PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS

BRISTOW LIBRARY & SNACK BAR ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

CITY OF COMMERCE

2535 COMMERCE WAY
COMMERCE, CA. 90040
TEL: (323) 722-4805

Prepared and Issued by:
Public Works Department
Engineering Division

Date Issued:
October 20, 2020

BIDS DUE: November 17, 2020 at 11:00 am

Non-Mandatory Pre-Bid Meeting: N/A

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NOTICE INVITING SEALED BIDS

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

PUBLIC NOTICE IS HEREBY GIVEN that the CITY OF COMMERCE, referred to as "CITY", invites sealed bids for the above stated project and will receive such bids at Commerce City Hall in the Office of the City Clerk, 2535 Commerce Way, Commerce, California 90040 by the due date of **November 17, 2020** at **11:00 am.**

Due to the COVID-19 virus pandemic and the City's implementation of social distancing, the City of Commerce is requesting all vendors to submit their bids electronically through Planetbids. City will receive electronic bids on or before the bid due date/time thru Planetbids at:
https://www.planetbids.com/portal/portal.cfm?CompanyID=32906

1. BID DOCUMENTS:
Electronic files of the Plans, Specifications and Contract Documents are available for download on the City website at: https://www.planetbids.com/portal/portal.cfm?CompanyID=32906. Hard copy of the bid package will not be mailed.

2. PRE-BID MEETING:
None.

3. SCOPE OF WORK:
The work to be done consists of furnishing all labor, materials, tools, equipment and incidental for the improvements as shown on Project Plans.

4. LOCATION OF WORK:
The project is located at 1466 S McDonnell Ave, Commerce, CA 90040.

5. SCHEDULE OF WORK:
In accordance with the Standard Specifications, and/or as may be provided for within the herein Special Provisions, after notification of award and prior to start of any work, the Contractor shall submit to the Engineer for approval its proposed Construction Schedule. At a scheduled date prior to commencement of work, the Contractor and all subcontractors shall attend a pre-construction conference at the City Hall.

Total construction duration is 60 working days. Please see Section A.00200 – Instructions to Bidders for the project schedule.

6. ESTIMATED COST OF WORK:
Estimated cost is in the range of $1,000,000.

7. BID BOND:
Bids must be accompanied by a bid bond, made payable to the City of Commerce for an amount no less than ten percent (10%) of the bid amount.

8. CONTRACTORS LICENSE:
Contractor shall have a valid California General Contractor License, Class B, General Building Contractor, at the time of bid, at the time of award and during the performance of the work.

9. DBE:
This project does not have a mandatory DBE participation (this is not a federally funded project.) However, the City hereby notifies all qualified bidders that it will affirmatively insure that qualified minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the basis of race, color, national origin, ancestry, sex, religion, or handicap in consideration for an award. Attention is directed to the provisions of Section 1777.5 (Chapter 1411, Statutes of 1968) and 1777.5 of the Labor Code concerning the employment of apprentices by the Contractor's or any such subcontractors under hire. The bidders and the selected Contractor shall not allow discrimination in employment practices on the basis of race, color, national origin, ancestry, sex, religion, or handicap.

Bids must be prepared on the approved Proposal forms in conformance with the Instructions to Bidders and submitted in a sealed envelope plainly marked on the outside.

No bid will be accepted from a Contractor who has not been licensed in accordance with the provisions of the Business and Professions Code. The successful Contractor and his subcontractors will be required to possess business licenses from the City.

Any contract entered into pursuant to this notice shall become effective or enforceable against the City only when the formal written contract has been duly executed by the appropriate officers of the City. The City reserves the right to reject any or all bids, to waive any irregularity, and to take all bids under advisement for a period of sixty (60) calendar days.

In entering into a public works contract, or a subcontract, to supply goods, services, or materials pursuant to a public works contract, the Contractor, or subcontractors, offers and agrees to assign to the awarding body all rights, title and interest in, and to, all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases

of goods, services, or materials pursuant to the public work's contract or subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

This project is subject to the requirements of SB 854.

No prime contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

No prime contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The bid proposal must include a print out from the DIR registration website showing that the prime contractor and each subcontractor is currently registered.

No bid proposals will be accepted nor any contract entered into with a prime contractor without proof of registration as required above. [Unless within the limited exceptions from this requirement for bid proposals only under Labor Code Section 1771.1(a)]

The prime contractor will be required to post job site notices regarding Labor Code compliance as described in 8 California Code of Regulation section 16451(d).

10. CALIFORNIA PREVAILING WAGE

Bidder agrees to comply with California Labor Code Sections 1771, 1775, 1776, 1777.5,1813, and 1815 to the performance of its work on this project. Specifically, the Bidder agrees to:

1. Pay all workers not less than the general prevailing rate of per diem wages for work of similar character in the locality in which the public work is performed.
2. Pay all workers not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter.
3. Adhere to the compliance measures outlined in LC 1775(b) for any second tier subcontractors that the contractor chooses to use on this project.
4. If requested, submit certified payroll records to the City on a weekly basis. Records shall be provided no later than 5 days following the last day of each workweek.
5. Comply with the applicable requirements and joint apprenticeship standards as required by LC 1777.5.

Contractor shall complete and sign non-collusion affidavit form and all other required forms included in the specifications.

If there are any questions regarding this project, please contact, via e-mail:

No bid will be accepted from a Contractor who has not been licensed in accordance with the provisions of the Business and Professions Code. The successful Contractor and his subcontractors will be required to possess business licenses from the City. The City reserves the right to reject any or all bids, to waive any irregularity, and to take all bids under advisement for a period of 60 calendar days.

If there are any questions regarding this project, please submit your questions via Planet Bid at https://www.planetbids.com/portal/portal.cfm?CompanyID=32906. It is the responsibility of the bidder to confirm transmission of correspondence.

By order of the City Council of the City of Commerce, California

LENA SHUMWAY, City Clerk

Dated: October 20, 2020

END OF SECTION

INSTRUCTIONS TO BIDDER'S

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

1. GENERAL

Bidder shall examine these instructions carefully and be responsive to conditions with which must be complied with prior to bid. Bidders shall be aware of the requirements of codes referenced in the Bidding Requirements and in the Contract Documents.

2. BID DOCUMENTS

Electronic files of the Plans, Specifications and Contract Documents are available for download on the City website at: https://www.planetbids.com/portal/portal.cfm?CompanyID=32906. Hard copy of the bid package will not be mailed.

3. PRE-BID MEETING

None.

4. PROPOSAL FORMS

Bids shall be submitted in writing on forms provided by the City. All information requested therein must be clearly and legibly set forth in the manner and form indicated. The City will not consider any proposal not meeting these requirements.

5. DELIVERY OF PROPOSAL

Bids must be prepared on the approved bid forms in conformance with the Instructions to Bidders and submitted in a sealed envelope plainly marked on the outside: " **Bristow Library & Snack Bar Roofing and HVAC Replacement Project – Do Not Open with Regular Mail".** Bids may be mailed or delivered by messenger to: City of Commerce, Attn: Purchasing Division of Finance, 2535 Commerce Way, City of Commerce, California 90040. Sealed bids for the project shall be submitted on or before: **11:00 AM** on **November 17, 2020, AT WHICH TIME THEY WILL BE PUBLICLY OPENED.** ***Late proposals will not be considered.***

6. BID BOND

Proposals must be accompanied by a proposal guarantee consisting of a bid bond payable to the City in the amount not less than ten percent (10%) of the total amount bid. Any proposal not accompanied by such a guarantee will not be considered. If a bidder to whom a contract is awarded fails or refuses to execute the contract documents or furnish the required insurance policies and bonds as set forth in those documents, the proposal guarantee shall be forfeited to the City. The proposal guarantees of all bidders will be held until the successful bidder has properly executed all contract documents.

7. EXAMINATION OF SITE

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 responsible to have personally examined the site, 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 specifications, site conditions and/or contract provisions.

8. PRE-BID INQUIRIES

If there are any questions regarding this project, please submit your questions via Planet Bid at https://www.planetbids.com/portal/portal.cfm?CompanyID=32906 no later than **November 10, 2020 at 5:00 P.M**. It is the responsibility of the bidder to confirm transmission of correspondence.

9. HAZARDOUS MATERIALS ABATEMENT – CERTIFICATION/REGISTRATION

If Contractor performs abatement work, Contractor must be certified for abatement work by the Contractors' State License Board and be registered by the Department of Industrial Relations, CAL-OSHA, pursuant to Title 8, California Code of Regulations, Section 341.6. If Contractor subcontracts the abatement work, Contractor need not be certified or registered for asbestos abatement, but the subcontractor must be listed in the Bid Form and must be certified by the Contractors State License Board and registered by the Department of Industrial Relations, CAL-OSHA, pursuant to Title 8, California Code of Regulations, Section 341.6.

10. AFFIRMATIVE ACTION

The City hereby notifies all qualified bidders that it will affirmatively insure that qualified minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the basis of race, color, national origin, ancestry, sex, religion, or handicap in consideration for an award. Attention is directed to the provisions of Section 1777.5 (Chapter 1411, Statutes of 1968) and 1777.5 of the Labor Code concerning the employment of apprentices by the Contractor's or any such subcontractors under hire. The bidders and the selected Contractor's shall not allow discrimination in employment practices on the basis of race, color, national origin, ancestry, sex, religion, or handicap.

11. CARTWRIGHT ACT REQUIREMENTS

In entering into a public works contract, or a subcontract, to supply goods, services, or materials pursuant to a public works contract, the Contractor's, or subcontractor's, offers and agrees to assign to the awarding body all rights, title and interest in, and to, all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public work's contract or subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor's, without further acknowledgment by the parties.

12. CONSTRUCTION SCHEDULE

In accordance with the Standard Specifications, and/or as may be provided for within the herein Special Provisions, after notification of award and prior to start of any work, the Contractor shall submit to the Engineer for approval its proposed Construction Schedule. At a scheduled date prior to commencement of work, the Contractor and all subcontractors shall attend a pre-construction conference at the City Hall.

13. WORKING HOURS

Working hours for this project will be:

Day Work: 7:00 am - 4:00 pm, Monday - Friday

No work will be allowed on City observed holidays and weekends without prior approval by Director of Public Works and Development Services. Night work is not allowed, unless directed and approved by Director of Public Works and Development Services.

14. WITHDRAWAL OF PROPOSALS

A proposal may be withdrawn by a written request signed by the bidder. Such requests must be delivered to the City's designated official prior to the bid opening hour stipulated in the Notice Inviting Bids. Proposals may not be withdrawn after the bid opening hour stipulated in the Notice Inviting Bids without forfeiture of the proposal guarantee. The withdrawal of a proposal will not prejudice the right of the bidder to submit a new proposal, providing there is time to do so.

15. IRREGULAR PROPOSALS

Unauthorized conditions, limitations, or provisions attached to a proposal will render it irregular and may cause its rejection. The completed proposal forms shall be without interlineations, alterations, or erasures. Alternative proposals will not be considered unless specifically requested. No oral, telegraphic, or telephonic proposal, modification, or withdrawal will be considered.

16. DISQUALIFICATION OF BIDDERS

In the event that any bidder acting as a prime Contractor has an interest in more than one proposal, all such proposals will be rejected, and the bidder will be disqualified. This restriction does not apply to subcontractors or suppliers who may submit quotations to more than one bidder, and while doing so, may also submit a formal proposal as a prime Contractor.

17. DISCREPANCIES AND MISUNDERSTANDINGS

Before submitting a Proposal, Bidders must satisfy themselves by personal examination of the work site, Plans, Specifications, and other contract documents, and by any other means as they may believe necessary, as to the actual physical conditions, requirements and difficulties under which the work must be performed, and fully inform themselves as to all existing conditions and limitations, and shall include in the Proposal, the cost of all items necessary in the completion of the project. The Bidder shall not be allowed any extra compensation by reason of any matter or thing, concerning that which such the Bidder might have fully informed them

prior to the bidding. No bidder shall at any time after submission of a proposal make any claim or assertion that there was any misunderstanding or lack of information regarding the nature or amount of work necessary for the satisfactory completion of the job.

Any errors, omissions, or discrepancies found in the Plans, Specifications, or other contract documents shall be called to the attention of the City. Should a Bidder find any ambiguity, inconsistency or error in the plans and project manual, or be in doubt as to their meaning, the Bidder shall notify the City, in writing as specified in the Notice Inviting Bids Section. Issues requiring clarification will be addressed in a written addendum. Any addenda issued by the City during the time of bidding are to be included in the proposal from the Bidder, and shall become a part of the Bid documents. The Bidder shall acknowledge receipt of addenda on the proposal form in the space provided.

18. SOLE SOURCE PROVISIONS

In accordance with Section 3400 of the California Public Contract Code, no materials or equipment is intended to be identified as "sole source". All material and equipment is specifically identified as is **or approved equal**. Bidders are encouraged to propose alternates for evaluation by the City as being equal to that specified in the contract documents.

19. PERMITS AND LICENSES

The Contractor's shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work. The Contractor's shall pay for and obtain a City Business License. Permit Fees will be reimbursed per Contact Allowance Item.

20. CONTRACTOR'S LICENSE LAW

Bidder may only bid on work for which Bidder is properly licensed by the Contractors' State License Board. No contract will be awarded to a bidder who is not licensed in accordance with the law under the provisions of Division III, Chapter 9, of the California Business and Profession Code at the time of the award.

Bidders shall comply with and require all subcontractors to comply with all Federal, State and City Contractor's License Laws and be duly registered and licensed there under as required. Joint venture Bidders must possess a joint venture license. Each party to a joint venture shall be properly licensed for the Work of this Project.

Contractor shall have a valid California General Contractor License, Class B, General Building Contractor, at the time of bid, at the time of award and during the performance of the work.

21. EMPLOYMENT OF UNDOCUMENTED ALIENS

Pursuant to Section 6101 of the Public Contract Code, the City may not award a public works contract to a bidder or contractor, nor shall a bidder or contractor be eligible to bid for or receive a public works contract, who has, in the preceding five

years, been convicted of violating a state or federal law respecting the employment of undocumented aliens.

22. CONTRACT BONDS

The successful Bidder is required to provide and pay for a performance and a payment bond. These bonds shall cover the faithful performance (100%) of the Contract for Construction and the payment of all obligations (100%) arising there under, in such form as the City may prescribe and with such sureties as they may approve. The successful Bidder shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney indicating the monetary limit of such power.

The City reserves the right to reject any proposed bonding company without stating cause. In this event the successful Bidder shall provide an alternate bonding company whose selection is acceptable to the City.

Bonds shall conform to state statutes regarding performance bond and labor and material payment bond with amount shown on each part equal to 100% of the total amount payable by terms of the Contract for Construction. The surety company shall be licensed to do business in the state in which the project is located and shall be acceptable to the City. Bond amount shall be increased to include any Change Order(s) added to the contract to 100% total value amount of each Change Order. Bonds will be recorded along with a copy of the construction contract in the County Recorder Records by the General Contractor's with written proof submitted to the City.

23. INSURANCE

Prior to the beginning of and throughout the duration of the Project, CONTRACTOR and its subcontractors shall maintain insurance in conformance with the requirements set forth below. CONTRACTOR will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth herein, CONTRACTOR agrees to amend, supplement or endorse the existing coverage to do so.

CONTRACTOR acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to CONTRACTOR or its subcontractors in excess of the limits and coverage identified in this Agreement and which is applicable to a given loss, claim or demand, will be equally available to CITY.

A. CONTRACTOR shall provide the following types and amounts of insurance:

Without limiting CONTRACTOR's indemnification of CITY, and prior to commencement of Work, CONTRACTOR shall obtain, provide and maintain at its own expense during the term of this Agreement, policies of insurance of the type and amounts described below and in a form satisfactory to CITY.

General liability insurance. CONTRACTOR shall maintain commercial general

liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than $1,000,000 per occurrence, $2,000,000 general aggregate, for bodily injury, personal injury, and property damage, and a $2,000,000 completed operations aggregate. The policy must include contractual liability that has not been amended. Any endorsement restricting standard ISO "insured contract" language will not be accepted.

Automobile liability insurance. CONTRACTOR shall maintain automobile insurance at least as broad as Insurance Services Office form CA 00 01 covering bodily injury and property damage for all activities of the CONTRACTOR arising out of or in connection with Project to be performed under this Agreement, including coverage for any owned, hired, non-owned or rented vehicles, in an amount not less than $1,000,000 combined single limit for each accident.

Umbrella or excess liability insurance. [Optional depending on limits required] CONTRACTOR shall obtain and maintain an umbrella or excess liability insurance that will provide bodily injury, personal injury and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general liability, automobile liability, and employer's liability. Such policy or policies shall include the following terms and conditions:

- A drop-down feature requiring the policy to respond in the event that any primary insurance that would otherwise have applied proves to be uncollectable in whole or in part for any reason;
- Pay on behalf of wording as opposed to reimbursement;
- Concurrency of effective dates with primary policies;
- Policies shall "follow form" to the underlying primary policies; and
- Insureds under primary policies shall also be insureds under the umbrella or excess policies.

Workers' compensation insurance. CONTRACTOR shall maintain Workers' Compensation Insurance (Statutory Limits) and Employer's Liability Insurance (with limits of at least $1,000,000) for CONTRACTOR's employees in accordance with the laws of the State of California, Section 3700 of the Labor Code. In addition, CONTRACTOR shall require each subcontractor to similarly maintain Workers' Compensation Insurance and Employer's Liability Insurance in accordance with the laws of the State of California, Section 3700 for all of the subcontractor's employees.

CONTRACTOR shall submit to CITY, along with the certificate of insurance, a Waiver of Subrogation endorsement in favor of CITY, its officers, agents, employees and volunteers.

Pollution liability insurance. Environmental Impairment Liability Insurance shall be written on a CONTRACTOR's Pollution Liability form or other form acceptable to CITY providing coverage for liability arising out of sudden, accidental and gradual pollution and remediation. The policy limit shall be no less than $1,000,000 dollars per claim and in the aggregate. All activities contemplated in this Agreement shall be

specifically scheduled on the policy as “covered operations.” The policy shall provide coverage for the hauling of waste from the project site to the final disposal location, including non-owned disposal sites.

Builder’s risk insurance. Upon commencement of construction and with approval of CITY, CONTRACTOR shall obtain and maintain builder’s risk insurance for the entire duration of the Project until only the CITY has an insurable interest. The Builder’s Risk coverage shall include the coverages as specified below.

The named insureds shall be CONTRACTOR and CITY, including its officers, officials, employees, and agents. All Subcontractors (excluding those solely responsible for design Work) of any tier and suppliers shall be included as additional insureds as their interests may appear. CONTRACTOR shall not be required to maintain property insurance for any portion of the Project following transfer of control thereof to CITY. The policy shall contain a provision that all proceeds from the builder’s risk policy shall be made payable to the CITY. The CITY will act as a fiduciary for all other interests in the Project.

Policy shall be provided for replacement value on an "all risk" basis for the completed value of the project. There shall be no coinsurance penalty or provisional limit provision in any such policy. Policy must include: (1) coverage for any ensuing loss from faulty workmanship, Nonconforming Work, omission or deficiency in design or specifications; (2) coverage against machinery accidents and operational testing; (3) coverage for removal of debris, and insuring the buildings, structures, machinery, equipment, materials, facilities, fixtures and all other properties constituting a part of the Project; (4) Ordinance or law coverage for contingent rebuilding, demolition, and increased costs of construction; (5) transit coverage (unless insured by the supplier or receiving contractor), with sub-limits sufficient to insure the full replacement value of any key equipment item; (6) Ocean marine cargo coverage insuring any Project materials or supplies, if applicable; (7) coverage with sub-limits sufficient to insure the full replacement value of any property or equipment stored either on or off the Site or any staging area. Such insurance shall be on a form acceptable to CITY to ensure adequacy of terms and sublimits and shall be submitted to the CITY prior to commencement of construction.

Other provisions or requirements

Proof of insurance. CONTRACTOR shall provide certificates of insurance to CITY as evidence of the insurance coverage required herein, along with a waiver of subrogation endorsement for workers’ compensation. Insurance certificates and endorsements must be approved by CITY’s risk manager prior to commencement of performance. Current certification of insurance shall be kept on file with CITY at all times during the term of this contract. CITY reserves the right to require complete, certified copies of all required insurance policies, at any time.

Duration of coverage. CONTRACTOR shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the Project hereunder

by CONTRACTOR, his agents, representatives, employees or subcontractors. CONTRACTOR must maintain general liability and umbrella or excess liability insurance for as long as there is a statutory exposure to completed operations claims. CITY and its officers, officials, employees, and agents shall continue as additional insureds under such policies.

Primary/noncontributing. Coverage provided by CONTRACTOR shall be primary and any insurance or self-insurance procured or maintained by CITY shall not be required to contribute with it. The limits of insurance required herein may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of CITY before the CITY's own insurance or self-insurance shall be called upon to protect it as a named insured.

Products/completed operations coverage. Products/completed operations coverage shall extend a minimum of three (3) years after project completion. Coverage shall be included on behalf of the insured for covered claims arising out of the actions of independent contractors. If the insured is using subcontractors, the Policy must include work performed "by or on behalf" of the insured. Policy shall contain no language that would invalidate or remove the insurer's duty to defend or indemnify for claims or suits expressly excluded from coverage. Policy shall specifically provide for a duty to defend on the part of the insurer. The CITY, its officials, officers, agents, and employees, shall be included as additional insureds under the Products and Completed Operations coverage.

CITY's rights of enforcement. In the event any policy of insurance required under this Agreement does not comply with these requirements or is canceled and not replaced, CITY has the right but not the duty to obtain the insurance it deems necessary and any premium paid by CITY will be promptly reimbursed by CONTRACTOR or CITY will withhold amounts sufficient to pay premium from CONTRACTOR payments. In the alternative, CITY may cancel this Agreement.

Acceptable insurers. All insurance policies shall be issued by an insurance company currently authorized by the Insurance Commissioner to transact business of insurance or is on the List of Approved Surplus Line Insurers in the State of California, with an assigned policyholders' Rating of A- (or higher) and Financial Size Category Class VII (or larger) in accordance with the latest edition of Best's Key Rating Guide, unless otherwise approved by the CITY's risk manager.

Waiver of subrogation. All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against CITY, its elected or appointed officers, agents, officials, employees and volunteers or shall specifically allow CONTRACTOR or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. CONTRACTOR hereby waives its own right of recovery against CITY, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

Enforcement of contract provisions (non estoppel). CONTRACTOR acknowledges and agrees that any actual or alleged failure on the part of the CITY to inform CONTRACTOR of non-compliance with any requirement imposes no additional obligations on the CITY nor does it waive any rights hereunder.

Requirements not limiting. Requirements of specific coverage features or limits contained in this Section are not intended as a limitation on coverage, limits or other requirements, or a waiver of any coverage normally provided by any insurance. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue and is not intended by any party or insured to be all inclusive, or to the exclusion of other coverage, or a waiver of any type. If the CONTRACTOR maintains higher limits than the minimums shown above, the CITY requires and shall be entitled to coverage for the higher limits maintained by the CONTRACTOR. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the CITY.

Notice of cancellation. CONTRACTOR agrees to oblige its insurance agent or broker and insurers to provide to CITY with a thirty (30) day notice of cancellation (except for nonpayment for which a ten (10) day notice is required) or nonrenewal of coverage for each required coverage.

Additional insured status. General liability policies shall provide or be endorsed to provide that CITY and its officers, officials, employees, agents, and volunteers shall be additional insureds under such policies. This provision shall also apply to any excess/umbrella liability policies.

Prohibition of undisclosed coverage limitations. None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to CITY and approved of in writing.

Separation of insureds. A severability of interests provision must apply for all additional insureds ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the insurer's limits of liability. The policy(ies) shall not contain any cross-liability exclusions.

Pass through clause. CONTRACTOR agrees to ensure that its subconsultants, subcontractors, and any other party involved with the project who is brought onto or involved in the project by CONTRACTOR, provide the same minimum insurance coverage and endorsements required of CONTRACTOR. CONTRACTOR agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. CONTRACTOR agrees that upon request, all agreements with consultants, subcontractors, and others engaged in the project will be submitted to CITY for review.

CITY's right to revise requirements. The CITY reserves the right at any time during

the term of the contract to change the amounts and types of insurance required by giving the CONTRACTOR a ninety (90) day advance written notice of such change. If such change results in substantial additional cost to the CONTRACTOR, the CITY and CONTRACTOR may renegotiate CONTRACTOR's compensation.

Self-insured retentions. Any self-insured retentions must be declared to and approved by CITY. CITY reserves the right to require that self-insured retentions be eliminated, lowered, or replaced by a deductible. Self-insurance will not be considered to comply with these specifications unless approved by CITY.

Timely notice of claims. CONTRACTOR shall give CITY prompt and timely notice of claims made or suits instituted that arise out of or result from CONTRACTOR's performance under this Agreement, and that involve or may involve coverage under any of the required liability policies.

Additional insurance. CONTRACTOR shall also procure and maintain, at its own cost and expense, any additional kinds of insurance, which in its own judgment may be necessary for its proper protection and prosecution of the Project.

24. SOCIAL SECURITY ACT

The successful Bidder agrees to comply with and to require all of his subcontractor's to comply with all the provisions of the Act of Congress approved August 14, 1935, known and cited as the "Social Security Act" and also the provisions of the act of the State Legislature approved, and known as the State Unemployment Compensation Law and all other laws and regulations pertaining to labor and workmen and all amendments to such data, and the Contractor further agrees to indemnify and hold harmless the City of Commerce of and from any and all claims and demands made against it by virtue of the failure of the Contractor's or any subcontractor's to comply with the provisions of any or all of said acts and amendments.

25. SALES AND USE TAX

The successful Bidder agrees to comply with and to require all of his subcontractors to comply with all the provisions of applicable state sales excise tax law and compensation use tax law and all amendments to same. The successful Bidder further agrees to indemnify and hold harmless the City of Commerce of and from any and all claims and demands made against virtue of the failure of the Contractor or any Subcontractor to comply with the provisions of any or all said laws and amendments. No mention shall be made in the proposal of Sales Tax, Use Tax, or any other tax, as all amounts bid will be deemed and held to include any such taxes which may be applicable.

26. WAIVER OF LIENS

The successful Bidder (General Contractor) is responsible for the payment of all bills for labor and materials furnished by the subcontractor, the suppliers, and the General Contractor on this project. The General Contractor shall deliver to the City unconditional Lien Waivers and/or Releases from himself and from each of his subcontractors and suppliers, and at such time he shall certify that he is submitting such lien waivers for all subcontractors and suppliers involved. If any liens are filed

against the City property, the City may, at its option, demand General Contractor immediately provide a bond in accordance with state statutes.

27. LEGAL RESPONSIBILITIES

All proposals must be submitted, filed and executed in accordance with State and Federal laws relating to bids for contracts of this nature whether the same or expressly referred to herein or not. Any bidder submitting a proposal shall by such action thereby agree to each and all of the terms, conditions, provisions, and requirements set forth, contemplated, and referred to in the Plans, Specifications, and other contract documents, and to full compliance therewith.

28. DISADVANTAGED BUSINESS ENTERPRISE (DBE)

This project is subject to Title 49 CFR 26.13(b): The contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of contract or such other remedy as the recipient deems appropriate. Take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the contract (49 CFR 26).

29. AWARD OF CONTRACT TO LOWEST RESPONSIBLE BIDDER MANDATORY

The right is reserved to reject any and all bids and waive any irregularity in any bid received. Award of the Contract, if awarded, will be to the lowest responsible and responsive bidder whose Bid Form complies with all requirements prescribed. Such award, if made, will be made within 60 days after opening of bids.

