORPORATE SEAL

SURETY:

BY \_\_\_\_\_

Name: \_\_\_\_\_  
Local Address: \_\_\_\_\_  
Phone No.: \_\_\_\_\_  
Fax No.: \_\_\_\_\_

## CONTRACT SERVICES AGREEMENT

This CONTRACT SERVICES AGREEMENT ("Agreement") is made and entered into as of Effective Date, by and between the CITY OF TORRANCE, a municipal corporation ("CITY"), and Company Name, type of Entity.

### RECITALS:

- A. The CITY wishes to retain the services of an experienced and qualified CONTRACTOR to furnish all labor, materials, tools, equipment and incidentals in accordance with the specifications prepared by the City of Torrance;
- B. In order to obtain the desired services, The CITY has circulated a Notice Inviting Bids for Replacement of the HVAC Units at Various Locations, Notice Inviting Bids No. **B2013-33** (the "NIB"); and
- C. CONTRACTOR has submitted a Bid (the "Bid") in response to the NIB. CONTRACTOR represents that it is qualified to perform those services requested in the Plans and Specifications. Based upon its review of all Bids submitted in response to the NIB, The CITY is willing to award the contract to CONTRACTOR.

### AGREEMENT:

#### 1. SERVICES TO BE PERFORMED BY CONTRACTOR

CONTRACTOR will provide the services and install those materials listed in the Plans and Specifications, which are on file in the General Services Department. The NIB and the Plans and Specifications are made a part of this Agreement. A copy of the Bid is attached as Exhibit A.

#### 2. TERM

Unless earlier terminated in accordance with Paragraph 4 below, this Agreement will continue in full force and effect for one year from Effective Date.

#### 3. COMPENSATION

##### A. CONTRACTOR's Fee.

For services rendered pursuant to this Agreement, CONTRACTOR will be paid in accordance with CONTRACTOR's Bid; provided, however, that in no event will the total amount of money paid the CONTRACTOR, for services initially contemplated by this Agreement, exceed the sum of \$ unless otherwise first approved in writing by the CITY

##### B. Schedule of Payment.

Provided that the CONTRACTOR is not in default under the terms of this Agreement, upon presentation of an invoice, CONTRACTOR will be paid monthly, within 30 days after the date of the monthly invoice.

#### 4. TERMINATION OF AGREEMENT

##### A. Termination by CITY for Convenience.

1. CITY may, at any time, terminate the Agreement for CITY's convenience and without cause.
2. Upon receipt of written notice from CITY of such termination for CITY's convenience, CONTRACTOR will:
  - a. cease operations as directed by CITY in the notice;
  - b. take actions necessary, or that CITY may direct, for the protection and preservation of the work; and
  - c. except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
3. In case of such termination for CITY's convenience, CONTRACTOR will be entitled to receive payment for work executed; and costs incurred by reason of such termination, along with reasonable overhead and profit on the work not executed.

##### B. Termination for Cause.

1. If either party fails to perform any term, covenant or condition in this Agreement and that failure continues for 15 calendar days after the nondefaulting party gives the defaulting party written notice of the failure to perform, this Agreement may be terminated for cause; provided, however, that if during the notice period the defaulting party has promptly commenced and continues diligent efforts to remedy the default, the defaulting party will have such additional time as is reasonably necessary to remedy the default.
2. In the event this Agreement is terminated for cause by the default of the CONTRACTOR, the CITY may, at the expense of the CONTRACTOR and its surety, complete this Agreement or cause it to be completed. Any check or bond delivered to the CITY in connection with this Agreement, and the money payable thereon, will be forfeited to and remain the property of the CITY. All moneys due the CONTRACTOR under the terms of this Agreement will be retained by the CITY, but the retention will not release the CONTRACTOR and its surety from liability for the default. Under these circumstances, however, the CONTRACTOR and its surety will be credited with the amount of money retained, toward any amount by which the cost of completion exceeds the Agreement Sum and any amount authorized for extra services.
3. Termination for cause will not affect or terminate any of the rights of the CITY as against the CONTRACTOR or its surety then existing, or which may thereafter accrue because of the default; this provision is in addition to all other rights and remedies available to the CITY under law.

C. Termination for Breach of Law.

In the event the CONTRACTOR or any of its officers, directors, shareholders, employees, agents, subsidiaries or affiliates is convicted (i) of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of a contract or subcontract; (ii) under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a public consultant or contractor; (iii) under state or federal antitrust statutes arising out of the submission of bids or proposals; or (iv) of violation of Paragraph 19 of this Agreement; or for any other cause the CITY determines to be so serious and compelling as to affect CONTRACTOR's responsibility as a public consultant or contractor, including but not limited to, debarment by another governmental agency, then the CITY reserves the unilateral right to terminate this Agreement or to impose such other sanctions (which may include financial sanctions, temporary suspensions or any other condition deemed appropriate short of termination) as it deems proper. The CITY will not take action until CONTRACTOR has been given notice and an opportunity to present evidence in mitigation.

5. **FORCE MAJEURE**

If any party fails to perform its obligations because of strikes, lockouts, labor disputes, embargoes, acts of God, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or hostile governmental action, civil commotion, fire or other casualty, or other causes beyond the reasonable control of the party obligated to perform, then that party's performance shall be excused for a period equal to the period of such cause for failure to perform.

6. **RETENTION OF FUNDS**

CONTRACTOR authorizes the CITY to deduct from any amount payable to CONTRACTOR (whether or not arising out of this Agreement) any amounts the payment of which may be in dispute or that are necessary to compensate the CITY for any losses, costs, liabilities, or damages suffered by the CITY, and all amounts for which the CITY may be liable to third parties, by reason of CONTRACTOR's negligent acts or omissions or willful misconduct in performing or failing to perform CONTRACTOR's obligations under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by CONTRACTOR, or any indebtedness exists that appears to be the basis for a claim of lien, the CITY may withhold from any payment due, without liability for interest because of the withholding, an amount sufficient to cover the claim. The failure of the CITY to exercise the right to deduct or to withhold will not, however, affect the obligations of CONTRACTOR to insure, indemnify, and protect the CITY as elsewhere provided in this Agreement.

**7. THE CITY'S REPRESENTATIVE**

Jim Fuentes, HVAC/Electrical Supervisor is designated as the "City Representative," authorized to act in its behalf with respect to the work and services specified in this Agreement and to make all decisions in connection with this Agreement. Whenever approval, directions, or other actions are required by the CITY under this Agreement, those actions will be taken by the City Representative, unless otherwise stated. The City Manager has the right to designate another City Representative at any time, by providing notice to CONTRACTOR.

**8. CONTRACTOR REPRESENTATIVE(S)**

The following principal(s) of CONTRACTOR are designated as being the principal(s) and representative(s) of CONTRACTOR authorized to act in its behalf with respect to the work specified in this Agreement and make all decisions in connection with this Agreement:

Company Representative

**9. INDEPENDENT CONTRACTOR**

The CONTRACTOR is, and at all times will remain as to the CITY, a wholly independent contractor. Neither the CITY nor any of its agents will have control over the conduct of the CONTRACTOR or any of the CONTRACTOR's employees, except as otherwise set forth in this Agreement. The CONTRACTOR may not, at any time or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of the CITY.

**10. BUSINESS LICENSE**

The CONTRACTOR must obtain a City business license prior to the start of work under this Agreement, unless CONTRACTOR is qualified for an exemption.

**11. OTHER LICENSES AND PERMITS**

CONTRACTOR warrants that it has all professional, contracting and other permits and licenses required to undertake the work contemplated by this Agreement.

**12. FAMILIARITY WITH WORK**

By executing this Agreement, CONTRACTOR warrants that CONTRACTOR (a) has thoroughly investigated and considered the scope of services to be performed, (b) has carefully considered how the services should be performed, and (c) fully understands the facilities, difficulties and restrictions attending performance of the services under this Agreement. If the services involve work upon any site, CONTRACTOR warrants that CONTRACTOR has or will investigate the site and is or will be fully acquainted with the conditions there existing, prior to commencement of services set forth in this Agreement. Should CONTRACTOR discover any latent or unknown conditions that will materially affect the performance of the services set forth in this Agreement, CONTRACTOR must immediately inform the CITY of that fact and may not proceed except at CONTRACTOR's risk until written instructions are received from the CITY.

**13. CARE OF WORK**

CONTRACTOR must adopt reasonable methods during the life of the Agreement to furnish continuous protection to the work, and the equipment, materials, papers, documents, plans, studies and other components to prevent losses or damages, and will be responsible for all damages, to persons or property, until acceptance of the work by the CITY, except those losses or damages as may be caused by the CITY's own negligence.

**14. CONTRACTOR'S ACCOUNTING RECORDS; OTHER PROJECT RECORDS**

Records of the CONTRACTOR's time pertaining to the project, and records of accounts between the CITY and the CONTRACTOR, will be kept on a generally recognized accounting basis. CONTRACTOR will also maintain all other records, including without limitation specifications, drawings, progress reports and the like, relating to the project. All records will be available to the CITY during normal working hours. CONTRACTOR will maintain these records for three years after final payment.

**15. INDEMNIFICATION**

CONTRACTOR will indemnify, defend, and hold harmless CITY, the Successor Agency to the former Redevelopment Agency of the City of Torrance, the City Council, each member thereof, present and future, its officers, agents and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages whatsoever, including, but not limited to, those arising from breach of contract, bodily injury, death, personal injury, property damage, loss of use, or property loss however the same may be caused and regardless of the responsibility for negligence. The obligation to indemnify, defend and hold harmless includes, but is not limited to, any liability or expense, including defense costs and legal fees, arising from the negligent acts or omissions, or willful misconduct of CONTRACTOR, its officers, employees, agents, subcontractors or vendors. It is further agreed, CONTRACTOR's obligations to indemnify, defend and hold harmless will apply even in the event of concurrent negligence on the part of CITY, the City Council, each member thereof, present and future, or its officers, agents and employees, except for liability resulting solely from the negligence or willful misconduct of CITY, its officers, employees or agents. Payment by CITY is not a condition precedent to enforcement of this indemnity. In the event of any dispute between CONTRACTOR and CITY, as to whether liability arises from the sole negligence of the CITY or its officers, employees, agents, subcontractors or vendors, CONTRACTOR will be obligated to pay for CITY's defense until such time as a final judgment has been entered adjudicating the CITY as solely negligent. CONTRACTOR will not be entitled in the event of such a determination to any reimbursement of defense costs including but not limited to attorney's fees, expert fees and costs of litigation.

**16. NON-LIABILITY OF THE CITY'S OFFICERS AND EMPLOYEES**

No officer or employee of the CITY will be personally liable to CONTRACTOR, in the event of any default or breach by the CITY or for any amount that may become due to CONTRACTOR.

17. **INSURANCE**

- A. CONTRACTOR must maintain at its sole expense the following insurance, which will be full coverage not subject to self insurance provisions:
- (1) Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
    - (a) Primary Bodily Injury with limits of at least \$500,000 per person, \$1,000,000 per occurrence; and
    - (b) Primary Property Damage of at least \$250,000 per occurrence; or
    - (c) Combined single limits of \$1,000,000 per occurrence.
  - (2) General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$2,000,000 per occurrence.
  - (3) Workers' Compensation with limits as required by the State of California and Employers Liability with limits of at least \$1,000,000.
- B. The insurance provided by CONTRACTOR will be primary and non-contributory.
- C. The CITY of Torrance, the Successor Agency to the former Redevelopment Agency of the City of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer must be named as additional insureds under the automobile and general liability policies.
- D. CONTRACTOR must provide certificates of insurance and/or endorsements to the City Clerk of the City of Torrance before the commencement of work.
- E. Each insurance policy required by this Paragraph must contain a provision that no termination, cancellation or change of coverage can be made without thirty days notice to the CITY.
- F. CONTRACTOR must include all subcontractors as insured under its policies or must furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors will be subject to all of the requirements of this Paragraph 17.

**18. SUFFICIENCY OF INSURERS**

Insurance required by this Agreement will be satisfactory only if issued by companies admitted to do business in California, rated "B+" or better in the most recent edition of Best's Key Rating Guide, and only if they are of a financial category Class VII or better, unless these requirements are waived by the Risk Manager of the CITY ("Risk Manager") due to unique circumstances. In the event the Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the CITY, the CONTRACTOR agrees that the minimum limits of any insurance policies and/or the performance bond required by this Agreement may be changed accordingly upon receipt of written notice from the Risk Manager; provided that CONTRACTOR will have the right to appeal a determination of increased coverage by the Risk Manager to the City Council of the CITY within 10 days of receipt of notice from the Risk Manager.

**19. CONFLICT OF INTEREST**

- A. No officer or employee of the CITY may have any financial interest, direct or indirect, in this Agreement, nor may any officer or employee participate in any decision relating to the Agreement that effects the officer or employee's financial interest or the financial interest of any corporation, partnership or association in which the officer or employee is, directly or indirectly interested, in violation of any law, rule or regulation.
- B. No person may offer, give, or agree to give any officer or employee or former officer or employee, nor may any officer or employee solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any way pertaining to any program requirement, contract or subcontract, or to any solicitation or proposal.

**20. NOTICE**

- A. All notices, requests, demands, or other communications under this Agreement will be in writing. Notice will be sufficiently given for all purposes as follows:
  - (1) Personal delivery. When personally delivered to the recipient: notice is effective on delivery.
  - (2) First Class mail. When mailed first class to the last address of the recipient known to the party giving notice: notice is effective three mail delivery days after deposit in an United States Postal Service office or mailbox.
  - (3) Certified mail. When mailed certified mail, return receipt requested: notice is effective on receipt, if delivery is confirmed by a return receipt.

- (4) Overnight delivery. When delivered by an overnight delivery service, charges prepaid or charged to the sender's account: notice is effective on delivery, if delivery is confirmed by the delivery service.
- (5) Facsimile transmission. When sent by fax to the last fax number of the recipient known to the party giving notice: notice is effective on receipt. Any notice given by fax will be deemed received on the next business day if it is received after 5:00 p.m. (recipient's time) or on a non-business day.

Addresses for purpose of giving notice are as follows:

CONTRACTOR:	Company Name Address Address  Fax
CITY:	City Clerk City of Torrance 3031 Torrance Boulevard Torrance, CA 90509-2970 Fax: (310) 618-2931

- B. Any correctly addressed notice that is refused, unclaimed, or undeliverable because of an act or omission of the party to be notified, will be deemed effective as of the first date the notice was refused, unclaimed or deemed undeliverable by the postal authorities, messenger or overnight delivery service.
- C. Either party may change its address or fax number by giving the other party notice of the change in any manner permitted by this Agreement.

**21. PROHIBITION AGAINST ASSIGNMENT AND SUBCONTRACTING**

This Agreement and all exhibits are binding on the heirs, successors, and assigns of the parties. The Agreement may not be assigned or subcontracted by either the CITY or CONTRACTOR without the prior written consent of the other.

**22. INTEGRATION; AMENDMENT**

This Agreement represents the entire understanding of the CITY and CONTRACTOR as to those matters contained in it. No prior oral or written understanding will be of any force or effect with respect to the terms of this Agreement. The Agreement may not be modified or altered except in writing signed by both parties.

**23. INTERPRETATION**

The terms of this Agreement should be construed in accordance with the meaning of the language used and should not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction that might otherwise apply.

**24. SEVERABILITY**

If any part of this Agreement is found to be in conflict with applicable laws, that part will be inoperative, null and void insofar as it is in conflict with any applicable laws, but the remainder of the Agreement will remain in full force and effect.

**25. TIME OF ESSENCE**

Time is of the essence in the performance of this Agreement.

**26. GOVERNING LAW; JURISDICTION**

This Agreement will be administered and interpreted under the laws of the State of California. Jurisdiction of any litigation arising from the Agreement will be in Los Angeles County, California.

**27. COMPLIANCE WITH STATUTES AND REGULATIONS**

CONTRACTOR will be knowledgeable of and will comply with all applicable federal, state, county and city statutes, rules, regulations, ordinances and orders.

**28. WAIVER OF BREACH**

No delay or omission in the exercise of any right or remedy by a nondefaulting party on any default will impair the right or remedy or be construed as a waiver. A party's consent or approval of any act by the other party requiring the party's consent or approval will not be deemed to waive or render unnecessary the other party's consent to or approval of any subsequent act. Any waiver by either party of any default must be in writing and will not be a waiver of any other default concerning the same or any other provision of this Agreement.

**29. ATTORNEY'S FEES**

Except as provided for in Paragraph 15, in any dispute, litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party will be awarded reasonable attorney's fees, together with any costs and expenses, to resolve the dispute and to enforce any judgment.

**30. EXHIBITS**

All exhibits identified in this Agreement are incorporated into the Agreement by this reference.

**31. CONTRACTOR'S AUTHORITY TO EXECUTE**

The persons executing this Agreement on behalf of the CONTRACTOR warrant that (i) the CONTRACTOR is duly organized and existing; (ii) they are duly authorized to execute this Agreement on behalf of the CONTRACTOR; (iii) by so executing this Agreement, the CONTRACTOR is formally bound to the provisions of this Agreement; and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which the CONTRACTOR is bound.

CITY OF TORRANCE,  
a Municipal Corporation

Company Name  
Type of Entity

\_\_\_\_\_  
Frank Scotto, Mayor

By: \_\_\_\_\_  
Name  
Title

ATTEST:

\_\_\_\_\_  
Sue Herbers, City Clerk

APPROVED AS TO FORM:

JOHN L. FELLOWS III  
City Attorney

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

Attachments: Exhibit A: Bid

**EXHIBIT A**

**Bid**

**[To be attached]**

**PART F**

**PROJECT SPECIFICATIONS**

**CONSTRUCTION SPECIFICATION**

**FOR**

**CITY OF TORRANCE VARIOUS BUILDING'S  
AIR CONDITIONING UNIT REPLACEMENT**

**3031 Torrance Boulevard  
Torrance, California**

**BARTEF YOOSEPHIANCE & ASSOCIATES, INC.  
Consulting Engineers**

**3734 Gleneagles Dr.  
Tarzana, CA 91356  
(818) 345-8614**

**February 21, 2013**

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SCOPE:

- A. This Section includes the following:
  - 1. Work covered by Contract Documents.
  - 2. Type of the Contract
  - 3. Work Under other contract
  - 4. Use of Premises
  - 5. Owner's occupancy requirements
  - 6. Work restrictions.

1.03 CONTRACT DOCUMENTS:

- A. The Contract Documents are to be interpreted according to their full intent, meaning and spirit, to provide a complete finished Project. Be responsible for the satisfactory completion of all Work and a complete finished Project.
- B. The Drawings show diagrammatically the Work to be performed. The Drawings are not intended to show every connection in detail nor all incidental parts, fittings and members required for a complete Project. These incidental parts, fittings and members shall be required as part of the Contract.
- C. The technical Specifications establish the quality of materials and workmanship to be performed. They are not intended to describe every step or member in the process of construction. Procedures, craftsmanship and materials of quality construction shall be performed and furnished where not specifically covered in these Specifications.
- D. Where a conflict of information occurs large-scale details shall supersede small scale sections. The Specification shall supersede the Drawings where the two differ.

1.04 DEFINITIONS:

- A. GUARANTEE and WARRANTY: Although the terms "guarantee" and "warranty" are defined to have the same basic meaning, "warranty" is generally used in conjunction with products manufactured or fabricated away from the Project Site, and "guarantee" is generally used in conjunction with units of work which require both products and substantial amounts of labor at the Project Site. The resulting difference is that warranties are frequently issued by manufacturers, and guarantees are generally issued by the Contractor and are frequently supported (partially) by product warranties from manufacturers.

- B. ENGINEER: This term is generally used in conjunction with some form of approval and identifies the discipline involved. The use in this meaning of approval shall be defined as representing Owner's interests in the construction process. The term "Engineer" used in conjunction with some form of approval in the Contract Documents may also mean the Owner or an authorized representative of the Owner.
- C. CONTRACTOR: Shall mean the Contractor for construction.
- D. OWNER: Shall mean the City of Torrance
- E. APPROVE: Where used in conjunction with the Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approve" will be held to the limitations of the Engineer's responsibilities and duties, and the specific request requiring response. In no case will "approval" by the Engineer be interpreted as an assurance to the Contractor that requirements of the Contract Documents have been fulfilled.
- F. INSTALLER: The person or entity engaged by the Contractor or his Subcontractor or Subcontractors for the performance of a particular unit of work at the Project Site including installation, erection, application and similar required operations. It is a general requirement that Installers be recognized experts in the work they are engaged to perform.
- G. INDICATED: The term "indicated" is a cross reference to details, notes or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for the purpose of helping the reader accomplish the cross reference, and no limitation of location is intended except as specifically noted.
- H. PROVIDE: Except to the extent further defined, the term "provide" means to furnish and install, complete and ready for the intended use.
- I. SECURE: Except to the extent further defined, the term "secure" or "secured" shall mean to anchor, fasten or otherwise attach with the appropriate type of fastener in a workmanship like manner. The size and frequency of the attachment shall be, when not specifically stated, that of the industry standard of good practice for the use intended.

1.05 EXPLANATIONS:

- A. The Specifications are divided into division, subdivisions and sections for the convenience of writing and using, and no other meaning is intended or implied.
- B. Underscoring of text is only for the purpose of assisting the reader in scanning the text for key words of the content.
- C. Overlapping Requirements: Where compliance with two (or more) sets of requirements is specified, and overlapping of those requirements establishes two different levels or minimums for a particular quality, the more stringent level will be enforced (which is generally the more costly of the two levels)

- A. Project Identification: city of Torrance Various Building's Air Conditioning unit replacement
- B. Project Locations: City of Torrance, California
- C. Owner: City of Torrance; 3031 Torrance Blvd., Torrance, CA 90509
  - 1. Owner's Representative; Mr. John Landis; (310) 781-7162
- D. Consulting Mechanical Engineer: Bartef Yoosephiance & Associates, Inc. ; 3734 Gleneagles Dr., Tarzana, CA 91356 ; (818) 345-8614
- E. Consulting Structural engineer; Ramin Zargari, SE.; 23632 Calabasas Rd., Suite 107A, Calabasas, CA 91302; (818) 222-0308
- F. The work consists of the following:
  - 1. Replacement of existing air conditioning unit and air distribution system In various City Buildings.
    - a. Demolition, removal and disposal of existing air conditioning systems.
    - b. Installation of new equipment, ductwork and piping
    - c. Installation of new boiler and water heater.
    - d. Air and Hydronic test and balancing
    - e. Installation of new rooftop equipment curbs.
    - f. Modification of existing equipment platforms and curbs.
    - g. Installation of electrical power wiring and devices.
    - h. Installation of plumbing systems as indicated on contract documents.
    - i. Repair of damaged roofing, as required.
    - j. Cutting and patching.
    - k. Finish and touch-up painting.

#### 1.07 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract

#### 1.08 WORK UNDER OTHER CONTRACT

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.
- B. Concurrent Work: Owner will award separate contract for the following construction work:
  - 1. A separate contract will be awarded for installation of Temperature Control System To serve the replaced heating boiler and existing air handling unit in the Benstead Plunge building.

#### 1.09 USE OF PREMISES

- A. General: Contractor shall have limited use of premises for construction operation as

indicated on construction documents and as instructed by the Owner.

- B. Use of Site: Limit use of premises to work in areas within the Contract limits indicated or instructed by the Owner. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to areas indicated on Drawings.
  - 2. Owner Occupancy: Allow for Owner occupancy of Project site and use by public. Contractor's forces are directed not to interact with Owner's personnel.
  - 3. Driveways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
  - 4. Parking and Contractor Storage: Owner will designate a parking area and storage area for the Prime contractor and all sub-contractors. Parking in other areas is not allowed, except with the direct permission of the Owner's Representative
  - 5. Waste Disposal: Prime Contractor shall provide for all removal and disposal of demolished materials and other construction waste. Contractor shall use the appropriate waste removal services as approved by the Owner. All waste shall be removed from roof and floors either manually or via a trash chute from roof and floors to the trash bins. Owner shall designate an specific area for location of contractor's trash bins.
- C. Use of Existing Buildings: Maintain existing buildings in which Work is performed in good condition with minimum damage to surrounding areas and structural, mechanical and electrical components. Repair damage caused by construction operations. Protect buildings and its occupants during construction period.

#### 1.10 OWNER'S OCCUPANCY REQUIREMENTS

- A. Full Owner Occupancy: Owner will occupy site and existing buildings during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the work so not to interfere with Owner's day-to day operations. Maintain existing exists, unless otherwise indicated.
  - 1. 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.
  - 2. Provide not less than 72 hours' notice to owner of activities that will effect Owner's operations.

- B. Owner' Occupancy of Completed Areas of Construction: Owner reserves the right to

occupy and place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

#### 1.11 WORK RESTRICTIONS

- A. On-Site Work Hours: it is responsibility of the Prime Contractor to ensure that Work is performed within the scheduled hours allowed by Owner. Contractor shall prepare a schedule of operation and submit for Owner's approval prior to start of Work.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner unless permitted under following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, following:
  - 1. Coordination Drawings.
  - 2. Administrative and supervisory personnel.
  - 3. Project meetings.

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE:

- A. Execution Requirements, Section 01700.
- B. Closeout Procedures, Section 01770.

1.04 COORDINATION

- 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 accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
  - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

- B. 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.
- C. 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. Pre-installation conferences.
  - 7. Startup and adjustment of systems.
  - 8. Project closeout activities.

#### 1.05 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
  - 1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
    - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    - b. Indicate required installation sequences
    - c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 30 by 42 inches
  3. Number of Copies: Submit five opaque copies of each submittal. Engineer will retain at least one copy.
    - a. Include copies of Coordination Drawings in operation and maintenance manuals when appropriate. Retain one returned copy as a Project Record Drawing.
  4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.
- B. Key Personnel Names: Within five 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 and office telephone numbers, Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

#### 1.06 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

#### 1.07 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, Engineer and Construction Manager of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Engineer and Construction Manager, within three days of the meeting.
- B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner, Construction Manager, and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Construction Manager, Engineer,

and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discuss items of significance that could affect progress of Work, including the following:
- C. Pre-installation Conference: Conduct a pre-installation 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 Construction Manager of scheduled meeting dates.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
- D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payments requests.
1. Attendees: In addition to representatives of Owner, Construction Manager, 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. 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.
  3. Minutes: Record and distribute to Contractor the meeting minutes.
  4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

PART 2 – RODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SUMMARY:

- A. This Section specifies administrative and procedural requirements for project submittals.

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Division -1 Sections
- B. Division -15 Sections

1.04 SUBMITTAL DEFINITIONS:

- A. Shop Drawings include custom-prepared data of all forms including drawings, diagrams, performance curves, data sheets, instructions, measurements and similar information not in standard printed form applicable to other projects.
- B. Product data includes standard printed information on materials, products and systems, not custom-prepared for this Project other than the designation of selections from available choices.
- C. Samples include both fabricated and non-fabricated physical examples of materials, products and work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.
- D. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, guarantees, bonds, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, operating and maintenance materials, security/protection/safety keys and similar information, devices and materials applicable to the Work and not defined as Shop Drawings, product data or samples.

1.05 SHOP DRAWING PROCEDURES:

- A. Submit Shop and Setting Drawings to Engineer for review according to the following schedule:
  - 1. One copy for the Engineer's file.

2. Two copies for the Owner.
  3. Additional copies required by the Contractor or supplier. The number of copies shall be determined by the Contractor.
- B. After Drawings have been reviewed and any corrections have been noted, the Drawings will be returned for corrections. When Shop Drawings are noted "rejected," correct and resubmit new Shop Drawings.

1.06 SHOP DRAWING PREPARATION:

- A. When phrase "by others" appears on Shop Drawings, indicate on the Drawing who is to furnish material or operations so marked. When Shop Drawings are returned by the Engineer and designated "resubmit" (or words of like meaning), correct original tracing and submit new prints. Fabrication shall not begin until final "Action" markings by the Engineer have been received.
- B. Shop Drawings shall be drawn to scale, shall show all necessary working and erection dimensions and such details, sections, plans and elevations all properly cross-referenced to the Contract Drawings, as are necessary to clearly delineate arrangements, construction and connections. Illustrate all work contiguous with and having a bearing on Work indicated. Number consecutively and date. Indicate the Project name, the names of the Contractor and the Subcontractor, and the name or description of the equipment.

1.07 PRODUCT DATA PROCEDURES:

- A. Contractor shall submit as for Shop Drawing Procedures.

1.08 PRODUCT DATA PREPARATION:

- A. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.

1.09 MISCELLANEOUS SUBMITTALS PROCEDURES:

- A. According to the requirements of the various Sections of the Specifications, submit all copies to the Engineer for distribution.
- B. Requests by the Engineer for changes and corrections on Shop Drawings to conform to the Contract Documents shall not be construed as an order for extra work under the Contract.
- C. Additional Shop Drawings which may be required at the Engineer's request for the proper execution of the Work shall be provided as though specified herein. Carefully review the Specifications for all submittals and make it a point to inform Subcontractors concerning the submission of Shop Drawings.
- D. Maintain one set of product data, Shop Drawings and samples (for each submittal) at the Project Site, available for reference by the Engineer or others. This set shall be complete

and maintained in order throughout the Project. Upon completion of the Work deliver a set to the Owner with a letter of transmittal listing each submittal. This set shall be in addition to the requirements found in Section 01700 - PROJECT CLOSEOUT.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SUMMARY:

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Division -1 Sections
- B. Division-15 Sections
- C. Structural Construction Documents

1.04 SCOPE:

- A. Be responsible for and have control over the quality and procedures of all involved in the Project. The qualifications, standards, visual requirements, tolerances, workmanship, performance, testing and retesting, scheduling and submitted requirements of the various Sections of these Specifications under this Contract shall be the responsibility of the Contractor as if performed by him; verify compliance of the work with these requirements.

1.05 SURVEYS, LAYOUTS AND LEVELS:

- A. Verify all grades, lines, levels and dimensions shown on Drawings and report any observed errors or inconsistencies to the Engineer before beginning work. Provide and maintain well built batter boards at all corners. Establish bench marks and basic lines and grades and coordinate systems for the construction area.

1.06 CONDUCT OF THE WORK:

- A. Be responsible for the execution of a satisfactory and complete job. Workmanship shall be of the highest quality, performed by skilled craftsmen of the trade involved and subject to the Engineer's approval.
- B. Be responsible for the proper fitting of all work and for the coordination of the operations of all engaged on the Project. Be prepared to guarantee the dimensions which may be required for the fitting of work to all surrounding work, and do (or cause to be done) all cutting,

fitting, adjusting, and patching necessary to make the several parts of the work come together properly.

1.07 EXAMINATION OF PREPARATORY WORK:

- A. Before starting a Section of Work carefully examine all preparatory work that has been executed. Check carefully, by whatever means are required, to ensure that the work and adjacent, relocated work will finish to proper contours, planes and levels. Promptly notify Engineer of any defects or imperfections in preparatory work which will in any way affect satisfactory completion of work. Absence of such notification will be construed as an acceptance of preparatory work, and later claim of defects therein will not be recognized.
- B. Under no condition shall a section of work proceed prior to preparatory work having been completed, cured, dried, and otherwise made satisfactory to receive such related work. Responsibility for timely installation of all materials rests solely with the Contractor who shall maintain coordination control at all times.

1.08 SUBCONTRACTORS:

- A. Pre-qualification for consideration to bid on any part of the Work shall be those Subcontractors who have been in business a minimum of three (3) years performing work on which they are proposing to bid. Specific qualifications stated elsewhere in the Specifications shall govern for the work involved.

1.09 DAMAGE SURVEY AND REPORTS:

- A. In the event of damage to the work from any cause, inform the Engineer of the damage and provide a detailed report of the damage, its cause and consequence.

1.10 TEMPORARY FIRE PROTECTION

- A. During the construction period and until the time certain protection needs may be fulfilled by permanent facilities, install and maintain whatever types and forms of temporary fire protection facilities may be needed to adequately protect against fire losses which are reasonably predictable and controllable. Except as otherwise indicated or required, comply with the applicable recommendations of NFPA-10 "Portable Fire Extinguishers" for each area of each construction activity when combustible materials, flammable liquids and similar exposures to possible fires are present. Locate extinguishers where most convenient and effective for intended purposes. Store combustible materials in recognized fire-safe locations and containers.

1.11 COORDINATION CONFERENCES:

- A. Every two weeks during the construction process call a coordination conference with all who are involved in or affected by the immediate work. Advise Owner of scheduled meeting dates. At each meeting review progress of other work and preparations for particular work under consideration, including requirements of Contract Documents, options, related change orders, purchases, deliveries, Shop Drawings, product data, quality control samples, possible conflicts, compatibility problems, time schedules, weather limitations, governing regulations, safety inspection and testing requirements, required performance results, recording requirements, and protection. Record significant discussions of each conference, and agreements and disagreements, along with final plan of action.

Promptly distribute record of meeting to everyone concerned, including the Engineer.

1.12 CUTTING AND PATCHING:

- A. Definition: "Cutting and patching" is hereby defined to include but is not necessarily limited to the cutting and patching of nominally completed and previously existing work in order to accommodate the coordination of work, the installation of other work, or to uncover other work for access or inspection or to obtain samples for testing or for similar purposes; exclude integral cutting and patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting and patching.
  - 1. Demolition is recognized as an example of a related but separate category of work, which may or may not also require cutting and patching.
  - 2. Excavating and the associated operations of boulder removal, dewatering, bracing, removal of underground debris, penetration of rock and other barriers, backfilling, and similar work as specified, may be required as a special form of cutting and patching, but is recognized primarily as an example of a related but separate category of work.
  - 3. Restoring or removing and replacing non-complying work is specified separately from cutting and patching, but may require cutting and patching operations as specified herein.
- B. GENERAL: Do not cut and patch operational elements and safety related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
- C. Do not cut and patch structural work in a manner resulting in a reduction of load-carrying capacity or load-deflection ratio.
- D. Visual Requirements: Do not cut and patch work which is exposed on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut and patch work, both as judged solely by the Engineer. Remove and replace work judged by the Engineer to be cut and patched unsatisfactorily or visually.
- E. Materials: Except as otherwise indicated or approved by the Engineer, provide materials for cutting and patching which will result in equal-or-better work than the work being cut and patched, in terms of performance characteristics and including visual effects where applicable. Comply with the requirements, and use materials identical with the original materials where feasible and where recognized that satisfactory results can be produced thereby.
- F. Execution: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work. Provide adequate protection of other work during the cutting and patching to prevent damage. Provide protection of the work from adverse weather exposure.
- G. Employ skilled tradesman to perform cutting and patching. Except as otherwise indicated or approved by the Engineer, proceed with cutting and patching at the earliest feasible time,

in each instance, and promptly perform the work.

- H. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original installer where possible, and comply with his recommendations. In general, where mechanical cutting is required, work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work. Restore exposed finishes of patched areas; where necessary extend finish restoration onto retained work adjoining in a manner which will eliminate evidence of patching. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch.

#### 1.13 GUARANTEES AND PRODUCT WARRANTIES:

- A. Guarantee all materials, equipment and workmanship for a period of one (1) year for general construction, two (2) years against leakage, and other specific warranties and guarantees stated in the Contract Documents from the date established on the executed Certificate of Substantial Completion, AIA Document G704. Manufacturers' and Subcontractors' guarantees and warranties shall be concurrent with that of the Contractor from the date of substantial completion.
- B. Within a reasonable length of time after receipt of a written notice by Owner, make good any defects in materials or workmanship which may have developed during the one (1) year period. Be responsible for any loss or damage caused by defects or by his workmen to the property or to the work or materials installed and make good any loss, damage or injury costs to the Owner.
- C. Damage incurred to the building shall be replaced or restored to its original condition and be acceptable to the Engineer and the Owner.
- D. Leakage Guarantee: Except for leakage resulting from extreme Acts of God, maltreatment, misuse, or other abnormal conditions that are over and beyond what might be reasonably expected and what would not normally be protected against in design and construction. Any leakage of water, bitumen, or other material (through, around, or under roofing, flashing, gravel, stops, gutters, downspouts, or other parts that make up the roof system, and/or any leakage of water or dampness through or around exterior walls, below or above grade, or through or around windows, doors, or other features that are a part of such walls, and/or leakage of water or dampness through or around floors on grade or through or around sleeves and other features in such floors) that occurs within a period of two (2) years following substantial completion and acceptance of construction will be considered a deficiency or failure caused by defective materials or workmanship, regardless of extenuating circumstances that may be connected with the leakage. Accept responsibility for such deficiency or failure during this two (2) year period, irrespective of bonds or guarantees that may have been received by Owner. Signing of the Contract will be construed as evidence of knowledge and acceptance of this responsibility.
- E. Further indicate evidence of understanding of this Contract condition by furnishing a written statement, prior to receiving final payment, as assurance that roof, walls, floor on grade, and all their component parts shall not leak for two (2) years, except as may be caused by abnormal conditions described herein.

#### 1.14 PUBLISHED STANDARDS AND NATIONAL ASSOCIATIONS:

A. References in the Contract Documents to published construction industry standards, either by name or by abbreviation listed below, including those by trade associations and technical societies shall apply as though bound herein. Where the requirements of this Specification do not describe every step or member in the construction process these standards shall be observed.

1. ACI American Concrete Industries  
Box 4754, Redford Station  
Detroit, Michigan 48219
2. AISC American Institute of Steel Construction  
101 Park Avenue  
New York, New York 10017
3. AISI American Iron and Steel Institute  
150 East 42nd Street  
New York, New York 10017
4. APA American Plywood Association  
1119 A Street  
Tacoma, Washington 98401
5. ASHRAE American Society of Heating, Refrigerating  
and Air-Conditioning Engineers, Inc.  
Arlington, Virginia 22206
6. ASTM American Society for Testing and Materials  
1916 Race Street  
Philadelphia, Pennsylvania 19103
7. AWI Architectural Woodwork Institute  
5055 South Chesterfield Road  
Arlington, Virginia 22206
8. AWPI American Wood Preservers Institute  
1651 Old Meadow Road  
McLean, Virginia 22101
9. AWS American Welding Society, Inc.  
2501 NW 7th Street  
Miami, Florida 33125
10. BHMA Builder Hardware Manufacturers Assoc.  
60 East 42nd Street  
New York, New York 10017
11. CRSI Concrete Reinforcing Steel Institute  
228 North LaSalle Street  
Chicago, Illinois 50501
12. CSI The Construction Specifications Institute  
1150 17th Street, NW

Washington, D.C. 20036

13. NEMA National Electrical Manufacturers Association  
155 East 44th Street  
New York, New York 10017
14. NEMI National Elevator Manufacturing Industry  
101 Park Avenue  
New York, New York 10017
15. NAAMM The National Association of Architectural Metal  
Manufacturers  
1010 West Lake Street  
Oak Park, Illinois 60301
16. PCA Portland Cement Association  
5420 Old Orchard Road  
Skokie, Illinois 60076
17. PCI Prestressed Concrete Institute  
20 North Wacker Drive  
Chicago, Illinois 60606
18. SDI Steel Door Institute  
2130 Keith Building  
Cleveland, Ohio 44115
19. SJI Steel Joist Institute  
2000 Jefferson Davis Highway  
Arlington, Virginia 22202
20. SMACNA Sheet Metal and Air Conditioning Contractors' National Association  
1611 North Kent Street  
Arlington, Virginia 22209
21. UL Underwriters' Laboratories, Inc.  
207 East Ohio Street  
Chicago, Illinois 60611

1.15 QUALITY CONTROL:

- A. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more stringent than applicable requirements indicated in Contract Documents.
- B. Inspect each item of materials or equipment immediately prior to installation, and reject damaged and defective items.
- C. Use intended as it is installed, true to line and level, and within recognized industry tolerances if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effects.