If lowest responsible Bidder refuses or fails to execute the Contract, Director of Public Works and Development Services may award the Contract to the second lowest responsible Bidder. Such award, if made, will be made within 75 days after opening of bids.

If second lowest responsible Bidder refuses or fails to execute the Contract, Director of Public Works and Development Services may award the Contract to the third lowest responsible Bidder. Such award if made, will be made within 90 days after opening of bids.

The above time periods within which award of Contract may be made are subject to extension of such further period as may be agreed upon in writing between Department of Public Works and Development Services and the Bidder concerned.

When Project is segregated into more than one prime Contract, and a Bidder upon one of the prime Contracts fail or refuses to execute the Contract, then the time for award of such Contract will be extended as provided by this Article, and the time for award of each of the other segregated prime Contracts will be extended by an equivalent length of time, if required.

30. CALIFORNIA PREVAILING WAGE

The City hereby notifies all qualified bidders that it will affirmatively insure that qualified minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the basis of race, color, national origin, ancestry, sex, religion, or handicap in consideration for an award. Attention is directed to the provisions of Section 1777.5 (Chapter 1411, Statutes of 1968) and 1777.5 of the Labor Code concerning the employment of apprentices by the Contractor's or any such subcontractors under hire. The bidders and the selected Contractor shall not allow discrimination in employment practices on the basis of race, color, national origin, ancestry, sex, religion, or handicap.

In entering into a public works contract, or a subcontract, to supply goods, services, or materials pursuant to a public works contract, the Contractor, or subcontractors, offers and agrees to assign to the awarding body all rights, title and interest in, and to, all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public work's contract or subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

To comply with SB 854, beginning January 1, 2015 the following applies: (1) No contractor or subcontractor may be listed on a bid proposal for public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]. (2) No contractor or subcontractor may be awarded a contract for public works on a public works project awarded on or after April 1, 2015, unless registered with the DIR. (3) The project is subject to compliance monitoring and enforcement by the DIR. (4) Require the prime contractor to post job site notices prescribed by regulation (regulation not created yet) or the City must post the notices itself. The contractor shall fill in the Department of Industrial Relations (DIR) Contractor Registration Number Form provided in "Section B – Bidder's Proposal" and submit it with the Sealed Bid.

31. EMPLOYMENT OF APPRENTICES

Attention is directed to the provisions in Section 1777.5 of the California Labor Code concerning employment of apprentices by the Contractor's or any subcontractor's under him. The Contractor and any subcontractor under him shall comply with the requirements of said section in the employment of apprentices; however, the Contractor shall have full responsibility for compliance with said Labor Code section for all apprentice occupations, regardless of any other contractual or employment relationships alleged to exist.

32. SUBCONTRACTS

Bidders' attention is directed to other provisions of the Subletting and Subcontracting Fair Practices Act, beginning with Public Contract Code Section 4100, related to penalties for failure to comply with the Act by using unauthorized subcontractors or

by making unauthorized substitutions. The Contractor is required to perform, with its own organization, Contract work amounting to at least 51% of the Contract Price. Failure to meet these requirements will result in disqualifying of the bid or termination of the contract. This provision supersedes any other provisions which specified a different subcontract requirement.

Proposed subcontractor's names, a general description of the work to be performed by each subcontractor's and the dollar amount for each subcontractor shall be submitted with the bid.

END OF SECTION

BID PROPOSAL FORM

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

SUBMITTED BY: _____
(Bidder's Name)

In accordance with the City of Commerce's Notice Inviting Sealed Bid Proposals, the undersigned BIDDER, hereby proposes to furnish all materials, equipment, tools, labor, and incidentals required for the above stated project as set forth in the Plans, Specifications, and contract documents therefore, and to perform all work in the manner and time prescribed therein.

BIDDER declares that this proposal is based upon careful examination of the work site, Plans, Specifications, Instructions to Bidders, and all other contract documents. If this proposal is accepted for award, BIDDER understands that failure to enter into a contract in the manner and time prescribed will result in forfeiture to the City of Commerce of the guarantee accompanying this proposal.

BIDDER understands that a bid is required for the entire work. The contract will be awarded on the prices shown on the bid schedule. It is agreed that the unit and/or lump sum prices bid include all appurtenant expenses, taxes, royalties and fees. In the case of discrepancies in the amounts bid, unit prices shall govern over extended amounts, and words shall govern over figures.

If awarded the Contract, the undersigned further agrees that in the event of the BIDDER'S default in executing the required contract and filing the necessary bonds and insurance certificates within ten working days after the date of the City of Commerce's notice of award of contract to the BIDDER, the proceeds of the security accompanying this bid shall become the property of the City of Commerce and this bid and the acceptance hereof may, at the City of Commerce's option, be considered null and void.

DELIVERED TO: City of Commerce
Attn: Purchasing Division of Finance
2535 Commerce Way
City of Commerce, California 90040

Bid shall be submitted in a sealed envelope and plainly marked on the outside "**Bristow Library & Snack Bar Roofing And HVAC Replacement Project – Do Not Open with Regular Mail".**

BID SCHEDULE

To the City of Commerce City Council, herein called the "Council": Pursuant to and in compliance with your Notice Inviting Bids and the other documents' relating thereto, the undersigned bidder, having familiarized himself with the work as per the paragraph, "Discrepancies and Misunderstandings," contained in the "INSTRUCTIONS TO BIDDERS" section, and with the terms of the contract, the local conditions affecting the performance of the contract, and the cost of the work at the place where the work is done, and with the drawings and specifications and other contract documents, hereby proposes and agrees to perform, within the time stipulated, the contract, including all of its component parts, and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all applicable taxes, utility and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required for this contract in the City of Commerce, all in strict conformity with the Contract Documents on file at the office of the City Clerk of said City, per the following bid schedules:

BASE BID SCHEDULE A BRISTOW LIBRARY					
Bid Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	GENERAL REQUIREMENTS: GENERAL CONDITIONS/ BONDS & INSURANCE	1	LS	$	$
2	SITE WORK/BUILDING	1	LS	$	$
3	METALS	1	LS	$	$
4	THERMAL AND MOISTURE PROTECTION	1	LS	$	$
5	FINISHES	1	LS	$	$
6	MECHANICAL SYSTEMS	1	LS	$	$
7	PLUMBING	1	LS	$	$
8	ELECTRICAL	1	LS	$	$
TOTAL BASE BID SCHEDULE A AMOUNT IN NUMBERS					**$**

BASE BID SCHEDULE B BRISTOW SNACK BAR					
Bid Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	GENERAL REQUIREMENTS: GENERAL CONDITIONS/ BONDS & INSURANCE	1	LS	$	$
2	SITE WORK/BUILDING	1	LS	$	$
3	WOODS AND PLASTICS	1	LS	$	$
4	THERMAL AND MOISTURE PROTECTION	1	LS	$	$
5	FINISHES	1	LS	$	$
6	MECHANICAL SYSTEMS	1	LS	$	$
7	ELECTRICAL	1	LS	$	$
TOTAL BASE BID SCHEDULE B AMOUNT IN NUMBERS					**$**

TOTAL BASE BID SCHEDULE A AMOUNT IN NUMBERS: _____

TOTAL BASE BID SCHEDULE B AMOUNT IN NUMBERS: _____

TOTAL BASE BID SCHEDULE A + B AMOUNT IN NUMBERS: _____

TOTAL BASE BID SCHEDULE A + B AMOUNT IN WORDS:_____

_____

<table>
<tr><td colspan="2">The award of Contract shall be based on the TOTAL BASE BID SCHEDULE A + TOTAL BASE BID SCHEDULE B AMOUNT.</td></tr>
<tr><td colspan="2">In the case of discrepancies in the amount of bid, unit prices shall govern over extended amounts, and words shall govern over figures.</td></tr>
<tr><td rowspan="5">Full compensation for the items listed to the right as Items A, B, C, D and E are considered as inclusive in each Bid Item listed above in the Base Bid Schedule as applicable, and no additional and/or separate compensation will be allowed.</td><td>A. Mobilization / Demobilization</td></tr>
<tr><td>B. Traffic Control</td></tr>
<tr><td>C. NPDES, WWECP, and Best Management Practices (BMPs), Public Convenience and Safety</td></tr>
<tr><td>D. Construction Staking by Land Surveyor</td></tr>
<tr><td>E. Clearing and Grubbing</td></tr>
<tr><td colspan="2">The bid prices shall include any and all costs, including labor, materials, appurtenant expenses, taxes, royalties and any and all other incidental costs to complete the project, in compliance with the Bid and Contract Documents and all applicable codes and standards.</td></tr>
<tr><td colspan="2">The City reserves the right to add, delete, increase or decrease the amount of any quantity shown and to delete any item from the contract and pay the contractor at the bid unit prices so long as the total amount of change does not exceed 25% (plus or minus) of the total bid amount for the entire project. If the change exceeds 25%, a change order may be negotiated to adjust unit bid prices.</td></tr>
<tr><td colspan="2">All other work items not specifically listed in the bid schedule, but necessary to complete the work per bid and contract documents and all applicable codes and standards are assumed to be included in the bid prices.</td></tr>
<tr><td colspan="2">A bid is required for the entire work, that the quantities set forth in the Bid Schedule are to calculate total bid amount, and that final compensation under the contract will be based upon the actual quantities of work satisfactorily completed.</td></tr>
<tr><td colspan="2">Bidder shall provide a bid amount for each bid item listed below. Failure to provide a bid for each bid item shall render the bid non-responsive</td></tr>
</table>

EXAMINATION OF SPECIFICATIONS AND SITE OF WORK

The Bidder declares that he/she has carefully read and examined the project plans, specifications, bid documents, and he/she has made a personal examination of the site (indicate name of the person, representing the bidder, who inspected the site and date below) and that he/she understands the exact scope of the Project.

Name of Person who inspected the site: _____

Date of Inspection: _____

ADDENDA ACKNOWLEDGMENT

The Bidder acknowledges receipt of the following Addenda and has included their provisions in this Proposal:

Addendum No._____ Dated_____

Addendum No._____ Dated_____

Addendum No._____ Dated_____

Addendum No._____ Dated_____

REQUIRED DOCUMENTS

- □ BID PROPOSAL FORM
- □ BID BOND FORM
- □ PROPOSED SUBCONTRACTORS FORM
- □ BIDDER QUALIFICATION FORM
- □ BIDDER INFORMATION FORM
- □ NON COLLUSION AFFIDAVIT
- □ EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION
- □ DEBARMENT AND SUSPENSION CERTIFICATION
- □ NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS
- □ DISCLOSURE OF LOBBYING ACTIVITIES
- □ CONSTRUCTION CONTRACT DBE COMMITMENT
- □ DBE INFORMATION – GOOD FAITH EFFORTS
- □ ONE ORIGINAL and TWO COPIES

SIGNATURE

IN WITNESS WHEREOF, BIDDER executes and submits this proposal with the names, titles, hands, and seals of all aforementioned principals.

Legal Name of Bidder: _____

Federal I.D. No.: _____ Contractor's License No.:_____

License Expiration Date:_____ License Classification: _____

Business Address _____
(Street and/or P.O. Box)

_____
(City) (State) (Zip)

E-Mail Address: _____

Business Telephone No.:_____Facsimile No.:_____

SIGN HERE ------>_____
Signature of Bidder - Print Name and Title of Bidder

Executed this_____day of_____, 20__ at_____`_____, California.

Subscribed and sworn to this _____ day of _____, 20__.

NOTARY PUBLIC _____

BID BOND FORM

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

KNOW ALL MEN BY THESE PRESENTS that_____,
as BIDDER, AND _____,
as SURETY, are held and firmly bound unto the City of Commerce, in the penal sum of
_____dollars
($_____), which is ten percent (10%) of the total amount bid by BIDDER to the City of Commerce for the above stated project, for the payment of which sum, BIDDER and SURETY agree to be bound, jointly and severally, firm by these presents. THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, whereas BIDDER is about to submit a bid to the City of Commerce for the above stated project, if said bid is rejected, or if said bid is accepted and a contract is awarded and entered into by BIDDER in the manner and time specified, then this obligation shall be null and void, otherwise it shall remain in full force and effect in favor of the City of Commerce. IN WITNESS WHEREOF the parties hereto have set their names, titles, hands, and seals this _____ day of _____, 20_____.

BIDDER* _____
_____

SURETY*_____
_____
_____

*Provide BIDDER/SURETY name, address and telephone number and the name, title, address and telephone number for authorized representative.

Subscribed and sworn to this _____ day of _____, 20_____.

NOTARY PUBLIC _____

Page intentionally left blank

PROPOSED SUBCONTRACTORS FORM

In compliance with the provisions of Section 4100 through 4114, inclusive, of the Public Contract Code, and any amendments thereto, each bidder shall set forth in its bid, the name and location of the-place of business of each subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and Installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one half of 1 percent of the Contractor's total bid; and the portion of the work which will be done by each subcontractor under this act. The Contractor shall list only one subcontractor for each portion as is defined by the Contractor.

No	Name, address, and phone number pf subcontractors, suppliers, and vendors	Name portion of work, materials, and/or equipment	Contractor's License #	DIR #	Dollar Amount	% of Total Bid Amount
1					$	%
2					$	%
3					$	%
4					$	%
5					$	%
6					$	%
7					$	%

No	Name, address, and phone number pf subcontractors, suppliers, and vendors	Name portion of work, materials, and/or equipment	Contractor's License #	DIR #	Dollar Amount	% of Total Bid Amount
8		$			%	
9		$			%	
10		$			%	
11		$			%	
12		$			%	
13		$			%	
14		$			%	
15		$			%	
16		$			%	
	Total	$			%	

Note: The prime contractor is required to perform, with its own organization, contract work amounting to at least 51% of the Contract Price.

END OF SECTION

BIDDER QUALIFICATION FORM

The bidder is required to state what work of a similar character to that included in the proposed contract he has successfully performed and give references which will enable the City Council to judge of his responsibility, experience, skill, business and financial standing.

The following are the names, addresses, and telephone numbers for three public agencies for which BIDDER has performed similar work with public agency within the past three years.

Additional pages supporting this portion of the proposal may be attached.

Reference 1			
Project Name:			
Type of Work:			
Year Completed:			
Contract Amount:			
Name/ Address of Owner/Agency:			
Reference Contact:	Name:	Title:	Tel:

Reference 2			
Project Name:			
Type of Work:			
Year Completed:			
Contract Amount:			
Name/ Address of Owner/Agency:			
Reference Contact:	Name:	Title:	Tel:

Reference 3			
Project Name:			
Type of Work:			
Year Completed:			
Contract Amount:			
Name/ Address of Owner/Agency:			
Reference Contact:	Name:	Title:	Tel:

Reference 4			
Project Name:			
Type of Work:			
Year Completed:			
Contract Amount:			
Name/ Address of Owner/Agency:			
Reference Contact:	Name:	Title:	Tel:

Reference 5			
Project Name:			
Type of Work:			
Year Completed:			
Contract Amount:			
Name/ Address of Owner/Agency:			
Reference Contact:	Name:	Title:	Tel:

END OF SECTION

BIDDER INFORMATION FORM

BIDDER certifies that the following information is true and correct:

Bidder's Name_____

Form of Legal Entity (i.e., individual, partnership, corporation, etc.)

_____

If a Corporation, State of Incorporation (i.e., Calif.) _____

Business Address _____

_____

Telephone _____

State Contractor's License No. and Class _____

Original Date Issued_____Expiration Date _____

The following are the names, titles, addresses, and phone numbers of all individuals, firm members, partners, joint ventures, and/or corporate officers having a principal interest in this proposal:

DIR #

_____

_____

_____

_____

_____

The date(s) of any voluntary or involuntary bankruptcy judgments against any principal having an interest in this proposal are as follows:

_____

_____

_____

All current and prior DBA'S, alias, and/or fictitious business names for any principal having an interest in this proposal are as follows:

_____

_____

_____

Previous contract performance history:

Was any contract terminated previously:_____

If the answer to the above is "yes", provide the following information:

Contract/project name and number: _____

Date of termination:_____

Reason for termination:_____

Owner's name:_____

Owner contact person and tel. no.:_____

IN WITNESS WHEREOF, BIDDER executes and submits this proposal with the names, titles, hands, and seals of all aforementioned principals this _____ day of _____, 20___.

BIDDER _____

_____

_____

_____

Subscribed and sworn to this _____ day of _____, 20___.

NOTARY PUBLIC_____

END OF SECTION

NON-COLLUSION AFFIDAVIT FORM

_____, being first duly sworn, deposes and says
(Name of Affiant)

that he\she is _____ of _____
(Title) (Name of Bidder)

the party making the foregoing bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Executed this _____ day of _____, 20_____ at _____.
(City, County and State)

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

By:_____

Title:_____

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PART 1 – GENERAL PROVISIONS

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

The General Provisions which shall apply to this Contract shall be those set forth in the Standard Specifications for Public Works Construction, Latest Edition, except as amended herein, published by Building News, Inc., 3055 Overland Avenue, Los Angeles, California 90034, hereinafter referred to as "Greenbook".

The “Greenbook” is referred to and by this reference made a part hereof as though set forth at length. The Contractor shall comply with the “Greenbook” in addition to the general conditions set forth in these General and Special Provisions of the Contract Documents.

2-1 AWARD AND EXECUTION OF THE CONTRACT.

ADD the following SUBSECTION: “**2-1.1 REGISTRATION OF CONTRACTORS.** Only a contractor licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code, AND registered with the Department of Industrial Relations (DIR) to bid on public works contracts shall be permitted to submit a bid for and subsequent enter into a contract with the City for any public improvement.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, or engage in the performance of any public works contract with the City unless currently registered and qualified to perform work pursuant to Section 1725.5 of the Labor Code.”

2-3 SUBCONTRACTS.

ADD the following SUBSECTION: “**2-3.4 REGISTRATION OF SUBCONTRACTORS.** Only a subcontractor licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code, AND registered with the Department of Industrial Relations (DIR) to bid on public works contracts shall be permitted to submit a bid for and subsequent enter into a contract with the City for any public improvement.”

6-9 LIQUIDATED DAMAGES.

DELETE the SECTION in its ENTIRETY and **REPLACE** with the following: “Failure of the Contractor to complete the Work within the time allowed will result in damages being sustained by the Agency. Liquidated damages shall accrue starting on the 1st day after expiration of the working days through the day of Contract acceptance.

The City of Commerce shall specify the amount for liquidated damages, as allowed per Public Contract Code §7203. For each consecutive calendar day in excess of the time specified for the completion of Work, as adjusted in accordance with SECTION 6-6 DELAYS

AND EXTENSIONS OF TIME, the Contractor shall pay to the Agency, or have withheld from monies due it, $1,000 per calendar day.

7-2 LABOR.

ADD the following SUBSECTION: "**7-2.5 COMPLIANCE MONITORING AND ENFORCEMENT.** Any contract with the City of any public improvement shall be subject to compliance monitoring and enforcement by the DIR in accordance with Section 1771.4 of the Labor Code.

9-3.2 PARTIAL AND FINAL PAYMENT

The text of Subsection 9-3.2 of the Standard Specifications is hereby deleted and replaced with the following:

The closure date for the purpose of making partial progress payments will be the last working day of each month. The Contractor will prepare the partial payment invoice with measurement of the work performed through the closure date and submit it to the City for approval.

When work is complete, the Contractor will determine the final quantities of the work performed and prepare the final progress payment, and submit it to the Engineer for approval.

It will take a minimum of thirty-five (35) calendar days from the date of approving the Contractor's invoice to make the payment to the Contractor. However, payments will be withheld pending receipt of any outstanding reports required by the contract documents, or legal release of filed Stop Payment Notices against the Contractor. In addition, the final progress payment will not be released until the Contractor returns the control set of Plans and Specifications showing the as-built conditions.

Five (5%) retention will be deducted from all progress payments. The Contractor will make a payment request for the retained amount, for approval by the City, upon field acceptance of the work by the City Engineer. The City Engineer upon field acceptance and receipt of the final as-built plans and any other reports or documents required to be provided by the Contractor will process a recommendation to the City Council for acceptance of the work. Not less than thirty-five (35) calendar days from the City Council acceptance of the work, the Contractor's final payment will be made provided Stop Payment Notices or other claims have not been filed against the Contractor and/or the City by material suppliers, sub-contractors, other governmental agencies, and private property owners. Until these Stop Payment Notices are released and claims are resolved the stop payment/claim amount will be withheld from the final payment.

The Contractor, however, may receive interest on the retention for the length of construction, or receive the retention itself as long as the retention is substituted with escrow holder surety or equal value.

At the request and expense of the Contractor, surety equivalent to the retention may be deposited with the State Treasurer, or a State or Federally chartered bank, as the escrow agent, who will pay such surety to the Contractor upon satisfactory completion of the contract.

Pursuant to PCC § 22300, the Contractor may substitute securities for retention monies held by the City or request that the City place such monies into an escrow account. The Contractor is notified, pursuant to PCC § 22300, that any such election will be at the Contractor's own expense and will include costs incurred by the City to accommodate the Contractor's request.

Progress payment paid by the City as contemplated herein, will be contingent upon the Contractor submitting, in addition to any additional documents, an updated Contract Schedule, Field Quantity Sheet and Certified Payroll Records in the form prescribed by these Contract Documents. Failure of the Contractor to submit acceptable additional documents described above will result in the City withholding partial payment, without liability to the City, until such an acceptable updated Contract Schedule is submitted. Nothing herein will allow the Contractor to suspend or slow progress of the Work.

A City Council resolution established a Project Payment Account, encumbered money in the current budget, and assigned that money to the Project Payment Account which is the sole source of funds available for payment of the Contract Sum. Contractor understands and agrees that Contractor will be paid only from this special fund and if for any reason this fund is not sufficient to pay Contractor, Contractor will not be entitled to payment. The availability of money in this fund, and City's ability to draw from this fund, are conditions precedent to City's obligation to make payments to Contractor.

PART 2 – SPECIAL PROVISIONS

BRISTOW LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT PROJECT

PUBLIC WORKS PROJECT NO: 2020-02F

CITY OF COMMERCE
CALIFORNIA

SPECIFICATIONS

FOR

BRISTOW LIBRARY
ROOF AND HVAC REPLACEMENT
IN THE CITY OF COMMERCE

October 2020

Prepared by:

BOA Architecture
1511 Cota Avenue,
Long Beach, California 90813
(562) 912-7900

Edward
Lok Ng
C-16840
REN.11/30/21

SECTION 00 01 01
PROJECT TITLE PAGE

Project Title:	**Bristow Park Library HVAC & Roof Replacement**
Client Agency:	City of Commerce Public Works Development Services Department 2535 Commerce Way Commerce, CA 90040 Phone: 323-722-4805
Project Location:	1466 S McDonnell Ave Commerce, CA 90040
Project Manager:	Karen Vigil Phone: 909-595-8599 Email: karen.vigil@transtech.org
Mechanical Engineer:	Engineering Design Analysis INC. Email: edaincorporated@aol.com
Architect Consultant:	Edward Lok Ng, Architect BOA Architecture 1511 Cota Avenue Long Beach, CA 90813 Phone: 562-912-7900 Email: lok.ng@boaarchitecture.com

DOCUMENT 00 01 02
TABLE OF CONTENTS

INTRODUCTORY INFORMATION

SCHEDULE, CLAUSES AND ATTACHMENTS, AND SOLICITATION REQUIREMENTS

Issued separately by the city of Commerce

CONSTRUCTION SPECIFICATIONS

DOCUMENT 00 01 02
TABLE OF CONTENTS

END OF DOCUMENT

SECTION 01 10 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE

A. The Contractor shall provide all materials, labor, tools, plant, supplies, equipment, transportation, superintendence, temporary construction of every nature, and all other services and facilities necessary to complete the construction of the restroom facilities, including all incidental work described in the contract documents.

B. The scope of work is contained in the contract documents.

C. The scope of work includes all work described in this spec and also what is shown in the construction documents, but is not limited to the following:
   1. Remove existing roofing material, flashings, light fixtures, surveillance cameras, and some roof accessories as detailed on the drawings.
   2. Remove existing rooftop package HVAC equipment, exhaust fans, heating ventilation units, equipment curbs, evaporative cooler, and associated connections.
   3. Provide and install new Polyvinyl-Chloride roofing system with walking pads over new rigid insulation, new sheet metal flashing, new rain gutters, new conduits in rigid insulation, and miscellaneous roofing accessories.
   4. Re-work some electrical conduits and communication lines on roof as detailed on the drawings.
   5. Provide new rooftop package HVAC equipment, exhaust fans, heating ventilation units, equipment curbs, curb adapters, evaporative cooler, new water heater, and associated connections
   6. Provide new safety post to existing roof access ladder and re-install existing roof hatch door.
   7. Remove and replace partial Fascia Board with new type.

D. All work shall be in accordance with applicable codes and local regulations that may apply. In case of conflict in or between the Contract Documents and a governing code or ordinance, the more stringent standard shall apply.

1.2 MISCELLANEOUS CONTRACT EXPENSES

A. The Contractor must include in its bid the cost fees or charges payable to State, local, or special community development agencies unless otherwise stated in the General Requirements.

1.3 Special Project Requirements

A. The Contractor shall provide temporary sanitary facilities at each location during the construction period comprising:
   1. One (1) standard toilet

2. One (1) Handwashing lavatory

The Contractor shall supply all labor, materials or whatever may be required at no additional cost to the City and shall maintain same in accordance with all Federal, State and local regulations on health and safety. Service to be provided to the temporary restrooms on Saturday between 3:00PM and 5:00PM and on Mondays, Wednesdays, and Fridays.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 29 76
PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for a certified Application for Payment.
   1. Coordinate the certified Schedule of Values and certified Application for Payment with, but not limited to, the Construction Schedule, submittal log, and list of Subcontractors.

1.2 RELATED REQUIREMENTS:

A. Section 01 33 00 – Submittal Procedures.

B. Section 01 77 04 – Closeout Procedures and Training.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 APPLICATION FOR PAYMENT

A. Each certified Application for Payment shall be consistent with previous applications and payments as reviewed by Engineer, paid for by City, and:
   1. The initial Application for Payment and Final Application for Payment at time of Substantial Completion involve additional requirements.

B. Payment Application Times: The period of Work covered by each Application for Payment is payment date for each progress payment as specified in the General Conditions. The period covered by each Application for Payment is previous month.

C. Application Preparation: Complete every entry on the form. Include execution by a person authorized to sign legal documents on behalf of General Contractor. Engineer will return incomplete applications without action.

E. Transmittal: Submit a minimum of two (2) signed and original copies of each certified Application for Payment to Engineer. All copies shall be complete, including releases and similar attachments.

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

F. Initial Application for Payment within 5 days of issuance of Notice to Proceed: Administrative actions and submittals, that must precede or coincide with submittal for first certified Application for Payment include, but are not limited to, the following:
   1. Schedule of Values.

2. List of principal suppliers and fabricators.
3. Hazardous Material Insurance Certificates, if applicable.
4. Construction Schedule.
5. Submittal Schedule.
6. Emergency Contact List.
7. Copies of authorizations and licenses from governing authorities for performance of Work.
8. Certified Payroll (Submitted directly to Labor Compliance in electronic format as specified by City including hard copy).

G. Applications for Payment: Administrative actions and submittals that must precede or coincide with submittal of Progress Applications for Payment include, but are not limited to, the following:
1. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by City including hard copy).
2. Updated and current Project Record Drawings (as-built).
3. Monthly Construction Schedule (updated, submitted and approved).
4. Approved Schedule of Values.
5. List of Subcontractors (Payments Summary).