Refer questionable visual effect choices to Engineer for final decision.

- D. Recheck measurements and dimensions of the Work as an integral step of starting each installation.
- E. Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of Project completion which will ensure best possible results for each unit of work, in coordination with entire Work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.
- F. All Work shown on the Drawings is to be constructed plumb, level and true with component members aligned and surfaces flat, unless otherwise indicated.
- G. Coordinate enclosures (closing-in) of work with required inspections and tests to avoid necessity of uncovering work for that purpose.
- H. Mounting Heights: Except as otherwise indicated, mount individual units or work at industry-recognized standard mounting heights for applications indicated. Refer questionable mounting choices to Engineer for final decision.
- I. Adjust, clean, lubricate, restore marred finishes, and protect newly installed work, to ensure that it will remain without damage or deterioration during the remainder of the construction period.

PART 2 – PRODUCT (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 – GENERAL

1.01 GENERAL

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 REQUIREMENTS:

- A. Provide and maintain all temporary facilities and general services required for the proper completion of the Work.
- B. Send proper notices, make all necessary arrangements, and perform all other services required for the care, protection and maintenance of all public utilities, including telephone and power poles and wires and all other items of this character on, around, and under the building site and in existing building. Assume all responsibility and pay all costs for which Owner may be liable.

1.03 TEMPORARY UTILITIES AND SERVICE:

- A. Water: Provide drinking water, which will be cooled in warm weather, for all workmen and job personnel. Water supply in existing building may be tapped and used in reasonable quantities at no cost. Do not waste water. Provide containers of water and paper cups at convenient locations where work is being executed. Provide and maintain runs of piping or hose as may be required. Do not interfere with Owner's operations in existing building.
- B. Temporary Heat: Provide and maintain temporary heat as required for the work during and throughout the entire period of construction to protect all work, materials, and equipment against injuries from dampness and cold. The permanent heating system may be utilized for that purpose after installation.
- C. Temporary Sanitary Facilities: Provide and maintain adequate facilities for the use of all persons employed about the Project. Portable type facilities may be used. Temporary toilets shall be installed at the time the Work is commenced and shall be maintained in compliance with all applicable health laws and regulations; the use of such facilities shall be enforced. Upon completion of the work, remove the temporary facilities and all traces thereof. Owner's facilities in existing building may not be used.
- D. Temporary Electric Service: Provide temporary electrical service, including adequate lighting, for all construction work on the Project throughout the whole period of construction. Service in existing building may be tapped and used in reasonable quantities at no cost. Do not interfere with Owner's operations in existing building.
- E. Temporary Telephone Service: Provide one (1) city telephone for the use of all

employed about the Project. Pay for the installation, maintenance, removal and all charges for use of this telephone, except charges for long distance messages shall be paid by the person making same. Owner's facilities in existing building may not be used. The telephone shall remain until the full completion of the Work, and shall be removed when directed by the Engineer.

1.04 TEMPORARY OPENINGS, LADDERS, SCAFFOLDS, STAIRS:

- A. Furnish, maintain, and operate all equipment such as temporary stairs, ladders, ramps, scaffolds, hoist, etc., as required for the proper execution of the Work. Remove on completion with all traces. Anchors shall not be made in finished surfaces for temporary equipment.

1.05 TEMPORARY PROTECTION OF THE WORK, LABOR AND MATERIALS:

- A. During the process of construction, all work shall be properly braced, secured or otherwise protected against the perils of wind, storms, and accidental dislodgement when the Work is not in progress. Protect existing building in areas where Work is being done.
- B. Schedule the Work to minimize the possible damage of finished surfaces. Finishes shall be taped, masked or otherwise protected in a suitable manner that will insure against possible damage by the installation of other work.
- C. Provide for the temporary protection of, and a hazard-free atmosphere for, labor engaged in the construction of the Project. Guard rails, ventilation, adequate lighting, safety lines, protectors against electrical shock, protection against explosion, falling objects and fire, etc., shall be employed.

1.06 TEMPORARY OFFICES:

- A. Provide and maintain temporary offices at the Job Site.
- B. Provide on the premises, where directed, suitable storage sheds, substantial and watertight in which to store tools and all materials subject to damage by weather. Storage sheds shall be of sufficient size to hold all materials required on the Site at one time and have floors raised at least 6 inches above the ground on heavy joists or sleepers. Storage sheds shall have neat appearance.

PART 2 – PRODUCT (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SUMMARY:

- A. This Section includes administrative and procedural requirements for selection of products for use in project; product delivery, storage, and handling; manufacturer's standard warranties on products; special warranties; product substitutions; and comparable products..

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Allowance, Section - 01210
- B. Closeout Procedures, Section - 01770
- C. All Sections of Contract Documents.

1.04 DEFINITIONS:

- A. Products: Item purchased for incorporating into the Work, Whether purchased for Project or taken from previously purchased stock. The term "product" includes the term "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 Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable / Equal Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, 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. The burden of proof, that the proposed product is comparable or equal, is on the firm or individual that proposes the alternate product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by words "Basis-of-Design" 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 other named manufacturers.

#### 1.05 SUBMITTALS

- A. Refer to Section 01330 for Product Submittals.
- B. Completed List: Within five days after date of commencement of work, submit five copies of product list to Engineer for review.
- C. Engineer's Action: Engineer will respond in writing to Contractor within five days of receipt of completed product list. Engineer's response will include a list of unacceptable product selections and brief explanation of reasons for action. Engineer's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- D. Engineer's Action for Substitution Request: If necessary Engineer will request additional information or documentation for evaluation within five days of receipt of request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within five days of receipt of request, or five days of receipt of additional information or documentation, whichever is later.
- E. Engineer's Action for Comparable / Equal Product Submittal. If necessary, Engineer will request information or documentation for evaluation within five days of receipt of request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within five days of receipt of request, or five days of receipt of additional information or documentation, whichever is later.
- F. Engineer's Action for Basis-of -Design Specification Submittals: If necessary, Engineer will request information or documentation for evaluation within five days of receipt of request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within five days of receipt of request, or five days of receipt of additional information or documentation, whichever is later.
- G. Engineer's decision will be final on whether a proposed product matches.

#### 1.06 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be 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.

## 1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long term storage at Project site and 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 and installing.
  - 4. Inspect products on delivery to ensure compliance with the contract Documents and to ensure that products are undamaged and properly protected.
- C. Store products that are subject to damage by the elements, under cover in weather tight enclosure above ground, with ventilation adequate to prevent condensation. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

## 1.08 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 with limitations on product warranties do not relieve Contractor of obligations under requirements of Contract Documents.
  - 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identifications, ready for execution. Submit a draft for approval before final execution.
  - 1. Manufacturer's Standard form: Modified to include Project Specific information and properly executed.
  - 2. Specific form: When specified forms are included with specifications, prepare a written document using appropriate form properly executed.
  - 3. Refer to Division 15 and Structural Specifications for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Division 1 Section “Closeout Procedures”

## PART 2 – PRODUCTS

### 2.01 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and unless otherwise indicated, that are new at the 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. Provide standard products, unless otherwise custom products have been specified.
  - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of Contract Documents
  - 4. Where products are specified by name the term “or equal” or “or approved equal” is implied per Public Contract Code. Comply with provisions of “Comparable / Equal Products” Article to obtain approval for use of an unnamed product.

### 2.02 PRODUCT SUBSTITUTIONS

- A. Timing: Engineer will consider request for substitution if received within ten days after the Notice of Award. Request received after that time may be considered or rejected at discretion of Engineer.
- B. Conditions: Engineer will consider Contractor’s request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, engineer will return request without action, except to record noncompliance with these requirements.
  - 1. 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 consideration by Owner and similar considerations.
  - 2. Requested substitution does not require extensive revisions to Contract Documents.
  - 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - 4. Requested substitution is fully documented and properly submitted.
  - 5. Requested substitution will not adversely affect Contractor’s Construction Schedule
  - 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - 7. Requested substitution is compatible and has been coordinated with other portions of the Work.

8. Requested substitution provides specified warranty.

#### 2.03 COMPARABLE / EQUAL PRODUCTS

- A. Conditions: Engineer will consider Contractor's request for comparable / equal product when the following conditions are satisfied. If the following conditions are not satisfied, engineer will return request without action, except to record noncompliance with these requirements.
  1. Requested substitution does not require extensive revisions to Contract Documents. That it is consistent with Contract Documents and will produce the indicated results, and that it is compatible with other portions of 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 in the Specifications.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of Architects and Owners, if requested.
  5. Complete submittal in accordance with Specifications.

#### PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SUMMARY

- A. This section includes general procedural requirements governing execution of Work including, but not limited to, the following.
  - 1. General installation of products
  - 2. Coordination of Owner-installed products
  - 3. Progress cleaning
  - 4. Starting and adjusting
  - 5. Protection of installation construction
  - 6. Correction of the Work

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Project Management and Coordination, Section- 01310
- B. Submittal Procedures, Section – 01330
- C. Closeout Procedures, Section - 01770

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existing and location of mechanical and electrical systems and other construction effecting the Work. Before construction verify location and points of connection of utility services.
- B. Acceptance of Conditions: Examine subcontracts, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions effecting performance. Record observations.
  - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work.
    - a. Description of the Work.

- b. List of detrimental conditions, including substrates.
  - c. List of unacceptable installation tolerances
  - d. Recommended corrections.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  3. Examine roughing in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation
  4. Examine walls, floors and roofs for suitable conditions where products and systems are to be installed.
  5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.02 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of 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.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of Contract Documents, submit a request for interpretation to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit request on CSI Form 3.2A, "Request for Interpretation"

### 3.03 INSTALLATION

- A. General: Locate the Work and components of Work accurately, in correct alignment and elevation, as indicated:
  1. Make vertical work plum and horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of access
  3. Conceal pipes, ducts and wiring and conduits in finished areas, unless otherwise indicated.
  4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling unless otherwise indicated
- B. Comply with manufacturer's written recommendations for installing products in applications indicated.

1. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion
2. Conduct construction operations so no part of Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
3. Anchor and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of Work.
4. Joints: Make joints of uniform width, Where joint location in exposed work are not indicated, arrange joints for best visual effect. Fit exposed connections together to form hairline joints.
5. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

#### 3.04 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste material and debris.
- C. Work Areas: Clean areas where work is in progress.
- D. Installed Work: Keep installed work clean.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing spaces
- F. Exposed Surfaces in finished Areas: Clean exposed surfaces and protect from damage
- G. Waste Disposal: Burying or burning waste material on-site and washing waste material down sewers or into waterways will not be permitted
- H. Limiting Exposures: Supervise construction operation to ensure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period.

#### 3.05 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest .
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and

- safeties. Replace damaged and malfunctioning controls and equipment
- D. Manufacturer's Field Service: If factory-authorized service representative is required to inspect field assembled components and equipment installation, comply with qualification requirements in Division 1 "Quality Requirements"

3.06 PROTECTION OF THE WORK

- A. Provide final protection and maintain conditions that ensure installed work is without damage or deterioration at time of substantial Completion.

3.07 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SUMMARY

- A. This section includes general procedural requirements governing demolition and removal of selected portion of building components and removal of demolition debris. from Project Site.

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Summary Section- 01100
- B. Temporary Facilities and Controls Section – 01500
- C. Division 15 Mechanical Sections
- D. Structural Construction Documents

1.04 DEFINITIONS

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

1.05 SUBMITTALS

- A. Qualification Data: For demolition firm.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
  4. Use of elevator and stairs.
  5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
  6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
  7. Means of protection for items to remain and items in path of waste removal from building.
- C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- D. Pre-demolition photographs or videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- E. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

#### 1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  4. Review areas where existing construction is to remain and requires protection.

1.07 PROJECT CONDITIONS

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

1.08 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to avoid existing warranties.
  - 1. Fire Sprinkler System: All work on fire sprinkler system is to be performed by the original installer.
  - 2. Fire Alarm System: All work on fire alarm system is to be performed by the original installer.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.

- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### 3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
  - 1. Comply with requirements for existing services/systems interruptions specified in Division 1 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner or Building manager will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass are of selective demolition and that maintain continuity of services/systems to other parts of building.
  - 3. Cut off pipe or conduit on walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
    - a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
  - 4. Temporarily cap, plug or seal all open pipes to prevent the entry of debris. Maintain caps, plugs, and seals until piping is ready to be reconnected or fixtures are ready to be reinstalled.

### 3.03 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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

### 3.04 SELECTIVE DEMOLITION, GENERAL

- A. General: demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher or lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operation. Maintain fire watch and

portable fire-suppression devices during flame-cutting operations.

5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floor, or framing.
  9. dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Owner
  4. Transport items to Owner's storage area designated by Owner.
  5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Owner, items may be removed to suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Cut concrete to a depth of at least ¾ inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its addendum.
  - 1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.
- F. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

### 3.06 DISPOSAL OF DEMOLISED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose to them in and EPA-approved landfill.
  - 1. Use City of Industry disposal service and dumpsters provided by city of Industry disposal service. Contact Valley Vista Services.
  - 2. Do not allow demolished materials to accumulate on-site.
  - 3. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 4. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

### 3.07 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt and debris caused by selective demolition operation. Return adjacent areas to condition existing before selective demolition operations began.

### 3.08 SELECTIVE DEMOLITION SCHEDULE

- A. Selective demolition includes items shown on the Drawings in addition to the items listed in this Schedule.

- B. Existing Items to Be Removed:
  - 1. As shown on drawings
- C. Existing Items to Be Removed and Salvaged:
  - 1. None
- D. Existing Items to Remain:
  - 1. As shown on Drawings.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SUMMARY

- A. This section includes general procedural requirements governing project closeout procedures and requirements for the entire Work

1.03 FINAL CLEANING AND PROTECTION:

- A. Upon completion of the Work thoroughly clean the building and Job Site of all trash and rubbish left during the course of construction and dispose of off the Job Site. Finished surfaces shall be protected from damage, dirt and dust until the date of substantial completion. Leave the Project in a clean, first-class condition.
- B. Work includes, but is not limited, to the following:
  - 1. Remove putty stains, labels, and paint from all glass, wash and polish same. Care shall be taken not to scratch glass. Replace all damaged glass regardless of cause.
  - 2. Remove all marks, stains, dust, fingerprints, and other soil or dirt from all finished surfaces and clean as required to leave in a first-class condition.
  - 3. Clean and polish all hardware items for all trades; this shall include removal of all stains, paint, dust, dirt, etc.
  - 4. Clean all fixtures and equipment, removing all stains, paint, dust, dirt, etc.
  - 5. Clean all lighting fixture lenses, removing all dust and fingerprints, etc. Replace all damaged lenses, regardless of cause.
  - 6. Remove all spots, excess grout, soil, and paint from all ceramic tile, and wash same.
  - 7. Remove all excess fibers from carpets after installation.
  - 8. Remove all temporary protection from vinyl asbestos tile; clean, wax, and polish all floors and bases.

1.03 DEFICIENCIES LIST AND SUBSTANTIAL COMPLETION:

- A. The Engineer shall visit the Project at intervals appropriate to the progress of the Work and shall advise the Contractor in writing of items which require correction, in order to

minimize the extent of the Deficiencies List issued at the time of Substantial Completion.

- B. Failure to make correction to the Work while it is accessible, while the trades involved are working and before other work is jeopardized, shall not be reason for acceptance by the Engineer of the work in question.
- C. Correct the items noted on the Deficiencies List within thirty (30) days from the date of Substantial Completion. After this period, Owner reserves the right to engage others to finish the Work and deduct the cost of finishing the Work from retainage. If after Substantial Completion of the Work, final completion of individual items is delayed through no fault and stated in writing to and confirmed by the Engineer, such items shall not constitute the Owner's right to engage others.

1.04 FINAL INSPECTION AND CORRECTION:

- A. The purpose of the final inspection is to determine whether the Work has been completed in a proper and workmanship like manner, that the Work has apparently been installed in accordance with the intent of the Drawings and Specifications, and that, in the Engineer's opinion, the work is satisfactory for Owner's acceptance.
- B. Personally make a special inspection trip to assure that the Work on the Project is ready for final acceptance, before calling upon the Engineer to make a final inspection.
- C. In order not to delay final acceptance of the Work, collect all necessary bonds, guarantees, receipts, affidavits, etc., called for in various articles of this Specification, prepared and signed in advance, and together with a letter of transmittal, list each paper included and deliver to the Engineer at or before the time of final inspection. Contractor is cautioned to check over each bond, guarantee, receipt, affidavit, etc., to see that the terms coincide with the requirements of the Contract.

1.05 RECORD DRAWING:

- A. In addition to copies of Contract Documents furnished for construction, Engineer will furnish one (1) additional complete set of the Drawings and also one (1) additional set of specifications. Record in red each and every change that is made from general drawings at the time when change is made. This includes any changes that are made in the building as well as a complete record of exact manner in which electrical and mechanical and piping are installed. Dimensions shall be included where appropriate to accurately locate piping and other items that will be concealed in finished building and that it may later be necessary to service. Upon completion of construction turn these Drawings over to the Engineer.
- B. Incorporate a schematic piping diagram, complete with all equipment, valves and piping. Indicate valve tag numbers, as installed, on the Drawings.
- C. Furnish such additional information on the Drawings or a supplemental sheet as required to meet the requirements of DIVISIONS 15
- D. All Drawings shall be subject to the review and approval by the Engineer and Drawings shall represent a true picture of the completed Project.

- A. The start-up of building systems shall be accomplished prior to the date of Substantial Completion to allow for testing, adjusting, debugging and checking. The use of the building systems for temporary utilities and service shall in no way penalize the Owner by reducing benefits from Warranties. Make good the coverage of Warranties from the Date of Substantial Completion on all building systems to the extent that temporary use has reduced the time of coverage by the Warranties. The time allowed for testing, adjusting, debugging and checking shall be established by the Engineer for each building system. List the expiration date of all building systems and equipment at time of Substantial Completion.

1.07 RECORDS, MAINTENANCE AND OPERATING MANUALS:

- A. Keep an accurate record of the installation of all materials and systems covered by the contractual agreement. The record shall indicate the location of all equipment and the routing of all systems.
- B. In addition to the above, accumulate one set of the following data for the Owner.
  - 1. All warranties, guarantees, and manufacturers' directions on equipment and material covered by the Contract.
  - 2. Approved equipment and fixture brochures, wiring diagrams and control diagrams.
  - 3. Copies of approved Shop Drawings.
  - 4. Any and all other data and/or drawings required during construction.
  - 5. Repair parts list of all items and equipment including name, address and telephone number of local supplier or agent.
  - 6. Furnish, through the Engineer, three (3) copies of Operating Instructions and Maintenance Recommendations.

1.08 MAINTENANCE AGREEMENTS:

- A. Advise Owner of all maintenance agreements available to him by those engaged in this Contract. List executed agreements at the time of Substantial Completion.