H. Final Application for Payment at Substantial Completion: Following Engineer issuance of certificate of Substantial Completion, submit an Application for Payment:
1. Administrative actions, submittals and/or Work that shall precede or coincide with this application include:
   a. Occupancy permits and similar approvals by authorities having legal jurisdiction over Work.
   b. Removal of temporary facilities and services.
   c. Testing, adjusting and balance records.
   d. Removal of surplus materials, rubbish, and similar elements.
   e. Meter readings.
   f. Preliminary Warranties, guarantees and maintenance agreements.
   g. Change over information related to City occupancy, use, operation, and maintenance.
   h. Final cleaning.
   i. Ensure that Work is completed.
   j. List of defective Work, recognized as exceptions to certificate of Substantial Completion.
   k. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by the City including hard copy).
   l. Certification that all benefit contributions due and owing to appropriate union trusts has been paid by General Contractor and Subcontractors, as specified by the Project Stabilization Agreement (PSA) and Article 6.49 of the General Conditions.
   m. Waivers and releases for General Contractor.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 Schedule of Submittals

A. Within 5 days after receiving a Notice to Proceed, the Contractor must submit a Schedule of Submittals, in the format indicated below, in duplicate, listing all items that must be furnished for review and approval by the Engineer. The schedule must indicate the type of items (such as sample, shop drawings, catalog cut, and so forth) and include the scheduled dates of submittal. In preparing the schedule, adequate time (10 days or more exclusive of time in the mail) must be allowed for review and approval and possible resubmittal. Also, the schedule must be coordinated with the approved construction progress chart. The Contractor must revise and/or update the schedule monthly. Such revised schedules must be submitted to the Engineer for approval.

B. Within 5 days after receiving a Notice to Proceed, the Contractor must complete and submit to the Engineer a listing of all subcontractors, including subcontractor name, address, telephone number, fax number and email address. Include an updated list with each progress payment request.

C. Schedule of Submittals Format

Project _____

Contract No. _____

Project Description _____

Spec. Section	Spec. Description	Paragraph Number	*Submittal Type	Date		Action Taken	Assigned Number
				Submittal	Returned		

*Submittal Type:

C – Certificate
S – Sample
SD – Shop Drawing
CD – Catalog Data
PL – Spare Parts List
MM – Maintenance Manual

SECTION 01 33 00
SUBMITTAL PROCEDURES

1.2 Shop Drawings and Related Data

A. Prior to submittal, the Contractor must stamp and sign the submittal to indicate that it is in accordance with the contract documents without deviation and has been reviewed and approved by the Contractor. The Contractor must make any corrections required by the Engineer. If the Contractor considers any correction indicated on the drawings to constitute a change to the contract drawings or specifications, notice must be given to the Engineer. Four prints of all approved shop drawings must be given to the Engineer. The approval of the drawings by the Engineer must not be construed as a complete check but indicates only that the submittal appears to comply with the contract documents. Approval of the shop drawings does not relieve the Contractor of responsibility for any error that may exist because the Contractor is responsible for the dimensions and for satisfactory construction of all work. The submission by the Contractor must be accompanied by a transmittal letter in a format approved by the Engineer.

1.3 Material, Equipment, and Fixture Lists

A. When required by the technical provisions, lists of materials, equipment, and fixtures must be submitted by the Contractor in accordance with the requirements specified for shop drawings. The lists must be supported by sufficient descriptive material, such as catalogs, cuts, diagrams, and other data published by the manufacturer, as well as by evidence of compliance with safety and performance standards, to demonstrate conformance to the specification requirements. Catalog numbers alone are not acceptable. The data must include the name and address of the nearest service and maintenance organization that regularly stocks repair parts. No consideration will be given to partial lists submitted from time to time. Approval of materials and equipment is tentative, subject to submission of complete shop drawings indicating compliance with the contract documents.

1.4 Certificates of Compliance

A. Any certificates required for demonstrating proof of compliance of materials with specification requirements, including statements of application, and extended guarantees, must be signed and submitted in quadruplicate to the Engineer at least 5 days before delivery. The Contractor must review all certificates before submissions are made to the Engineer, to ensure compliance with the contract specification requirements and to ensure that the affidavit is properly signed. Each certificate must be signed by an official authorized to certify on behalf of the manufacturing company and must contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates must contain the name and address of the testing laboratory and the dates of tests to which the report applies. Certification

must not be construed as relieving the Contractor from furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.5 Review of Submittals

A. When submittals are reviewed by others, each submittal must be returned to the Engineer stamped and signed or marked in one of the following ways:
   1. A Action: The Contractor is advised that "A Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the contract documents.
   2. B Action: The Contractor is advised that "B Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the notations and the contract documents.
   3. C Action: The Contractor is advised that "C Action" means that no work may be fabricated, manufactured, or constructed and that the Contractor must make a new submittal. Any submission marked "C Action" is not permitted on the site.

B. The "A Action" or "B Action" submittals must be returned to the Engineer. The Contractor is responsible for obtaining prints of them and for distributing them to the field and to subcontractors.

C. In the case of shop drawings in the form of manufacturers' descriptive literature, catalog cuts, and brochures stamped "A Action" or "B Action," returned to the Engineer, the Contractor is responsible for distributing them to the field and to the subcontractors. If the shop drawings are stamped "C Action," the Engineer will provide copies to the Contractor, who must submit new shop drawings to the Engineer.

D. In the case of samples stamped "A Action" or "B Action," the Engineer will provide one of the samples to the Contractor. In the case of samples stamped "C Action," all of the submitted samples must be returned.

1.6 Spare Parts Data

A. Spare parts data must be submitted in quadruplicate.

1.7 Schedule of Values

A. The Contractor must submit a construction cost breakdown using the attached Schedule of Values. When applicable, a separate cost breakdown form must be submitted for each separate building. However, the total cost of site work for each facility must be included in the cost estimate breakdown for each restroom

building. The number of items provided on the Systems Construction Cost Estimate Breakdown form are the minimum required. Additional subdivision of these items may be used by the Contractor.

B. Submit the construction cost breakdown after contract award to the Engineer.

C. Do not delete items from the Schedule of Values form. However, expand the schedule "Description of Work" as necessary to allow evaluation of work or to make progress payments.

D. If the contract price changes, the Schedule of Values must be revised to reflect the change(s) and forwarded to the Engineer.

E. A current Schedule of Values must accompany all Contractor Requests for Payment.

F. See following exhibit for Schedule of Values.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

THE FOLLOWING SCHEDULE OF VALUES IS ONLY A LIMITED LIST AND MAY NOT CAPTURE ALL ITEMS IN THE CONSTRUCTION DOCUMENTS					
Item No.	**Item Description**	**Unit**	**QTY ***	**Unit Price**	**Amount**
1	MOBILIZATION	LS	1		
2	DEMOLITION	LS	1		
	BUILDING EXTERIOR				
3	RIGID ROOF INSULATION	SF	17,850		
4	ROOFING (PVC); PIPE SLEEVES, CURBS, EQUIPMENT FLASHING	SF	17,850		
5	METAL CAP FLASHING @ PARAPET WALLS	LS	1		
6	ROOF DRAINS	EA	6		
7	SCUPPERS	EA	7		
8	LADDER SAFETY POST	EA	1		
9	HVAC EQUIPMENT PLATFORMS & VENT PIPES	LS	1		
10	PATCH-UP PLASTER/DRYWALL	LS	1		
11	HVAC UNITS AT ROOF W/ EXTERIOR DUCTS, DUCT EXTENSIONS, AND CURB ADAPTORS	LS	1		
12	EXHAUST FAN UNIT AT ROOF	LS	1		
13	EXHASUT FAN UNIT AT CEILING	LS	1		
14	HEATING VENTILATION UNIT AT ROOF	LS	1		
15	MAKE UP AIR UNIT AT ROOF	LS	1		
16	AIR BALANCING	LS	1		
17	WATER HEATER	EA	1		
18	SERVICE, POWER, SWITCHING AND DISTRIBUTION, NEW HVAC SYSTEM	LS	1		
X	**AND EVERYTHING NOT INCLUDED IN THE ABOVE LIST**				
	SUBTOTAL				
	FEDERAL CONDITIONS / OVERHEAD / PROFIT				
	TOTAL				

SECTION 01 35 43
ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.1 Scope

A. The work covered by this section consists of furnishing all labor, material, and equipment and performing all work required for compliance with environmental regulations and preventing pollution during, and as a result of, construction operations under this contract, in addition to those measures set forth in other technical provisions of these specifications.

B. The Contractor and subcontractors must comply with all applicable environmental federal, state, local environmental, health and safety laws and regulations.

1.2 Notification

A. The Contractor must, after receiving a notice of noncompliance with the foregoing provisions, immediately take corrective action. The notice, when delivered to its Contractor or its authorized representative at the site of the work, is deemed sufficient for this purpose. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost because of any such stop orders may be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is subsequently determined that the Contractor was in compliance.

1.3 Environmental Regulatory Compliance

A. Within 5 days after receiving the notice to proceed or not less than 5 days prior to commencing on-site work, the Contractor must submit any environmental documents that are required by federal, state or local environmental regulations. Plans must be approved by the City prior to commencing on-site work and must describe and include, but is not limited to, the following

1. Waste Minimization and Management Plan must describe how natural resources potentially impacted by construction will be protected or managed; construction wastes will be stored and disposed of or recycled; and pollutants associated with building materials will be controlled. The waste minimization and management section of the plan must also list materials and construction debris to be recycled, and address the disposal of solid and hazardous wastes and materials, including asbestos and lead-based paint. It must also include tables applicable to the reclamation of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) in accordance with the City recycling code and 1.4 (B) below.

2. Environmental Compliance Plan must document NEPA compliance by describing mitigation measures to address environmental concerns/sensitive receptors identified in the National Environmental Policy Act (NEPA) document(s) in Section B. 1500, Attachments, and as set out in the mitigation measures in the General Requirements.

1.4 Environmental Site Controls

A. Location of Hazardous Materials: The location of the Contractor's temporary storage of any hazardous materials and/or wastes must be appropriately marked and included in the health and Safety Plan (see Section 1.5 below).

B. Post Construction Cleanup or Obliteration: The Contractor must remove and properly dispose of all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, excess or waste materials, or any other vestiges of construction as directed by the Engineer. No separate or direct payment may be made for post construction cleanup and all associated costs must be considered included in the contract price.

C. Dust Control: The Contractor must keep the site free from dust in accordance with applicable regulations.

D. Noise Minimization: The Contractor must perform demolition and construction operations to minimize noise including conducting work during less sensitive hours of the day in accordance with the City Noise Ordinance.

1.5 Health and Safety

A. Prior to commencing on-site work, the Contractor must submit an Occupational Safety and Health Administration (OSHA) Emergency Action Plan (EAP) to the Engineer to demonstrate compliance by the Contractor and subcontractors with applicable OSHA regulations. If the Contractor is not required by OSHA to develop a written EAP, i.e. if 10 or fewer are employed for the construction project or any other specific regulations identified by OSHA, then the Contractor shall submit to the Engineer a signed letter stating the Contractor shall meet OSHA's EAP requirements in a verbal communication to all employees.

B. Prior to commencing on-site work, the Contractor must submit a project-specific Project Safety Plan to the Engineer. The plan must include, but is not limited to, hazard communication, labeling, emergency response and preparedness and training.

C. Copies of Material Safety Data Sheets (MSDSs) for any hazardous material(s), as defined by OSHA's Hazard Communications Standard, must be included whenever such materials arrive on-site. MSDSs must be kept together and maintained centrally on-site through to project completion. Provide a copy of each MSDS in the Operating and Maintenance Manual. The use of asbestos containing materials, in excess of one percent as defined by US Environmental Protection Agency regulations, is prohibited in the construction of this project. Provide an executed copy of the “Certificate of Asbestos and Lead-Based Paint (New Work)” in the Operating and Maintenance Manual.

D. The use of lead-based paint is prohibited in the construction of this project.

E. The use of lead-containing solder for plumbing and plumbing fixtures is prohibited in the construction of this project.

F. The Contractor must sign and submit to the City a “Certification of Asbestos and Lead-Based Paint” for this project.

G. See following exhibits for additional information.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 35 43
ENVIRONMENTAL PROCEDURES

Safety and Health and Related Environmental Requirements

The Contractor is required to meet all applicable OSHA, federal, state, and local safety, health, and related environmental requirements in addition to the City requirement listed in this table.

Issue	City Requirements
Asbestos	*Review of Facility Asbestos Survey:* Before any building maintenance, equipment installation, renovation, alteration, demolition, or other project begins, determine whether ACBM will be disturbed. Proper Work Practices: If ACBM is present, follow proper control procedures and work practices. *Consultation With Facility Asbestos Coordinator:* Consult with the facility manager or his or her designee before the start of any work likely to disturb ACBM. Disturbance means activities that crumble or pulverize ACBM or presumed asbestos-containing material (PACM) or generate visible debris. Operations may include drilling, abrading, cutting a hole, pulling cable, and crawling through tunnels or attics and spaces above the ceiling where asbestos is actively disturbed or asbestos-containing debris is actively disturbed. *Asbestos Work Authorization:* You must have an approved Form 8210, *Work Authorization - Asbestos,* before work begins within any building containing asbestos.
Barricades, Barriers, and Warnings	Your barricades must meet the OSHA requirements. In addition, you assume control of your work area during your activities unless otherwise specified in writing by the City Engineer (CE) or City Engineer's representative (CER).
Electrical Work	Lock or rope off work areas involving exposed energized equipment or have an attendant present to prevent accidental contact by unqualified people. Refer to the Barricade section of this guideline for additional information.
Elevated Work and Fall Protection	Follow strictly the applicable OSHA fall protection requirements.
Fire Protection	Do not block, remove, or otherwise prevent City fire extinguishers from being immediately accessible and usable. If a system must be impaired by a scheduled shutdown, notify the Engineer and do not proceed without the Engineer’s authorization.
Hazard Communication	Inform the Engineer before any chemicals are used. Before materials are brought on site, provide material safety data sheets (MSDSs) and an inventory of materials. For projects that are anticipated to use substantial quantities of hazardous materials, you may be required to provide a routing, storage, and waste disposal plan.
Hazardous Materials	Follow all OSHA requirements regarding hazardous materials. Hazardous materials include, but are not limited to, flammable and combustible liquids, gasoline, diesel fuel, motor oil, lubricating oil, hydraulic oil, corrosive cleaners, and battery acid. Provide secondary containment for all containers of liquids that are over 5 gallons in capacity. Immediately report all hazardous material releases ("spills"), regardless of how small or where they occur, to the designated Engineer. Releases include solids, liquids, and gases.
Hot Work	Do not begin any hot work until the Engineer has completed and signed a City Hot Work Permit. The permit will be valid for only a single work shift. You must display the permit at the work site. You are prohibited from performing hot work (a) when the City has not authorized it, (b) in locations in which fire protection systems have been impaired, (c) in the presence of explosive or flammable atmospheres, or (d) in locations were large quantities of flammable and combustible materials are unprotected.
Powered Industrial Trucks	Powered industrial trucks and other mobile equipment must follow all traffic rules of the City facility. The maximum speed limit for in-plant powered vehicles is 5 miles per hour. Many work areas have posted speed limits that you must strictly follow. Perform refueling only in authorized locations following safe procedures. As a general rule, the City does not allow gas- or diesel-powered industrial equipment inside City facilities. Coordinate exceptions to the rule through the City safety office.
Ladders	Strictly follow all OSHA requirements regarding ladders. Barricade the ladder use area to prevent contact with mobile equipment and employees.
Lead-Based Paint	*Review of Facility Lead Survey:* Before any construction, alterations, and/or repair activities

	begin; determine whether LBP will be disturbed. If the painted surface has not been tested, you must have it tested before beginning any activities that could potentially disturb LBP. *Proper Work Practices:* If LBP is present, follow proper control procedures and work practices. *Consultation With Engineer:* Consult with the Engineer before the start of any work likely to disturb LBP. Examples of activities that may affect LBP include paint removal by scraping, sanding, power tools, or heat guns; alterations that include removing drywall, structural steel, or other building materials coated with LBP; welding, cutting, or other hot work on coated metal surfaces; abrasive blasting of mail boxes and other equipment; and moving or cleaning of abrasive blasting enclosures.
Personal Protective Equipment	Before beginning work, evaluate the work area for hazards, determine whether contract employees will be required to use personal protective equipment (PPE) to protect themselves from these hazards, and document the hazard assessment. Wear the PPE required regardless of your perception of hazard potential.
Regulated And Prohibited Materials	*Pesticides.* The City has restricted the use of pesticides. Obtain prior approval of the City environmental compliance coordinator for special cases that may require the use of pesticide treatments. *Seventeen Chemical Prohibitions.* Adhere to chemical prohibition policies. Do not use on City property any of the 17 chemicals prohibited by EPA unless the Engineer authorizes its use (each of these chemicals must be authorized separately). The district environmental compliance coordinator can supply the list. *Asbestos-Free Products.* Install no asbestos-containing products or materials in City facilities. *Lead.* Apply no lead-based paint in City facilities.
Scaffolding	Follow strictly the applicable OSHA scaffolding requirements. Provide adequate barrier protection around the scaffolding to prevent hazards to City staff.
Walking and Working Surfaces	If the project requires temporary modifications to the means of egress, inform the Engineer before performing such actions, provide appropriate alternative means of egress, and communicated these to all employees.

Emergency Procedures

Preparations for Emergency	Be prepared for emergency situations. Ensure that emergency telephone numbers are site specific, readily available, easily read, and communicated to all employees. Train and authorize employees to implement emergency procedures.
Medical Emergencies	Have procedures and medical supplies to provide emergency medical services for your own personnel. Determine how to contact emergency medical services before work begins, and have on-site capabilities to contact such services immediately.
Fires	See Fire Protection above. In the event of a fire, you must: - Immediately remove personnel from the area or building following City evacuation procedures. - Immediately contact the nearest City employee and inform him or her of the fire. You may also activate an emergency alarm in the area. If no City employees are on-site, immediately contact the local fire department. Personnel trained in the use and limitations of fire extinguishers may attempt to extinguish the fire if it is safe to do so.
Chemical Releases	See Hazardous Materials above. If the event of a hazardous material release, you must: - Immediately remove personnel from the area or building following City evacuation procedures. - Immediately contact the designated City representative and inform him or her of the release. You may also activate an emergency alarm in the area. If no City employees are on-site, immediately contact the local fire department. Contractor personnel should not respond to the release unless specifically trained and protected to perform hazardous material response.
Power Outages	In the event of a power outage, you must: - Immediately stop work and assemble for a head count and possible facility egress. - Inform all contract employees that equipment may automatically restart when power resumes. - Immediately contact the designated City representative and inform him or her of the status of contract work and personnel head count. Relay at this time all hazards created due to the power outage. When power resumes evaluate the status of operations that were being performed relative to hazard potential. For example, the interruption of ventilation in confined spaces may generate atmospheric hazards.
Accident Investigation and Reporting	As soon as is practical after an accident, investigate and document an accident investigation. The documentation must describe the incident and identify the causes and the corrective actions that will prevent future incidents. Report all accidents, whether or not they result in injury. Give the written report to the Engineer within 24 hours of the accident or incident.

SECTION 01 35 43
ENVIRONMENTAL PROCEDURES

Certificate of Asbestos and Lead-Based Paint

(New Work)

To: Engineer, City

Subject: Certification for new construction

City facility name: _____

City facility address: _____

Certification for new construction:
This Contractor/Owner hereby certifies that no asbestos-containing material in excess of 1 percent as defined by applicable US Environmental Protection Agency regulations and no lead-based paint has been furnished or installed at the referenced project.

Contractor/Owner name: _____

Signature: _____

Address: _____

_____

Telephone: _____ Date executed: _____

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 Contractor Quality Control

A. Contractor Quality Control: The Contractor is responsible for the overall quality of all its own work and the work performed by their subcontractors working under this contract. The quality of any part of the work installed must not be less than that required by the technical divisions of this specification. If the Engineer determines that the quality of work does not conform to the applicable specifications and drawings, the Contractor will be advised in writing of the areas of nonconformance, and within 7 days the Contractor must correct the deficiencies and advise the Engineer in writing of the corrective action taken.

B. Noncompliance with Quality Control Requirements: Failure of the Contractor to comply with the above requirements may be cause for termination for default as defined in the contract documents.

1.2 Submittals

A. Prior to the start of on-site work, the Contractor must submit to the City a Contractor Quality Control Plan that includes the following information:
   1. Procedures for reviewing coordination drawings, shop drawings, certificates, certifications, or other submittals.
   2. Testing and inspection schedule, keyed to Construction Schedule, indicating tests and inspections to be performed, names of persons responsible for inspection and testing for each segment of work including preparatory, initial, and follow-up.
   3. Proposed forms to be used including Contractor's Daily Report, Contractor Test and Inspection Report and Non-Compliance Check-Off List.

B. Independent Testing and Inspection Laboratory (if any): Submit the following.
   1. Name.
   2. Address.
   3. Telephone number.
   4. Names of full-time registered engineer.
   5. Responsible officer.
   6. Copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by inspection.

1.3 Quality Control Procedures

A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship.

B. Comply fully with manufacturer's published instructions, including each step-in sequence of installation.

C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from the City before proceeding.

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

E. Perform work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.

1.4 Contractor Field Inspection and Testing

A. Contractor: Test and Inspect work provided under this Contract to ensure work is in compliance with Contract requirements. Required tests and inspections are indicated in each individual Specification Section and shall be performed as required by the City inspector.

B. Preparatory Inspection: Performed prior to beginning work and prior to beginning each segment of work and includes:
1. Review of Contract requirements.
2. Review of shop drawings and other submittal data after return and approval.
3. Examination to assure materials and equipment conform to Contract requirements.
4. Examination to assure required preliminary or preparatory work is complete.

C. Initial Inspection: Performed when representative portion of each segment of work is completed and includes:
1. Quality of workmanship.
2. Review for omissions.
3. Examination of products used.
4. Approval or rejection of inspected segment of work.

D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying work has been corrected.

1.5 Contractor’s Daily Report

A. The Contractor shall maintain daily reports, and provide a copy to the City if requested, for days that work was performed. Include the following information:
1. Date, weather, minimum and maximum temperatures, rainfall, and other pertinent weather occurrences.
2. Daily workforce of Contractor and subcontractors, by trades.

3. Description of work started, ongoing work, and work completed by each subcontractor.
4. Coordination implemented between various trades.
5. Approval of substrates received from various trades.
6. Nonconforming and unsatisfactory items to be corrected.
7. Remarks

1.6 Contractor's Test and Inspection Reports

A. Prepare and submit to the City, a written report of each inspection signed by Contractor Quality Control Representative performing inspection within 2 days following day inspection was made.

B. Include the following on written reports of inspection:
1. Cover sheet prominently identifying that inspection "CONFORMS" or "DOES NOT CONFORM" to Contract Documents.
2. Date of inspection and date of report.
3. Project name, location, solicitation number, and Contractor.
4. Names and titles of individuals making inspection, if not Contractor's Project Field Superintendent.
5. Description of Contract requirements for inspection.
6. Description of inspection made, interpretation of inspection results, and notification of significant conditions at time of inspection.
7. Requirements for follow-up inspections.

1.7 Non-Compliance Check-Off List

A. Maintain check-off list of work that does not comply with Contract Documents, stating specifically what is non-complying, date faulty work was originally discovered, and date work was corrected. No requirement to report deficiencies corrected same day it was discovered. Submit copy of Non-Compliance Check-Off List of non-complying work items to the Engineer on a weekly basis.

1.8 Completion and Inspection of Work

A. Prior to final acceptance by the City and issuance of a Certificate of Substantial Completion and/or Notice of Completion, submit a certification signed by Contractor to the Engineer stating that all work has been inspected and all work, except as specifically noted, is complete and in compliance with Contract Documents.

PART 2 - PRODUCTS (Not used)
PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 Product Options and Substitutions

A. Provide Products that comply with Contract Documents, which are undamaged and new at time of installation.

B. Provide Products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and intended use and effect.

1.2 Product Delivery Requirements

A. Transport and handle Products in accordance with manufacturer's instructions, using means and methods that will prevent damage, deterioration and loss, including theft.

B. Schedule Product delivery to minimize long-term storage at the Project sites and prevent overcrowding of construction spaces.

C. Coordinate Product delivery with installation schedule to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

D. Deliver Products to Project site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

E. Promptly inspect shipments to ensure that Products comply with project requirements, quantities are correct, Products are undamaged, and properly protected.

F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.3 Product Storage and Handling Requirements

A. Store and protect Products in accordance with manufacturers' published instructions, with seals and labels intact and legible.

B. Store Products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation.

Maintain temperature and humidity within range required by manufacturer's published instructions.

C. For exterior storage of fabricated Products, place on sloped supports, above ground.

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

E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.

F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

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

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 73 00
EXECUTION

PART 1 - GENERAL

1.1 Layout of Work

A. The Contractor shall be responsible for all measurements based on them. The Contractor must furnish, at its own expense, platforms, equipment, tools, materials, and labor as may be required.

1.2 Contractor's Temporary Use of Facilities and Equipment

A. No new facilities or equipment intended for the permanent installation, including materials-handling vehicles, may be used for temporary purposes unless specified in the contract or unless the Contractor has the written permission of the Engineer.

1.3 Cleaning

A. Cleaning During Construction:
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
   3. Collect and remove waste materials, debris, and rubbish from site as specified in the Environmental Compliance and Management Plan as required in Section 01 35 43 - Environmental Procedures.

B. Final Cleaning:
   1. Complete following cleaning operations before requesting the City's inspection for Substantial Completion.
      a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
      b. Remove tools, construction equipment, machinery and surplus material from Project Site.
      c. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      d. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be

satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.

e. Leave Project clean and ready for occupancy.

2. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. Section includes: Procedures for achieving the most environmentally conscious Work feasible within the limits of the Construction Schedule, Contract Sum, and available materials, equipment, and products.
   1. Participate in promoting efforts of the City to create an energy-efficient and environmentally-sensitive structure.
   2. Use recycled-content, toxic-free, and environmentally-sensitive materials and equipment.
   3. Use environmentally-sensitive procedures.
      a. Protect the environment, both on-site and off-site, during demolition and construction operations.
      b. Prevent environmental pollution and damage.
      c. Effect optimum control of solid wastes.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents and prevailing City Ordinances.

C. Related Sections:
   1. Section 01 40 00 - Quality Requirements: Contractor's Daily Report.
   ventilation, progress cleaning and waste removal.
   2. Section 01 60 00 - Product Requirements: Substitutions.
   3. Section 02 41 19 – Selective Structure Demolition.

1.2 DEFINITIONS

A. Adequate ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of dust fumes, vapors, or gases.

B. Construction and demolition waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.

   1. Rubbish: Includes both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, metal cans, and bones.
   2. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work.

C. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.

D. Diversion: Redirection of waste ordinarily deposited in a municipal landfill to a recycling facility or to another destination for reuse

E. Environmental pollution and damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.

F. Hazardous Materials: Includes pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

G. Interior final finishes: Materials and products that will be exposed at interior; occupied spaces; including flooring, wallcovering, finish carpentry, and ceilings.

H. Municipal Solid Waste Landfill: A permitted facility that accepts solid, non-hazardous waste such as household, commercial, and industrial waste, including construction and demolition waste.

I. Packaged dry products: Materials and products that are installed in dry form and are delivered to the site in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.

J. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.

K. Sanitary Wastes:
   1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food.
   2. Sewage: Domestic sanitary sewage

L. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.

1.3 SUBMITTALS

A. Solid Waste Management and Environmental Protection Plan: Prepare and submit at the Preconstruction Meeting a Solid Waste Management and Environmental Protection Plan including, but not limited to, the following:
   1. Solid Waste Management and Environmental Protection Plan as required by the City.
      a. Approval of the Contractor's Solid Waste Management and Environmental Protection Plan, will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.

B. With each Contractor's Report as specified in Section 01 40 00 – Quality Requirements, submit an updated Summary of Solid Waste Disposal and Diversion. Submit on form in Appendix A of this Section. Include manifests, weight tickets, receipts, and invoices specifically identifying the Project and waste material for:
   1. Municipal Solid Waste Landfills.
   2. Recycling/Reuse Facilities.

C. With Record Submittals as specified in Section 01 77 00 - Closeout Procedures and Training, submit the following:
   1. Final Summary of Solid Waste Disposal and Diversion. Submit on form in Appendix A of this Section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 RECYCLING AND REUSE

A. Collection: Implement a recycling/reuse program that includes separate collection of waste materials of the following types as appropriate to local and regional recycling/reuse facilities:
   1. Roofing Materials
   2. Metal.
      a. Ferrous.
      b. Non-ferrous.
   3. Wood.
   4. Debris.
   5. Others as appropriate.

B. Recycling/reuse centers: Contact governmental solid waste offices, Environmental Protection Agency (EPA) regional offices, and applicable non-profit organizations.
   1. Roofing Materials
   2. Metal.
      a. Ferrous.
      b. Non-ferrous.
   3. Wood.
   4. Debris.
   5. Others as appropriate.

C. Handling:
   1. Clean materials which are contaminated prior to placing in collection containers. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
   2. Arrange for collection by or delivery to the appropriate recycling or reuse facility.

3.2 ENVIRONMENTAL CONTROLS

A. Protection of natural resources: Preserve the natural resources within the Project boundaries and outside the limits of permanent Work performed under this Contract in their existing condition or restore to an equivalent or improved condition as approved by the Engineer, upon completion of the Work.
   1. Confine demolition and construction activities to work area limits indicated on the Drawings and as directed by the City.
      a. Demolition and salvage operations: As specified in Section 02 41 19 - Selective Structure Demolition.
      b. Disposal operations for demolished and waste materials that are not identified to be salvaged, recycled or reused:
         1) Remove debris, rubbish, and other waste materials resulting from demolition and construction operations, from site.
         2) No burning permitted.
         3) Transport materials with appropriate vehicles and dispose off-site to areas which are approved for disposal by governing authorities having jurisdiction.
         4) Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways. Remove spillage and sweep, wash, or otherwise clean project site, streets, or highways.
         5) Comply with applicable regulations.
   2. Water resources as follows:
      a. Comply with requirements of the National Pollutant Discharge Elimination System (NPDES) and the State Pollutant Discharge Elimination System (SPDES).
      b. Oily substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water.
         1) Store and service construction equipment at areas designated for collection of oil wastes.
      c. Mosquito abatement: Prevent ponding of stagnant water conducive to mosquito breeding habitat.
      d. Prevent run-off from site during demolition and construction operations.
   3. Land resources: Prior to construction, identify land resources to be preserved within the Work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from The City.
   4. Air Resources: Prevent creation of dust, air pollution, and odors.
      a. Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
         1) Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.
      b. Store volatile liquids, including fuels and solvents, in closed containers.
      c. Properly maintain equipment to reduce gaseous pollutant emissions.
      d. Interior final finishes: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible in

accordance with The City approved Solid Waste Management and Environmental Protection Plan.

5. Noise Control: Perform demolition and construction operations to minimize noise. Perform noise producing work in less sensitive hours of the day or week as directed by the City.
   a. Repetitive, high level impact noise will be permitted only between the hours permitted in the City Noise Ordinance. Do not exceed the limitations specified by OSHA.
   b. Provide equipment, sound-deadening devices, and take noise abatement measures that are necessary for compliance.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

Appendix A

SUMMARY OF SOLID WASTE DISPOSAL AND DIVERSION

Project Name: _____

Contractor Name: _____ License Number: _____

Contractor Address: _____

Solid Waste Material	**Date Material** Disposed/ Diverted	**Amount Disposed/ Diverted** (ton or cu.yd)	**Municipal Solid Waste Facility** (name, address, & phone number)	**Recycling/Reuse Facility** (name, address, & phone number)	**Comments** (if disposed, state why not diverted)
Roofing					
Metal					
Wood					
Debris					
Paper/ Cardboard					
Other:					

Signature: _____ Date: _____

Appendix B

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

2.0 SPECIFICATIONS - NOT USED

3.0 SOLID WASTE PREVENTION

A. Total dollar amount of solid waste disposed (landfill) for this project.
$_____.

B. Total weight of solid waste disposed (landfill) for this project. $_____.

4.0 RECYCLING

A. Total dollar value of solid waste diverted from landfill and recycled or reused for this project. (Express as total dollar amount for solid waste disposal in landfill for equivalent type and amount of diverted waste.) $_____.

B. Total weight of solid waste diverted from landfill and recycled or reused for this project. (Express as total weight for solid waste disposal in landfill for equivalent type and amount of diverted waste.) $_____.

5.0 COMMENTS

A. Comments and suggestions for increasing amount of recycled materials used in construction materials.

_____
_____
_____
_____
_____
_____.

B. Comments and suggestions for improving solid waste prevention and recycling efforts during construction.

_____
_____
_____
_____
_____
_____.

Signature: _____ Date: _____

SECTION 017704
CLOSEOUT PROCEDURES AND TRAINING

PART 1 - GENERAL

1.1 Maintenance Instructions and Requirements

a. Contents: Each chapter must describe the procedures necessary for City personnel to perform the maintenance on the applicable system. Emphasis must be placed on the method of mechanical control of systems and equipment from a maintenance standpoint. References must be made, as appropriate, to drawings, schematics, and sequences of operation included as part of the construction contract drawings and specifications that show piping and equipment arrangements and items of control. Prints of these drawings must be reduced to 11 inches x 17 inches for insertion in the manuals. Drawings must represent the "as-built" condition.

b. Maintenance Procedures: The maintenance procedures must be divided into two categories: Preventive Maintenance and Corrective Maintenance.
   1) Preventive Maintenance
      i. Provide a schedule for preventive maintenance. State, preferably in tabular form, the recommended frequency of performance for each preventive maintenance task (cleaning, inspection, and scheduled overhauls).
      ii. Provide instruction and schedules for all routine maintenance cleaning and inspection, with recommended lubricants.

c. Manufacturers' Brochures: Include manufacturers' descriptive literature covering devices used in the system, together with illustrations, exploded views, and renewal parts lists. This section must also include special devices manufactured by the Contractor.

d. Special Maintenance: Provide information of a maintenance nature covering warranty items that have not been discussed elsewhere.

e. Shop Drawings: Provide a copy of all approved shop drawings covering approval of equipment for the project with the manufacturers' brochures.

f. Spare Parts Lists: Include a recommended spare parts list for all equipment furnished for the project. The parts list must include a tabulation of descriptive data for all the electrical-electronic spare parts and all the mechanical spare parts proposed for each type of equipment or system. Each part must be properly identified by part number and manufacturer.

g. Warranty: Include a copy of the “special” or extended warranty in the operation and maintenance manual.

B. Submittal, In both “hard” and electronic DVD or CD-ROM format:
   1. Preliminary Submittal: Two draft copies of the completed manuscript for items in this outline must be submitted to the City

Engineer for review within 30 days after approval of equipment to be provided. One copy will be returned to the Contractor within 15 days after submittal and, if required, must be revised and resubmitted within 15 days.

2. Final Submittal: four complete sets of manuals must be furnished to the Engineer not later than 30 days before completion of the project.
3. Final Submittal must be accepted by the Engineer before training can begin.

1.2 Other Closeout Submittals

A. Additional requirements for Systems Manuals, Operating Instructions, Training and other deliverables are contained in individual Specification Sections. All closeout requirements must be provided to and accepted by the Engineer prior to requesting final payment. Examples of additional closeout requirements include, but are not limited to, the following

1. Final Punch-List with all items certified as complete.
2. Record “As Built” Drawings, the Contractor shall submit certified As-Built Record Drawings and Specifications in the quantities and media specified.
3. Warranty, the Contractor shall submit all transferable guarantees and warranties for equipment, materials and installations furnished by any manufacturer, supplier, or installer.
4. Signed Asbestos and Lead-Based Paint Certificate.
5. Material Safety Data Sheets
6. Signed and sealed Contractor Release of Claims.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 02 41 00
ROOF REMOVAL AND SUBSTRATE PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Removal of existing roofing components and substrate preparation related to roof replacement work.

B. Recycling of mechanically-attached single-ply roofing membranes, ballast, and foam insulation.

1.2 RELATED SECTIONS

A. Section 013300 – Submittal Procedures

B. Section 016000 – Product Requirements

C. Section 061516 – Wood Roof Deck Repair and Replacement

1.3 UNIT PRICES

A. Provide unit prices for the work described in Item 3.6.

1.4 ALTERNATES

A. Provide alternate pricing for recycling of the following existing roof system components:
   1. Stone ballast and/or concrete pavers.
   2. Mechanically-attached single-ply roof membrane.
   3. Rigid foam insulation board.

B. Refer to Article 3.8 for preparation requirements related to recycling of existing components.

C. Contact Nationwide Foam Recycling, Framingham, MA, (888) 820-2760, or similar recycling company, for recycling of existing roofing components.

D. The recycler shall provide a certificate/letter to the Owner identifying the following:
   1. Project name and location.
   2. Contractor name.
   3. Components recycled as part of the project.
   4. Total weight and/or volume of materials recycled.

1.5 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. Factory Mutual Global (FM)
   2. National Roofing Contractors Association (NRCA)

1.6 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.7 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive a manufacturer's warranty. Company shall have a minimum of 5 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the Owner immediately for resolution.

1.8 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure. Store roll materials standing on end.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not perform roof removal work during inclement weather.

B. Cold weather precautions:
1. Refer to product manufacturer and NRCA requirements and recommendations for cold weather application requirements and restrictions.

C. Material Safety Data Sheets (MSDS) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 FASTENERS

A. For re-securement of wood deck to underlying structural components, per Article 3.4:
1. For untreated wood: No. 14 fluorocarbon-coated screws, length as necessary to penetrate minimum 1-1/4-inch depth into underlying wood structural framing.
2. For treated wood: Stainless steel screws; length as necessary to penetrate minimum 1-1/4-inch depth into underlying wood structural framing.

B. For re-securement of existing perimeter wood nailers to underlying substrates, per Article 3.5:
1. For securement to untreated wood: No. 14 fluorocarbon-coated screws, length as necessary to penetrate minimum 1-1/4-inch depth into underlying wood substrate.
2. For securement to treated wood: Stainless steel screws; length as necessary to penetrate minimum 1-1/4-inch depth into underlying wood

substrate.

3. For securement to existing masonry walls: 1/4-inch minimum diameter "Tapcon" screws or other fastener type suitable to adequately secure the wood to the existing masonry wall.

2.2 REPLACEMENT DRAIN COMPONENTS

A. Roof drain assembly: Clamping ring type; cast iron drain bowl, clamping ring, strainer, and related fittings; such as Type 21500 (Size as necessary to match existing drain pipe size) by Josam Company.
   1. Piping:
      a. To match existing, by size and type; as necessary to comply with applicable insurance requirements, and local codes.
   2. Drain connectors, hangers, and clamps:
      a. Drain connections as required; as necessary to comply with applicable insurance requirements, and local codes.

B. Roof drain clamping ring (for use where existing is missing or damaged): Cast iron; type and size to fit existing drain bowl.

C. Roof drain strainer (for use where existing is missing or damaged): Cast iron; type and size to fit existing drain assembly.

2.3 RETROFIT ROOF DRAIN INSERTS

A. Retrofit roof drain insert: Retrofit drain assembly, clamping ring and strainer: Product such as "Hercules RetroDrain", manufactured by OMG Roofing Products, Agawam, MA, or approved equal. Size and configuration as necessary to accommodate existing roof drain and pipe.

PART 3 - EXECUTION

3.1 GENERAL

A. Exercise caution to avoid damage to components indicated as "existing" or remaining in place. Do not disturb these components.

B. Prior to any cutting, drilling, or removals, view both sides of the surface affected. If damage occurs to existing components, repair or replace components defaced or damaged during removals to the satisfaction of the Owner.

C. Prior to work start, the contractor shall obtain the services of a licensed plumber to verify that all roof drains and plumbing vents located within the project area are free of debris and properly functioning. Notify the Owner immediately if roof

drains or plumbing vents are found to be blocked, clogged, or otherwise not properly functioning. The licensed plumber shall provide a letter indicating all roof drains and plumbing vents in the project area are free of debris and properly functioning. Refer to Section 013300.

3.2 ROOF REMOVAL

A. Removal of existing roofing and related components: Remove and discard all existing roofing materials down to the structural deck, except components designated for recycling per Article 1.4. This includes spray-applied polyurethane foam roof systems (where existing), roofing membranes, base flashings, penetration flashings, insulation, underlying roof membranes, underlayment, and sheet metal flashings and accessories, as indicated in the specifications and drawings. Remove all roofing and related components in a manner that will not cause damage to the underlying structural deck.

B. Do not begin work until the substrates have been prepared as specified, and are ready and acceptable to have materials installed. By beginning work, the Contractor acknowledges that the substrates are satisfactory.

C. Existing roof system protection:
   1. Do not use adjacent roof areas as storage areas for roofing materials.
   2. Where excessive traffic over new or existing roofing is unavoidable, provide and use 3/4-inch plywood, set over a minimum of 1-1/2-inch-thick rigid board insulation to protect roofing components in place (expanded polystyrene insulation is not acceptable).
   3. When materials are stored on the roof, provide roof protection as indicated above.

3.3 TEMPORARY DISPLACEMENT OF ROOFTOP EQUIPMENT

A. Temporary displacement of mechanical units:
   1. If mechanical units are to be temporarily displaced, shut off all affected electrical, plumbing and gas lines and disconnect all electrical, plumbing, gas lines and ventilation ducts where required to allow for lifting mechanical units prior to roof removal work. All disconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all disconnections with the Owner.
   2. Lift units in a manner that will not cause damage to the mechanical unit, mechanical unit components or structural deck.
   3. Prior to leaving the site, return units to their original position, resulting in a watertight condition.
   4. Ensure mechanical units are returned to their previous operational condition prior to leaving the site.

B. Temporary displacement of gas lines, conduit, junction boxes and condensate lines:
   1. Temporarily displace gas lines, conduit, junction boxes, condensate lines or other items that may interfere with roof replacement work. Any necessary disconnection of gas lines, conduit and junction boxes is to be performed by a licensed mechanical/electrical contractor as applicable to the work being performed. Coordinate all disconnections with the Owner.

C. After completion of work, reinstall any mechanical units that have been temporarily displaced. Reconnect all electrical, plumbing, gas lines and ventilation ducts where required. All reconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all reconnections with the Owner.

D. After completion of work, reconnect any gas lines, conduit and/or junction boxes have been disconnected. Reconnection of gas lines, conduit and/or junction boxes is to be performed by a licensed mechanical/electrical contractor as applicable to the work being performed. Coordinate all reconnections with the Owner.

3.4 DECK INSPECTION AND RE-SECUREMENT

A. After completion of roof removal work, inspect the existing roof deck. If damaged or deteriorated roof deck is encountered, notify the Owner immediately. Refer to Section 061516 for roof deck repair/replacement procedures.

B. Re-securement of wood decks:
   1. For locations requiring a wind uplift rating of FM 1-90 or less:
      a. In the field of the roof, re-secure the existing wood deck at a maximum spacing of 12-inches on center (every other rib for 1-1/2 in. deck) at underlying supports in the field of the roof. At the roof perimeters and corners, re-secure the deck at a maximum spacing of 6 inches on center (every rib for 1-1/2 in deck) at all underlying supports.
      b. At each deck side lap, secure the deck to the supporting members. For interlocking-type side laps, secure both sides of the lap (upper and lower). For overlap-type side laps, ensure securement penetrates all deck panels at the laps.
      c. Ensure spacing between each side lap fastener or side lap fasteners and supports is no more than 36-inches in the field of the roof and no more than 30-inches on center in the perimeter and corner areas. Fasten overlap-type side laps with FM-Approved side lap fasteners.
   2. For locations requiring a wind uplift rating of FM 1-105 through 1-120:

a. In the field of the roof, re-secure the existing wood deck at a maximum spacing of 6-inches on center (at every rib for 1-1/2 in. deck) at underlying supports in the field of the roof. At the roof perimeters and corners, re-secure the deck with two fasteners every 6-inches on center (two fasteners at each rib location for 1-1/2 in deck) at all underlying supports.

b. At each deck side lap, secure the deck to the supporting members. For interlocking-type side laps, secure both sides of the lap (upper and lower). For overlap-type side laps, ensure securement penetrates all deck panels at the laps.

c. Ensure spacing between each side lap fastener or side lap fasteners and supports is no more than 30-inches in the field of the roof and no more than 15-inches on center in the perimeter and corner areas. Fasten overlap-type side laps with FM-Approved side lap fasteners.

3.5 RE-SECUREMENT OF PERIMETER WOOD BLOCKING

A. Re-secure wood blocking (nailers) to the underlying substrate at perimeters in a manner to resist a minimum force of 300 lbs. per linear foot, at a minimum spacing of 12-inches on center. Refer to FM Global Loss Data Sheet 1-49.

3.6 ROOF DRAIN INSPECTION AND REPAIR

A. If drain assemblies are found to be damaged, contact the Owner. Replace drain assemblies found to be damaged *(Unit Price Work)*:
   1. Remove and discard the entire roof drain assembly.
   2. Install replacement roof drain bowl, clamping ring, strainer and related fittings at locations of original drain assembly. Connect the bowls to the existing piping in accordance with manufacturer requirements and recommendations, and all local and state plumbing codes.

B. If the clamping ring is missing, damaged, or does not fit the drain strainer, install a new clamping ring *(Unit Price Work).*

C. If the roof drain strainer is missing, damaged, or plastic, install a new roof drain strainer *(Unit Price Work).*

3.7 ROOF INSERT INSTALLATION

A. Install retrofit roof drain inserts following the requirements and recommendations of the retrofit roof drain insert manufacturer.

3.8 RECYCLING OF EXISTING ROOFING COMPONENTS (ALTERNATE WORK)

A. Rigid board foam insulation:

1. Confirm securement type of rigid board insulation. Note that rigid board foam insulation adhered using asphalt of low-rise foam adhesive cannot be recycled.
2. Inspect condition of existing rigid board foam insulation. Discard insulation boards found to be wet and/or damaged.
3. Remove insulation boards from the roof surface.
4. Contact the recycling company for instructions regarding storage of rigid board foam insulation awaiting pick-up.

C. Mechanically-attached single-ply roofing membrane:
1. Confirm securement type of single-ply roofing membrane. Note that fully-adhered roofing membranes cannot be recycled.
2. Cut membrane into manageable pieces, following the instructions of the recycler. Remove and discard existing membrane seams, fastening strips, and associated fasteners.
3. Remove roofing membrane from the roof surface.
4. Contact the recycler for instructions regarding storage of roofing membrane awaiting pick-up.

END OF SECTION

SECTION 02 41 19
SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Procedures for demolition and removal of existing building elements.
   2. Removal of designated building equipment and fixtures.
   3. Salvaged material.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00-Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 01 35 43 - Environmental Procedures: Recycling and reuse of waste materials.

1.2 SYSTEM DESCRIPTION

A. The extent of Selective Demolition Work is that Work necessary, and required to facilitate the new construction indicated.

B. Demolition shall be such that all construction, new and existing, can be performed, and completed in accordance with the construction documents.

C. The contractor shall visit the project site and familiarize himself with the existing conditions and project requirements.

D. Verify the scope of the Work under this Section including salvage material. The City will be responsible for removing all materials and equipment which the City wishes to salvage prior to the beginning of this Work.

1.3 QUALITY ASSURANCE

A. Performance Criteria:
   1. Requirements of Structural Work: Do not cut structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.
   2. Operational and Safety Limitations: Do not cut operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in a manner intended or resulting in a decreased operational life, increased maintenance or decreased safety.

3. Visual Requirements: Do not cut 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 demolition work judged by the Engineer to be cut and patched in a visually unsatisfactory manner.
4. Loading: Do not superimpose loads at any point upon existing structure beyond design capacity including loads attributable to materials, construction equipment, demolition operations and shoring and bracing.
5. Vibration: Do not use means, methods, techniques or procedures which would induce vibration into any element of the structure.
6. Fire: Do not use means, methods, techniques or procedures which would produce any fire hazard unless otherwise approved by the Engineer.
7. Water: Do not use means, methods, techniques or procedures which would produce excessive water run-off, and water pollution.
8. Air Pollution: Do not use means, methods, techniques or procedures which would produce uncontrolled dust, fumes or other damaging air pollution.

1.4 PROJECT SITE

A. Indicated "Existing Construction" was obtained from existing drawings or other information which may not reflect actual conditions. The Contractor shall verify all existing conditions and notify the Engineer of discrepancies before proceeding with the Work.

B. Perform the removal, cutting, drilling, etc., of existing work with extreme care, and using small tools in order not to jeopardize the structural integrity of the building.

C. Occupancy: Contractor shall have full use of the facility during construction.

D. Condition of Structure: The City assumes no responsibility for the actual condition of portions of the structure to be demolished.

E. Partial removal: Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by the City. Salvaged items must be transported from the site as they are removed.

F. Protection: Make sure that the safe passage of persons around the area of demolition is maintained during the demolition operation. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

1.5 PROTECTION OF EXISTING CONSTRUCTION

A. Provide temporary protection of existing construction (floors, roof, and walls) when adjoining new work and in traffic areas.

B. Provide temporary construction, constructed of framing and plywood, to protect existing construction and surrounding surfaces from damage by movement of materials and personnel.

C. The contractor is responsible for all damage to existing structure and shall replace or repair all areas of damage.

D. Repair, replace, or rebuild existing construction as required or as directed which has been removed, altered or disrupted to allow for new construction. Existing construction shall be corrected to match adjacent construction, new or existing.

E. Perform cutting of existing concrete and masonry construction with saws and core drills. Do not use jack-hammers or explosives.

1.6 SHORING AND BRACING

A. Provide temporary shoring of existing construction to allow removal of existing structural elements. Maintain shoring until new structural elements are in place and accepted by the Engineer and City Inspector(s).

PART 2 - PRODUCTS

2.1 SALVAGED MATERIALS

A. Removed and salvaged materials of value not designated for reinstallation, unless claimed as salvage by the City, shall become the property of the Contractor and shall be removed from the premises by the Contractor and recycled, reused or disposed of as specified in Section 01 35 43 - Environmental Procedures.

B. The City will remove or, under separate contract, have all materials and equipment which the City requires removed prior to Work under this Section begins.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to the Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected and approved by the Engineer.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION

A. Temporary Support: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.

B. Provide adequate protection of other work during selective demolition to prevent damage and provide protection of the work from adverse weather exposure.

3.3 PROCEDURE

A. Employ only skilled tradesmen to perform selective demolition.

B. Cut work by methods least likely to damage work to the retained and work adjoining.

C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete and masonry work.

D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

E. Where selective demolition terminates at a surface or finish to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even, substrate transition.

3.4 POLLUTION CONTROLS

A. Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with AQMD standards.

B. Comply with governing authorities pertaining to environmental protection.
   1. Protect natural resources as specified in Section 01 35 43 - Environmental Procedures.

C. Clean adjacent portion of the structure and improvement of dust, dirt and debris caused by demolition operations, as directed by the Engineer and governing authorities. Return adjacent areas to its condition prior to the start of the work.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Collect, recycle, reuse, and dispose of demolished materials as specified in Section 01 35 43 - Environmental Procedures and as approved by the City in the Solid Waste Management and Environmental Protection Plan.

3.6 SCHEDULE OF SELECTIVE DEMOLITION

A. The project involves removal of existing roofing, gutters and downspouts, and wood fascia.

B. Provide additional selective demolition as indicated and required by the Contract Documents and as required for indicated new construction.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wood Framing.
   2. Concealed blocking behind wall mounted items.
   3. Sheathing material.
   4. Wood treatment.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Lumber Standards Committee (ALSC):
   1. Softwood Lumber Standards.

B. American Plywood Association (APA):
   1. Grades and Standards.

C. American Society for Testing and Materials (ASTM):
   1. ASTM A307 - Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
   2. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

D. American Wood Preservers Association (AWPA):
   1. AWPA - C1 - All Timber Products - Preservative Treatment by Pressure Process.
   2. AWPA - C15 - Wood for Commercial-Residential Construction Preservative Treatment by Pressure Processes.
   3. AWPA - C20 - Structural Lumber - Fire-Retardant Treatment by Pressure Processes.
   4. AWPA - C27 - Plywood - Fire-Retardant Treatment by Pressure Processes.
   5. AWPA - P5 - Waterborne Preservatives.

E. Underwriters' Laboratories, Inc. (UL):
   1. UL FR S - Fire Rated Treated Wood with Flame Spread and Smoke Developed Ratings of 25 or less in accordance with ASTM E84.
   2. UL 723 - Test for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Procedures for submittals.
   1. Assurance/Control Submittals:
      a. Certificates:
         1) Pressure Treated Wood: Certification from treating plant stating chemicals and process used and net amount of preservative retained are in conformance with specified standards.
         2) Preservative Treated Wood: Certification for water-borne preservative that moisture content was reduced to 19 percent maximum, after treatment.
         3) Fire-Retardant Treated Wood: Certification from treating plant stating that fire-retardant treatment materials comply with governing code, ordinances and requirements of local authority having jurisdiction, and treatment will not bleed through finished surfaces.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:
   1. Lumber Grading Agency: Certified by ALSC.
   2. Plywood Grading Agency: Certified by APA.

B. Regulatory Requirements: Conform to applicable codes for fire-retardant treatment of wood surfaces for flame/smoke ratings.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Transport, handle, store, and protect products.
   1. Inspect wood materials for conformance to specified grades, species, and treatment at time of delivery to Project Site.
   2. Reject and return unsatisfactory wood materials.

B. Provide facilities for handling and storage of materials to prevent damage to edges, ends and surfaces.

C. Keep materials dry. Stack materials off ground minimum 12 inches or, if on concrete slab-on-grade, minimum 1-1/2 inches, fully protected from weather. Provide for air circulation within and around stacks and under temporary coverings.

D. For materials pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Environmental Impact:
   1. Formaldehyde: Products containing urea-formaldehyde will not be permitted.
   2. Wood pressure treatment products: Products containing chromium will not be permitted. Products containing arsenic will not be permitted.
   3. Use exterior plywood only. Interior plywood is not permitted.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber, finished 4 sides, 15 percent maximum moisture content. Each piece of lumber to be factory marked with type, grade, mill and grading agency.
   1. Light framing: Construction grade Douglas fir or southern pine, appearance grade where exposed.
   2. Structural framing and timbers: No. 2 grade Douglas Fir, Southern Pine, or Spruce, appearance grade where exposed.
   3. Boards: Construction grade.

2.2 NAILERS, BLOCKING, FURRING AND SLEEPERS

A. Wood for nailers, blocking, furring and sleepers: Construction grade, finished 4 sides, 15 percent maximum moisture content. Pressure preservative treat items in contact with roofing, flashing, waterproofing, masonry, concrete or the ground.

2.3 BUILDING PAPER

A. Asphalt saturated felt, non-perforated.

2.4 FASTENERS

A. Fasteners: Provide manufacturers recommended power tools for each type of fastener.
   1. Bolts, Nuts, Washers, Lag Screws, and Wood Screws: ASTM A307, Medium carbon steel; size and type to suit application; galvanized for treated wood; plain finish for other interior locations, of size and type to suit application, unless otherwise noted.
   2. Expansion Shield Fasteners: For anchorage of non-structural items to solid masonry and concrete.
   3. Powder or Pneumatically Activated Fasteners: For anchorage of non-structural items to steel.