1.09 INSTRUCTING OWNER'S PERSONNEL:

- A. Provide experienced, competent personnel to instruct Owner's personnel in the operation, maintenance and inspection of all building systems and equipment. Maintain this service to the Owner for a period of not less than ninety (90) days following the date of Substantial Completion.

PART 2 – PRODUCT (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section
- C. This Section applies to all aspects of Division 15 and is intended to be complementary to the General Conditions and Supplementary Conditions.
- D. Furnish labor, materials, services, equipment and appliances required for complete furnishing and installation of mechanical systems, including Plumbing, Heating, Ventilating and Air Conditioning.
- E. Use of words "provide," "furnish," or "install" means item or facility is to be both furnished and installed unless expressly stated otherwise.

1.02 CODES:

- A. Meet requirements of National Fire Prevention Association (NFPA), local and state codes having jurisdiction, and requirements of Utility Companies whose services are used.
- B. Codes and ordinances having jurisdiction over Work are minimum requirements; but, if Contract Documents indicate requirements, which are in excess of those minimum requirements, then requirements of Contract Documents shall be followed. Should there be any conflicts between Contract Documents and codes or any ordinances having jurisdiction, report these to Engineer.

1.03 SCOPE:

- A. Furnish all labor, materials, equipment, transportation, testing and services necessary for satisfactory and complete installation of work indicated on the contract documents. The scope of work shall include, but not necessarily limited to the following major items of work.
  - a. Dismantling, removal and disposal of existing air conditioning units.
  - b. Dismantling and removal of existing heating boiler and water heater
  - c. Installation of new equipment, ductwork and piping
  - d. Installation of new temperature controls.
  - e. Air and Hydronic test and balance
  - f. Installation of new rooftop equipment curbs and platforms.
  - g. Modification of existing equipment platforms
  - h. Installation of new equipment screens.
  - i. Installation of electrical power wiring and devices.

- j. Installation of plumbing systems as indicated on contract documents.
- k. Repair of damaged roofing, as required.
- l. Cutting and patching.
- m. Finish and touch-up painting.
- n. Installation of new access ladder.

1.04 DRAWINGS AND SPECIFICATIONS:

- A. Drawings accompanying these Specifications show extent of Work to be done; comply with evident intent of these Documents in every particular.
- B. Thoroughly examine the existing project site in connection with this Work; ascertain general construction conditions and be familiar with all limitations caused by such conditions.
- C. Plans are intended to show general arrangement and extent of Work contemplated. Exact location and arrangement of parts shall be determined after equipment has been reviewed by Engineer, as Work progresses, to conform in best possible manner with surroundings, and as directed by Engineer and Owner's Representative.
- D. Follow dimensions without regard to scale. Where no figures or notations are given, the Plans shall be followed.

1.05 UTILITIES:

- A. Location and sizes of existing sanitary waste, condensate drain, natural gas and industrial cold water piping are approximate, and shown in accordance with data secured from existing building Contract Drawings. Data shown are offered as an estimating guide without guarantee of accuracy. Check and verify all data given, and verify exact locations of all utility services pertaining to Work.

1.06 SYMBOLS:

- A. Symbols for various outlets, duct and piping systems are noted on Plans, and shall be strictly adhered to in connection with all Work. Should Contractor be in doubt regarding exact meaning and intent of various symbols used, he shall confer with Engineer for interpretation whose decision shall be final.

1.07 STANDARDS FOR PRODUCTS, MATERIAL AND EQUIPMENT:

- A. Products, material and equipment shall meet requirements of Contract Documents, shall be new and free from defects, shall conform to published construction industry standards, and shall be UL listed and labeled where Underwriters Laboratories, Inc. has requirements for such products, material and equipment.
- B. Manufacturers' names and catalog numbers are used in the Contract Documents as a means of establishing product grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered. Manufacturer named in schedules is manufacturer whose product was used in laying out job; products of other named manufacturers will be considered as substitutions. Contractor must prove

that substitution will perform satisfactorily and meet space and capacity requirements of scheduled manufacturer.

- C. Where only one manufacturer is named in the Contract Documents, it is to be used as a basis of quality. Unless otherwise indicated, other manufacturers may be used if quality of proposed product, material, or equipment is equal to quality of that named. Such unnamed manufacturers' products will, however, be considered as substitutions and shall not be used as a pricing basis.
- D. Quality basis shall be interpreted to include material, workmanship, weight, finish, gauges of material, appearances, capacity, and performance.
- E. Manufacturers' representation as to availability of equipment parts and replacement and service personnel in area will be a factor in consideration of substitutions.
- F. Contractor shall make all necessary adjustments (structural, electrical, etc.) in the Work which may be affected as a result of substitution at no additional cost.
- G. If performance of a substitution is unsatisfactory; Contractor shall replace the substitution with the specified product, material or equipment at no additional cost.

1.08 SUBMITTALS:

- A. Shop Drawings: Submit four bound copies, including brochures and schedules as follows:
  - 1. Draw equipment layouts to at least  $\frac{1}{4}'' = 1'-0''$  scale including equipment and piping accessories, showing all clearances for operating and servicing.
  - 2. Schedules of ducts, pipes and fittings.
  - 3. Specialties, valves, gauges and thermometers of all types.
  - 4. Foundations, supports, hangers and inserts.
  - 5. Expansion loops, expansion joints, guides, and anchors.
  - 6. Insulation.
  - 7. Pumps and pump characteristics, curves and pump test.
  - 8. fans and fan characteristics, curves and fan test
  - 9. Packaged Air Conditioning units.
  - 10. Boiler and accessories.
  - 11. Hot water Boiler , water heater and storage tank
  - 12. Air distribution devices

13. Temperature control system, thermostats
  14. Heating ventilating and Evaporative make-up air units
  15. Wiring diagram, control panelboard, motor starters and controls for electrically operated equipment.
  16. Specialty products.
  17. Vibration isolation.
- B. Installation Instructions: Submit manufacturer's printed installation instructions for product specified to be installed in accordance with manufacturer's instructions.

#### 1.09 RECORD DRAWINGS

- A. provide record drawings indicating all changes from record drawings, including the following:
1. Principal shut-off valves plainly marked and identified.
  2. Changes from drawings in location of piping and equipment drawn to scale.
  3. Equipment layout drawings revised from the shop drawings to show the actual installed conditions and dimensioned to nearest permanent architectural feature.

#### 1.10 OPERATION AND MAINTENANCE MANUALS:

- A. Submit the manuals as an assembly of the following information bound in durable Binding:
1. Page indicating name, address, telephone number, and name of person to contact regarding building and equipment maintenance at office of Contractor.
  2. Sectionalize manual by dividers, with tab indexes indicating various sections.
  3. At front of each section, sheet indicating name, address and telephone number of person to be contacted at office of major supplier.
  4. complete description of recommended operational procedures including maintenance, lubrication data, and spare replacement parts lists of equipment items. Include all applicable catalog data, diagrams, cut sheets describing equipment and sources from which replacement parts can be obtained.
    - a. (Performance data, curves, charts, etc.) on all pumps and motor driven equipment with motor ratings, and electrical single lines and wiring diagrams, and disconnect switches.
  5. Complete name plate data for each and every item of equipment provided under

each section of the manual.

6. Complete control wiring diagram, including written operating procedure with catalog literature describing each control instrument.
7. Complete and detail of air and hydronic test and balance log, including the name and address of the engineer doing the test and balance.

1.11 JOB CONDITIONS:

- A. Inspection of conditions: Examine related work and surfaces before starting work.. Refer to Engineer, in writing conditions which will prevent proper provision of this work. Beginning work without reporting unsuitable conditions to Engineer constitutes acceptance of conditions by Contractor. Perform any required removal, repair or replacement of the work caused by unsuitable conditions at no additional cost to the project.
- B. Seismic Design: The Contractor shall be responsible for all anchors and connections of mechanical work to the building structure to prevent damage as a result of an earthquake, including manufactured equipment the connection and integrity of shop fabricated and field fabricated materials and equipment. All building equipment and connections therefore shall be designed to resist lateral seismic forces equal to 1.0 of equipment weight to working allowable stress. Cantilever posts supporting any equipment shall be designed to resist lateral seismic forces equal to 1.0 of equipment weight to allowable working stress.

1.12 COORDINATION:

- A. Coordinate work among all trades to facilitate general progress of Work. Allow all other trades every reasonable opportunity for installation of their work.
- B. Layout roof equipment platforms and transition curbs, Set pipe sleeves and verify that openings for ductwork and piping are provided before starting installation of work.
- C. Layout exact locations of outlets, pipes, diffusers, and pieces of equipment to avoid interference.
- D. Mechanical and electrical work shall have precedence over the other in the following sequence:
  1. Soil and waste piping
  2. Ductwork
  3. Water piping
  4. Electrical.

1.13 MANUFACTURER'S WARRANTY

- A. Standard warranty of the manufacturer shall apply for replacement of parts after expiration of other warranty periods stated in Division 15 sections if they are for a shorter time than standard manufacturer's warranty. Manufacturer shall furnish and replace parts to Owner. Furnish Engineer printed manufacturer's warranties complete with material included and expiration dates based upon an acceptance date by the Owner. Extended warranties will be required for equipment replaced during warranty period.

1.14 MOTORS AND CONTROLLERS:

- A. Furnish with each piece of equipment all motors, motor starters and automatic controls.
- B. Motors shall conform to latest NEMA motor standard requirements and shall be suitable for service intended. Motors shall be rated to operate at an ambient temperature of 40°C. Oiling devices shall be located where readily accessible. Motors for belt-driven equipment shall be provided with adjustable slide rails. Motors for outdoor installation shall be TEFC unless otherwise specified. Nameplate horsepower of motor submitted shall be equal to or greater than scheduled horsepower and shall be greater than required horsepower to handle load.
- C. Motor controllers shall be automatic magnetic type, complete with ambient compensated thermal overload protection in each leg of a type and capacity suitable for the motor protected. Each controller shall have HOA switch, red run pilot light, and at least two extra sets of contacts for interlocking and alarm functions. Auxiliary controls and devices shall be operated on 120-volt, single-phase current; each starter for motors operating at other than 120-volts shall be provided with control power transformer. Submit Shop Drawings on all controllers. Controllers shall be Allen-Bradley, Square D, Cutler Hammer, G.E., or Sylvania.
- D. Electrical devices that fall within scope of UL testing capabilities shall be so tested and marked on re-inspection basis.
- E. If Contractor proposes to furnish motors varying in horsepower and characteristics from those specified, he shall first inform Engineer of change and shall then pay additional charges in connection with change.

1.15 PAINTING:

- A. Furnish the finish painting of uncoated equipment installed outdoors and touch-up damaged surfaces with paint to match existing adjacent surfaces. Painting material and colors shall be approved by the Owner's Representative.

1.16 EQUIPMENT IDENTIFICATION:

- A. Furnish and install black Bakelite name tags with white lettering to identify equipment starters, pushbutton stations, control switches and each major piece of mechanical equipment.
- B. Pipe Markers:

1. Furnish and install pipe markers in accordance with the City of Torrance Building Standards.
2. In absence of Owner's furnished Building Standards, Furnish and install pipe markers equal to "Set Mark SNA" as manufactured by Seton Name Plate Company, Inc., New Haven, Connecticut for all supply and return piping as listed below:

	<u>Piping</u>	<u>Background</u>	<u>Letter</u>
a.	Hot water supply	Yellow	Black
b.	Hot water return	Yellow	Black
c.	Industrial water	Yellow	Black
d.	Natural Gas	Yellow	Black
c.	Sanitary sewer	Green	Black

- C. Pipe markers shall be a minimum of 8 inches long and designed for snap-around parallel marking. Provide directional arrows with solid background of same background color as pipe marker. In mechanical rooms pipe markers and directional arrows shall be placed at approximately 20 feet on centers and at each inlet and outlet connection for each equipment piece. Other piping exposed to view shall have directional arrows and pipe markers at not more than 30 feet on centers. Pipe markers shall meet applicable ANSI/OSHA specifications.
- D. Valve markers shall be 2 inch round brass tags with 1/4 inch high letters denoting system and 1/2 inch high number of valve in system. Tags shall be equal to Seton. Prepare and install, in suitable glazed frame, typewritten valve charts giving number, location and function of each valve installed under this Contract.

1.17 ACCESS PANELS:

- A. Furnish access panels for all locations where mechanical equipment requiring access is installed behind walls or above non-accessible ceilings.
- B. Access Panels: Milcor; UL labeled as required to suit fire rating of surface in which installed, of the following styles in unrated surfaces.
- C. Masonry, ceramic tile and gypsum board walls: Style M, 10 inches x 10 inches minimum size.
- D. In metal lath and plaster walls: Style K, 12 inches x 12 inches minimum size.
- E. In plaster ceilings: Style K, 12 inches x 12 inches minimum size.
- F. In acoustical tile ceilings: Style AT, 12 inches x 12 inches minimum size.
- G. In gypsum board ceilings: Style DW, 10 inches x 10 inches minimum size.

1.18 TESTS, ADJUSTMENTS AND INSPECTIONS:

- A. On completion of installation, test and adjust entire installation for proper operation.

- B. Pay costs for labor, materials, and equipment as required for systems testing and adjusting. Provide apparatus, temporary piping connections or other requirements for tests. Take due precautions to prevent damage to building or its contents incurred by such tests. Repair and make good damage so caused at no additional cost to Owner.
- C. Leaks, defects or deficiencies discovered as a result of these tests or tests performed by Owner-retained testing and balancing firm shall be repaired, and tests shall be repeated until test requirements are fully completed.
- D. Whenever practical, piping tests shall be made before pipe is covered or concealed.
- E. The intention of this Specification Section is to provide necessary tests during job and at job completion to insure tight piping and ductwork and a correctly adjusted system, and Contractor shall do everything necessary to accomplish this.
- F. Motors and bearings on equipment shall be correctly oiled and greased before equipment is operated and again at job completion. Provide complete oiling and greasing instructions for Owner's designated personnel. Grease fittings shall be installed on equipment requiring periodic greasing.

1.19 TESTING AND BALANCING HYDRONIC EQUIPMENT AND PIPING :

- A. Retain a qualified balancing firm to balance HVAC flow rates in conformance with design quantities. See Section 15999.
- B. Test and adjust hydronic piping and equipment hydrostatically in accordance with ANSI code B31- appropriate section.

1.20 HVAC TESTING AND BALANCING

- A. Retain a qualified balancing firm to balance HVAC flow rates in conformance with design quantities. See Section 15999.
- B. Provide necessary openings for test and balance; coordinate this Work with balancing firm. Adjust and replace belts and sheaves for system balancing. See Section 15999 for additional responsibilities of this Contractor in connection with HVAC system testing and balancing.

1.21 AIR DISTRIBUTION SYSTEM TESTS

- A. Provide the services of a certified AABC qualified balancing and testing engineer to balance, adjust, and test the air conditioning air moving equipment and air distribution systems. Make changes in pulleys, belts, and dampers required for correct balance at no additional cost to the project. Test and record all variable and constant volume terminal units at minimum and maximum air flow.

1.22 EARTHQUAKE REQUIREMENTS:

- A. Take special note and conform to all code requirements regarding earthquake

construction such as equipment and piping installation with connections to the structure.

1.23 REPAIRS AND RETESTS

- A. Make all other adjustments, repairs, and alteration required to meet specifies test results. Correct defects disclosed by tests or inspections and replace defective parts. Use only new materials in replacing defective parts; in case of pipe, replace with same length as defective piece. Repeat the tests after the defects have been corrected and parts replaced until pronounced satisfactory.

1.24 SYSTEM OPERATION

- A. All equipment, ductwork and piping shall operate without any objectionable noises during all phases of operation as determined by the Owner and Engineer. Where noise exists, it shall be corrected at no extra cost to the project.

1.25 CLEANING OF SYSTEMS

- A. cleaning operations are supplemented by detailed instructions for specific systems in other sections of Division 15 specification.
- B. Piping, ductwork and equipment to be installed:
  - 1. Clean and remove rust, plaster and dirt before insulation is applied.
- C. Piping ductwork and equipment to be painted:
  - 1. Clean piping, ductwork and equipment exposed in completed structure, removing rust, plaster and dirt by wire brushing.
  - 2. Remove all grease, oil and similar materials by wiping with clean rags and suitable solvents.
  - 3. Paint system with durable paint as specified or to exactly match the surrounding areas of pipe and equipment.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Pipe and Pipe Fittings as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Supports, Anchors and Seals - Section 15090
- B. Valves and Specialties - Section 15100
- C. Insulation - Section 15250

1.04 SUBMITTALS:

- A. Submit for review data on pipe materials, fittings.
- B. Submit 1/4 inch = 1'-0" scale Shop Drawings of piping.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Black Steel Pipe: Use ASTM Specification A-120 or A-53 pipe. Schedule 40 in sizes 10 inches or smaller. Pipe 2-1/2 inches in size or smaller shall be assembled with threaded malleable iron, 150 psig fittings. Pipe 3 inches in size or larger shall be assembled by use of long-radius, welding type. Schedule 40 fittings as manufactured by Nibco Company or Tube-Turn Corporation, or with grooved joints equal to Victaulic. Flanges throughout shall be welding neck, 150 psig standard; flanges with raised faces shall be installed with pair of flat ring rubber gaskets of appropriate thickness.
- B. Cast-Iron Soil Pipe: Use service weight cast-iron soil pipe and fittings ASTM Specification A-74, coated inside and out. Above ground use compression type joints similar to Tyler Pipe Ty-Seal or No-Hub.
- C. Copper Pipe: Use Type L copper pipe, ASTM Specification B-88. Use sweat fittings made up with lead free solder for temperatures up to 200°F and pressures up to 75 psig

for 4 inches and smaller. Use sweat fittings made up with 95-5 solder for temperatures up to 250°F and pressures up to 150 psig for 4 inches and smaller. For higher pressures or temperatures for sizes larger than 4 inches, braze joints in accordance with ANSI B31.1.

- D. Refer to each Section of this Specification for special pipe material and fitting requirements which will take precedence over material and fitting requirements of this Section.
- E. Unions: Use Grinnell Figure 463 or equal unions in ferrous piping and Grinnell Figure 9730 or equal unions in copper piping. Use Epco or equal dielectric unions at connections between ferrous and nonferrous piping.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION:

- A. Install various piping systems as specified, adhering to general routing and methods of distribution shown on Drawings, including required pipes, fittings, valves, hangers, sleeves, insets, and other items and appurtenances as may be required for satisfactory operation of various systems.
- B. Run exposed lines parallel with and perpendicular to building lines, and wherever possible, group together for easier service and identification. Lines, which require definite grades for draining, shall have precedence in routing over other lines. Install horizontal and vertical lines as close as possible to walls, ceilings, struts and members to occupy minimum space consistent with proper requirements for insulation, expansion, removal of pipe and access to valves. Finish off concealed work within limits permitted by vertical or horizontal chases.
- C. Use unions at connections to equipment to facilitate dismantling and elsewhere as required in erection of pipe or installation of valves.
- D. Make connections to rotating equipment in such manner to prevent transmission of vibration into piping systems.
- E. Pipe shall be properly reamed after cutting and threading and shall be cleaned before installation.

#### 3.02 WELDING:

- A. Welding shall meet requirements of ANSI B31.5 "Pressure Piping Code" and American Welding Society. Before assignment of any welder to the work, provide Owner's Representative with names of the intended welders together with certification of their qualifications as determined by National Certified Pipe Welding Bureau or by other recognized testing laboratory or agency.

#### 3.03 TESTS AND INSPECTIONS:

- A. During the progress of Work and upon its completion, make the following tests of Work. Also make tests as required by authorities having jurisdiction over the work. Make tests in presence of Owner's Representative and other authorities having jurisdiction over the Work requiring tests. Pay inspection charges and fees required for this work.
- B. Perform pipe tests before Work is conceded.
- C. Provide apparatus and temporary piping connections required for tests. Take due precautions to prevent damage incurred by such tests to building equipment or its contents. Repair and make good any damage caused by tests.
- D. Leaks, defects or deficiencies discovered shall be repaired and replaced, and tests shall be repeated until test requirements are fully complied with. No caulking of pipe joints to stop leaks will be permitted.
- E. Cold water pipes shall be hydrostatically tested at 150 psi and this pressure shall be maintained for not less than 24 hours. Any equipment in system that may be damaged at this pressure shall be disconnected from system.
- F. Gas piping shall be pressure tested, shall stand an air pressure of 25 psi and shall hold the pressure for a period of 15 minutes with no perceptible pressure drop.
- G. Heating water piping shall be tested as described for cold water piping.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Supports, Anchors and Seals indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSE WHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Ductwork - Section 15840

PART 2 - PRODUCTS

2.01 PIPE HANGERS:

- A. Use Tolco or equal by Grinnell galvanized or cadmium plated pipe hangers suitable for each use.
- B. Do not use perforated straps in any work.
- C. Use Tolco Figure 1A adjustable clevis hanger for ferrous pipes less than 4 inches.
- D. Use Grinnell Figure 260 galvanized adjustable clevis hanger for ferrous pipes 4 inches and larger.
- E. Use Tolco Figure 81 copper plated steel clevis hanger for copper pipes up to 4 inches.
- F. Use Tolco Figure 1F felt coated galvanized riser clamps for copper pipes up to 4 inches.
- G. Use Tolco Figure 81 copper plated steel riser clamps for vertical copper pipe risers.
- H. Use galvanized hanger rods, 22,000 psi minimum tensile strength.
- I. Use beam clamps suitable for type of construction involved and for load.
- J. Use Unistrut or equal channel for trapeze hangers.

- K. Use Rawl H/S or equal machine bolt anchors in concrete or concrete block construction.
- L. Size hangers for insulated piping to go around insulation. Provide suitable saddle at each hanger location to protect insulation.

PART 3 - EXECUTION

3.01 HANGER INSTALLATION:

- A. Unless shown otherwise on Drawings, install hangers for horizontal runs of ferrous piping with the following maximum spacing:

Pipe up to and including 1 inch -----	-----	5 feet
Pipe 1-1/4 inches to 3 inches -----	-----	9 feet
Pipe 3-1/2 inches and 4 inches -----	-----	13 feet
Pipe 5 inches to 8 inches -----	-----	16 feet

- B. Note that hanger spacings are based on beam strength characteristics of pipe; provide closer spacing as required to interface with building structure.

- C. Unless shown otherwise on Drawings, install hangers for horizontal copper piping with the following maximum spacing:

Pipe up to 1/2 inch in size -----	-----	5 feet
Pipe 3/4 inch to 1-1/4 inches -----	-----	6 feet
Pipe 1-1/2 inches and 2 inches -----	-----	8 feet
Pipe 2-1/2 inches and larger -----	-----	10 feet

- D. Install a hanger within 2 feet of each elbow or tee. Install additional supports for valves and strainers. Install not less than one hanger per length of cast iron pipe. Support vertical risers by approved riser clamps at each floor. Vertical pipes within a space shall have not less than two supports.

- E. Galvanized hanger rod sizes shall meet requirements of the following schedule:

Pipe up to and including 2 inches -	-----	3/8 inch rods
Pipe 2-1/2 inches to 3-1/2 inches -	-----	1/2 inch rods
Pipe 4 inches and 5 inches -	-----	5/8 inch rods
Pipe 6 inches -	-----	3/4 inch rods

- F. Use trapeze hangers where several pipes are parallel at same elevation or where ductwork on other obstructions interfere with use of a single hanger. Space trapeze hangers based on smallest pipe supported by hanger; do not exceed 10 foot spacing between trapeze hangers.

- G. Install supports and hangers to permit free expansion and contraction in piping systems. Use hangers that permit vertical adjustment to maintain proper pitch. Install piping guides and anchors where necessary to control expansion and contraction. No piping

shall be self-supporting or supported from equipment connections.

3.02 FLOOR, WALL AND CEILING PLATES:

- A. Install chromium plated escutcheons of an approved pattern where exposed pipes pass through floors, finished walls or finished ceilings.

3.03 PIPE SLEEVES:

- A. Provide Jet Line pipe sleeves or pipe sleeves made of No. 22 gauge galvanized steel, properly secured in place with approximately 1/4 inch space between each sleeve and pipe surface and insulation passing through the sleeve for pipes which pass through concrete floors, roofs and masonry walls. Build pipe sleeves in place as walls and floors are built up. Provide sleeves for insertion into structural building parts. Make spaces between sleeves and pipes passing through concrete floors, exterior walls and roofs watertight and fire resistant with approved non-hardening mastic material.
- B. Restore fire rating of floors or walls at pipe penetration by packing with fire-safing, grouting, or other approved means.

3.04 ISULATION SADDLES:

- A. Saddles shall cover bottom half of insulation at each hanger. Minimum saddle length shall be 10 inches for sizes up to and including 3 inch pipe. Lengths of larger sizes shall not be less than three times the nominal pipe size in inches. In cases where insulation is of inadequate compressive strength to prevent marring insulation provide a high compressive strength insulation such as foamglass or cork.

3.05 CONCRETE PADS:

- A. Provide equipment platform and curbs under roof mounted equipment. See general detail on mechanical drawings.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Valves and Specialties as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060

1.04 SUBMITTALS:

- A. Submit for approval data on valves, and specialties.

PART 2 - PRODUCTS

2.01 VALVES:

- A. Use valves and strainers specified below for cold water and heating hot water systems. Valves shall be as follows or equal by, Nibco, Stockham or Walworth.
  - 1. Gate Valves: 2-1/2 inches and smaller, Nibco No. T-113 bronze body, non-rising stem; 3 inches and larger, Nibco No. F-619, iron body, bronze trim, non-rising stem.
  - 2. Ball Valves: Three piece bronze body, blowout proof stem, TFE seats. Nibco No. T595-Y, threaded or S595-Y, soldered.
  - 3. Check Valves: 2-1/2 inches and smaller, Nibco No. T-413, bronze with bronze disc; 3 inches and larger, Nibco No. F918, bronze trimmed with bronze disc.
  - 4. Vertical Check Valves: Mission duo check or equal, bronze trim.
  - 5. Balance Valves: Bell and Gossett Circuit Setter.
  - 6. Y-Strainers: 2-1/2 inches and smaller, Mueller No. 351M; cast bronze, with screwed ends and 304 stainless steel screened blow off end. Suitable for 50 PSI at

350 °F working conditions.

## 2.02 SPECIALTIES:

- A. Furnish the following specialties where indicated on Plans, and at locations specified below.
1. Automatic Air Vent Valves: Bell & Gossett high capacity float type, pipe drain to floor drain. Install at high points in water circulating lines.
  2. Thermometers: Weksler Type AA Industrial Adjust-Angle thermometers, 9 inch scale, red-reading mercury filled. Scale for thermometers indicated shall be such to fit service required. Provide a brass separable socket for each thermometer. Install for water in and out conditions at all water heat exchanging equipment.
  3. Gauges: Weksler 900R Regal or equal accuracy of 1% of scale range; blacked enameled aluminum cast style ASD flangeless: 4-1/2 inch dial calibration screw; slip ringless cover. Pump gauges shall have a scale range as determined by system static head and pump curves. Install a gauge cock at each gauge tap. Gauges shall be installed at pumps and in and out connections at all water heat exchange equipment. For steam service, install water-filled siphon between line and gauge.
  4. Thermometer Wells: Wells installed in insulated pipe or tees shall have 1-1/2 inch extension neck Weksler Type C42-2. Penetrating depths shall be same as for uninsulated installation. Wells shall be installed at an angle of 45 degrees in all locations. Thermometer wells shall be installed in each pipe at a heat exchanging device even though a thermometer may also be indicated.
  5. Gauge Connections: Install gauge connection consisting of pipe nipple and gauge cock where indicated on Plans and install gauge on each side of water coils, pump and heat exchanging devices.
  6. Air Eliminators: Bell & Gossett Rolairtrol or equal tangential air separator without strainer.
  7. Heating Water Pressure Reducing Valve: Bell & Gossett No. B7 or equal with brass body and working parts factory adjusted to 12 psig with 8-25 psig adjustable range.
  8. Heating Water Pressure Relief Valve: Bell & Gossett No. A3 or equal with brass body and working parts factory adjusted to 30 psig with 20 to 40 psig adjustable range.

## PART 3 - EXECUTION

### 3.01 VALVE INSTALLATION:

- A. Install control valves in piping systems at connections to equipment, branches from mains, and elsewhere as indicated and required for complete control or service to branch lines. Valves shall be accessibly located and same size as the piping in which installed.

B. Install air separator on suction side of each heating hot water pump.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Insulation as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Domestic Water System – Section 15401
- B. Heating Water Piping Systems - Section 15700
- C. Ductwork - Section 15840
- D. Refrigeration Piping System – Section 15651

1.04 SUBMITTALS:

- A. Submit for approval data on insulation materials.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Materials used shall have a flame spread rating of not more than 25 without evidence of continuous progressive combustion, and with a smoke developed rating not higher than 50. Shop Drawing submittals shall show this information.

2.02 HOT WATER PIPING:

- A. Use Owens-Corning Fiberglas 25 ASJ/SSL, or equal, one-piece pipe insulation with all service jacket and self sealing lap.
- B. For heating water pipes use 1- inch insulation for 1/2 inch through 3 inch pipes, and 1-1/2 inch insulation for 3-1/2 inch and larger pipes.

2.03 HOT WATER EXPANSION TANKS

- A. Use Owens-Corning Fiberglas Type 705 or equal rigid board, 2 inches thick, 6-pound density.

2.04 SUPPLY DUCTWORK:

- A. Use Owens-Corning Fiberglas Type 100 or equal commercial grade faced duct wrap insulation providing an in-place R value not less than R-6 or minimum of 2 inches thick.

2.05 REFRIGERATION TUBING:

- A. 1-inch thick Armaflex or equal pipe insulation, Seal joints with Armstrong 520 adhesive.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Do not apply insulation until piping has been inspected, pressure tested and found tight.

3.02 REFRIGERATION PIPING INSULATION:

- A. Insulate tubing per manufacturer's installation instructions, cover all elbows and fittings with specified insulation material. Cover the entire length of tubing and fittings installed outdoors with aluminum jacket.

3.03 WATER PIPING INSULATION INSTALLATION:

- A. Insulate heating water supply and return piping.
- B. Insulate fittings and valves with insulating cement applied to thickness equal to that of adjoining pipe insulation and cover with glass cloth jacket. Fittings may be insulated with two layers of precut fiberglass blanket insulation jacketed with preformed PVC covers in lieu of insulating cement and cloth jacket.

2.04 PIPE INSULATION COVER (OUTDOORS):

- A. Use smooth aluminum jacket on outdoor insulated pipe.

3.05 SUPPLY DUCTWORK INSULATION INSTALLATION:

- A. Insulate unlined supply ductwork, both above suspended ceilings and in service areas without ceilings. Internally lined ductwork need not be insulated; however, external insulation shall overlap internal lining 24 inches.
- B. Install duct wrap in strict accordance with manufacturer's instructions both to obtain the required R-value and a continuous vaporseal.
- C. Provide a 2 inch staple/tape flap at all lateral and longitudinal joints. Staple seams at 6 inches on-center with outward clinching staples.

- D. Where rectangular ducts are 24 inches or larger in width, secure duct wrap to bottom of duct with insulation pins and speed clip washers spaced 18 inches on center maximum.
- E. Seal all seams, punctures, tears and other penetrations with pressure-sensitive foil tape.

3.06 EXPANSION TANK AND AIR SEPARATOR INSULATION:

- A. Insulate existing expansion tank and air separator.
- B. Miter fiberglass board insulation for close fit and scored for contour. Secure insulation board with 0.20 galvanized steel bands spaced at 12 inches on center. Fill open joints and voids with mineral wool cement. Cover with 1 inch hexagonal mesh galvanized wire and trowel a 1/2 inch smooth coat of asbestos cement. Cover with a second 1/2 inch thick finish coat of Portland cement trowled smooth. Cover with sized glass fabric applied with Insul-Coustic 102 lagging adhesive. Do not cover ASME code stamp; bevel insulation at opening.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Natural Gas Piping System as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Supports, Anchors and Seals - Section 15090
- C. Valves and Specialties - Section 15100

1.04 APPLICABLE STANDARDS:

- A. Meet requirements and recommended practices of the following:
  - 1. "National Fuel Gas Code," NFPA-54.
  - 2. Local Plumbing Code.
  - 3. Requirements of local gas utility company.

PART 2 - PRODUCTS

2.01 PIPING:

- A. Use Schedule 40 black steel pipe. For pipes 2-1/2 inches and smaller use malleable iron screwed fittings. For pipes 3 inches and larger use long radius welding type Schedule 40 fittings as manufactured by Nibco Company or Tube-Turn Corporation. Gas piping 1 pound and above shall be welded regardless of size.

2.02 COCKS:

- A. Gas Cocks: 2 inches and smaller, Crane No. 1228; 2-1/2 inches and larger, Crane No. 324.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION:

- A. Install gas piping system as shown on Drawings.
- B. Rough-in for and make final connection to gas-fired equipment in the building.
- C. Keep inside of piping dry and free of dirt, cutting burrs and other foreign substances. Threaded piping shall be reamed smooth after cutting and shall be threaded with true, sharp dies to insure a proper joint make-up.

3.02 VALVE INSTALLATION:

- A. Install gas valves or cocks at each equipment connection.

3.03 TESTS:

- A. See Section 15060.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Domestic Water System as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Supports, Anchors and Seals - Section 15090
- C. Valves and Specialties - Section 15100

1.04 Submittals:

- A. Submit for approval data on pressure reducing valves.

PART 2 - PRODUCTS

2.01 PIPING:

- A. Use copper piping. See Section 15060.

2.02 PRESSURE REDUCING VALVES:

- A. Watts Regulator Co. No. 223S or equal.

2.03 PRESSURE GAUGES:

- A. Marshaltown Figure 23, or equal; 3-1/2 inch dial size 0-160 psi.

2.04 BACKFLOW PREVENTER

- A. Watts Regulator Co. Reduced pressure principle No. 909QT, or equal

PART 3 - EXECUTION

3.01 PRESSURE REDUCING VALVE:

- A. Install a pressure reducing valve in industrial cold water system

3.02 INDUSTRIAL COLD WATER SYSTEM:

- A. Install industrial cold water system as shown on Plans; provide control valves as specified in Section 15100.
- B. Rough-in for and make final connections to all equipment requiring make-up water supply.
- C. Arrange piping so system will be free from traps and can be readily drained using hydrants threaded to receive 3/4 inch hose at low points.
- D. Install EPCO or equal dielectric unions at connection between copper and steel pipe.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawing and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Domestic Water System as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Supports, Anchors and Seals - Section 15090
- C. Valves and Specialties - Section 15100
- D. Insulation - Section 15250
- E. Domestic Water Heater – Section 15424

1.04 Submittals:

- A. Submit for approval data on backflow preventer, pressure reducing valves, shock absorbers.

PART 2 - PRODUCTS

2.01 PIPING:

- A. Use copper piping. See Section 15060.

2.02 BACKFLOW PREVENTER:

- A. Watts Series 909 reduced pressure backflow preventer or equal by Febco.

2.03 PRESSURE REDUCING VALVES:

- A. Watts No. 223S or equal.

2.04 PRESSURE GAUGES:

- A. Marshaltown Figure 23, or equal; 3-1/2 inch dial size 0-160 psi.

PART 3 - EXECUTION

3.01 DOMESTIC WATER SYSTEM:

- A. Install hot and cold domestic water system as shown on Plans; provide control valves as specified in Section 15100.
- B. Rough-in for and make final connections to all equipment requiring water supply.
- C. Arrange piping so system will be free from traps and can be readily drained using hydrants threaded to receive 3/4 inch hose at low points.
- D. Install EPCO or equal dielectric unions at connection between copper and steel pipe.

3.02 INSULATION:

- A. Insulate hot and cold water piping. See Section 15250.

3.03 TESTS:

- A. See Section 15060.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirements of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Soil and Drainage Piping System as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Supports, Anchors and Seals - Section 15090

1.04 SUBMITTALS:

- A. Submit for approval data on cleanouts.

PART 2 – PRODUCTS

2.01 PIPING:

- A. Use Type “M” copper piping; see Section 15060.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION:

- A. Install equipment drainage piping system as shown on Drawings; see Section 15060.
- B. Rough-in for and make final connection to equipment requiring drainage.
- C. Uniformly grade piping at not less than 1/8 inch per foot, grade piping 3 inches and smaller at not less than 1/4 inch per foot.

3.04 TESTS:

- A. See Section 15060.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Domestic Water Heaters as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Supports, Anchors and Seals - Section 15090
- C. Natural Gas Piping System - Section 1535
- D. Domestic Water System - Section 15401

1.04 SUBMITTALS:

- A. Submit for approval data on water heaters, circulating pumps, controls, storage tank, valves and thermometers.

PART 2 – PRODUCTS

2.01 GENERAL

- A. furnish and install as shown and scheduled Drawings a high efficiency Copper Fin Tube hot water heater, including options and accessories as specified. Water Heater shall be manufactured by Raypak, or approved equal.

2.02 WATER HEATER CAPACITY:

- A. Provide and install a water heater as specified and scheduled on drawings
- B. Water Heater shall be suited for indoor installation and operation. maximum operating pressure shall be 160 psig; temperature.
- C. Water heater shall have a maximum output as indicated on Plans when fired with natural gas.

2.01 GENERAL WATER HEATER DESIGN:

- A. The water heater shall be design certified and tested by AGA Laboratories with listed minimum thermal efficiency of 84% and shall bear ASME stamp and approved for 160 psig working pressure.
- B. Water Heater shall be equipped with a 60 psig pressure relief valve.
- C. Water Heater shall be completely assembled and fire tested at factory. Unit shall be ready for immediate mounting on equipment platform and ready for attachment of water, fuel, and electrical connections.
- D. Water tube heat exchanger of the water heater shall be of single bank, horizontal grid design with eight integral copper fin tubes with ends rolled into an ASME boiler quality steel tube sheet and sealed to 160 psig rated bronze heaters with silicone "O" rings. Heat exchanger shall be explosion proof on the water side, bearing 20 years Warranty against thermal shock.
- E. Water Heater shall be capable of operating down to 105° F. without condensation.
- F. Heat exchanger header shall be Glass-lined Cast Iron with Cupro Nickel fin tubing.
- G. Burners shall be tubular type with multiport radial gas orifices for Ultra-Low Nox emission (less than 20 PPM) Burners shall be furnished with a fan-assisted, clean burning , and highly efficient fuel air mixture.
- H. Combustion chamber shall be lined with interlocking ceramic fiber and sealed against boiler stand-by loss. The burners shall be equipped with a fan assisted fuel air mixture.
- I. Pilot control system shall be equipped with a 100% safety shutdown and hot surface type ignition and external viewing port.
- J. Gas train shall be equipped with CSD-1 firing/leak test valve, pressure test valve, dual sealed main gas valve, redundant safety shut-off valve, main gas regulator, shut-off cock and plugged pressure tapping per ANSIZ51.13.
- K. Water Heater staging shall be accomplished by control of gas flow to the boiler.
- J. Entire water heater base frame and other components shall be factory painted before shipment, using a hard-finish enamel.