4. Fasteners for Wood and Plywood (over 1/2 inch) to Light Gage Metal Framing and Metal Deck (up to 1/8 inch thick):
   a. Hilti PWH #3 with wings.
   b. ITW TEKS/4 with wings.
   c. Or approved equal.
5. Fasteners for Wood and Plywood (up to 2 inches thick) to Metal (from 1/8 inch to 1/4 inch thick):
   a. Hilti PFH #4 with wings.
   b. ITW TEKS/4 with wings.
   c. Or approved equal.
6. Fasteners for Non-Structural Wood Members to Masonry: 1/4-inch diameter x 3-1/4 inch with phillips flat head.
   a. Tapcon masonry anchors, by ITW Buildex.
   b. Kwik-Con II fastener, by Hilti.
   c. Or approved equal
7. Fasteners for preservative treated lumber must be hot dipped galvanized, type 304 or 316 stainless steel, or zinc-polymer coated.

2.5 WOOD TREATMENT

A. Preservative Pressure Treated Lumber, Alkaline Copper Quat (ACQ): Type B, Ammoniacal Copper Quat or Type D, Amine Copper Quat.
   1. Manufacturers:
      a. Chemical Specialties, Incorporated,
      b. Arch Wood Protection, Inc.,
      c. Osmose Inc.,
      d. Or approved equal.
   2. Products:
      a. CSI: “Preserve”.
      b. Arch Wood: “Natural Select”.
      c. Osmose: “Nature Wood”.
      d. Or approved equal.
   3. Impregnate lumber with preservative treatment conforming to AWPA Standard C1 and P5. Apply the preservative in a closed cylinder by pressure process in accordance with AWPA Standard C15.
   4. Retention of preservative:
      a. Moderate service conditions (weather exposure): 0.25 pounds per cubic foot (oxide basis).
      b. Severe conditions (constant contact with ground or water): 0.40 pounds per cubic foot (oxide basis).
   5. Remove excess moisture where shrinkage is a serious fault or where treated lumber will be in contact with plaster, or stucco, and where water-borne treated lumber is to be painted or stained.
   6. Lumber shall be dried to 15 to 19 percent moisture content after treatment, and material to be painted or stained shall have knots and pitch streaks sealed as with untreated wood.

7. Liberally brush freshly cut surfaces, bolt holes and machined areas with the same preservative in accordance with AWPA Standard M4.
8. Treatment material shall provide protection against termites and fungal decay and shall be registered for use as a wood preservative by the U. S. Environmental Protection Agency.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Chemical Specialties, Incorporated,
      b. Hickson Corporation,
      c. Hoover Treated Wood Products, Incorporated,
      d. Or approved equal.
   2. Products:
      a. CSI: “D-Blaze”.
      b. Hickson: “Dricon”.
      c. Hoover: “Pyro-Guard”.
      d. Or approved equal.
   3. Lumber and plywood shall be treated as follows:
      a. Each piece of treated material shall bear the UL FR-S rating (flame spread and smoke developed less than 25) indicating compliance with an extended 30-minute tunnel test in accordance with ASTM E84 or UL 723.
      b. After treatment, all lumber shall be dried to an average moisture content of 19 percent or less.
      c. After treatment, all plywood shall be dried to an average moisture content of 15 percent or less.
      d. All treated material shall meet interior Type A requirements in AWPA standard C-20 for lumber and C-27 for plywood.
      e. Chemicals used to treat material shall be free of halogens, sulfates and formaldehyde.

C. Wood Requiring Treatment:
   1. Lumber, Preservative Treated: Nailers, blocking, stripping, and similar items in conjunction with roofing, flashing, and other construction. Sills, blocking, furring, stripping, and similar items in contact with masonry or concrete.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that spacing, direction and details of supports are correct to accommodate installation of blocking, backing, stripping, furring and nailing strips.

C. Report in writing to the Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected and approved by the Engineer.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 INSTALLATION - FRAMING

A. Set structural members level and plumb, in correct position.

B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Place horizontal members, crown side up.

D. Construct load bearing framing and curb members full length without splices.

E. Double members at openings as indicated on Drawings. Space short studs over and under opening to stud spacing.

F. Construct double joist headers at ceiling openings and under wall stud partitions that are parallel to roof trusses. Frame rigidly into roof trusses.

G. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 4 inches.

H. Place sill gasket directly on sill flashing. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

I. Coordinate installation of wood decking and prefabricated wood trusses.

J. Install miscellaneous blocking, nailing strips and framing where required as backing for attachment of wall mounted fixtures, cabinetwork, and other items, and as detailed on Drawings. Coordinate to allow proper attachment of work of other Sections.
   1. Secure in place using fasteners specified. Use only recommended power tools for placement of fasteners.
   2. Recess heads of fasteners below surface of wood members.

K. Secure in place with appropriate fasteners. Use fasteners of correct size that will not penetrate members where opposite side will be exposed to view or require finishing. Do not split wood with fasteners; set panel products to allow expansion at joints.

L. Construct members of continuous pieces of longest possible lengths.

3.3 INSTALLATION - PLYWOOD

A. Secure roof sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing.

B. Use sheathing clips between sheets between roof framing members or provide solid edge blocking between sheets.

C. Secure wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered.

D. Install plywood in combination single and two spans continuous.

3.4 SITE TREATMENT OF WOOD MATERIALS

A. Apply preservative treatment in accordance with manufacturer's published instructions.

B. Brush apply two coats of preservative treatment on wood in contact with cementitious materials and roofing and related metal flashings. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting members.

3.5 CONSTRUCTION

A. Site Tolerances:
1. Framing Members: 1/4 inch from true position, maximum.

3.6 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspection.

B. Framing Inspection:

1. Inspect wood framing installation and connections at completion of each phase of wood construction for correct installation, nailing, connections, and fasteners.
2. Inspect and verify that types and spacing of fasteners are installed in locations specified or indicated on Drawings.
3. Inspect types, locations, and fasteners for structural metal framing connectors.
4. Inspect types, locations, and connections of hold-down anchors.
5. Inspect wood to steel beam connections.

3.7 SCHEDULE - NAILING

CONNECTION	NAILING
Joist to sill or girder, toenail	3 - 8d
Bridging to joist, toenail each end	2 - 8d
Bottom Plate to joist or blocking, face nail	16d at 16 inches o.c.
Top plate to stud, end nail	2-16d
Stud to bottom plate	4-8d, toenail or 2-16d, end nail
Double studs, face nail	16d at 24 inches o.c.
Double top plates, face nail	16d at 16 inches o.c.
Top plates, laps and intersections, face nail	2 - 16d
Continuous header, two pieces	16d at 16 inches o.c. along each edge
Ceiling joists to plate, toenail	3 - 8d
Continuous header to stud, toenail	4 - 8d
Ceiling joists, laps over partitions, face nail	3 - 16d
Ceiling joists to parallel rafters, face nail	3 - 16d
Rafter to plate, toenail	3 - 16d
Built-up corner studs	16d at 24 inches o.c.
Built-up beams	20d at 32 inches o.c. at top and bottom staggered 2 - 20d at ends and at each splice

Payment for items of work covered under Division 6 of the plans and these specifications shall be based on the lump sum bid pricing identified in the Bid Schedule. No additional compensation will be allowed.

END OF SECTION

SECTION 06 15 16
WOOD ROOF DECK REPAIR AND REPLACEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Wood deck repair and replacement associated with roof replacement.

1.2 RELATED SECTIONS

A. Section 013300 – Submittal Procedures

B. Section 016000 – Product Requirements

C. Section 024100 – Roof Removal and Substrate Preparation

D. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 UNIT PRICES

A. Provide unit prices for the work described in Articles 3.2 and 3.3.

1.4 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Wood Preservers Association (AWPA)
   2. American Wood Preservers Institute (AWPI)
   3. American National Standard Institute (ANSI)
   4. Western Wood Products Association (WWPA)

1.5 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.6 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive a manufacturer's warranty. Company shall have a minimum of 5 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the Owner immediately for resolution.

1.7 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure. Store roll materials standing on end.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not perform wood deck repair/replacement work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for

installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

B. Material Safety Data Sheets (MSDS) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 WOOD DECK REPAIR/REPLACEMENT MATERIALS

A. For use at "Wood Deck Inspection/Repair" outlined in Article 3.2:
   1. Steel plate: 16-gauge galvanized with pre-drilled holes for fasteners and plates.
   2. For securing wood to wood and wood to steel: No. 14 fluorocarbon-coated screws; length as necessary to penetrate minimum 1-inch depth through the deck.
   3. For securing wood to underlying structural steel (1/2-inch thick max.): 12-24 x 1-1/4 inch Hex Washer Head, Teks 5, or approved equal.

B. For use at "Wood Deck Inspection/Replacement" outlined in Article 3.3:
   1. Replacement wood plank:
      a. Wood plank dimensions and type: As required by conditions encountered; Type, grade and species to match dimensions and type of existing wood plank deck.
   2. Replacement plywood:
      a. Plywood dimensions and type: As required by conditions encountered; Type,
      grade and species to match dimensions and type of existing wood plank deck.
   3. Fasteners:
      a. For securing wood to wood and wood to steel: No. 14 fluorocarbon-coated screws; length as necessary to penetrate minimum 1-inch depth through the deck.
      b. For securing wood to underlying structural steel (1/2-inch thick max.): 12-24 x 1-1/4 inch Hex Washer Head, Teks 5, or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

A. Refer to Section 024100 for general work and substrate preparation requirements.

3.2 WOOD DECK INSPECTION AND REPAIR *(Unit Price Work)*

A. Repair at openings caused by obsolete roof penetration removal or other defects less than 12” by 12” in size:
   1. At locations encountered and other locations indicated by the Owner, cover the existing opening with 16-gauge steel plate stock. Lap the plate a minimum of 8-inches beyond the opening on all sides. Fasten the steel plate with specified fasteners and plates 6-inches on center. Secure the plate a minimum of 2-inches in from the outside edge of the repair plate.

3.3 WOOD DECK INSPECTION AND REPLACEMENT *(Unit Price Work)*

A. Inspect deck for structurally unsound or otherwise defective areas and for fastening deficiencies. Perform treatments as indicated:
   1. Remove defective decking and repair resultant openings:
      a. Install replacement decking with the long dimension across the supports. Leave a 1/8-inch gap at all edges and end joints. Install shims as necessary between the replacement decking and the structural members to ensure that the replacement decking is flush with adjacent decking.
      b. Mechanically attach the new wood decking to the underlying supports using the specified fasteners.
   2. Install additional fasteners where the existing fasteners missed the underlying supports or where the number of fasteners installed does not meet minimum code requirements.
   3. Remove loose or protruding nails or hammer them down flush with the deck surface.

B. Sweep deck clean before installing new materials.

END OF SECTION

SECTION 07 01 50
PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Roof tear-off.

2. Temporary roofing membrane.

3. Roof replacement preparation.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Existing Membrane Roofing System: Roofing system identified above, including roofing membrane, and components and accessories between deck and roofing membrane.

C. Roof Tear-Off: Removal of existing membrane roofing system from roof sheathing.

D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

E. Existing to Remain: Existing items of construction that are not indicated to be removed.

F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer

B. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.

C. Schedule of Re-Roofing Preparation Activities: Indicate the following:

1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination of Owner's continuing occupancy of existing building.

1.7 QUALITY ASSURANCE

A. Reroofing Conference: Conduct conference at Project site.

1. Meet with Owner; Architect; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:

a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.

b. Temporary protection requirements for existing roofing system that is to remain during and after installation.

c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.

d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

e. Existing deck removal procedures and Owner notifications.

f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.

g. Structural loading limitations of deck during reroofing.

h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.

i. Existing conditions that may require notification of Architect before proceeding.

1.8 PROJECT CONDITIONS

A. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

C. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

D. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

PART 2 - PRODUCTS

2.1 INFILL MATERIALS

A. Use infill materials matching existing membrane roofing system materials unless otherwise indicated.

2.2 TEMPORARY ROOFING MATERIALS

A. Design and selection of materials for temporary roofing are responsibilities of Contractor.

2.3 TEMPORARY ROOF DRAINAGE

A. Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

A. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

B. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter or under existing membrane roofing system components that are to remain.

3.2 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.

B. Roof Tear-Off: Remove existing roofing membrane, insulations, flashings, and other membrane roofing system components down to the deck.

3.3 DECK PREPARATION

A. Inspect deck after tear-off of membrane roofing system.

B. Roof Deck: If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.

1. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify the City. Do not proceed with installation until directed by Architect.

3.4 TEMPORARY DISPLACEMENT OF ROOFTOP EQUIPMENT

A. Temporary displacement of mechanical units:

1. If mechanical units are to be temporarily displaced, shut off all affected electrical, plumbing and gas lines and disconnect all electrical, plumbing, gas lines and ventilation ducts where required to allow for lifting mechanical units prior to roof removal work. All disconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all disconnections with the Owner

2. Lift units in a manner that will not cause damage to the mechanical unit, mechanical unit components or structural deck.

3. Prior to leaving the site, return units to their original position, resulting in a watertight condition.

4. Ensure mechanical units are returned to their previous operational condition prior to leaving the site.

B. Temporary displacement of gas lines, conduit, junction boxes and condensate lines:

1. Temporarily displace gas lines, conduit, junction boxes, condensate lines or other items that may interfere with roof replacement work. Any necessary disconnection of gas lines, conduit and junction boxes is to be performed by a licensed mechanical/electrical contractor as applicable to the work being performed. Coordinate all disconnections with the Owner.

C. After completion of work, reinstall any mechanical units that have been temporarily displaced. Reconnect all electrical, plumbing, gas lines and ventilation ducts where required. All reconnection of plumbing, gas lines, electrical conduit and ventilation ducts is to be performed by a licensed mechanical/electrical contractor. Coordinate all reconnections with the Owner.

D. After completion of work, reconnect any gas lines, conduit and/or junction boxes that have been disconnected. Reconnection of gas lines, conduit and/or junction boxes is to be performed by a licensed mechanical/electrical

contractor as applicable to the work being performed. Coordinate all reconnections with the Owner.

3.5 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site is not permitted.

B. Transport and legally dispose of demolished materials off Owner's property.

3.6 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by preparation for re-roofing operations. Return adjacent areas to condition existing before operations began.

END OF SECTION

SECTION 07 54 19
POLYVINYL-CHLORIDE (PVC/TPO) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Condition and Division 01 Specification Sections, apply to this section.

1.2 SUMMARY

A. Section includes:
1. Mechanically-fastened thermoplastic PVC/TPO roofing system on metal deck, including:
    a. Rigid Insulation over existing wood sheathing.
    b. Walkway material.

1.1 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For the following products:
1. Sheet roofing, including T-shaped side and end lap seam.
2. Walkway pads or rolls.

1.3 INFORMATIONAL SUBMITTALS

A. Contractor's Product Certificate: Submit letter, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

B. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
1. Include letter from Manufacturer written for this Project indicating approval of Installer.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

E. Warranties: Unexecuted sample copies of special warranties.

F. Inspection Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.4 INFORMATIONAL SUBMITTALS

A. Maintenance Data: To include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section, UL listed for roofing systems identical to that specified for this Project, with minimum five years’ experience in manufacture of specified products in successful use in similar applications.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
1. An authorized full-time technical employee of the manufacturer.
2. An independent party certified as a Registered Roof Observer by the Roof Consultants Institute, retained by the Contractor or the Manufacturer and approved by the Manufacturer.

D. Pre-installation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review temporary protection requirements for roofing system during and after installation.

8. Review roof observation and repair procedures after roofing installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.
2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
3. Remove temporary plugs from roof drains at end of each day.
4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.8 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Manufacturer's Warranty: Manufacturer's standard or customized form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
1. Manufacturer's warranty includes roofing membrane, base flashings, fasteners, roofing membrane accessories and other components of roofing system specified in this Section. One manufacturer must provide the warranties for specification sections 070150.72, 070150.73, and 075216.15.
2. Warranty Period: 20 years from date of Substantial Completion.

C. Installer's Warranty: Submit roofing Installer's warranty, covering the Work of this Section and related Sections indicated above, including all components of membrane roofing such as single ply roofing membrane, base flashing, fasteners, cover boards, substrate boards, and walkway products, for the following warranty period:
1. Warranty Period: Two years from date of Substantial Completion.

D. Manufacturer Inspection and Preventive Maintenance Requirement: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections and preventive maintenance is included in the Contract Sum. Inspections to occur in Years 2, 5, 10 and 15 following completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Manufacturer/Product: The roof system specified in this Section is based upon products of Tremco, Inc., Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles.

B. Approval of Other Manufacturers and Comparable Products: Submit in accordance with project substitution requirements, within time allowed for substitution review.

C. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
   1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
   2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Flashings and Fastening: Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:

1. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
2. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated on Drawings. Identify products with appropriate markings of applicable testing agency.

F. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 THERMOPLASTIC MEMBRANE MATERIALS

A. Thermoplastic PVC/TPA sheet, ASTM D4434 Type IV internally fabric reinforced, Energy Star qualified, CRRC listed, and California Title 24 Energy Code compliant.
1. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6509: 300 lbf/in (52 kN/m).
2. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6509: 100 lbf (440 N).
3. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D 6509: 25 percent.
4. Minimum Thickness, nominal, ASTM D 751: 60 mils (1.5 mm).
5. Exposed Face Color: White.
6. Reflectance, ASTM C 1549: 86 percent.
7. Thermal Emittance, ASTM C 1371: 0.86.
8. Solar Reflectance Index (SRI), ASTM E 1980: 108.
9. Recycled Content, minimum: 25 percent preconsumer.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, and color as PVC/TPA sheet membrane.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Flashing Sheet Bonding Adhesive:
   1. Elastomeric low-VOC solvent-based contact-type adhesive for bonding TPA non-fleece-backed single ply membranes and flashings to substrates.
      a. VOC, maximum, ASTM D 3960: <200 g/L.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 mm by 3 mm) thick; with anchors.

D. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, prepunched.

E. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to membrane roofing system manufacturer.

F. Termination Joint Sealant: Silicone, S, NS, 25 or 50, NT: Single-component, nonsag, plus 25 to 50 percent and minus 25 to 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, and compatible with adjacent materials.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 SUBSTRATE BOARDS

A. Glass-mat-faced gypsum panel, ASTM C1177/C 1177M.
   1. Thickness: 1/4 inch.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.6 WALKWAY MATERIALS

A. Walkway roll, reinforced PVC/TPA membrane roll with serrated slip-resistant surface, fabricated for heat welding to compatible PVC/TPA membrane surface.
   1. Roll Size: 36 inches by 60 foot (914 mm by 18.3 m).
   2. Thickness: 0.08 inch (2 mm).
   3. Color: Grey.

B. Rubber blocks: 100% rubber blocks with steel channels and reflective strips designed for supporting conduit.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
2. Wood Roof Deck: Verify that wood deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch (1.6 mm) out of plane relative to adjoining deck.
3. Existing Prepared Roof Substrate: Verify that existing insulation and substrate is sound and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s recommendations.

B. NRCA Installation Details: Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations:

1. Perimeter Edge, Embedded Edge: Plate TP-4.
2. Curb Detail at Rooftop HVAC Units, Premanufactured: Plates TP-13.
3. Curb Detail at Rooftop HVAC Units, Job-Built, Wood: Plate TP-14.

4. Penetration, Sheet Metal Enclosure: Plate TP-16.
5. Penetration, Stack Flashing: Plate TP-18.
6. Penetration, Plumbing Vent: Plate TP-20.
7. Penetration, Plumbing Vent, Premanufactured Boot: Plate TP-20A.
8. Roof Drain: Plate TP-27.
9. Base Flashing at Through-wall Scupper: Plate TP-28.
10. Base Flashing at Overflow Scupper: Plate-29.
11. Gutter at Draining Edge: Plate TP-30.
12. Guide for Clearances between Pipes / Walls / Curbs – Table 4.
13. Guide for Crickets and Saddles – Table 5.

3.4 SUBSTRATE BOARD

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Secure substrate board using mechanical fasteners.
2. Adhere substrate board to decking where fasteners will be visible on the underside of the decking.

3.5 MECHANICALLY FASTENED MEMBRANE ROOFING INSTALLATION

A. Mechanically fasten membrane roofing over area to receive roofing and install according to roofing system manufacturer's written instructions.
1. Install sheet according to ASTM D 5082.

B. Start installation of membrane roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten securely at terminations, penetrations, and perimeter of roofing.

E. Adhere membrane to substrate board over deck areas where mechanical fasteners will be visible on the underside of the decking.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

3.6 FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing. Install umbrellas to counter flash.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.7 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products surrounding serviceable equipment and in a continuous path from roof access points. Heat weld walkway products to substrate according to roofing system manufacturer's written instructions.

B. Replace all wood blocks with new rubber blocks set on oversized walkpad sections.

3.8 FIELD QUALITY CONTROL

A. Roofing Inspector: Owner will engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

B. Roofing Inspector: Contractor shall engage a qualified roofing inspector for a minimum of 2 full-time days on site to perform roof tests and inspections and to prepare start up, interim, and final reports. Roofing Inspector's quality assurance inspections shall comply with criteria established in ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

D. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Furnishing and installing sheet metal flashing and trim where indicated.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

B. Section 01 40 00: Quality Requirements

C. Section 01 60 00: Product Requirements

D. Section 07 92 00: Joint Sealants

E. Section 09 91 00: Painting

G. Section 23 31 00: HVAC Ducts

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM A167 – Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
2. ASTM A653 – Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy- Coated (Galvannealed) by the Hot-Dip Process
3. ASTM A924 – General Requirements for Steel Sheet, Metallic-Coated by the
4. ASTM B29 – Refined Lead
5. ASTM B32 – Solder Metal
6. ASTM B209 – Aluminum and Aluminum-Alloy Sheet and Plate
7. ASTM B221 – Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles, and Tubes

B. American Welding Society (AWS):

1. AWS A5.22 - Flux Cored Corrosion-Resisting Chromium and Chromium- Nickel Steel Electrodes

C. Federal Specifications (FS):

1. FS A-A-51145D – Flux, Soldering, Non-electronic, Paste and Liquid
2. FS SS-C-153 – Cement, Bituminous, Plastic

D. Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA):

1. SMACNA Architectural Sheet Metal Manual, latest edition

E. Aluminum Association (AA):

1. DAF-45: Designation System for Aluminum Finishes

1.04 QUALITY ASSURANCE

A. Comply with Project Quality Program Requirements (see 1.02 above).

B. Manufacturer and Applicator/Installer Qualifications:

1. Manufacturer's Qualifications: Minimum of 5 years' experience in manufacturing of specified materials/products, with record of successful in-service performance.

2. Applicator/Installer Qualifications: Engage applicator/installer with minimum 5 years' experience in installation of materials/products similar in material, design, and to ex- tent indicated for this Project.

a. Installer Certification: Obtain written certification from manufacturer, certifying that installer is approved by, licensed, or certified by manufacturer for installation of specified materials/products or systems.

b. Provide list of minimum 5 projects similar in nature and size to that of this Project, where specified materials/products have been successfully installed/used.

C. Coordinating and Scheduling: Take field measurements required for proper and adequate fabrication and installation of Work.

1. Coordinate sheet metal Work related to waterproofing and roofing Work with waterproofing and roofing installers.

1.05 SUBMITTALS

A. Refer to Sections 01 33 00 - Submittal Procedures, for submittal requirements and procedures.

B. Product Data: Manufacturers product data, installation instructions and general recommendations for each fabricated product

C. Shop Drawings: Fabrication and installation drawings for each item to be provided under this Section.

1. Include detailed drawings of fabricated items including reglets, counterflashing, gutters, downspouts, scuppers, conductor heads,

splash pans, parapet coping, fascia, gravel stops and expansion/joint system.

1.06 DEFINITIONS

A. VOC: Volatile Organic Compound, as defined in SCAQMD Rule 102 – Definition of Terms:

1. Any volatile compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and exempt compounds.

B. SCAQMD: South Coast Air Quality Management District.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 01 60 00 – Product Requirements, for general requirements for delivery, storage, and handling procedures

B. Welding Electrodes: Store coated electrodes in containers at not less than 40°F above ambient temperature.

PART 2 - PRODUCTS

2.01 SHEET METAL MATERIALS

A. Galvanized Steel: ASTM A653 with G90 coating, structural quality, minimum 0.0299-inch thickness (22 U.S. Standard Gage).

B. Aluminum:

1. Sheet And Plate: ASTM B209, Alloy 3003-H14, 0.032-inch material where rigid backing occurs, and for window flashing

a. Use 0.050-inch material for sills and where no backing, unless otherwise indicated

2. Extrusions: ASTM B221 – Alloy 6063-T6

2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Solder: ASTM B32, 50-50 tin/lead solder with Rosin Flux, unless otherwise recommended by metal manufacturer.
1. Flux For Solder: FS A-A-51145D; Type I for galvanized steel, and Type II for stainless steel.

B. Welding Electrodes: Comply with AWS requirements

C. Fasteners: Same metal as flashing/sheet metal or other corrosion-resistant metal recommended by sheet manufacturer, compatible with items in contact.

1. Use stainless steel fasteners for dissimilar metals.
2. Use compatible washers where required to protect surfaces, allow adjustment or movement, and provide water tight connections
3. Nails: Case-hardened galvanized concrete nails or roofing nails in length and size required; use one-inch diameter tinned disks where required.
4. Rivets: 18-8 stainless steel
5. Sheet Metal Screws: Self tapping stainless steel with seal where required for watertight connection.
6. Match finish of exposed heads with material being fastened, except for stainless steel.

D. Red Rosin Paper: Inorganic fiber coating both sides and weighing not less than four pounds per 100 square feet.

E. Block Tin: Commercial tin consisting of clean tin solids with minimum 98 percent tin content; free of solders, foreign metals and materials.

F. Epoxy Seam Sealer: Two-part, non-corrosive metal seam cementing compound recommended by metal manufacturer for exterior/interior non-moving joints, including riveted joints

G. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, and non- migrating sealant.

H. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed; comply with ASTM C920 and requirements of Section 07 92 00 – Joint Sealants

I. Flashing Compound: Fibrated asphalt plastic cement conforming to FS SS-C-153

J. Metal Accessories: Corrosion-resistant sheet metal clips, straps, anchoring devices, and similar accessory units required for installation of Work, match or compatible with material being installed; size and gage required for performance.

K. Isolation Material: Single component, inert-type, non-corrosive compound, free of asbestos fibers, sulfur components, and other deleterious impurities compounded for 15 mil dry film thickness per coat; VOC compliant.

1. Elasto-Deck BT manufactured by Pacific Polymers International, Inc., or

equivalent products acceptable by architect.

L. Backup Plates And Cover Plates: Same material and finish as flashing.

2.03 FABRICATION

A. Shop-fabricate Work to greatest extent possible.
   1. Fabricate sheet metal Work in accordance with SMACNA "Architectural Sheet Metal Manual" unless otherwise indicated.
   2. Fabricate for waterproof and weather-resistant performance; with expansion provisions.

B. Seams: Fabricate non-moving seams with flat-lock seams.
   1. Tin edges to be seamed, form seams, and solder.
   2. Form aluminum seams with seam sealer; rivet joints.

2.04 PERFORMANCE

A. Form exposed sheet metal work to fit substrates complying with material manufacturer instructions and recommendations, for forming material without excessive oil-canning, buckling and tool marks, true to line and levels indicated.

B. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with specified isolation material or other permanent separation as recommended by fabricator.

C. Form sheet metal to dimensions and shapes required and indicated with molded and broken surfaces true and angles accurate.