2.04 WATER HEATER PUMP

- A. Provide water 1/8 HP water heater pump shipped loose for field installation. Water heater shall be equipped with an energy-saving pump relay, mounted and wired, which automatically shuts off the water heater pump at a set period after water heater shutdown (adjustable for five or ten minutes) to avoid standby losses associated with constant

2.05 WATER HEATER CONTROL:

- A. Water heater shall be equipped with following controls:
  - a. 120V, 60Hz, 1 phase power supply to 24 V transformer
  - b. 100% Shut-Off Lock Out
  - c. Hot Surface Ignition
  - d. Remote Flame Sensor
  - e. High Limit Control, Manual Reset
  - f. On/Off Power Switch
  - g. manual Shut off, Front Mounted
  - h. Flow Switch
  - i. Blocked Vent Pressure Switch
  - j. Combustion Air Proving Switch
  - k. Economaster Style Pump Time Delay
  - l. Diagnostic Panel with LCD Display 2 Lines, 20 Characters

2.06 WATER HEATER VENTING:

- A. Water heater shall be equipped with vent outlet located at the heater, complete with tupe B flue vent and air intake elbow

2.07 COLD WATER START UP

- A. Water heater shall be furnished with model P-26 cold water start up kit shipped loose for field installation.

2.08 HOT WATER STORAGE TANK

- A. Water Heater storage Tank shall be Raypak 80 gallon factory insulated and jacketed tank. Tank shall have a double coating of high –temperature glass lining and be equipped with two (2) magnesium anode rods. Tank shall be ASME constructed and designed for 160 psig working pressure. Tank shall be insulated with R-16 rigid polyurethane that completely surrounds the tank and shall be enclosed in a baked enamel steel jacket
- B. Tank shall be furnished with thermometer gauge, temperature and pressure relief valve and tankstat
- C. Tank shall be covered by a five year limited warranty against corrosion.

PART 3 - EXECUTION

3.01 WATER HEATER INSTALLATION:

- A. Install water heater and hot water storage tank at locations as shown on Drawings.
- B. Extend flue vent through existing flue vent opening in roof to a point at least 2 feet higher than roof. Install new flashing and seal water tight. Repair roof if damaged.
- C. Extend full size relief line from temperature and pressure relief valve to floor drain.
- D. Connect natural gas piping to water heater per manufacturer’s installation instructions and latest City of Torrance Plumbing Code.

- E. Connect water heater to existing cold and hot water piping.
- F. Install pump control wiring and interface circulation hot water pumps with the water heater control panel per manufacturer's installation instructions and control wiring diagram. Interface water heater control system and storage tank tankstat. For 120° F hot water supply
- G. Test fire water heater and adjust all controls and firing stages per manufacturer's installation instruction and start-up manual.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Hot Water Boiler as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Natural Gas Piping Systems - Section 15350
- B. Liquid Heat Transfer Piping System - Section 15700

1.04 SUBMITTALS:

- A. Submit for approval data on packaged boilers including fuel to output efficiency, burner turn-down ratio, gas train, pressure ratings, inputs/outputs and boiler control system.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. furnish and install as shown and scheduled Drawings a 95% efficiency modulating boiler with water tube stainless steel heat exchanger and fully condensing design rated for 30 psi working pressure, including options and accessories as specified. Boiler shall be manufactured by Laars, or approved equal.

2.02 BOILER CAPACITY:

- A. Boiler shall be suited for indoor installation and operation. maximum operating pressure shall be 30 psig; temperature controllers shall be set for 180°F operation.
- B. Boiler shall have a maximum output as indicated on Plans when fired with natural gas.

2.03 GENERAL BOILER DESIGN:

- A. The boiler shall be design certified and tested by ANSI Z21.13/CSA 4.9 with listed

minimum thermal efficiency of 95% and shall bear ASME stamp and approved for 30 psig working pressure.

- B. Boiler shall be equipped with a ASME certified pressure relief valve.
- C. Boiler shall be completely assembled and fire tested at factory. Unit shall be ready for immediate mounting on equipment platform and ready for attachment of water, fuel, and electrical connections.
- D. Water tube heat exchanger of the boiler shall be low water volume design, stainless steel and welded construction. Heat exchanger shall have a limited 13 years warranty.
- E. Boiler shall be fully condensing type with built in condensate drain and trap.
- F. Boiler shall have a sealed combustion chamber with combustion seal. The boiler jacket shall be a unitized shell finished with acrylic thermo-set paint
- G. The boiler shall be Low Nox, using a premix burner with stainless steel woven metal fiber wrap, and a negative pressure gas valve. Boiler Nox emission shall not exceed 10 ppm meeting requirements of SCAQMD 2012.
- H. Boiler shall be designed for horizontal or vertical Category IV venting with 3-inch diameter PVC or CPVC or stainless steel vent material.
- I. Boiler staging shall Modulate down to 20% of full fire (5:1 turndown)
- J. Boiler shall be furnished with circulation pump, either mounted or shipped loose for field installation, complete with all controls, disconnect and devices.
- k. Entire boiler base frame and other components shall be factory painted before shipment, using hard-finish enamel.

#### 2.04 BOILER CONTROL PANEL:

- A. Boiler control shall be an integrated electronic PID temperature and ignition control with LCD and touchpad and shall control the boiler operation and firing rate. Control shall have the ability to control the boiler pump, system pump each with delay feature.
- B.. The control shall have built-in outdoor reset feature with customized reset curves, based on the outdoor temperature and desired system water temperature. Boiler shall be shipped with the outdoor reset sensor.
- C. The control shall use MODBUS protocol and accept 4-20mA or 0-10 VDC input connection from the building management system, and shall be equipped with dry alarm contacts for ignition failure.

- D. Allowable control adjustments shall include:
  - 1. Boiler temperature set point
  - 2. outdoor reset section
  - 3. low boiler set point temperature
  - 4. High boiler set point temperature
  - 5. remote signal selection
  - 6. Anti-short cycle feature
  
- E. Display shall indicate the following:
  - 1. Boiler inlet water temperature
  - 2. Boiler temperature rise
  - 3. Stack temperature
  - 4. Outdoor air temperature
  - 5. Fan rpm
  - 6. boiler high limit set point
  - 7. Flame sense signal, control alerts and lock outs.
  
- G. Boiler control system shall be furnished with all necessary control devices and accessories, outdoor temperature and hot water temperature sensors for field installation and wiring by mechanical contractor.
  
- H. Boiler shall have pump control wiring terminals for field wiring extension and connection to hot water pump controls.

2.05 STARTING SERVICE:

- A. After boiler installation is completed, manufacturer shall provide services of a field representative for starting the unit and training the operator.

2.06 GAS SYSTEM:

- A. The gas train shall be AGA approved.
- B. Provide a gas regulator to reduce fuel gas pressure from 1 psig to burner inlet pressure recommended by boiler manufacturer.
- C. Exposed metal parts (except stainless steel) shall be protected by a minimum of one base coat and one finish coat of heat and corrosion resistant primer paint.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install boilers in accordance with manufacturer's recommendations and applicable codes.
- B. Install boilers on equipment platform.

- C. Install outside air sensor in an appropriate location under a field supplied sun shield. Install control wiring and connect to boiler control panel per manufacturer's installation instructions. Consult Owners Representative and Engineer regarding the location of sensor.
- D. Install water temperature sensor in hot water return pipe. Install control wiring and connect to boiler control module per manufacturer's installation instructions.
- E. Install pump control wiring and interface circulation hot water pumps with the boiler control panel per manufacturer's installation instructions and control wiring diagram.
- F. Install CPVC exhaust and intake pipes in accordance with the manufacturer's installation instructions, City mechanical and plumbing codes and detail shown on mechanical drawings. Whichever is most stringent. Provide and install galvanized sheet metal roof flashing and counter flashing around exhaust pipe and seal water tight. Repair roof if damaged.

3.02 CHEMICAL TREATMENT:

- A. Provide and install a new 5 gallon chemical pot feeder and connect to the system piping as shown on drawings.
- B. Chemical materials shall be furnished by the City Service Department.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section
- B. The specific requirement of City of Torrance apply to this Section

.1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Refrigerant Piping System as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Insulation - Section 15250
- C. Split System Air Conditioning units - Section 15771

1.04 SUBMITTALS:

- A. Submit for approval piping diagrams and data on valves and specialties.

PART 2 - PRODUCTS

2.01 PIPING AND FITTINGS:

- A. Piping shall be refrigeration grade copper meeting requirements of ASTM B260-80.
- B. Fittings shall be wrought copper with long radius elbows equal to Muller Streamline.
- C. Suction line traps shall be a manufactured standard one-piece trap.
- D. Connection materials shall be Sil-Fos or Easy Flow for brazing and 95-5 or Sta-Bright for soldering.
- E. Flux shall be Handy & Harmon.

2.02 REFRIGERANT SPECIALTIES:

- A. Refrigerant specialties shall be selected for pressure involved in system where they are to be used. All parts in refrigerant system shall be a combination refrigerant dryer and filter. Specialties shall be as manufactured by Sporlan, Moeller, General or Alco.

2.03 INSULATION:

- A. See Section 15250.

PART 3 - EXECUTION

3.01 PIPING INSTALLATION:

- A. Refrigerant piping shall be sized in strict accordance with equipment manufacturer's recommendations.
- B. Refrigeration system connections shall be copper to copper type properly cleaned and brazed. Use flux only where necessary.
- C. Install refrigerant piping from condensing units to evaporator coils complete with required refrigerant specialties including accessible charging valves and site glasses.
- D. Install suction piping without sags to allow for oil flow back to compressor. Great care shall be taken in sizing and running refrigerant lines so there is a general slope toward condensing unit riser and riser trap.

3.02 REFRIGERANT CHARGING:

- A. Circulate dry nitrogen through tubes being soldered to eliminate formation of copper oxide during brazing operation.
- B. Make evacuation and leak tests in presence of Owner's representative after completing refrigeration piping systems. A positive pressure test will not suffice for procedure outlined below:
  - 1. Draw a vacuum on each entire system with vacuum pump to 200 microns using a vacuum gauge calibrated in microns. Do not use cooling compressor to evacuate system nor operate it while system is under high vacuum.
  - 2. Break vacuum with refrigerant gas to be used and reestablish vacuum test. Vacuum shall hold for 24 hours at 200 microns without compressor running.
  - 3. Conduct tests at 70°F (21°C) ambient temperature or above.
  - 4. Do not run systems until above tests have been made and systems started up as specified. Inform Owner's Representative of status of systems at time of final inspection and schedule start-up and testing if prevented by outdoor conditions before this time.
  - 5. After testing, fully charge system with refrigerant and conduct a test with a Halide leak detector.

3.03 VALVES:

- A. Manual refrigerant shut-off valves shall be ball valves designed for refrigeration service and full line size and shall be as manufactured by Muller or equal by Superior or Henry.

Valves shall have cap seals.

- B. Provide service valve on each liquid and suction line at compressor.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Heating Water Piping Systems as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Pipe and Pipe Fittings - Section 15060
- B. Valves, Cocks and Faucets - Section 15100
- C. Insulation - Section 15250
- D. Hot Water Boiler - Section 15623
- E. Temperature Controls - Section 15900

PART 2 - PRODUCTS

2.01 PIPE AND PIPE FITTINGS:

- A. Use Type "L" copper pipe; see Section 15060

2.02 VALVES:

- A. See Section 15100.

2.03 INSULATION:

- A. See Section 15250.

PART 3 - EXECUTION

3.01 HEATING WATER PIPING:

- A. Install heating water supply and return piping as shown on drawings. Connect to new hot water boiler and existing air handling unit.
- B. Relocate existing hot water circulating pump and install on new hot water secondary loop piping. Replace circulating pump if damaged and /or malfunctioning.

3.02 TESTS AND ADJUSTMENTS:

- A. Piping Tests - see Section 15060.
- B. Testing and Balancing - see Section 15999.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Fan-Coil Units as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Soil and Waste Piping System - Section 15405
- B. Ductwork - Section 15840
- C. Filters - Section 15880
- D. Refrigeration Piping System - Section 15651
- E. HVAC Testing and Balancing - Section 15999

1.04 SUBMITTALS:

- A. Submit for approval data on fan-coil unit.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Fan-coil units shall be type, size and capacity shown on equipment schedules. Unit performance shall be certified in accordance with Air Conditioning and Refrigeration Institute (ARI) Standard 441.
- B. Units shall be of type as shown on Drawings and shall include Direct expansion coil, drain pan, auxiliary drain pan, fan board, fan, fan housing, motor and thermal insulation.

2.02 CABINET :

- A. Cabinet shall be fabricated of galvanized steel with baked enamel finish and internally insulated with R-4.2 insulation with vapor barrier lining .

2.03 COIL:

- A. Direct Expansion coils shall be suitable for R-22 refrigerant fabricated of seamless copper tubes mechanically bonded to aluminum fins with continuous fins, complete with thermostatic expansion valve

2.04 DRAIN PANS:

- A. Main drain pans shall be insulated galvanized steel with brass drain connection

2.05 FANS:

- A. Fan wheels shall be centrifugal forward-curved, double width. Fan wheels, scrolls and housings shall be of corrosion-resistant material.

2.06 MOTORS:

- A. High efficiency ECM (electronic commutating motor) with integral thermal overload protection. Motors shall be factory run tested in assembled unit prior to shipping. Motor cords shall be quickly detachable at switch box by locking connection.

2.07 FILTERS:

- A. Units shall accept 1- inch throwaway filters of standard sizes.
- B. See Section 15880.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install fan-coil Units at locations shown on Drawings. Connect to existing ductwork, refrigeration tubing and condensate drain pipe.
- B. Adjust fan speed to obtain air quantities shown on Drawings. See Section 15999.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Rooftop Air Conditioning Unit as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Ductwork - Section 15840
- B. Filters - Section 15880
- C.. Temperature Controls - Section 15900

1.04 SUBMITTALS:

- A. Submit for approval data on rooftop air conditioning units.
- B. Submit Operation and Maintenance Manual

1.05 QUALITY ASSURANCE:

- A. Units shall be certified in accordance with ARI Standard.
- B. Unit shall conform to ANSI/ASHRAE 15 (latest edition) ASHRAE 62 and UL Standard 1995, and National Electric Code.
- C. Roof Curb shall be manufactured to NRCA criteria per Bulletin B-1986

1.06 DELIVERY STORAGE AND HANDLING:

- A. Units shall be stored and handled per manufacturer's recommendations.

1.07 WARRANTY

- A. Provide a full parts & labor warranty for five years from start-up date.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Furnish and install as shown and scheduled on Drawings, unitary packaged rooftop air conditioning unit, including options and accessories as specified. Unit shall be manufactured by Carrier Corp., or approved equal.
- B. Unit shall be packaged rooftops as specified on the contract documents and within these specifications. Cooling and heating capacity ratings shall be based upon ARI Standard 360. Unit shall consist of insulated weather-tight casing with compressors, air cooled condenser coil, condenser fans, evaporator coil, gas fired furnace, filters, supply fan and motors and drives, and unit controls.
- C. Unit shall be single piece construction as manufactured at the factory. Package unit shall be constructed for installation on a roof curb providing full perimeter support.
- D. Unit shall be factory run tested to include the operation of all fans, compressors, heat exchangers, and control sequences.
- E. Unit shall have labels, decals, and/or tags to aid in the service of the unit and indicate caution areas.

## 2.02 CASING

- A. Cabinet: Galvanized steel, bonderized, and finished with a baked enamel paint to withstand a minimum of 500 consecutive-hour salt spray application in accordance with standard ASTM B 117. Structural members shall be heavy gauge with access doors and removable panels of heavy gauge steel. Roof panels shall be of single piece. Evaporator fan and gas heat sections interior surfaces shall be insulated with ½-inch thick, 1.0 lb. density flexible fiberglass insulation, neoprene coated on the air side within evaporator section and Aluminum foil faced in gas heat section. Base rail shall be minimum of 16 gauge thickness. Condensate pan shall be fabricated on non corrosive material sloped towards ¾-inch drain connection.
- B. Access Panels: Fully gasketed hinged access panels shall be tool less for to access filter section and with molded composite handles to access control box, indoor fan and motor, gas compartment and compressors.

## 2.03 AIR FILTERS

- A. Air Filters: Filters shall mount in pivoting filter tray, 2-Inch thick standard throw away type.

## 2.04 SUPPLY FAN

- A. Supply fan shall be belt driven unless scheduled otherwise to be direct driven, double-inlet type forward curved, constructed of steel with non-corrosive material coating, adjustable-pitch motor pulley, permanently lubricated bearings, dynamically balanced and resiliently mounted.
- B. Motor shall have permanently lubricated bearings with maximum continuous bhp rating for continuous duty operation and inherent automatic –reset thermal overload protection.

2.05 EVAPORATOR AND CONDENSER COILS

- A. Coils shall be constructed of aluminum fins mechanically bonded to copper tubes with all joints brazed.
- B. Evaporator coil shall be leak tested to 150 psig, pressure tested to 450 psig and qualified to UL 1995 burst test at 1775 psig.
- C. Condenser coil shall be leak tested to 150 psig, pressure tested to 650 psig and qualified to UL 1995 burst test at 1775 psig.
- D. Condenser coil shall be pre-coated with durable epoxy phenolic coating. Coating shall be applied to aluminum fin stock prior to fin stamping.
- E. Provide pitched drain pan to assure positive drainage of condensate from the unit casing.

2.06 CONDENSER FANS

- A. Condenser fans shall be direct driven propeller type with permanently lubricated bearings and totally enclosed motor.
- B. an motors shall have inherent thermal overload protection with automatic reset..

2.07 REFRIGERATION SYSTEM

- A. Compressor: shall be fully hermetic, scroll type each with independent refrigeration circuits, resiliently mounted on rubber grommets. Compressor motor shall be cooled by refrigerant gas and internally protected from high discharge temperature conditions.
- B. Refrigeration circuits shall include the following control, safety, and maintenance features.
  - 1. Thermostatic Expansion Valve.
  - 2. Refrigeration filter-drier.
  - 3. Service gauge connection on Suction and discharge lines.
  - 4. Pressure gauges .

2.08 OUTDOOR AIR SECTION

- A. Except as scheduled on drawings for units with integral economizer system, provide units with factory furnished outside air hood and adjustable manual volume dampers.

2.09 GAS FURNACE

- A. Heat exchanger shall be induced draft type with direct ignition system and redundant main gas valve. Heat exchanger shall be controlled by and integrated microprocessor based gas controller board.

- B. Heat exchanger shall be of tubular-section type construction of 20 gauge steel with 1.2 mil aluminum-silicone alloy coating.
- C. Unit shall be equipped with anti-cycle protection on flame rollout switch and high temperature limit switch.
- D. burners shall be constructed of aluminum coated steel.

#### 2.10 MISCELLANEOUS FEATURES

- A. Provide unit with factory recommended transition roof curbs. And the following safety features:
  - 1. Supply duct smoke detector where required by Code and to replace existing malfunctioning devices
  - 2. Head pressure control package
  - 3. Unit mounted Fused Disconnect switch.
  - 4. Convenient outlet

### PART-3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that roof is ready to receive work and opening locations and dimensions have been surveyed and verified by the air conditioning unit's manufacturer recommended transition curb manufacturer for all new air conditioning units.
- B. Verify that proper power supply is available.

#### 3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Where indicated and as required mount units on factory built transition roof curb providing watertight enclosure to protect ductwork. Install roof mounting curb level.
- C. Provide tie down cables and anchor to structure per earthquake requirements.
- D. Furnish and install supply duct smoke detector and wiring for automatic shut- off of supply and return fans during smoke.

#### 3.03 MANUFACTURER'S FIELD SERVICES

- A. Furnish complete submittal wiring diagrams of the package unit as applicable for field maintenance and service.

3.04 TESTS:

- A. See Section 15999.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Split System Air Conditioning Units as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Ductwork - Section 15840
- B. Refrigeration Piping System - Section 15651
- C.. Temperature Controls - Section 15900
- D. Forced Air Furnace Units – Section 15780

1.04 SUBMITTALS:

- A. Submit for approval data on rooftop air conditioning units.
- B. Submit Operation and Maintenance Manual

1.05 QUALITY ASSURANCE:

- A. Units shall be certified in accordance with ARI Standard.
- B. Unit shall conform to ANSI/ASHRAE 15 (latest edition) ASHRAE 62 and UL Standard 1995, and National Electric Code.

1.06 DELIVERY STORAGE AND HANDLING:

- A. Units shall be stored and handled per manufacturer's recommendations.

1.07 WARRANTY

- A. Provide a full parts & labor warranty for five years from start-up date.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Furnish and install as shown and scheduled on Drawings, Split System air conditioning unit, including options and accessories as specified. Unit shall be manufactured by Carrier Corp., or approved equal.
- B. Unit shall be factory assembled single piece air cooled air conditioner, complete with factory wiring, piping, controls, compressor, refrigerant charge R-410A and special features required prior to field start-up.

2.02 CABINET

- A. Cabinet: Galvanized steel, bonderized, and finished with a baked enamel paint and equipped with dense grille option.

2.03 FANS

- A. Condenser fan shall be direct drive propeller type with totally enclosed, permanently lubricated bearings and corrosion resistant shaft. Fan blades shall be statically and dynamically balanced. Fan openings shall be equipped with coated steel wire safety guards.

2.05 COMPRESSOR

- A. Compressor shall be hermetically sealed and mounted on rubber vibration isolators.

2.06 CONDENSER COIL

- A. Air cooled condenser coil shall be constructed of aluminum fins mechanically bonded to copper tubes and sealed.
- B. Condenser coil shall be coated to resist corrosion

2.07 REFRIGERATION COMPONENTS

- A. Refrigeration circuit components shall include liquid line and vapor-line shut-off valves, with sweat connections, system charge of refrigerant and compressor oil. Unit shall be equipped with high and low pressure switches and filter drier.

PART-3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Where indicated and as required mount units on existing equipment platforms.
- C. Provide tie down cables and anchor to structure per earthquake requirements.
- D. Furnish and install refrigeration tubing between the split system air conditioning unit and indoor evaporator coil.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Furnish complete submittal wiring diagrams of the split system air conditioning unit as applicable for field maintenance and service.

3.03 TESTS:

- A. See Section 15999.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other division 1 Specifications, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Forced Air Furnace Units as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Ductwork - Section 15840
- B. Refrigeration Piping System - Section 15651
- C.. Temperature Controls - Section 15900
- D. Split System Air Conditioning Units – Section 15776

1.04 SUBMITTALS:

- A. Submit for approval data on forced air furnaces.
- B. Submit Operation and Maintenance Manual

1.05 QUALITY ASSURANCE:

- A. Units shall be certified in accordance with ARI Standard.
- B. Unit shall conform to ANSI AND (latest edition) ASHRAE 62 and UL Standard 1995, and National Electric Code.

1.06 DELIVERY STORAGE AND HANDLING:

- A. Units shall be stored and handled per manufacturer's recommendations.

1.07 WARRANTY

- A. Provide a full parts & labor warranty for five years from start-up date.

PART 2 - PRODUCTS

2.01 GENERAL:

- A. Furnish and install as shown and scheduled on Drawings, Forced Air Furnace unit, including options and accessories as specified. Unit shall be manufactured by Carrier Corp., or approved equal.

2.02 CONDENSING GAS FURNACE

- A. Multi-poise condensing furnace cabinet shall be fabricated of pre-painted galvanized steel, with resiliently mounted inducer motor, 3-pass 20 gauge corrosion resistant aluminized steel primary heat exchanger and flow through polypropylene coated secondary heat exchanger.
- B. Components shall include; slow opening gas valve with electric switch gas shut-off , flame proving sensor, hot surface igniter, pressure switch assembly, flame rollout switch, blower, inducer assembly 40 VA transformer and drain tubing and installed condensate drain trap.
- C. Centrifugal blower wheel shall be fabricated of galvanized steel, statically and dynamically balanced with permanently lubricated and sealed bearings. Fan motor shall be resiliently mounted, multiple-speed direct drive.
- D. Complete with 1-inch thick 30% efficiency disposable filters.
- E. Controls shall include a microprocessor based integrated electronic control board with 11 service troubleshooting codes.

2.03 INDUCED COMBUSTION GAS FURNACE:

- A. Multi-poise Induced Combustion furnace cabinet shall be fabricated of pre-painted galvanized steel, with resiliently mounted inducer motor, 3-pass 20 gauge corrosion resistant aluminized steel heat exchanger.
- B. Components shall include; slow opening gas valve with electric switch gas shut-off , flame proving sensor, hot surface igniter, pressure switch assembly, flame rollout switch, blower and inducer assembly 40 VA transformer.
- C. Centrifugal blower wheel shall be fabricated of galvanized steel, statically and dynamically balanced with permanently lubricated and sealed bearings. Fan motor shall be resiliently mounted, multiple-speed direct drive.
- D. Complete with 1-inch thick 30% efficiency disposable filters.
- E. Controls shall include a microprocessor based integrated electronic control board with 11 service troubleshooting codes.

2.04 DIRECT EXPANSSION COILS

- A. Direct expansion coils shall be of vertical design N-coil, fabricated of aluminum fins bonded to copper tubes with galvanized steel casing, threaded brass insert connections, thermostatic Expansion Valve and corrosion resistant condensate pan. Coil shall be suitable for operating with R-410A refrigerant.

PART-3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Where indicated and as required mount units on existing equipment platforms.
- C. Provide tie down cables and anchor to structure per earthquake requirements.
- D. Furnish and install refrigeration tubing between the split system air conditioning unit and indoor evaporator coil.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Furnish complete submittal wiring diagrams of the split system air conditioning unit as applicable for field maintenance and service.

3.03 TESTS:

- A. See Section 15999.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Heating Ventilating Units as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Natural Gas Piping System - Section 15350
- B. Temperature Controls - Section 15900

1.04 SUBMITTALS:

- A. Submit for approval data on Heating Ventilating units and Evaporative Make Up Air unit heater.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Furnish new heating ventilating units and evaporative make-up air unit with all accessories and options that are contained in existing units to be replaced, except where specifically indicated on contract documents to be excluded.
- B. Investigate existing units for their size, capacity options and dimensions prior to placing the order for replacement units. Contact Reznor field representative in assisting the field investigation if necessary.

2.02 GAS FIRED HEATING VENTILATING UNITS (HV):

- A. Furnish and install gas fired unit heaters as specified and scheduled on drawings and contract documents. Heating Ventilating Units shall be product of Reznor, or approved equal.
- B. Heating Ventilating Unit shall be rooftop unit with double wall insulated cabinet, bonderized and coated with baked enamel finish. Unit shall include filter rack, blower and motor, heat exchanger, power vent, downturn plenum and 100-percent fresh air damper and intake hood, and 24 V controls.

- C. Heat exchanger and burners shall be fabricated of 409 stainless steel, complete with stainless steel drip pan and 2 stage gas valve and ductstat and spark ignition
- D. Fan wheel shall be centrifugal type, resiliently mounted with ODP motor with starter.
- E. Fresh air intake shall be equipped with rain baffled intake hood and 2 position motorized damper for 100 percent fresh air intake.
- F. Filter rack shall be suitable for 2-inch permanent filters

#### 2.02 GAS FIRED MAKE-UP AIR UNIT (MU)

- A. Furnish and install gas fired make-up air unit as specified and scheduled on drawings and contract documents. Make up air unit shall be product of Reznor, or approved equal.
- B. Make-up air unit shall be rooftop unit with double wall insulated cabinet, bonderized and coated with baked enamel finish. Unit shall include filter rack, blower and motor, heat exchanger, power vent, downturn plenum and 100-percent fresh air damper and intake hood, evaporative cooling section, and 24 V controls.
- C. Heat exchanger and burners shall be fabricated of 409 stainless steel, complete with stainless steel drip pan and 2 stage gas valve and ductstat and spark ignition
- D. Fan wheel shall be centrifugal type, resiliently mounted with ODP motor with starter.
- E. Fresh air intake shall be equipped with rain baffled intake hood and 2 position motorized damper for 100 percent fresh air intake.
- F. Filter rack shall be suitable for 2-inch permanent filters
- G. Evaporative cooling module shall be complete assembly with 12” rigid Cellulose member.

### PART 3 - EXECUTION

#### 3.01 HEATING VENTILATING AND MAKE –UP AIR UNIT INSTALLATION:

- A. Install units on existing curbs at locations indicated on drawings.
- B. Install in strict accordance with manufacturer's instructions.
- C. Provide and install power upgrade to units (HV-1 and HV-4) as scheduled on drawings for larger motor horse power motors. Provide new disconnect switch and devices as required.
- D. Units heating capacities are derated to match the natural gas input rating as scheduled on drawings. Connect unit to existing power and gas pipe and adjust fan speed to deliver scheduled air quantity.
- E. Run new power wiring and install new disconnect switch for units specified with upgrade fan horse power.

- F. Connect make-up air unit to existing gas, make-up water and drain piping.
- G. Connect units to existing building temperature control system.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Low Pressure Ductwork as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Insulation - Section 15250
- B. Forced Air Furnace Units - Section 15780
- C. Rooftop Air Conditioning Unit - Section 15775
- D. Fan Coil Units - Section 15761
- E. Heating Ventilating Units – Section 15790

1.04 SUBMITTALS:

- A. Submit for approval data on distribution devices, duct liner, fire dampers and 1/4 inch scale Shop Drawings of ductwork installation.

PART 2 - PRODUCTS

2.01 SHEET METAL DUCTWORK:

- A. Ductwork shall be constructed of new galvanized prime grade steel sheets in accordance with HVAC Duct Construction Standards (1st Edition 1985) published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
- B. Unless otherwise noted on Drawings, return ductwork, and supply ductwork from air handling unit shall be 2 inch water gauge. In accordance with SMACNA Manual.
- C. Installed ductwork shall meet SMACNA Manual with respect to sheet deflection and vibration, reinforcing, seam and joint integrity, beam strength of duct section and duct leakage.

- D. Ductwork gauge and reinforcing shall comply with SMACNA Manual to specified static pressure rating.
- E. Provide turning vanes in each square elbow. Construct turning vanes using single thickness turning vanes with 3/4 inch flat trailing edge.
- F. Duct transition and offsets shall be as shown in SMACNA Manual.
- G. Duct hardware for control of manual dampers and splitters shall be as follows:
  - 1. Dampers and splitters with shaft length 12 inches or less: Use Ventlok No. 620 1/4 inch dial regulator on uninsulated ducts. On externally insulated ducts use Ventlok No. 627 for 1-1/2 inch insulation or Ventlok No. 628 for 1-1/2 inch insulation.
  - 2. Dampers and splitters with shaft length between 12 and 24 inches: Use Ventlok No. 635 3/8 inch dial regulator and ventlok No. 607 end bearing on uninsulated ducts. On externally insulated ducts use Ventlok Nos. 637, 638, or 639 elevated dial regulator 1 inch, 1-1/2 inch or 2 inch insulation and Ventlok 607 end bearing.
  - 3. Dampers with shaft length 24 inches and longer: Use Ventlok No. 641 self-locking regulator and No. 607 end bearing on uninsulated ducts. On externally insulated ducts use Ventlok No. 644 self-locking regulator and No. 607 end bearing.
  - 4. Splitters with blade length 18 inches or longer or duct depth 24 inches or more: Use Ventlok No. 600-3 splitter damper set with 1/4 inch control rod where duct is accessible. For ducts above nonaccess ceilings use Ventlok No. 691 self-locking splitter damper assembly, Ventlok No. 680 miter gears, and Ventlok No. 677 concealed damper regulator. Where duct depth is 25 to 60 inches use two sets of the above hardware. Where duct is over 60 inches use three sets of hardware.
  - 5. Where ducts are internally lined, provide a 1/2 inch diameter metal spacer (top and bottom) between damper or splitter blade and sheet metal wall to prevent blade from rubbing against liner.
  - 6. Dampers and splitters above nonaccessible ceilings: Delete dial regulator specified above, substitute Ventlok No. 607 end bearing in its place, extend shaft to Ventlok No. 677 concealed damper regulator through Ventlok No. 695 universal joint. Damper regulator cover plate shall be painted to match ceiling. Provide wood blocking to secure damper regulator to ceiling structure.
- H. Unless otherwise noted on Drawings, duct sizes shown on Drawings are for net free area.
- I. Seal ductwork so the leakage rate is less than 5% of the system operating airflow.

- A. Furnish flexible connections fabricated of Thermafab fabric which shall meet requirements of UL test procedure UL-214. Fabric shall be coated on exterior side, with inorganic elastomeric compound and shall be able to withstand exposure to 500°F and shall be ozone resistant and airtight. Connectors shall be preassembled utilizing 24 gauge metal edges and shall have 3 inches or 6 inches as required exposed fabric and shall be as manufactured by Duro-Dyne Corporation, or Venfabrics.

2.03 ACCESS DOORS:

- A. Provide hinged access doors in ductwork to provide access to automatic dampers and fire dampers. Where ducts are insulated access doors shall be double skin doors with 1 inch insulation in door. Where size of duct permits, doors shall be 18 inches x 16 inches. Doors 24 inches x 16 inches and larger shall be provided with Ventlok No. 100 or 140.
- B. Provide identification for fire damper access openings. Stencil the words FIRE DAMPER on access doors in sheet metal ducts.

2.04 FLEXIBLE DUCT:

- A. Flexible duct shall conform to Class 1 requirements of NFPA. A nominal 1 inch thickness of fiberglass insulation shall be enclosed in a factory applied and sealed vapor barrier jacket. Insulated flexible duct shall be Type SLR-181 Genflex as manufactured by General Environment Corporation or equal by Wiremold or Thermaflex. Flexible duct shall be installed in accordance with manufacturer's recommendations. Joints and connections shall be made with positive locking steel straps and approved mastic. Tape insulation joints. Maximum length of flexible duct shall be 7 feet.

2.05 FIRE DAMPERS:

- A. Fire dampers shall be solid steel curtain type with corrosion resistant steel blades and with frames which shall be continuous one-piece roll formed construction with mounting flanges. In closed position blades shall interlock completely. Horizontally mounted dampers shall close and shall be locked by use of stainless steel springs. Damper reset shall be accomplished by use of access panels which shall be furnished and installed.
- B. Fire dampers for rectangular ducts shall be Type B with 95% or greater free area. Fire dampers for round or oval ducts shall be Type C with 100% free area.
- C. Fire dampers shall be UL labeled, shall meet NFPA Standard No. 90A requirements, shall carry the corresponding label and shall also be in accordance with pertinent regulations of the City. Dampers shall be Fire-Seal dampers, as manufactured by Air-Balance, Inc., or equal by United Sheet Metal Company, Advanced Air, Inc., or Ruskin.

2.06 MANUAL BALANCING DAMPERS:

- A. Provide Ruskin MD-35 or equal opposed blade manual balancing damper fabricated from galvanized steel.
- B. Provide Ventlok No. 555 quadrant type regulator for each damper.

## PART 3 - EXECUTION

### 3.01 GENERAL:

- A. Sheet metal shown on Drawings and specified or required for heating, ventilating and air conditioning systems shall be constructed and erected in a first-class, workmanlike manner. Work shall be guaranteed for a period of one year from and after date of job acceptance against noise, chatter, whistling or vibration, and shall be free from pulsation under all conditions of operation. Should above defects occur after system is in operation, either remove and replace defect or reinforce as directed by Owner's Representative.
- B. Ducts shall be erected in general locations shown on Drawings, but must conform to structural and finish conditions of building. Before fabricating any ductwork, check physical conditions at job site and make any necessary changes in cross sections and offsets whether specifically indicated or not.
- C. Horizontal ducts up to and including 40 inches in their largest dimension shall be supported by means of No. 18 U.S. gauge band iron hangers attached to ducts by means of screws, rivets or clamps, and fastened to above structure with inserts, toggle bolts, beam clamps or other approved means. Each duct section shall have at least one pair of supports. Clamps shall be used to fasten hangers to reinforcing on sealed ducts.
- D. Horizontal ducts larger than 40 inches in their greatest dimension shall be supported by means of angle iron trapeze hangers. Each duct section shall have at least one pair of supports.

### 3.02 FLEXIBLE CONNECTION INSTALLATION:

- A. Install flexible connections at inlet and outlet of each air conditioning units.

### 3.03 ACCESS DOOR INSTALLATION:

- A. Install access doors for automatic dampers and fire dampers.
- B. Access doors shall be accessibly located.

### 3.04 FLEXIBLE DUCTWORK INSTALLATION:

- A. Install flexible ductwork as indicated on Plans; maximum length shall be seven feet. Install flexible ductwork so continuous bends do not exceed 90° and bend radius is not less than three duct diameters.

### 3.05 FIRE DAMPER INSTALLATION:

- A. Install fire dampers at locations shown on Drawings, at locations listed below, and as required by City Building Inspection Department.
  - 1. Where ducts penetrate fire rated walls or partitions.

- 2. Where ducts penetrate fire rated ceilings.
  - B. Install fire dampers in strict accordance with manufacturer's instructions.
- 3.06 MANUAL BALANCING DAMPERS:
- A. Install manual balancing dampers at locations shown on Drawings and at branch ductwork to ceiling diffusers and grilles, and return air and outside air connections to each air conditioning unit. Manual balancing dampers may be deleted where automatic dampers are installed that can be also used for fresh air balancing purposes.
  - B. Install dampers in accordance with manufacturer's instructions.
- 3.07 LEAKAGE TEST OF INSTALLED SYSTEM:
- A. Test installed ductwork before external insulation is applied.
  - B. Conduct tests in the presence of the Owner's Representative. Total leakage shall not exceed 5% of system design CFM at static pressure rating specified in Paragraph 2.01-B.
  - C. Repair or replace leaking duct sections and re-test.
  - D. Certify in writing results of duct testing for approval by Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish labor, materials, tools, equipment and related items required for complete installation of Filters as indicated by Contract Documents.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Rooftop Air Conditioning Units - Section 15775
- B. Forced Air Furnace Units – Section 15780
- C. Fan Coil Units – Section 15761

1.04 SUBMITTALS:

- A. Submit for approval data on filters.

PART 2 - PRODUCTS

2.01 AIR FILTERS:

- A. Filters shall be 1-inch thick disposable type Underwriters Laboratories listed and have a 30% dust spot efficiency per ASHRAE 52-76 (MERV 8).
- B. One set of filters shall be provided by the air conditioning unit. Furnish additional one set of filters to be installed in the air conditioning unit after completion of construction and testing and balancing of the system.
- C. Filter shall be capable of operating with face velocities up to 500 FPM without impairing efficiency, and shall have an initial resistance not to exceed 0.17 inch W.G., and shall be classified by Underwriters Laboratories as Class 2.

2.02 FILTER HOUSINGS:

- A. Housing shall be completely factory-assembled to receive the pre and final filters.