D. Form flat locked seams not subject to stress - 1/2-inch-wide and flat locked seams subject to stress - one inch wide.

E. Form lap expansion seams not less than four inches wide and fill with specified seam sealer.

F. Cap flat seams in direction of flow where exposed to weather.

G. Provide minimum 1/2-inch hem at exposed edges of sheet metal.

H. Provide minimum of one lap expansion seam in straight runs of four feet or more, not more than eight feet from corners, and not more than 16 feet on centers in straight runs. Align sheet metal expansion joints with expansion joints of other materials in proximity.

2.05 SHOP PAINTING

A. Treat galvanized sheet metal surfaces which will be concealed in finished Work with approved water-based neutralizing solution or wash coat; apply one shop coat of approved organic or inorganic zinc-rich primer specified in Section 09 91 00 – Painting.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect substrates and conditions under which metal flashing and trim will be installed

1. Do not proceed with installation until unsatisfactory conditions have been corrected

B. Preparation:

1. Clean surfaces to be welded or soldered by abrading with steel wool or steel brushes
2. Apply flux to areas of steel to receive solder and hot dip in new block tin to prime metal.

3.02 INSTALLATION

A. Install sheet metal straight and true, with miters and joints accurately fitted, exposed Work, free of dents.

1. Reinforce corners and make seams waterproof.
2. Make provisions for expansion and contraction in sheet metal assemblies.
3. Securely anchor Work in place; conceal fasteners where practicable.

B. Install sheet metal with continuous concealed clips of same gauge, in lengths not exceeding eight feet, spaced 1/8 inch apart for expansion, and fastened to structure not more than eight inches on centers.

1. Fold fastened edge of clips back over fasteners.

C. Punch or drill and rivet, providing invisible rivets and seams, where multiple layers of metal occur.

1. Continuously solder or weld folded edges and wipe or grind smooth to provide texture to match surrounding metal.

D. Fabricate flashing for corners of building, not less than four feet long in each direction.

E. Minimum Radius of Brake in Sheet Metal: Twice metal thickness.

F. Furnish and install reglets for flashing in forms for concrete and within other materials where indicated

G. Secure flashing in reglets with not less than two 3/4-inch lead wedges spaced not more than 24 inches on centers.

1. Apply sealant specified in Section 07 92 00 – Joint Sealants; cover wedges and provide weathertight joint.

H. Apply red rosin paper as barrier between asphalt products and sheet metal as each piece of sheet metal is installed; lap not less than four inches and fasten to structure.

I. Roof Penetrations: Furnish and install sleeves which have four-inch-wide flanges and ten inches high flared top counterflashing with 1/8 inch by 1 1/2-inch draw band.

J. Separate dissimilar metals with fiber spacers or specified isolation material.

K. Welding: Perform welding with direct current, reverse polarity equipment utilizing minimum current to minimize distortion of metal.

1. Use start and run-off tabs to assure uniformity of weld terminations.
2. Chip and wire brush weld areas with stainless steel tools; remove flux and slag between welding passes and after final welding pass.
3. Grind and texture exposed welds to match surrounding metal.

L. Soldering: Assemble tinned joints of sheet metal with tinned soldering coppers and solder; fill joint with molten solder; wipe joints free of excess solder.

1. Remove flux, rinse twice in hot, clean water and wipe dry.
2. Texture joints to match adjacent surfaces.

END OF SECTION

SECTION 07 62 07
SHEET METAL FOR PVC ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements related to sheet metal fabrication and installation related to fully-adhered Polyvinyl Chloride (PVC) roofing.

1.2 RELATED SECTIONS

A. Section 013300 – Submittal Procedures

B. Section 016000 – Product Requirements

C. Section 024100 – Roof Removal and Substrate Preparation

D. Section 075420 – Fully-Adhered PVC Roofing

E. Section 079201 – Sealants for Roof Replacement

F. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Society for Testing and Materials (ASTM)
      a. ASTM A 653/653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
   2. American National Standard Institute (ANSI)
   3. Factory Mutual Global (FM)
   4. National Roofing Contractors Association (NRCA)
   5. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
      a. SMACNA Architectural Sheet Metal Manual, 6th Edition
   6. Single Ply Roofing Industry (SPRI)
      a. ANSI/SPRI/FM 4435/ES-1 – Wind Design for Edge Systems Used with Low Slope Roofing Systems

1.4 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 013300.

B. Refer to Section 013300 for procedural requirements related to the submittal process.

1.5 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive a manufacturer's warranty. Company shall have a minimum of 5 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the Owner immediately for resolution.

1.6 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 016000 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure. Store roll materials standing on end.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not perform work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

B. Cold weather precautions:
   1. NOTE: Do not install sealants, adhesives, primers and pressure-sensitive flashings associated with sheet metal flashing at temperatures below 40°F (5°C).
   2. When the outside temperature is forecast to fall below 40°F (5°C), store unused materials in a heated location. Remove these materials only when ready for installation. Sealants, adhesives, primers and pressure-sensitive flashings should be maintained at a temperature of 40°F (5°C), minimum, at all times. Do not use sealants, adhesives or primers that develop a gelled or lumpy texture to them. Return these materials to a heated location.
   3. Be aware of potential condensation formation on the PVC roof surface during application/flash-off of adhesives and primer. Remove condensation using a heat gun prior to adhesion to the insulation or cover board substrate. Do not use an open flame to remove condensation from the roof membrane or flashing materials.
   4. Refer to the PVC roofing manufacturer and NRCA requirements and recommendations for additional cold weather application recommendations and restrictions.

C. Material Safety Data Sheets (MSDS) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 SHEET METAL ACCESSORIES

A. Perimeter edge metal flashing system: Perimeter edge sheet metal flashing system consisting of a continuous inner clip and outer fascia piece, designed in accordance with the requirements of ANSI/SPRI/FM 4435/ES-1.
   1. Inner clip/retention system and continuous cleats associated with perimeter edge metal flashing systems: Galvanized steel, 20-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.

2. Fascia piece/gravel stop associated with perimeter edge metal flashing systems: PVC-coated prefinished galvanized steel, 24-gauge, maximum section lengths of 10-feet; color as selected by the Owner.

B. Perimeter parapet cap metal flashing system: Parapet cap sheet metal flashing system consisting of a continuous inner clip and outer fascia piece, designed in accordance with the requirements of ANSI/SPRI/FM 4435/ES-1.
   1. Inner clip/retention system and continuous cleats associated with perimeter edge metal flashing systems: Galvanized steel, 20-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.
   2. Parapet cap associated with perimeter parapet cap metal flashing systems: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

C. Interior parapet caps, area divider caps, expansion joint covers, curb caps, and fascia extensions: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.
   1. Continuous cleats associated with prefinished aluminum cap and fascia extension installation: Galvanized steel, 20-gauge, ASTM A 653/653M; G-90, maximum section length of 10-feet.

D. Reglet-mounted, surface-mounted and slip counter flashings: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet; standard prefinished color as selected by the Owner.

E. Gutters: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating. Fabricate in 10-foot sections; lap, pop-rivet, and seal sections together to create a maximum 50-foot constructed gutter. When gutters are required at perimeter edges greater than 50-feet, provide expansion joints between gutter sections. Fabricate one-piece gutters in accordance with the drawings. Provide a 4-inch flange with a 1/2-inch hug at the inner edge of the gutter flange.
   1. Gutter spacers: Painted galvanized steel, 1-inch wide by 3/16-inch thick; seal and secure to gutter as shown on drawings. Paint color to match gutter.

F. Through-fascia, through-wall and overflow scuppers:
   1. Scupper liners: Stainless steel, 22-gauge. Fabricate scupper flashings in accordance with the “SMACNA Architectural Sheet Metal Manual, 7th Edition”, Figures 1-26, 1-28, 1-29 and 1-30. Provide a 4-inch flange with a 1/2-inch hug at the inner edge of the scupper flange. Solder all seams watertight.
   2. Conductor heads and closure plates: Stainless steel, 22-guage. Solder all seams watertight. Fabricate these components in accordance with the drawings, and the requirements outlined in the “SMACNA Architectural Sheet Metal Manual, 7th Edition”.

G. Gutter and scupper box fascia cover: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating, maximum section lengths of 10-feet (for gutter fascia covers); standard prefinished color as selected by the Owner. Provide gutter fascia end caps, concealing stainless steel/aluminum gutter.

H. Downspouts, associated with gutters and scuppers: Prefinished galvanized steel, 24-gauge, with Kynar 500 coating. Fabricate downspouts with a "Pittsburgh Lock" seam, and in accordance with the drawings and "SMACNA Architectural Sheet Metal Manual, 7th Edition", Figures 1-32B and 1-32F; size the hangers to match downspouts.

I. Pitch pans:
1. Pitch pans: PVC-coated sheet metal, 24-guage minimum thickness, or pre-fabricated pitch pan approved by the roofing membrane manufacturer. Fabricate to dimensions shown on drawings, with a minimum 4-inch depth and other dimensions to be kept to the minimum size necessary to provide a 2-inch clearance all sides from the penetration.
2. Tubular penetration hoods and pitch pan covers: Stainless steel, 22-guage. Solder all seams and laps watertight. Fabricate to dimensions shown on drawings.

J. Miscellaneous sheet metal accessories:
1. For terminating flashing: Anchor bar: 1-inch x 1/8-inch extruded aluminum with slotted holes spaced 6 inches o.c.
2. For securement of tubular penetration flashings and sheet metal hoods at tubular penetrations: Stainless steel adjustable clamp.

2.2 FASTENERS

A. For securing sheet metal flashings: Fasteners appropriate for the substrate encountered, and compatible with the sheet metal type to be secured. Where fastener heads are exposed, provide neoprene washers.

B. For copper: Copper or bronze fasteners.

C. For stainless steel: Stainless steel fasteners.

D. For securing aluminum anchor bar: Fasteners appropriate for substrate encountered, and approved by the roofing manufacturer.

2.3 SEALANT

A. Refer to Section 079201.

PART 3 - EXECUTION

3.1 SHEET METAL INSTALLATION

A. Perimeter edge metal flashing system:
   1. Install the metal system manufacturer to meet the requirements of ANSI/SPRI/FM 4435/ES-1. Provide a system matching the dimensions indicated on the drawings.
   2. For pre-fabricated parapet cap metal systems: Install in accordance with the metal system manufacturer.
   3. For shop-fabricated perimeter edge metal systems:
      a. Secure the horizontal flange of the inner clip/continuous cleat with nails 6-inches o.c.
      b. Secure the outer vertical face of the continuous cleat with minimum #14 fasteners 18-inches o.c. Decrease fastener spacing to 9-inches o.c. within 10-feet of a building corner.
      c. Place the outer fascia/gravel stop piece. Fully crimp the fascia to the underlying continuous cleat. Secure the flange with nails 3-inches o.c. in two staggered rows.

B. Parapet edge cap metal flashing system:
   1. For pre-fabricated parapet cap metal systems: Install in accordance with the metal system manufacturer to meet the requirements of ANSI/SPRI/FM 4435/ES-1. Provide a system matching the dimensions indicated on the drawings.
   2. For shop-fabricated parapet cap metal systems:
      a. Fabricate inner clips/continuous cleats with a kick-up, creating a minimum 1/2-inch per foot slope toward the roof.
      b. Secure the horizontal flange of the inner clip/continuous cleat with nails 6-inches o.c.
      c. Secure the outer vertical face of the continuous cleat with minimum #14 fasteners 18-inches o.c. Decrease fastener spacing to 9-inches o.c. within 10-feet of a building corner.
      d. Place the cap sections. At the outer face, fully crimp the fascia to the underlying continuous cleat. At the inner face, secure the flange with #12 fasteners, fitted with neoprene washers 18-inches o.c., max., and within 2-inches of each end.
      e. Join adjacent parapet cap sections using a standing seam, with a 1” height.
      f. Where parapet caps terminate at walls, turn cap piece up 4-inches, minimum. Install counterflashing over exposed end piece.

C. Interior parapet, area divider and expansion joint covers, and fascia extensions:
   1. Install caps, as detailed, at locations indicated on the drawings.
   2. Fabricate with seams type indicated on drawings to dimensions indicated on drawings. Provide a 3/4-inch hemmed drip edge.

3. Fastening: Secure faces of interior parapet, area divider and expansion joint covers with specified fasteners appropriate for the substrate encountered, fitted with neoprene washers, spaced 18-inches o.c. max., and within 2-inches of each end.
4. Join adjacent interior parapet, area divider and sheet metal expansion joint cover sections using standing seams, with a 1" height.
5. Where interior parapet, area divider, and expansion joint covers terminate at walls, turn cap piece up 4-inches, minimum. Install counterflashing over exposed end piece.

D. Fascia extensions:
1. Secure fascia extensions with specified fasteners appropriate for substrate condition encountered, 12-inches o.c. max.

E. Reglet-mounted and slip counterflashings: Provide counterflashings, as detailed, at locations indicated on the drawings:
1. Cut reglets into masonry walls to accommodate reglet-mounted counterflashing.
2. Fabricate counterflashing to dimensions indicated on drawings. Fabricate the counterflashing with a 3/4-inch hemmed drip edge, and on surface mounted counterflashing, a 1/2-inch 45-degree angle sealant slot. Fabricate slip counterflashings to dimensions necessary to accommodate existing conditions, and as shown on drawings. Provide a minimum 4-inch face if conditions allow.
3. Secure counterflashings with specified fasteners appropriate for substrate condition encountered, fitted with neoprene washers. Space fasteners 12-inches o.c. max.
4. Provide a continuous bead of sealant along the top edge of reglet-mounted and surface-mounted counterflashings to shed water and provide a watertight seal.

F. Gutters and downspouts:
1. Shop-fabricated gutters: Place the gutter. Secure the flange with nails 3-inches o.c. in two staggered rows.
2. Gutter expansion joints: Provide gutter expansion joints at locations recommended by SMACNA; fabricated following the recommendations of SMACNA.
3. Downspouts: Install downspouts at locations indicated on drawings. Secure downspouts in accordance with the "SMACNA Architectural Sheet Metal Manual, 7th Edition", Figure 1-35A, using fasteners appropriate for the substrate encountered.
   a. Terminate the base of downspouts to match existing condition, unless indicated otherwise on the drawings.

G. Scupper liners, closure plates, conductor heads and downspouts:

1. Scupper liners: Install scupper liners at through-fascia and through-wall scupper locations indicated on the drawings. Install scupper liners following the requirements and recommendations of SMACNA.
2. Cover plates: At the exterior face of the scupper, install cover plates. Install scupper cover plates following the requirements and recommendations of SMACNA.
3. Conductor heads: Where indicated on the drawings, install conductor closure flanges and boxes following the requirements and recommendations of SMACNA.
4. Downspouts: Install downspouts at conductor boxes. Secure downspouts in accordance with the "SMACNA Architectural Sheet Metal Manual, 7th Edition", Figure 1-35A, using fasteners appropriate for the substrate encountered.
   a. Terminate the base of downspouts to match existing condition, unless indicated otherwise on the drawings.
5. Install scupper box fascia covers as indicated on the drawings. Fully clip fascia covers to stainless steel scuppers.

H. Tubular penetration and pitch pan flashings:
1. Flash tubular penetrations and pitch pans as indicated on drawings. Do not use pitch pans at tubular penetrations without the approval of the Owner.
2. Tightly secure top edge of tubular penetration flashing with a stainless steel clamp. Seal top edge of flashing and clamp watertight.
3. Install tubular penetration hoods and pitch pan covers as indicated on the drawings.

I. Anchor bar: Fasten the upper edges of modified bitumen flashings with an anchor bar installed in accordance with the requirements of the roofing membrane manufacturer.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preparing sealant substrate surfaces.
   2. Sealant and backing.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
   2. ASTM C834 - Specification for Latex Sealants.
   3. ASTM C920 - Specification for Elastomeric Joint Sealants.
   4. ASTM D1056 - Flexible Cellular Material- Sponge or Expanded Rubber.

B. Federal Specifications (FS):
   1. FS SS-S-200 - Sealing Compounds, Two Component, Elastomeric, Polymer Type, Jet-Fuel Resistant, Cold Applied.
   2. FS TT-S-1657 - Sealing Compound, Single Component Butyl Rubber Based Solvent Release Type (for Buildings and other Types of Construction).

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Procedures for submittals.
   1. Product Data: Product chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

B. Section 01 77 04 - Closeout Procedures and Training: Procedures for closeout submittals.
   1. Warranty: Submit manufacturer warranty with forms completed in City name and registered with manufacturer.

1.4 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver Products in manufacturer's original unopened containers or packages with labels intact, identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions, where applicable.

C. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.5 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements: Install sealant during manufacturer's recommended temperature ranges and weather conditions for application and cure. Consult manufacturer when sealant cannot be applied during recommended conditions.

1.6 WARRANTY

A. Section 01 77 04 - Closeout Procedures and Training: Procedures for closeout submittals.

B. Warranty:
1. Submit written warranty signed by sealant manufacturer agreeing to replace sealants and accessories which fail because of loss of cohesion or adhesion or which do not cure.
2. Warranty Period: 5 years or longer per the manufacturers' standard warranties.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated into the work include the following:
1. Bostik, Inc.
2. Dow Corning.
3. GE Silicones.
4. Mameco International.
5. W.R. Meadows, Inc.
6. Nomaco, Inc.
7. Pecora Corporation.

8. Sika Corporation.
9. Sonneborn Building Products Div. ChemRex, Inc.
10. Tremco.
11. USG Corp.
12. Or approved equal.

2.2 BUILDING SEALANTS (See Sealant Schedule at the end of this Section for specific use of sealants.)

A. Urethanes:
1. Type 2: Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25.
   a. Chem-Calk 500, by Bostik.
   b. Vulkem 227, by Mameco.
   c. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
   d. Or approved equal.

B. Silicones:
1. Type 1: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 50.
   a. 795 Silicone Building Sealant, by Dow Corning.
   b. 864 Architectural Silicone Sealant, by Pecora Corporation.
   c. Or approved equal.

C. Preformed Compressible & Non-Compressible Fillers:
1. Type 1: Backer Rod - Closed cell polyethylene foam:
   a. HBR Backer Rod, by Nomaco.
   b. #92 Greenrod, by Nomaco.
   c. Sonofoam Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
   d. Or approved equal.
2. Type 2: Backer Rod - Open cell polyurethane foam:
   a. Denver Foam, by Backer Rod Mfg Inc.
   b. Foam Pack II, by Nomaco.
   c. Or approved equal.
3. Type 3: Neoprene compression seals:
   a. WE, WF, and WG Series, by Watson Bowman & Acme Corp.
   b. Will-Seal 150 Precompressed Expanding Foam Sealants, by Will-Seal, a Division of Illbruck.
   c. Or approved equal.
4. Type 4: Butyl Rod: Kirkhill Rubber Co. or approved equal.

D. Bond Breaker Tape: Polyethylene tape of plastic as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate of joint filler must be avoided for proper performance of sealant

2.3 COLORS

A. Generally, use sealant colors matching color of material joint is located in.

B. Where a joint occurs between two materials of differing colors and Contractor cannot determine which material to match, contact the Engineer for selection.

2.4 ACCESSORIES

A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant manufacturer for joint surfaces to be cleaned.

B. Primer: As recommended by sealant manufacturer.

C. Masking tape and similar accessories to protect surfaces from damage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that joint widths are in conformance with sealant manufacturer allowable limits.
   2. Verify that contaminants capable of interfering with adhesion have been cleaned form joint and joint properly prepared.

C. Report in writing to the Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION

A. Prepare and size joints in accordance with manufacturer's instructions. Clean substrates of dirt, laitance, dust, or mortar using solvent, abrasion, or

sandblasting as recommended by manufacturer. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Verify that joint backing and release tapes are compatible with sealant. Verify sealant is suitable for substrate. Verify that sealant is paintable if painted finish is indicated.

C. Protect materials surrounding work of this Section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's published instructions.

B. Prime or seal joint surfaces where recommended by sealant manufacturer. Do not allow primer or sealer to spill or migrate onto adjoining surfaces.

C. Install backer rod and bond breaker tape where required by manufacturer.

D. Install preformed compressible and non-compressible fillers in accordance with manufacturer's published instructions.

E. Install sealants to depths recommended by sealant manufacturer in uniform, continuous ribbons free of air pockets, foreign embedded matter, ridges, and sags, "wetting" joint bond surfaces equally on both sides.

F. Tool joints concave unless shown otherwise. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove so that joint will not trap moisture and foreign matter. Dry tool joints. Do not use soap, water, or solvent to tool joints.

G. Epoxy Floor Joint Sealant: Install sealant at floor construction and control joints in accordance with manufacturer's published instructions and initially under manufacturer's supervision.

3.4 CURING

A. Cure sealants in compliance with manufacturer's published instructions.

3.5 CLEANING

A. Remove excess and spillage of sealants promptly as the work progresses, using materials and methods as recommended by sealant and substrate manufacturers. Clean adjoining surfaces to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

3.6 SEALANT SCHEDULE

A. Exterior Joints:
   1. Perimeters of exterior openings where frames and other penetrations meet roofing.
      a. Sealant Urethane Type 2
      b. Sealant Silicone Type 1 (for prefinished materials only)

END OF SECTION

SECTION 07 92 01
SEALANTS FOR ROOF REPLACEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements related to the installation of sealants associated with sheet metal flashing work.

1.2 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures

B. Section 01 60 00 – Product Requirements

C. Section 02 41 00 – Roof Removal and Substrate Preparation

D. Section 07 62 07 – Sheet Metal for PVC Roofing

E. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.3 REFERENCES

A. Reference standards of the following sources are applicable to products and procedures specified in Part 2 - Products and Part 3 – Execution of this Section:
   1. American Society for Testing and Materials (ASTM)
      a. ASTM C 920 – Standard Specification for Elastomeric Joint Sealants

1.4 SUBMITTALS

A. Prior to the start of work, submit the following to the Owner for approval:
   1. Product submittals required within Section 01 33 00.

B. Refer to Section 01 33 00 for procedural requirements related to the submittal process.

1.5 QUALITY ASSURANCE PROCEDURES

A. Applicator Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive a manufacturer's warranty. Company shall have a minimum of 5 years documented experience certified by roofing system manufacturer.

B. Single Source Responsibility: Roofing system materials and components shall be supplied and warranted by roofing system manufacturer for specified roofing system and shall be in compliance with specified regulatory requirements.

C. Examine the technical specifications and drawings. Verify all dimensions, detail conditions, roof plan notes and existing site conditions that may affect the work. Verification of existing dimensions and site conditions is the responsibility of the Contractor. No additional compensation will be considered for failure to verify existing dimensions, detail conditions, roof plan note callouts, and existing site conditions.

D. Upon examination, if conflicts between the technical specifications and drawings, and those of federal, state or local regulatory agencies, the product manufacturer, industry roofing standards, or Owner-mandated requirements are discovered, notify the Owner immediately for resolution.

E. During work, if conditions are discovered which do not allow for continuation of the work per the technical specifications and drawings, notify the Owner immediately for resolution.

1.6 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 60 00 for transport, handling, storage and product requirements.

B. Deliver materials in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store materials in weather protected environment, clear of ground and moisture. Protect foam insulation from direct sunlight exposure. Store roll materials standing on end.

D. Protect adjacent materials and surfaces against damage from roofing work. Do not store materials on previously completed roofing.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not perform work during inclement weather. Refer to product manufacturer for outdoor temperature requirements for installation of materials. Do not install materials at times when the outdoor temperature does not fall within the minimum/maximum temperature requirements of the manufacturer.

B. Cold weather precautions:

1. Refer to the sealant manufacturer for cold weather application recommendations and restrictions.

C. Material Safety Data Sheets (MSDS) of all specified products shall remain on site for the duration of this project.

PART 2 – PRODUCTS

2.1 SEALANT

A. Sealant: Moisture-cured, non-sag, one-part polyurethane sealant, in compliance with ASTM
C 920, Type S, Grade NS. Color to match sheet metal or as directed by Owner.
1. Closed-cell backing materials, bond breakers, and primers as recommended by the sealant manufacturer for the joint conditions encountered.

B. High temperature sealant: For use at high-temperature penetrations and other locations where high temperatures are anticipated: Product type approved by Owner for temperature and substrate condition encountered.

C. Sealant primer: Type recommended and approved by sealant manufacturer for substrate encountered.

D. Joint filler, backer rod and bond breaker tape:
1. Product(s) recommended and approved by sealant manufacturer for substrate encountered.
2. Size and configuration as necessary for condition encountered.

PART 3 - EXECUTION

3.1 SEALANT INSTALLATION

A. Cleaning: Clean surfaces immediately before installation of sealants to provide surfaces suitable for the installation of sealant.

B. Joint filler, backer rod, and bond breaker tape: Install joint filler and backer rods to result in minimum sealant depth of 1/4-inch and maximum of 1/2 the joint width. If joint is of insufficient depth to receive joint filler or backer rod, install bond breaker tape to the bottom of the joint to prevent sealant bonding to the joint bottom.

C. Primer: Apply primer if required by the sealant manufacturer for the type of sealant and conditions encountered. Apply primer in accordance with the sealant manufacturer's requirements and recommendations.

D. Sealant installation: Install sealant where required in accordance with the requirements and recommendations of the sealant manufacturer. Tool the joint immediately after installation.

END OF SECTION

SECTION 09 91 00
PAINTING

PART 1 - 7GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Surface preparation and field application of paints and finishes for exterior surfaces.
   2. Schedule of Items to be painted.
   3. Exterior painting and finishing schedule.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Submit product data for each type of paint specified.
      a. Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content.
      b. Painting Schedule listing surfaces to be painted with cross reference to the specific painting and finishing system and application. Identify each paint material by manufacturer's catalog number and general classification.
   2. Samples: Submit color brush-out sample for each paint color and sheen specified.
      a. Three samples on 8 1/2-inch x 11-inch card stock for color and sheen verification.
      b. Identify each sample by paint manufacturer, paint type, color, and sheen.
   3. Assurance/Control Submittals:
      a. Test Reports: Submit manufacturer's Material Safety Data Sheets (MSDS) for each paint type proposed.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Surface Burning Characteristics in Accordance with ASTM E-84 for Class I or A finish:
      a. Flame Spread (Non-Combustible Surfaces): Less than 25.
      b. Smoke Density (Non-Combustible Surfaces): Less than 450.
   2. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.

D. Prevent fire hazards and spontaneous combustion.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements:
   1. Apply paint finishes only when moisture content of surfaces is within manufacturer's acceptable ranges for type of finish being applied.
   2. Surface temperatures or surrounding air temperature to be above 40 degrees F before applying alkyd finishes; above 45 degrees F for interior latex, and 50 degrees F for exterior latex work. Minimum for varnish and transparent finishes is 65 degrees F.
   3. Provide continuous ventilation and heating facilities to maintain temperatures above 45 degrees F for 24 hours prior to, during and 48 hours after application of finishes.
   4. Do not apply paint in areas where dust is being generated.
   5. Provide lighting level in areas being painted of 80-foot candles measured mid-height at substrate surface.

1.7 MAINTENANCE

A. Section 01 77 00 - Closeout Procedures and Training: Procedures for closeout submittals.

B. Extra Materials:
1. Provide one gallon of each color, type and sheen to the Engineer.
2. Label each container with color, type, texture, room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the work include the following:
1. Benjamin Moore and Company.
2. Comex Group (Color Wheel/Frazee/Kwal/Parker).
3. Duron Paints and Wallcoverings.
4. Devoe (ICI).
5. Sherwin-Williams Company.
6. Or approved equal.

B. Section 01 60 00 - Product Requirements: Product options and substitutions. Substitutions: permitted.

2.2 MATERIALS

A. Paints:
1. Manufacturer’s “Best Grade” for each type specified.
2. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
3. Providing good flowing and brushing properties and be capable of drying or curing free of streaks or sags.
4. VOC limits (g/L) for interior paint applications: Per code.

B. Primers and Undercoaters: Manufactured by same manufacturer as finish coat materials.

C. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacturer.

2.3 INTERIOR PAINT SYSTEMS

A. Benjamin Moore:
1. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
2. Wood Trim: Satin, Water Base, Acrylic Latex.
   a. Primer: 253 Moorecraft Latex Enamel Undercoater and Primer Sealer; 2.0 mils.
   b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.

B. Comex Group (Color Wheel/Frazee/Kwal/Parker):
1. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Ultra-Tech C141 Interior 100% Acrylic Low-Sheen Enamel; MDF 1.44 mils.
2. Wood Trim: Satin, Water Base, Acrylic Latex.
   a. Primer: Ultra-Tech C312 Interior-Exterior 100% Acrylic Wood Primer; MDF 1.8 mils.
   b. Each Finish Coat: Ultra-Tech C141 Interior 100% Acrylic Low-Sheen Enamel; MDF 1.44 mils.

C. Duron:
1. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Ultra Deluxe Interior Acrylic Latex Eggshell (Low Sheen) Enamel 36 Series; MDF 1.4 mils.
2. Wood Trim: Satin, Water Base, Acrylic Latex.
   a. Primer: Interior Acrylic Enamel Undercoater 04-123; MDF 1.6mils. (MPI 50, Approved)
   b. Each Finish Coat: Ultra Deluxe Interior Acrylic Latex Eggshell (Low Sheen) Enamel 36 Series; MDF 1.4 mils.

D. Devoe (ICI):
1. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Mirrolac W/B Semi-Gloss Enamel DP83XX; MDF 1.5 mil.
2. Wood Trim: Satin, Water Base, Acrylic Latex.
   a. Primer: Wonder-Prime DR51701; MDF 1.5 mil.
   b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

E. Frazee:
1. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: 126 Mirro Glide Interior Low Sheen Acrylic Enamel; MDF 1.4 mils.
2. Wood Trim: Satin, Water Base, Acrylic Latex.
   a. Primer: 172 Grip N Seal Enamel Undercoater; MDF 2.2 mils.

b. Each Finish Coat: 126 Mirro Glide Interior Low Sheen Acrylic Enamel; MDF 1.4 mils.

F. Sherwin Williams:
1. Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Each Finish Coat: DTM Acrylic S-G, B66W200; MDF 3.0 mils.
2. Wood Trim: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: PrepRite Classic Primer, B28W101, MDF 1.6 mils.
b. Each Finish Coat: ProClassic Waterborne S-G, MDF 1.4 mils.

G. Or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to the Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected and approved by the Engineer.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION

A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, and conditions otherwise detrimental to formation of a durable paint film.

B. Perform preparation and cleaning procedures in accordance with paint manufacturer's published instructions for each particular substrate condition.
1. Provide barrier coats over incompatible primers or remove and reprime as required.
2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be painted or provide surface applied protection prior to surface preparation and

painting operations. Reinstall all removed items after completion of paint work.

3. Clean surfaces to be painted before applying paint of surface treatment. Remove oil and grease prior to mechanical cleaning.

C. Ferrous Metals: Clean ferrous surfaces that are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

1. Touch-up shop-applied prime coats, where damaged or bare. Clean and touch-up with same type shop primer.

D. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum-based solvent. Apply coat of etching primer if required by paint manufacturer.

E. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes, and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends faces, undersides, and backsides of such wood, including cabinets and counters.
2. Seal tops, bottoms, and cut-outs with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

3.3 APPLICATION

A. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.

B. Apply each coat slightly darker than preceding coat unless otherwise approved by the Engineer. Sand lightly between coats to achieve specified finish.

C. Do not apply finishes on surfaces that are not dry.

D. Number of coats and film thickness required is same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.

E. Apply additional coats when undercoats, stains, or other conditions show through final coat until paint film is of uniform finish, color, and appearance.

Surfaces, including edges, corners, crevices, welds, and exposed fasteners to receive minimum dry film thickness equivalent to that of flat surfaces.

F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate. Provide minimum dry film thickness (MDF) of the entire coating system as indicated in Painting and Finishing Schedule at end of this Section.

G. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by manufacturer to material scheduled to be painted or finished that has not been shop primed. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

H. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage.

I. Completed Work: Match the Engineer’s approved field samples for color and sheen.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field testing and inspection.

B. Inspect painting and coating application for scheduled material, color, sheen, specified thickness (MDF), and coverage.

3.5 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Upon completion of work leave premises neat and clean.

3.6 PROTECTION

A. Protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

3.7 COLOR SCHEDULE – See Drawings

3.8 SCHEDULE OF ITEMS TO BE PAINTED

A. Painted finishes shall be provided for, but not limited to, the following items. Refer to Drawings and Paint Color Schedule at end of this Section for designated finishes and colors of areas.
   1. Interior: All interior surfaces as scheduled on Drawings including, but not limited to:
      a. Fiberglass doors and frames.
      b. Gypsum wallboard.
      c. Exposed concrete unit masonry.
      d. Exposed structure columns.
      e. Exposed wood trim.

B. Do not paint the following items:

   1. Pre-finished items:
      a. Aluminum, brass, bronze, stainless steel, and chrome plated steel.
      b. Pre-finished items, such as toilet compartments, acoustical ceiling materials, mechanical, and electrical equipment.
      c. UL, FM, and other code-required labels.
      d. Equipment identification, performance rating, and name plates.
      e. Finish hardware.
      f. Factory finished metal wall panels, metal wall panel trim, and metal gravel stops.
   2. Exposed items:
      a. Exposed mechanical ductwork, hangers, and supports.
      b. Exposed piping and conduit, hangers and supports.
      c. Exposed fire protection piping, hangers and supports.
      d. Exposed roof structure.
      e. Exposed roof deck.

3.9 PAINTING AND FINISHING SCHEDULE

A. Exterior Paint Systems:
   1. Interior Gypsum Wallboard:
      a. 1 coat Latex Primer.
      b. 1 coat Latex Eggshell Enamel

2. Ferrous Metals
   a. Touch up Prime Coat.
   b. Two tinted coats of Alkyd Enamel Semi-Gloss.

END OF SECTION

SECTION 22 05 00
PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Waterproofing.
2. Electrical Connections and Protection.
3. Supports and anchors.
4. Cleaning, Protection and Adjustment.
5. Dielectric Fittings.
6. Piping connections.
7. Mechanical Identification.
8. Sleeves and Seals.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
1. 07 92 00 - Joint Sealants: Sealants.
2. 09 91 00 - Painting: Field painting.

1.2 WATERPROOFING

A. Where work penetrates waterproofing, including waterproof concrete, the method of installation shall be approved by the Engineer prior to performing the work. Furnish necessary sleeves, caulking and flashing required to make openings absolutely watertight.

1.3 ELECTRICAL CONNECTIONS AND PROTECTION

A. Regardless of voltage, provide control wiring, interlock wiring, and equipment control wiring for the equipment provided under this division of the specifications.

B. Furnish electrical disconnect switches, starters and combination starter disconnects required for equipment provided under this division of the specifications. Circuit breakers furnished shall be rated for motor protection.

C. Power wiring not used for control functions, complete from power source to motor or equipment junction box, including power wiring through starters, shall be provided under Division 26.

D. Coordinate to ensure that electrical devices furnished or provided are compatible with the electrical systems used.

E. Confirm final location of electrical equipment to be installed in the vicinity of piping.

1.4 PAINTING

A. Painting requirements of this section shall conform to Division 9 – Finishes: Painting.

B. Provide surface preparation, priming, and final coat application in strict accordance with manufacturer's recommendations.

C. Provide field painting of systems, equipment and miscellaneous metals located outdoors. Application shall be in strict accordance with manufacturer's recommendations.

D. Provide painting of plumbing piping and equipment exposed in mechanical equipment room and in occupied spaces. Plumbing items to be painted are as follows:
1. Piping, pipe hangers, pipe insulation, and supports
2. Equipment and supports.
3. Accessory items.

1.5 CLEANING, PROTECTION AND ADJUSTMENT

A. Cleaning
1. General cleaning requirements are specified in Division 1 – General Requirements.
2. Upon completion of the work, clean the exterior surface of equipment, accessories, and trim installed. Clean, polish, and leave equipment, accessories, and trim in first-class condition.

B. Protection of Surfaces
1. Protect surfaces from damage during the construction period.
2. Provide plywood or similar material under equipment or materials stored on floors or roofs. Provide protection in areas where construction may damage surfaces.
3. Surfaces damaged during the construction shall be repaired or replaced at no additional cost to the City. The method of repairing or replacing the surface shall be approved by the Engineer.

C. Protection of Services
1. Protect services from damage during the construction period.

2. Repair, replace and maintain utilities, facilities or services (underground, above ground, interior or exterior) damaged, broken or otherwise rendered inoperative during the course of construction.
3. Services damaged during the construction shall be replaced at the cost of the Contractor at fault. The method used in repairing, replacing or maintaining the services shall be approved by the Engineer.

D. Protection of Equipment and Materials
1. Equipment and materials shall be stored in a manner that shall maintain an orderly, clean appearance. If stored on-site in open or unprotected areas, equipment and material shall be kept off the ground and out of standing water by means of pallets or racks, and covered with tarpaulins.
2. Equipment and material, if left unprotected and damaged, shall be repainted or otherwise refurbished at the discretion of the Owner. Equipment and material are subject to rejection and replacement if, in the opinion of the Engineer or manufacturer the equipment has deteriorated or been damaged to the extent that its immediate use or performance is questionable, or that its normal life expectancy has been curtailed.
3. During the construction period, protect piping, fittings, valves, equipment, and associated appurtenances from damage and dirt. Each system of piping shall be flushed to remove grit, dirt, sand, and other foreign matter for as long a time as required to thoroughly clean the systems.

E. Adjustment
1. After the entire installation has been completed, make required adjustments to balancing valves, circulating systems, pressure reducing valves and similar devices until performance requirements are met.
2. Provide factory-lubricated bearings for equipment. Before initial startup of equipment, inspect and verify bearings for proper amounts of lubricant. If required, provide proper amounts of lubricant in accordance with manufacturer's recommendations.

1.6 DIELECTRIC FITTINGS

A. Ferrous to non-ferrous pipe connections shall be made with threaded, soldered, plain, or welded end connections that match piping system material. Dielectric fittings shall prevent any electrolytic action between dissimilar materials.

1.7 PIPING CONNECTIONS

A. Make pipe connections according to the following
1. Provide unions in supply piping systems 4 inches and smaller:
   a. Adjacent to each side of valve
   b. At final connection to equipment

2. Provide flanged connections for supply piping systems 4 ½ inches and larger:
   a. Adjacent to each side of valve
   b. At final connection to equipment
3. Provide sewer lateral cleanout:
   a. As indicated on Plans.

1.8 SLEEVES AND SEALS

A. Sleeves for Pipes through Non-fire Rated Floors: 18 gage (1.2 mm thick) galvanized steel.

B. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage (1.2 mm thick) galvanized steel.

C. Sleeves for Round Ductwork: Galvanized steel.

D. Sleeves for Rectangular Ductwork: Galvanized steel or wood.

E. Sealant: refer to Section 07 92 00 – Joint Sealants.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
   1. Grinnell.
   2. Elcen.
   3. Fee and Mason.
   4. Kin-Line.
   5. Michigan.
   6. Unistrut.
   7. Or approved equal.

B. Plumbing Piping - DWV:
   1. Conform to ASTM F708.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch (13 to 38 mm): Malleable iron, adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes to 3 Inches (75 mm): Cast iron hook.

6. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.
7. Vertical Support: Steel riser clamp.
8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water:

1. Conform to ASTM F708.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch (13 to 38 mm): Malleable iron adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 Inches (50 to 100 mm): Carbon steel, adjustable, clevis.
5. Hangers for Hot Pipe Sizes 6 Inches (150 mm) and Over: Adjustable steel yoke, cast iron roll, double hanger.
6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches (150 mm) and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
8. Wall Support for Pipe Sizes to 3 Inches (76 mm): Cast iron hook.
9. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.
10. Wall Support for Hot Pipe Sizes 6 Inches (150 mm) and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast-iron roll.
11. Vertical Support: Steel riser clamp.
12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
13. Floor Support for Hot Pipe Sizes to 4 Inches (100 mm): Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
14. Floor Support for Hot Pipe Sizes 6 Inches (150 mm) and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.2 PIPE HANGER AND SUPPORT SCHEDULE

PIPE SIZE Inches (mm)	MAX. HANGER SPACING Feet (m)	HANGER ROD DIAMETER Inches (mm)
1/2 to 1-1/4 (12 to 32)	6.5 (2)	3/8 (9)

1-1/2 to 2 (38 to 50)	10 (3)	3/8 (9)
2-1/2 to 3 (62 to 75)	10 (3)	1/2 (13)
4 to 6 (100 to 150)	10 (3)	5/8 (15)
8 to 12 (200 to 300)	14 (4.25)	7/8 (22)
PVC (All Sizes)	6 (1.8)	3/8 (9)
C.I. Bell and Spigot (or No-Hub) and at Joints	5 (1.5)	1/2 (13)

2.3 PROTECTION OF ELECTRICAL EQUIPMENT

A. Plan and arrange overhead piping to avoid dedicated electrical space that may include motors, controllers, switchboards, panel boards, or similar equipment.

1. Dedicated electrical space is equal to the width and depth of the electrical components and extends from the floor to a height of 6 feet above the electrical components or to the structural ceiling, which ever is lower. No piping, leak detection apparatus, equipment, components or associated appurtenances foreign to the electrical installation shall be located in the dedicated electrical space.
2. Dropped, suspended, or any other type of ceiling that does not add strength to the building structure can not be provided as a separation between dedicated electrical spaces for the installation of foreign components within the dedicated electrical space.

B. Where the installation of foreign components occurs above the dedicated electrical space (6 feet above the electrical systems), contractor shall provide a means of secondary containment to prevent damage to the electrical systems.

C. Secondary Containment Piping System

1. Piping system shall consist of clear unpigmented Polyvinyl Chloride pipe and fittings. The containment piping system shall be longitudinally split. The pipe shall align via a tongue and groove and the fittings shall be manufactured in two halves.
2. The pipe and fitting shall be temporarily held together by clips affixed over top of integral fitting clip locators. Final system joining shall be provided by welding components together via an injection bonding process.

3. Final containment inspection shall be provided via a low-pressure air test per manufacturer's requirements.

2.4 DIELECTRIC FITTINGS

A. Dielectric unions shall be factory – fabricated assemblies with a minimum working pressure as required to suit system pressures.

B. Dielectric flanges shall be factory – fabricated, companion flange assemblies with a minimum working pressure as required to suit system pressures.

C. Dielectric flange kits shall be field – fabricated with a minimum working pressure as required to suit system pressures. Kit shall include flanges, full face type phenolic gasket, phenolic bolt sleeves, phenolic washers, and steel backing washers.

D. Dielectric couplings shall be galvanized steel with inert and noncorrosive, thermoplastic lining, threaded ends and a minimum working pressure as required to suit system pressures.

E. Dielectric nipples shall be electroplated steel nipple with unert and noncorrosive, thermoplastic lining, plain, threaded, or grooved ends and a minimum working pressure as required to suit system pressures.

F. Acceptable Manufacturers:
1. Watts Industries
2. Zurn Industries
3. Sioux Chief Industries
4. Or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to the Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected and approved by the Engineer.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION - MECHANICAL IDENTIFICATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.3 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's instructions.
B. The use of lead-containing solder for plumbing and plumbing fixtures is prohibited in the construction of this project.

3.4 INSTALLATION - PIPE HANGER AND SUPPORTS

A. Support horizontal piping as scheduled.

B. Install hangers to provide minimum 1/2-inch (13 mm) space between finished covering and adjacent work.

C. Place hangers within 12 inches (300 mm) of each horizontal elbow.

D. Use hangers with 1-1/2 inch (38 mm) minimum vertical adjustment.

E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet (1.5 m) maximum spacing between hangers.

F. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

G. Support riser piping independently of connected horizontal piping.

H. Provide copper plated hangers and supports for copper piping.

I. Design hangers for pipe movement without disengagement of supported pipe.

J. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.5 INSTALLATION - MECHANICAL IDENTIFICATION

A. Install identifying devices after completion of coverings and painting.

B. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive.

C. Install tags using corrosion resistant chain. Number tags consecutively by location.

D. Install underground plastic pipe markers 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried pipe.

E. Identify control panels and major control components outside panels with plastic nameplates.

F. Identify valves in main and branch piping with tags.

G. Identify piping, concealed or exposed, with plastic pipe markers and plastic tape pipe markers. Use tags on piping 3/4-inch (20 mm) diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.

Payment for all items of work identified in Division 22 in the plans and these specifications will be based on the lump sum pricing for items identified as Plumbing in the Bid Schedule. No additional Compensation will be allowed.

END OF SECTION

SECTION 23 05 93
TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Testing, adjustment, and balancing of air systems.
   2. Measurement of final operating condition of HVAC systems.
   3. Sound measurement of equipment operating conditions.
   4. Vibration measurement of equipment operating conditions.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. Associated Air Balance Council (AABC):
   1. AABC - National Standards for Total System Balance.

B. National Environmental Balancing Bureau.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Procedures for submittals.
   1. Assurance/Control Submittals:
      a. Test Reports: Submit the following reports directly to State Representative from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 01 40 00 - Quality Requirements:
         1) Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
         2) Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for inclusion in operating and maintenance manuals.
         3) Provide reports in binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

4) Indicate data on AABC National Standards for Total System Balance forms.

b. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.

c. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

1.4 QUALITY ASSURANCE

A. Qualifications:
1. Company specializing in testing, adjusting, and balancing of specified with minimum 5 years documented experience. Company to be certified by one of the following.
a. AABC Certified Independent Testing and Balancing Agency.
b. National Environmental Balancing Bureau Certified Independent Agency. (NEBB).

B. Certification: Certify the testing, adjusting, and balancing field data reports.

C. Testing, Adjusting, and Balancing Reports: Use testing, adjusting, and balancing Agent's standard forms.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
2. Temperature control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Duct systems are clean of debris.
5. Air outlets are installed and connected.
6. Duct system leakage is minimized.

3.2 PREPARATION

A. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to State Representative to facilitate spot checks during testing.

B. Provide additional balancing instruments as required.

3.3 INSTALLATION TOLERANCES

A. VAV-1, MB-1: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.4 ADJUSTING

A. Ensure recorded data represents actual measured or observed conditions.

B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

E. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by State Representative.

F. Check and adjust systems approximately six months after final acceptance and submit report.

3.5 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities. Perform this work with cooling system energized where applicable to obtain the extra resistance of wet coils.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Open volume control devices to 100%.

F. Vary total system air quantities by duct static pressure set point. Provide adjustment to set point as necessary to achieve air flows.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

END OF SECTION

SECTION 23 07 13
DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Ductwork insulation.
   2. Duct liner.
   3. Insulation jackets.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
   2. ASTM C177 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
   3. ASTM C335 - Steady-State Heat Transfer Properties of Horizontal Pipe Insulation.
   4. ASTM C518 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   5. ASTM C534 - Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
   6. ASTM C547 - Mineral Fiber Pipe Insulation.
   7. ASTM C553 - Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
   8. ASTM C921 - Properties of Jacketing Materials for Thermal Insulation.
   9. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
   10. ASTM E84 2007 Edition - Surface Burning Characteristics of Building Materials.
   11. ASTM E96 - Water Vapor Transmission of Materials.

B. National Fire Protection Association (NFPA):
   1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   1. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

D. Underwriters Laboratories, Inc. (UL):

1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.4 QUALITY ASSURANCE

A. Qualifications:

   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 3 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 3 years documented experience.

B. Materials:
   1. Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84, NFPA 255 and UL 723.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials to site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

C. Store insulation in original wrapping and protect from weather and construction traffic.

D. Protect insulation against dirt, water, chemical, and mechanical damage.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements
   1. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

   2. Maintain temperature during and after installation for minimum period of 24 hours.

SECTION 23 07 13
DUCT INSULATION

1.7 ENVIRONMENTAL REQUIREMENTS

A. Energy efficiency:
1. Insulation: Minimum thickness in accordance with ASHRAE 90.1. Provide additional thickness to ensure surface temperatures are below 100 degrees and to prevent condensation on cold surfaces.

PART 2 - PRODUCTS

2.1 DUCTWORK INSULATION

A. Glass Fiber, Flexible Duct Wrap
1. Manufacturers:
a. Owens/Corning, Toledo, OH (800) 438-7465.
b. Other acceptable manufacturers offering equivalent products.
1) CertainTeed.
2) Schuller (Manville).
3) Knauf.
4) Or equal.
2. Insulation: ASTM C553 flexible, noncombustible blanket.
a. 'K' ('Ksi') value: ASTM C518, 0.30 at 75 degrees F.
b. Maximum service temperature: 250 degrees F.
c. Maximum moisture absorption: 0.20 percent by volume.
d. Density: 0.75 lb. /cu ft.
3. Vapor Barrier Jacket
a. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
b. Moisture vapor transmission: ASTM E96; 0.02 perm.
c. Secure with pressure sensitive tape.
4. Vapor Barrier Tape
a. Manufacturers:
1) Owens/Corning.
2) CertainTeed.
3) Schuller (Manville).
4) Or equal.
b. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber-based adhesive.
5. Tie Wire: Annealed steel, 16 gages.

B. Glass Fiber Duct Liner, Flexible
1. Manufacturers:
a. CertainTeed.
b. Other acceptable manufacturers offering equivalent products.
1) Knauf.
2) Schuller (Manville).

3) Owens Corning.
4) Or equal.

2. Insulation: ASTM C553; flexible, noncombustible blanket.
   a. 'K' ('Ksi') value: ASTM C518, 0.28 at 75 degrees F.
   b. Maximum service temperature: 250 degrees F.
   c. Density: 1.5 lb. /cu ft.
   d. Maximum Velocity on Coated Air Side: 4,000 ft. /min.
3. Adhesive
   a. Waterproof fire-retardant type.
4. Liner Fasteners: Galvanized steel, impact applied with integral head.

C. Glass Fiber, Rigid Board
1. Manufacturers:
   a. CertainTeed.
   b. Other acceptable manufacturers offering equivalent products.
      1) Knauf.
      2) Schuller (Manville).
      3) Owens Corning.
      4) Or equal.
2. Insulation: Glass fibers bonded with a thermosetting resin for rigidity. Comply with ASTM C 612, Type IB, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.
   a. 'K' ('Ksi') value: ASTM C518, 0.28 at 75 degrees F.
   b. Maximum service temperature: 250 degrees F.
   c. Density: 1.5 lb. /cu ft.
3. Vapor Barrier Jacket
   a. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
   b. Moisture vapor transmission: ASTM E96; 0.02 perm.
   c. Overlap seams with pressure sensitive tape.
4. Vapor Barrier Tape
   a. Manufacturers:
      1) Owens/Corning.
      2) CertainTeed.
      3) Schuller (Manville).
      4) Or equal.
   b. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber-based adhesive.
5. Pin to ductwork below 8 feet and seal all perforations hardcast mastic.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that piping has been tested before applying insulation materials.
   2. Verify that ductwork has been tested before applying insulation materials.
   3. Verify that surfaces are clean, foreign material removed, and dry.

B. Report in writing to State Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the State.

3.2 INSTALLATION - DUCTWORK INSULATION

A. Install materials in accordance with manufacturer's instructions and ASHRAE 90.1.

B. Insulated ductwork conveying air below ambient temperature:
   1. Provide insulation with vapor barrier jackets.
   2. Finish with tape and vapor barrier jacket.
   3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
   4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. Insulated ductwork conveying air above ambient temperature:
   1. Provide with or without standard vapor barrier jacket.
   2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

D. For ductwork exposed in finished spaces below 10 feet above finished floor, finish with aluminum jacket.

E. For exterior applications, provide insulation with vapor barrier jacket. Cover with caulked aluminum jacket with seams located on bottom side of horizontal duct section.

F. External Duct Insulation Application:
   1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
   2. Secure insulation without vapor barrier with staples, tape, or wires.

3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

G. Duct and Plenum Liner Application:
1. Adhere insulation with adhesive for 100 percent coverage.
2. Secure insulation with mechanical liner fasteners. Refer to SMACNA Standards for spacing.
3. Seal and smooth joints.
4. Seal liner surface penetrations with adhesive.
5. Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

3.3 CONSTRUCTION

A. Substituted insulation materials shall provide thermal resistance within 10 percent at normal conditions, as materials indicated.

3.4 DUCTWORK INSULATION SCHEDULE

A. Flexible Glass Fiber Duct Wrap Insulation Schedule:

DUCTWORK FINISH	THICKNESS INCH
Supply Ducts Aluminized Film	1-1/2"
Return Ducts Aluminized Film	1-1/2"
Outdoor Air Intake Ducts Aluminized Film	1-1/2"

B. Flexible Glass Fiber Duct Liner Insulation Schedule:

DUCTWORK FINISH	THICKNESS INCH
Plenums (Cooling System) Black Pigmented, UL	1"
Supply Ducts Black Pigmented, UL	1"

SECTION 23 07 13
DUCT INSULATION

Return Ducts Black Pigmented, UL	1"
Outdoor Air Intake Ducts Black Pigmented, UL	1"
Ducts Exposed to Outdoors Black Pigmented, UL	2"

END OF SECTION

HVAC DUCTS
SECTION 23 31 00

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal ductwork.
   2. Insulated flexible duct.
   3. Volume control dampers.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
   2. Section 23 07 13 - Duct Insulation: Duct Insulation.
   3. Section 23 37 13 - Diffusers Registers and Grilles.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM A 36 - Structural Steel.
   2. ASTM A 90 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
   3. ASTM A 167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
   4. ASTM A 480 - General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
   5. ASTM A 653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process.
   6. ASTM A 568 Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.

B. American Welding Society (AWS):
   1. AWS D9.1 - Welding of Sheet Metal.

C. National Fire Protection Association (NFPA):
   1. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
   2. NFPA 90B - Installation of Warm Air Heating and Air Conditioning Systems.
   3. NFPA 91 - Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying.

4. NFPA 96 - Installing of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   1. SMACNA - HVAC Air Duct Leakage Test Manual.
   2. SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

E. Underwriters Laboratories, Inc. (UL):
   1. UL 181 - Factory-Made Air Ducts and Connectors.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: No variation of duct configuration or sizes permitted except by written permission. Size round ducts installed in place of rectangular ducts in accordance with ASHRAE table of equivalent rectangular and round ducts.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Duct materials, duct liner, duct connectors, and flexible duct.
      b. Factory or shop manufactured assemblies including volume control dampers. Include electrical characteristics and connection requirements.

   2. Project Record Documents: Accurately record the following:
      a. Actual locations of ducts and duct fittings.
      b. Record changes in fitting location and type.
      c. Show additional fittings used.
      d. Actual locations of access doors, test holes, and fire dampers.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards - Metal and Flexible.

B. Qualifications:
   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

C. Regulatory Requirements: Construct ductwork to NFPA 90A. NFPA 90B, and NFPA 96 standards.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Transport, handle, store, and protect Products.

B. Protect dampers from damage to operating linkages and blades.

1.7 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements:
   1. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
   2. Maintain temperatures during and after installation of duct sealants.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Environmental Impact:
   1. Indoor Air Quality: Install insulation so that unfazed fiberglass and mineral fiber insulation are not in the interior of the ductwork.