PART 3 - EXECUTION

3.01 FILTER INSTALLATION:

- A. Install one complete set of filters in equipment requiring filters; do not operate any such equipment without filters in place.
- B. Upon completion of building and immediately prior to air balancing, install second set of filters in equipment requiring filters.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. Furnish and install new electronic space thermostat (replace existing) for all air conditioning units, heating ventilating units and forced air furnaces to be replaced under this contract. Use existing wiring and conduits where applicable. Provide and install new wiring, conduit and devices as required to accomplish functional control system. This work shall be covered by the project Prime Mechanical Contractor
- B. Furnish labor, materials, tools, equipment and related items required for complete installation of direct digital electronic Temperature Control System for the Benstead Plunge existing air handling unit and new boiler and heating hot water control system as indicated by Contract Documents. This work shall be covered by the Control System Contractor.
- C. Provide a complete integrated direct digital control (DDC) system of automatic temperature control as specified herein and as shown on the Contract Drawings. The Contractor shall furnish all equipment, materials, labor, supervision and services necessary for or incidental to the installation of a complete and operating electronic system of temperature controls for heating, ventilating and air conditioning. The Facility Management System shall include all workstation software and hardware, Process Control Units (PCU), Local Area Networks LAN, sensors, control devices, actuators, installation and calibration, supervision, adjustments and fine tuning necessary for a complete and fully operational system. Provide a complete system comprising but not limited to:
  - 1. Energy Management Control
  - 2. Sensors and actuators
  - 3. Controllers
  - 4. Interconnecting wiring to the required termination points
  - 5. Maintenance during Warranty period
- D. The temperature control system is based on the City of Torrance standard control system.
- E. Spare.
- F. BAS Contractor shall furnish and install all related software, and furnish HVAC-DDC controls and shall be the responsibility of the ATC Contractor to provide all labor, material, and programming to seamlessly integrate the above systems into one fully

integrated HVAC, access initiated control, and security management system of control. BAS Contractor shall provide all communication and control wiring. Mechanical Contractor shall install all low voltage control system conduits. It shall be the responsibility of the BAS Contractor to coordinate his work with the Electrical Contractor as it relates to the above sections.

- G. System shall be tied into the City of Torrance existing Ethernet LAN via standard “Xenta 527” network interface controller.

1.03 INSTALLING CONTRACTOR:

- A. Temperature Controls Contractor shall be selected by Owner.

1.04 RELATED WORK SPECIFIED ELSEWHERE:

- A. Hot Water Boiler - Section 15623
- B. Heating Piping System - Section 15700

1.05 SUBMITTALS:

- A. Submit for approval system control diagrams, sequences of control and data on control system components.
- B. Submit operation and maintenance data, including systems descriptions, set points, and controls settings and adjustments.
- C. Include inspection period, cleaning methods, recommend cleaning materials, and calibration tolerances.
- D. Provide owner instruction. Use operation and maintenance data as a training manual.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 10 years documented experience.
- B. Installer: Installation by personnel directly employed by the manufacturer or by personnel of a company that is a fully authorized representative of the manufacturer.

1.07 WARRANTY

- A. Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one (1) year from completion of system demonstration and two years material only on all factory BAS equipment and software.
- B. Hardware and software personnel supporting this warranty agreement shall provide onsite or offsite service in a timely manner after failure notification to the vendor. The contractor shall respond to calls for warranty service within 24 working hours. Emergency service shall be obtainable within 8 hours of notification by the Owner.

Emergency service shall be obtainable on a 24-hour basis, 7 days per week.

- C. This warranty shall apply equally to both hardware and software.

## PART 3 – PRODUCTS

### 3.01 ELECTRONIC EQUIPMENT

#### A. Digital Input Devices

1. General: Provide digital input devices to satisfy the requirements of the installation.
2. Current Sensing Relay
  1. Type: Adjustable current threshold

#### B. Analog Input Devices

1. General:
  - a. Provide analog input devices to satisfy the requirements of the installation.
  - b. Provide devices with the following characteristics:
  - c. Have a range, accuracy, and speed of response suitable for the application and suitable for the environment in which they are installed.
  - d. Selected and installed to ensure that they together with the wiring system will not be adversely affected by induced voltages from other wiring systems in the building.
  - e. Achieve the required device accuracy's in the software point value, i.e. after inclusion of transducer and signal transmission errors.
2. Analog Input Transducers
  - a. Provide analog input transducers where required for signal conversion. Provide integral, accessible zero and span adjustments, open and short circuit protection and reverse polarity protection.
  - b. Accuracy:  $\pm 1.5\%$  of span
  - c. Output: 0-10 V D.C. directly proportional to input over the entire rated span of the transducer.
3. All Temperature Sensors
  - a. Type: Current loop, Integrated Circuit, Thermistor or RTD operation. Linear response, suitable for the working range of the application.
  - b. Accuracy:  $\pm 0.5^\circ\text{F}$  of calibrated temperature over the working range, including drift over a 6 month period.
  - c. Repeatability:  $\pm 0.5^\circ\text{F}$

3.02 CONTROL WIRING

- A. All electric wiring in conjunction with the automatic temperature control system shall be furnished and installed by the control system contract.
- B. All low voltage control system conduit is to be furnished and installed by the electrician (division 16).

3.03 SYSTEM NETWORK CONTROLLER (XENTA 527)

- A. BAS contractor shall provide and install a system network interface controller for the purpose of controlling and monitoring the DDC system(s) via TCP/IP.
- B. Controller shall have an I/NET communication port and Lonworks communication port on the controller capable of interfacing with third-party equipment.
- C. Owner shall be responsible for providing an IP address, tap connection, and Internet provider.
- D. The quantities and types of controllers shall be determined by the Contractor based upon the requirement to provide a fully operational system, as per the intent of the specification, as shown on the drawings and recommended by the manufacturer. As a minimum, the following features shall be supported in each Xenta 527 Router:
  - 1. Provides a modular solution for access through standard commercial LAN/WAN systems.
  - 2. Standard TCP/IP communication protocol allowing easy integration of communication into LAN, WAN, Internet, or intranet systems.
  - 3. Support for Larger number of links (sites) available – up to 1,000.
  - 4. Expanded LINK support allows distribution of commercial LAN down to the single-controller environment.
  - 5. LAN/WAN point globalization distribution to selected nodes, with user-manageable limits on distribution to minimize traffic.
  - 6. Message/alarm/globalization buffering to provide local storage of data until distribution (operates without floppy or hard disk).
  - 7. On-board battery protects buffered data in case of power outages.
  - 8. Integral and simplified installation, configuration, and check-out tools.
  - 9. Diagnostic function to verify operations.
  - 10. Ports include:
    - a. 10BASE-T Ethernet port (RJ45).
    - b. Local PC port for I/NET host workstations or portable maintenance PC.
    - c. RS485 synchronous SDLC controller LAN port.

3.04 INSTALLATION AND CONTROL SYSTEM RESPONSIBILITES

- A. General
  - 1. Control System contractor is to provide all controls for the one existing 100% OSA heating only AHU, one existing exhaust fan and one new boiler with HW pump. Control System contractor is to provide new system graphic pages on the

I/NET Seven workstation located at the City of Torrance Maintenance shop.

B. AHU (EXISTING):

1. Control System contractor is to provide programmable controllers and new 3-way HW control valve (Manufactured by Belimo) for the existing 100% OSA Air Handling Unit. BAS controls will provide start/stop control based on time of day schedule and maintain space temperature.

C. EXHAUST FAN (EXISTING):

1. Control System contractor is to provide a programmable controller for the one existing Exhaust Fan. BAS controls will provide start/stop control based on operation of the Air Handling Unit (AHU).

D. BOILER SYSTEM:

1. Control System contractor is to provide a programmable controller to enable/disable the new boiler and secondary HW pump. BAS controls will provide start/stop control only and provide monitoring of the HW temperature(s) and status. Boiler staging and primary HW pump will be controlled by internal boiler manufacture provided controls.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL:

- A. Requirements of CITY OF TORRANCE REQUEST FOR PROPOSAL and GENERAL CONDITIONS are made a part of this Section
- B. The specific requirement of City of Torrance apply to this Section

1.02 SCOPE:

- A. The testing, adjusting and balancing (TAB) of air conditioning systems will be performed by an impartial independent technical firm whose operations are limited only to the field of professional TAB. TAB work shall be done under direct supervision of a qualified engineer employed by TAB firm.
- B. Include in bid all costs for employing a TAB firm. With bid proposal furnish name of TAB firm for this project; this will be a factor in evaluating bids.
- C. TAB firm shall be responsible for inspecting, adjusting, balancing and logging data on the performance of fans, dampers in the duct systems, air distribution devices and the operation of automatic controls and interlocks.
- D. Cooperate with TAB firm; provide necessary data on design and proper application of system components; furnish labor and material required to eliminate any deficiencies or malfunction.
- E. Be responsible to Owner for satisfactory execution of TAB work. Allow sufficient funds in Project cost estimate and bid proposal and sufficient time in Project schedule to cover all work required for completion of TAB work.

1.03 DOCUMENTS:

- A. Provide Plans, Specifications, and Change Orders to TAB firm.
- B. Provide approved submittal data on equipment installed and related changes required to accomplish test procedures outlined in this Section of Specifications.
- C. Transmit one copy of the following "Records for Owner" to TAB firm for review and comments:
  - 1. "As Installed" Drawings
  - 2. Approved Fixture Brochures
  - 3. Approved Wiring Diagrams

4. Approved Control Diagrams
5. Shop Drawings
6. Instructions
7. Valve Charts.

1.04 RESPONSIBILITIES OF CONTRACTOR:

- A. Have all systems complete in operational readiness prior to notifying TAB firm that Project is ready for their services, and so certify in writing to Owner that such a condition exists.
- B. Make any changes in sheaves, belts and dampers or the addition of dampers required for correct balance as required by TAB firm, at no additional cost to Owner.
- C. Provide and coordinate services of qualified, responsible subcontractors, suppliers and personnel as required to correct, repair or replace any and all deficient items or conditions found during the testing, adjusting and balancing period.
- D. In order that systems may be properly tested, balanced and adjusted as required by these Specifications, operate said systems for length of time necessary to properly verify their completion and readiness for TAB and pay costs of operations during TAB period.
- E. Provide timeframe allowances in Project contract completion schedules to permit completion of TAB services within allotted time and minimum disturbance to the building occupants.
- F. Should TAB firm be so notified and TAB work commenced and the systems are found to not be in readiness or a dispute occurs as to readiness of systems, Contractor shall request an inspection be made by a duly appointed representative of Owner, Engineer, TAB firm and Contractor. This inspection shall establish to the satisfaction of represented parties whether or not systems meet basic requirements for TAB services. Should inspection reveal TAB services notification to have been premature, costs of the inspection and work previously accomplished by TAB firm shall be paid for by Contractor. Furthermore, such items as are not ready for TAB services shall be completed, placed in operational readiness and TAB services shall again be requested.
- G. Complete operational readiness, prior to commencement of TAB, services shall include the following:
  1. Construction status to allow projected operating conditions.
  2. Air Distribution Systems
    - a. Verify installation for conformity to design. Supply, return and exhaust ducts terminated and pressure tested for leakage as required by Specifications.

- b. Volume and fire dampers properly located and functional. Dampers serving requirements of minimum and maximum outside air, return and relief shall provide tight closure and full opening, smooth and free operation.
  - c. Supply, return, exhaust and transfer grilles, registers, diffusers and terminal units installed.
  - d. Air conditioning system, unit and associated apparatus, such as filter sections and access doors, shall be blanked or sealed to eliminate excessive bypass or air leakage.
  - e. Fans (supply, return, and exhaust) operating and verified for freedom from vibration, proper fan rotation and belt tension; heater elements shall be proper size and rating; record motor amperage and voltage and verify nameplate ratings are not exceeded.
3. Water Circulating Systems
- a. Check and verify pump alignment and rotation.
  - b. Position valves pertinent to system design and require operation to permit full flow of water through system components. Operate hydronic systems under full flow conditions until circulating water is clean. Strainers shall be removed and cleaned as required during this cycle of operation.
  - c. Record each pump motor amperage and voltage. Readings shall not exceed nameplate rating.
  - d. Water circulating systems shall be full of water and free of air, expansion tanks set for proper water level and air vents installed at high points of systems and operating freely.
4. Automatic Controls
- a. Verify that control components are installed in accordance with Project requirements and functional, including electrical interlocks, damper sequences, firestats and smoke detectors.
  - b. Controlling instruments shall be functional and set for designed operating conditions. Factory pre-calibration of thermostats will not be acceptable.
  - c. Temperature regulation will be adjusted for proper relationship between controlling instruments and calibrated by control subcontractor using data submitted by TAB firm. The correctness of final setting shall be proved by taking hourly readings for a period of three successive 8-hour days in a typical room on each separately controlled zone. Total variation shall not exceed 2° from present median temperature during entire temperature survey period.

- H. TAB firm will not instruct or direct Contractor in any of the work, but will make such reports as are necessary direct to Owner representative. Plans and Specifications have indicated valves, dampers and miscellaneous adjustment devices for purpose of adjustment to obtain optimum operation conditions; install these devices in a manner that will leave them accessible and readily adjustable. Should any such device not be readily accessible, provide access as required by TAB firm.

## PART 2 - PRODUCTS

### 2.01 MINIMUM QUALIFICATIONS OF TAB FIRMS:

#### A. General:

1. Each professional firm desiring to submit proposals for performance of professional services for testing and balancing HVAC systems for projects shall submit necessary brochures describing history of firm and qualifications of personnel to Architect.
2. Each professional firm submitting such information on its qualifications and personnel shall keep information current by submitting supplemental data a minimum of once every six months or when professional or technical personnel who shall perform the work may change.
3. Each professional firm warrants by submittal of its personnel qualifications that such personnel shall be used in performance of the work. In event of personnel change, professional firm submitting a proposal shall submit complete qualifications and experience record of new personnel. Owner, upon acceptance of proposal, expects work to be performed by the personnel whose experience is so described.

#### B. Qualifications of Firm

1. Firm shall be one which is licensed to do professional services of this specified type and as a minimum have one professional engineer with current registration to perform such professional services.
2. Firm shall be capable of performing services specified at location of facility described within time specified, preparing and submitting the detailed report of actual field work performed and following up the basic work as may be required.
3. Firm shall be a member in good standing of Associated Air Balance Council (AABC) and listed in its current directory.

#### C. Qualifications of TAB Firm Personnel

1. A minimum of one professional engineer with current registration is required to be in the permanent employment of firm for supervision and direction in the work performed. This engineer shall be totally responsible for developing job site data as required for test procedures outlined in Specifications of Project.

2. All personnel used on job site shall be either professional engineers or technicians, who shall have been permanent, full time employees of firm for a minimum of six months prior to start of work for that specific Project.

### PART 3 - EXECUTION

#### 3.01 GENERAL RESPONSIBILITIES OF TAB FIRM:

- A. TAB firm shall act as liaison between Owner, Engineer and Contractor and inspect installation of mechanical piping systems, sheet metal work, temperature controls and other component parts of heating, air conditioning and ventilating systems. Inspection of the work shall cover that part relating to proper arrangement and adequate provisions for testing and balancing.
- B. TAB firm shall, within 60 days of its employment, review Drawings and Specifications to identify any potential balancing problems and to determine there are adequate provisions for testing and balancing systems. Report any problem to Architect or Architect's representative.
- C. Upon completion of installation and start-up of mechanical equipment, check, adjust and balance system components to obtain optimum conditions in each conditioned space in building. Prepare and submit to Owner, or Owner's delegated representative, complete reports on the balance and operations of systems.
- D. Measurements and recorded readings of air, water and electricity that appear in reports must be done by permanent employed technicians or engineers of firm.
- E. Make a total of three inspections within 90 days after occupancy of building to insure that satisfactory conditions are being maintained throughout and to satisfy any unusual conditions.
- F. Make an inspection in building during opposite season in which initial adjustments were made, and at that time make any necessary modifications to initial adjustment required to produce optimum operation of system components to produce proper conditions in each conditioned space. At time of opposite season checkout, Owner's representative shall be timely notified before any readings or adjustments are made.

#### 3.02 TESTING AND BALANCING AIR SYSTEMS:

- A. Test and adjust air systems to conditions set forth in Plans and Specifications. Air systems include:
  1. Supply Air Systems
  2. Return Air Systems
- B. In fan systems, air quantities indicated on Plans may be varied as required to secure a maximum temperature variation of 2° within each separately controlled space, but total air quantity indicated for each zone must be obtained.

- C. Test and adjust blowers and fans to deliver CFM required by the systems with concurrent recording of RPM, supply voltage and full load amperes. Report any changes of belts and sheaves required.
- D. Make pitot tube traverses of main supply, return ducts and adjust fans and dampers to achieve specified air volumes.
- E. Test and adjust fresh air intake and return air dampers and louvers to conditions scheduled or required.
- F. Test and record static pressure on entering and leaving side of each supply fan and balancing dampers and other components of system.
- G. Test and adjust supply air diffusers, grilles, and return air registers to Specification requirements and as shown on Drawings. Adjust supply diffuser pattern blades for proper air distribution in each room or space.
- H. Measure temperature in each space and concurrent outside temperature.

3.03 TESTING AND ADJUSTING WATER SYSTEMS:

- A. Flow of water through water coils shall be adjusted by adjusting valves until rated pressure drop across each coil is obtained and water flow verified by venturi readings. Rated pressure drop shall first be adjusted through coils in each of several systems and the temperature differential between inlet and outlet shall be determined to be in accordance with its rating. Bypass valves shall then be adjusted on each coil until an equal pressure drop between supply and return connections is obtained with the three-way valves set to bypass all coils in each of the several systems.

3.04 TESTING AND ADJUSTING AUTOMATIC CONTROLS:

- A. Test automatic controls, controlled devices, interlocks, and safety devices associated with HVAC system for proper operation and sequence during heating, cooling, and intermediate modes of operation. Adjust automatic controls to deliver required quantities of air at temperatures specified or scheduled on Plans and to maintain proper conditions in each room of building.
- B. Report deficiencies or malfunctions to Owner.

3.05 MARKING OF SETTINGS:

- A. Upon completion of testing and balancing of each system permanently mark settings of dampers and controls.

3.06 PROFESSIONAL REPORT:

- A. Before final acceptance of report is made, TAB firm shall furnish Owner the following data:
  - 1. Summary of main supply, return and exhaust duct pitot tube traverses and fan settings indicating minimum value required to achieve specified air volumes.

2. A tabulated record of temperatures in all spaces on each separately controlled zone, together with outside temperature at time of measurement.
  3. A listing of measured air quantities at each outlet corresponding to temperature tabulation specified above.
  4. Supply pressure readings entering and leaving each air conditioning unit, filter, balancing dampers and other components of system.
  5. Motor current readings per phase at each equipment motor. Voltages at time of reading shall be listed.
  6. Water pressure readings at gauge connections. Pressure readings at coils and pumps shall be related to coil and pump curves in terms of GPM handled and confirmed by GPM flow through metering stations at each coil if applicable.
  7. Water temperature readings entering and leaving each coil and heat exchanger under maximum load conditions in each case.
- B. The final report shall certify test methods and instrumentation used, final velocity reading obtained, air quantities at each outlet supply, return, exhaust, temperatures, pressure drops, RPM of equipment, amperage of motors, air balancing problems encountered, recommendations and uncompleted punch list items. Test results shall be recorded on standard forms.
- C. A summary of actual operating conditions shall be included with each system outlining normal and/or ventilation cycles of operation. The intent of final report will provide a reference of actual operating conditions for Owner's operating personnel.

END OF SECTION