PART 2 - PRODUCTS

2.1 DUCTS

A. Galvanized Steel Ducts: ASTM A653 having zinc coating in conformance with ASTM A90.

B. Steel Ducts: ASTM A569 and A568.

C. Flexible Ducts:
   1. Manufacturers:
      a. Anco Products Inc.
      b. Hart & Cooley.
      c. Tuttle & Bailey.
      d. Or equal.
   2. UL Labeled, black polymer film supported by helically wound spring steel wire.
   3. Pressure Rating: 4 inches WG positive and 0.5 inches WG negative.
   4. Maximum Velocity: 4000 fpm.

5. Temperature Range: -20 degrees F to 175 degrees.

D. Insulated Flexible Ducts:
   1. Manufacturers:
      a. Anco Products Inc.
      b. Hart & Cooley.
      c. Tuttle & Bailey
      d. Or equal.
   2. Black polymer film supported by helically wound spring steel wire; fiberglass insulation; aluminized vapor barrier film.
   3. Pressure Rating: 4 inches WG positive and 0.5 inches WG negative.
   4. Maximum Velocity: 4000 fpm.
   5. Temperature Range: -20 degrees F to 175 degrees F.

E. Sealant:
   1. Manufacturers:
      a. Duro Dyne Corporation, Farmingdale, NY (800) 899-3876.
      b. H.B. Fuller Co, St. Paul, MN (888) 423-8553.
      c. Hardcast, Inc., Wylie, TX (800) 527-7092.
      d. Or equal.
   2. Non-hardening, water resistant, fire resistive, compatible with mating materials; liquid used alone or with tape, or heavy mastic.

2.2 VOLUME CONTROL DAMPERS

A. Manufacturers:
   1. Louvers and Dampers, Inc., Florence, KY (606) 647-2299.
   2. Prefco Products, Inc., Buckingham, PA (800) 437-6653.
   3. Ruskin Manufacturing, Kansas City, MO (816) 761-7476.
   4. Or equal.

B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated.

C. Splitter Dampers:
   1. Material: Same gage as duct to 24 inches size in either direction, and two gages heavier for sizes over 24 inches.
   2. Blade: Fabricate of double thickness sheet metal to streamline shape, secured with continuous hinge or rod.
   3. Operator: Minimum 1/4-inch diameter rod in self aligning, universal joint action, flanged bushing with set screw.

D. Single Blade Dampers: Fabricate for duct sizes up to 6 x 30 inch.

E. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inches. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.

F. End Bearings: Except in round ductwork 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon or sintered bronze bearings.

G. Quadrants:
1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.
2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.
3. Where rod lengths exceed 30 inches provide regulator at both ends.

2.3 DUCTWORK FABRICATION

A. Fabricate and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

B. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows are used, provide turning vanes.

C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
1. Verify that electric power is available and of the correct characteristics.

B. Report in writing to State Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the State.

3.2 INSTALLATION - DUCTWORK

A. Install in accordance with manufacturer's instructions.

B. Install and seal ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.

C. Duct Sizes are inside clear dimensions. For lined ducts, maintain sizes inside lining.

D. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.

E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

F. Use crimp joints with or without bead for joining round duct sizes 8 inches and smaller with crimp in direction of air flow.

G. Use double nuts and lock washers on threaded rod supports.

H. Connect diffusers or light troffer boots to low pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp and tape.

I. Connect flexible ducts to metal ducts with draw bands plus tape.

J. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

K. Install so that unfazed fiberglass and mineral fiber insulation are not in the interior of the ductwork.

3.3 INSTALLATION - DUCTWORK ACCESSORIES

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA HVAC Duct Construction Standards - Metal and Flexible.

B. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION

SECTION 23 32 00
AIR DUCT CLEANING

PART 1 - GENERAL

1.1 QUALIFICATION OF THE HVAC SYSTEM CLEANING CONTRACTOR

A. Membership: The HVAC system cleaning contractor shall be a certified member of the National Air Duct Cleaners Association (NADCA), or shall maintain membership in a nationally recognized non-profit industry organization dedicated to the cleaning of HVAC systems.

B. Certification: The HVAC system cleaning contractor shall have a minimum of one (1) Air System Cleaning Specialist (ASCS) certified by NADCA on a full-time basis, or shall have staff certified by a nationally recognized certification program and organization dedicated to the cleaning of HVAC systems.

C. Supervisor Qualifications: A person certified as an ASCS by NADCA, or maintaining an equivalent certification by a nationally recognized program and organization, shall be responsible for the total work herein specified.

D. Experience: The HVAC system cleaning contractor shall submit records of experience in the field of HVAC system cleaning as requested by the Owner.

E. Equipment, Materials and Labor: The HVAC system cleaning contractor shall possess and furnish all necessary equipment, materials and labor to adequately perform the specified services.

1. The contractor shall assure that its employees have received safety equipment training, medical surveillance programs, individual health protection measures, and manufacturer=s product and material safety data sheets (MSDS) as required for the work by the U.S. Occupational Safety and Health Administration, and as described by this specification. For work performed in countries outside of the U.S.A, contractors should comply with applicable national safety codes and standards.

2. The contractor shall maintain a copy of all current MSDS documentation and safety certifications at the site at all times, as well as comply with all other site documentation requirements of applicable OSHA programs and this specification.

3. Contractor shall submit to the Owner all Material Safety Data Sheets (MSDS) for all chemical products proposed to be used in the cleaning process.

F. Licensing: The HVAC system cleaning contractor shall provide proof of maintaining the proper license(s), if any, as required to do work in this state.

Contractor shall comply with all Federal, state and local rules, regulations, and licensing requirements.

1.2 STANDARDS

A. NADCA Standards: The HVAC system cleaning contractor shall perform the services specified here in accordance with the current published standards of the National Air Duct Cleaners Association (NADCA).

1. All terms in this specification shall have their meaning defined as stated in the NADCA Standards.
2. NADCA Standards must be followed with no modifications or deviations being allowed.

B. Applicable Standards and Publications: The following current standards and publications of the issues currently in effect form a part of this specification to the extent indicated by any reference thereto:
1. National Air Duct Cleaners Association (NADCA): AAssessment, Cleaning & Restoration of HVAC Systems (ACR 2005),@ 2004.
2. National Air Duct Cleaners Association (NADCA): AUnderstanding Microbial Contamination in HVAC Systems,@ 1996.
3. National Air Duct Cleaners Association (NADCA): AIntroduction to HVAC System Cleaning Services,@ 2004.
4. National Air Duct Cleaners Association (NADCA): Standard 05 ARequirements for the Installation of Service Openings in HVAC Systems,@ 2004.
5. Underwriters= Laboratories (UL): UL Standard 181.
6. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE): Standard 62-89, AVentilation for Acceptable Indoor Air Quality@.
7. Environmental Protection Agency (EPA): ABuilding Air Quality,@ December 1991.
8. Sheet Metal and Air Conditioning Contractors= National Association (SMACNA): AHVAC Duct Construction Standards - Metal and Flexible,@ 1985.
9. North American Insulation Manufacturers Association (NAIMA): ACleaning Fibrous Glass Insulated Air Duct Systems,@ 1993.

PART 2 - HVAC SYSTEM CLEANING SPECIFICATIONS AND REQUIREMENTS

2.1 SCOPE OF WORK

A. Scope: This section defines the minimum requirements necessary to render HVAC components clean, and to verify the cleanliness through inspection and/or testing in accordance with items specified herein and applicable NADCA Standards.

B. The Contractor shall be responsible for the removal of visible surface contaminants and deposits from within the HVAC system in strict accordance with these specifications.

C. The HVAC system includes any interior surface of the facility=s air distribution system for conditioned spaces and/or occupied zones. This includes the entire heating, air-conditioning and ventilation system from the points where the air enters the system to the points where the air is discharged from the system. The return air grilles, return air ducts to the air handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, humidifiers and dehumidifiers, supply air ducts, fans, fan housing, fan blades, air wash systems, spray eliminators, turning vanes, filters, filter housings, reheat coils, and supply diffusers are all considered part of the HVAC system. The HVAC system may also include other components such as dedicated exhaust and ventilation components and make-up air systems.

2.2 HVAC SYSTEM COMPONENT INSPECTIONS AND SITE PREPARATIONS

A. HVAC System Component Inspections: Prior to the commencement of any cleaning work, the HVAC system cleaning contractor shall perform a visual inspection of the HVAC system to determine appropriate methods, tools, and equipment required to satisfactorily complete this project. The cleanliness inspection should include air handling units and representative areas of the HVAC system components and ductwork. In HVAC systems that include multiple air handling units, a representative sample of the units should be inspected. The cleanliness inspection shall be conducted without negatively impacting the indoor environment through excessive disruption of settled dust, microbial amplification or other debris. In cases where contamination is suspected, and/or in sensitive environments where even small amounts of contaminant may be of concern, environmental engineering control measures should be implemented.

4. Damaged system components found during the inspection shall be documented and brought to the attention of the Owner.

B. Site Evaluation and Preparations: Contractor shall conduct a site evaluation, and establish a specific, coordinated plan which details how each area of the building will be protected during the various phrases of the project.

C. Inspector Qualifications: Qualified personnel should perform the HVAC cleanliness inspection to determine the need for cleaning, at minimum, such

personnel should have an understanding of HVAC system design, and experience in utilizing accepted indoor environmental sampling practices, current industry HVAC cleaning procedures, and applicable industry standards.

2.3 GENERAL HVAC SYSTEM CLEANING REQUIREMENTS

A. Containment: Debris removed during cleaning shall be collected and precautions must be taken to ensure that Debris is not otherwise dispersed outside the HVAC system during the cleaning process.

B. Particulate Collection: Where the Particulate Collection Equipment is exhausting inside the building, HEPA filtration with 99.97% collection efficiency for 0.3-micron size (or greater) particles shall be used. When the Particulate Collection Equipment is exhausting outside the building, Mechanical Cleaning operations shall be undertaken only with Particulate Collection Equipment in place, including adequate filtration to contain Debris removed from the HVAC system. When the Particulate Collection Equipment is exhausting outside the building, precautions shall be taken to locate the equipment down wind and away from all air intakes and other points of entry into the building.

C. Controlling Odors: Measures shall be employed to control odors and/or mist vapors during the cleaning process.

D. Component Cleaning: Cleaning methods shall be employed such that all HVAC system components must be Visibly Clean as defined in applicable standards (see NADCA Standards). Upon completion, all components must be returned to those settings recorded just prior to cleaning operations.

E. Air-Volume Control Devices: Dampers and any air-directional mechanical devices inside the HVAC system must have their position marked prior to cleaning and, upon completion, must be restored to their marked position.

F. Service Openings: The contractor shall utilize service openings, as required for proper cleaning, at various points of the HVAC system for physical and mechanical entry, and inspection.

1. Contractor shall utilize the existing service openings already installed in the HVAC system where possible.
2. Other openings shall be created where needed and they must be created so they can be sealed in accordance with industry codes and standards.
3. Closures must not significantly hinder, restrict, or alter the airflow within the system.
4. Closures must be properly insulated to prevent heat loss/gain or condensation on surfaces within the system.
5. Openings must not compromise the structural integrity of the system.

6. Construction techniques used in the creation of openings should conform to requirements of applicable building and fire codes, and applicable NFPA, SMACNA and NADCA Standards.
7. Cutting service openings into flexible duct is not permitted. Flexible duct shall be disconnected at the ends as needed for proper cleaning and inspection.
8. Rigid fiber glass duct systems shall be resealed in accordance with NAIMA recommended practices. Only closure techniques that comply with UL Standard 181 or UL Standard 181a are suitable for fiber glass duct system closures.
9. All service openings capable of being re-opened for future inspection or remediation shall be clearly marked and shall have their location reported to the Owner in project report documents.

G. Ceiling sections (tile): The contractor may remove and reinstall ceiling sections to gain access to HVAC systems during the cleaning process.

H. Air distribution devices (registers, grilles & diffusers): The contractor shall clean all air distribution devices.

I. Air handling units, terminal units (VAV, Dual duct boxes, etc.), blowers and exhaust fans: The contractor shall insure that supply, return, and exhaust fans and blowers are thoroughly cleaned. Areas to be cleaned include blowers, fan housings, plenums (except ceiling supply and return plenums), scrolls, blades, or vanes, shafts, baffles, dampers and drive assembles. All visible surface contamination deposits shall be removed in accordance with NADCA Standards. Contractor shall:
   1. Clean all air handling units (AHU) internal surfaces, components and condensate collectors and drains.
   2. Assure that a suitable operative drainage system is in place prior to beginning wash down procedures.
   3. Clean all coils and related components, including evaporator fins.

J. Duct Systems. Contractor shall:
   1. Create service openings in the system as necessary in order to accommodate cleaning of otherwise inaccessible areas.
   2. Mechanically clean all duct systems to remove all visible contaminants, such that the systems are capable of passing Cleaning Verification Tests (see NADCA Standards).

2.4 HEALTH AND SAFETY

A. Safety Standards: Cleaning contractors shall comply with applicable federal, state, and local requirements for protecting the safety of the contractor=s employees, building occupants, and the environment. In particular, all

applicable standards of the Occupational Safety and Health Administration (OSHA) shall be followed when working in accordance with this specification.

B. Occupant Safety: No processes or materials shall be employed in such a manner that they will introduce additional hazards into occupied spaces.

C. Disposal of Debris: All Debris removed from the HVAC System shall be disposed of in accordance with applicable federal, state, and local requirements.

2.5 MECHANICAL CLEANING METHODOLOGY

A. Source Removal Cleaning Methods: The HVAC system shall be cleaned using Source Removal mechanical cleaning methods designed to extract contaminants from within the HVAC system and safely remove contaminants from the facility. It is the contractor=s responsibility to select Source Removal methods that will render the HVAC system Visible Clean and capable of passing cleaning verification methods (See applicable NADCA Standards) and other specified test, in accordance with all general requirements. No cleaning method, or combination of methods, shall be used which could potentially damage components of the HVAC system or negatively alter the integrity of the system.

1. All methods used shall incorporate the use of vacuum collection devices that are operated continuously during cleaning. A vacuum device shall be connected to the downstream end of the section being cleaned through a predetermined opening. The vacuum collection device must be of sufficient power to render all areas being cleaned under negative pressure, such that containment of debris and the protection of the indoor environment are assured.
2. All vacuum devices exhausting air inside the building shall be equipped with HEPA filters (minimum efficiency), including hand-held vacuums and wet-vacuums.
3. All vacuum devices exhausting air outside the facility shall be equipped with Particulate Collection including adequate filtration to contain Debris removed from the HVAC system. Such devices shall exhaust in a manner that will not allow contaminants to re-enter the facility. Release of debris outdoors must not violate any outdoor environmental standards, codes or regulations.
4. All methods require mechanical agitation devices to dislodge debris adhered to interior HVAC system surfaces, such that debris may be safely conveyed to vacuum collection devices. Acceptable methods will include those, which will not potentially damage the integrity of the ductwork, nor damage porous surface materials such as liners inside the ductwork or system components.

B. Methods of Cleaning Fibrous Glass Insulated Components
   1. Fibrous glass thermal or acoustical insulation elements present in any equipment or ductwork shall be thoroughly cleaned with HEPA vacuuming equipment, while the HVAC system is under constant negative pressure, and not permitted to get wet in accordance with applicable NADCA and NAIMA standards and recommendations.
   2. Cleaning methods used shall not cause damage to fibrous glass components and will render the system capable of passing Cleaning Verification Tests (see NADCA Standards).

C. Damaged Fibrous Glass Material
   1. Evidence of damage: If there is any evidence of damage, deterioration, delaminating, friable material, mold or fungus growth, or moisture such that fibrous glass materials cannot be restored by cleaning or resurfacing with an acceptable insulation repair coating, they shall be identified for replacement.
   2. Replacement: When requested or specified, Contractor must be capable of remediating exposed damaged insulation in air handlers and/or ductwork requiring replacement.
   3. Replacement material: In the event fiber glass materials must be replaced, all materials shall conform to applicable industry codes and standards, including those of UL and SMACNA. Replacement of damaged insulation is not covered by this specification.

D. Cleaning of coils
   1. Any cleaning method may be used which will render the Coil Visibly Clean and capable of passing Coil Cleaning Verification (see applicable NADCA Standards). Coil drain pans shall be subject to Non-Porous Surfaces Cleaning Verification. The drain for the condensate drains pan shall be operational. Cleaning methods shall not cause any appreciable damage to, displacement of, inhibit heat transfer, or erosion of the coil surface or fins, and shall conform to coil manufacturer recommendations when available. Coils shall be thoroughly rinsed with clean water to remove any latent residues.

E. Antimicrobial Agents and Coatings
   1. Antimicrobial agents shall only be applied if active fungal growth is reasonably suspected, or where unacceptable levels of fungal contamination have been verified through testing.
   2. Application of any antimicrobial agents used to control the growth of fungal or bacteriological contaminants shall be performed after the removal of surface deposits and debris.
   3. When used, antimicrobial treatments and coatings shall be applied in strict accordance with the manufacturer=s written recommendations and EPA registration listing.

4. Antimicrobial coatings shall be applied according to the manufacturer=s written instructions. Coatings shall be sprayed directly onto interior ductwork surfaces, rather than Afogged@ downstream onto surfaces.

PART 3 - EXECUTION

3.1 CLEANLINESS VERIFICATION

A. General: Verification of HVAC System cleanliness will be determined after mechanical cleaning and before the application of any treatment or introduction of any treatment-related substance to the HVAC system, including biocidal agents and coatings.

B. Visual Inspection: The HVAC system shall be inspected visually to ensure that no visible contaminants are present.
   1. If no contaminants are evident through visual inspection, the HVAC system shall be considered clean; however, the Owner reserves the right to further verify system cleanliness through Surface Comparison Testing or the NADCA vacuum test specified in the NADCA standards.
   2. If visible contaminants are evident through visual inspection, those portions of the system where contaminants are visible shall be re-cleaned and subjected to re-inspection for cleanliness.
   3. NADCA vacuum test analysis should be performed by a qualified third party experienced in testing of this nature.

C. Verification of Coil Cleaning

   1. Cleaning must restore the coil pressure drop to within 10 percent of the pressure drop measured when the coil was first installed. If the original pressure drop is not known, the coil will be considered clean only if the coil is free of foreign matter and chemical residue, based on a thorough visual inspection (see NADCA Standards).

3.2 PRE-EXISTING SYSTEM DAMAGE

A. Contractor is not responsible for problems resulting from prior inappropriate or careless cleaning techniques of others.

3.3 POST-PROJECT REPORT

B. At the conclusion of the project, the Contractor shall provide a report to the Owner indicating the following:

1. Success of the cleaning project, as verified through visual inspection and/or gravimetric analysis.
2. Areas of the system found to be damaged and/or in need of repair.

END OF SECTION

SECTION 23 37 13
DIFFUSERS, REGISTERS AND GRILLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Diffusers.
   2. Registers/grilles.

B. Related Sections:
   1. Section 09 91 00 - Painting: Painting of ductwork visible behind outlets and inlets.

1.2 REFERENCES

A. Air Diffusion Council (ADC):
   1. ADC 1062 - Certification, Rating and Test Manual.

B. Air Movement and Control Association (AMCA):
   1. AMCA 500 - Test Method for Louvers, Dampers and Shutters.

C. Air Conditioning and Refrigeration Institute (ARI):
   1. ARI 650 - Air Outlets and Inlets.

D. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE):
   1. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.

E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   1. SMACNA - HVAC Duct Construction Standard - Metal and Flexible.

F. National Fire Protection Association (NFPA):
   1. NFPA 70 - National Electrical Code.
   2. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

1.3 SUBMITTALS

A. Procedures for submittals.
   1. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

1.4 QUALITY ASSURANCE

A. Test and rate air outlet and inlet performance in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

B. Test and rate louver performance in accordance with AMCA 500.

C. Qualifications
1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Titus, Richardson, TX (214) 899-1030.
2. Accutherm, Hayward, CA (510) 785-0510
3. Or equal.

2.2 CEILING DIFFUSERS – CD-1

A. Type: Modular core diffuser to discharge air in four-way pattern, adjustable.

B. Frame: T-bar as scheduled on plans.

C. Fabrication: Steel with baked enamel, “off-white” finish.

D. Accessories: Opposed blade damper with damper adjustable from diffuser face. As specified on drawings.

2.3 VARIABLE AIR DIFFUSER – CD-2

A. Type: Mechanical thermostat within hardware.

B. Frame: T-Bar as scheduled on plans.

C. Fabrication: Steel with baked enamel, “off-white” finish.

D. Auto changeover for heating and cooling, self-adjustable plate to control air flow.

2.4 CEILING RETURN GRILLE – CRG-1

A. Type: Egg crate ½" x ½" x 1" core.

B. Fabrication: Aluminum, "off-white" finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Coordinate location of outlets and inlets with Architectural reflected ceiling plan and make necessary adjustments in position to conform with architectural features, symmetry, and electrical lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09 91 00.

END OF SECTION

SECTION 23 57 32
PACKAGED ROOFTOP AIR CONDITIONING UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Packaged Rooftop Air Conditioning Unit (RTU)

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 23 31 00 – HVAC Ducts
   2. Section 23 59 00 – HVAC Instrumentation and Controls
   3. Section 26 05 19 – 600-volt power and control cable

1.2 REFERENCES

A. ARI 210 - Unitary Air Conditioning Equipment

B. NFPA 70 - National Electrical Code

C. NFPA 90A - Installation of Air Conditioning and Ventilation Systems.

D. UL 465 - Central Cooling Air Conditioners

1.3 DEFINITIONS

A. Roof Top Air Conditioning Unit (RTU): Single-packaged, self-contained, factory-assembled, pre-wired, Door unit consisting of cabinet and frame, evaporator fan, evaporator-coil, [electric heater] or [fuel-fired furnace] or [heat-pump], condenser coil, condenser fan, compressor(s), controls and filters in draw-through air flow configuration.

1.4 SUBMITTALS

A. Section 01 60 00 – Product Requirements, Product Data, and Samples: Procedures for submittals.
   1. Product Data: Provide product data for manufactured Units. Indicate performance capacities, energy-efficiency ratings and electrical characteristics.

2. Shop Drawings: Provide shop drawings for manufactured Units. Indicate refrigerant pipe connections, ductwork connections, filter size and quantity, condensate drain connection, thermostatic valves, temperature controls connections and electrical rough-in connections with electrical characteristics and connection requirements.
3. Assurance/Control Submittals:
    a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
    b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

B. Section 01 77 00 – Closeout Procedures and Training: Procedures for closeout submittals.
1. Project Record Documents: Accurately record the following:
    a. Plan view of installed location of Units
    b. Elevation or section view of installed Units.
2. Warranty: Submit written minimum five (5) years warranty to include coverage for refrigeration compressors condenser and evaporator with forms completed in Owner name and registered with manufacturer as specified in this Section.
3. Extra Products: Submit extra products as specified in this Section.
4. Operating instruction: Document training by furnishing a sign-in sheet with a description of the training provided instructors name and organization, and those who received training. Refer to 01780 1.3, 1.4, and 1.5 for more specific training

1.5 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer: Company specializing in manufacturing Products specified with minimum five (5) years documented experience.
2. Installer: Company specializing in performing the Work of this Section with minimum five (5) years documented experience.

B. Regulatory Requirements:
1. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for the purpose specified and indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 – Product Requirements: Transport, handle, store, and protect Products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
   1. Trane.

B. Section 01 60 00 – Product Requirements: Product options and substitutions. Substitutions: Permitted providing equal quality and performance, and as agreed to by Engineer.

2.2 MATERIALS

A. Cabinet -
   1. Frame and Panels: Minimum 18-gauge galvanized steel structural frame members; minimum 20-gauge cabinet panels with baked enamel or powder coated finish, easily removed access doors or panels with quick release fasteners.
   2. Insulation: Minimum one half (1/2") inch (13 mm) thick acoustic duct liner with smooth, black neoprene air-side surface for lining cabinet interior. Edges exposed to conditioned air path shall be coated with black neoprene surface.
   3. Provide double-wall construction.
   4. Drain Pan: Stainless steel, insulated, high-slope for positive drainage per ASHRAE Standard 62-89. Drain pan shall extend under the complete coil section.

B. Evaporator Fan -
   1. Fans: V-Belt driven, with permanently lubricated bearings, double width, double inlet, forward curved centrifugal fan, statically and dynamically balanced; resiliently mounted. Minimum three V-belt-driven blowers to provide required CFM with external total pressure of 4.4 in. wg.
   2. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.

   3. Motors: 30 hp, 480 volts, 3 phase, 60 Hz; rated for variable frequency drive duty.

C. Exhaust Fan -
   1. Fans: V-Belt driven, with permanently lubricated bearings, two double widths, double inlet, forward curved centrifugal fans, statically and

dynamically balanced; resiliently mounted. Minimum three V-belt-driven blowers to provide required CFM with external total pressure of 0.75 in. wg.

2. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.

D. Motors:
1. Supply fans – HP as scheduled, 480 volts, 3 phase, 60 Hz; rated for variable frequency drive duty.
2. 100% Economizer Exhaust fans – HP as scheduled, 480 volts, 3 phase, 60 Hz; rated for variable frequency drive duty.

E. Evaporator Coil -
1. Direct expansion cooling coil shall be 3/8" or ½" inch outside diameter seamless copper tubes expanded into aluminum fins. Maximum coil face velocity shall not exceed five hundred feet per minute.
2. Refrigeration circuit with externally equalized thermal expansion valve, filter-drier, and charging valves.

F. Heater - Fuel Fired Furnace: natural-gas, self-contained, package unit complete with burner and controls. Aluminized steel heat exchanger, AGA certified; minimum AFUE efficiency of 75 percent. Electronic pilot ignition shall be provided. Unit shall be provided as an integral part of the Roof Top Air Conditioning Unit.

G. Air Filters - Four-inch-thick throw-away type with 85 percent ASHRAE Dust Spot Efficiency filter. Filter face velocity shall be as scheduled.

H. Condenser Fans - Direct-driven, with permanently lubricated bearings, thermal overload protection; weatherproofed, vertical discharge propeller type with fan guard, statically and dynamically balanced, resiliently mounted.

I. Condenser Coil - Shall be seamless copper tubes expanded into aluminum fins with sub-cooling circuits, tested for leaks up to 425 psig. Suction and Liquid line service gauge ports and full charge of refrigerant. Provide refrigerant pressure switches to cycle condenser fans.

J. Compressor - Shall be hermetically sealed, 3600 rpm maximum, resiliently mounted with positive lubrication internal motor protection, refrigerant line filter drier, and crankcase heater.

K. Refrigerant – Only R-410a refrigerant is permitted.

L. Mixed-Air Casing:
   1. Dampers: Provide outside, return and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fail to closed position. Relief dampers may be gravity balanced.
   2. Gaskets: Provide tight fitting dampers with edge gaskets maximum leakage 5 percent at 2 inches (500 Pa) pressure differential.
   3. Damper Operator: 24 volts with gear train sealed in oil with spring return to fail to closed position.
   4. Furnish outside air tracking hardware integral to unit, for continuous monitoring of installation ventilation service.

M. Manufactured Roof Mounting Curb: Curbs to be furnished by Mason West for custom configuration for AC-1, 2 at standard height above grade, and for AC-3 at elevated height for installation of supply air and return air services within elevated curb.

N. Integral Controls:
   1. Controls - Shall be factory wired unit mounted terminal board and shall include contactors, high- and low-pressure cutouts, internal winding thermostat, 24 Volt control circuit transformers; non-cycling reset relay.
      a. Units provided with Direct Digital Controls shall include a controller(s) full unit controls capability, and capacity for interface to building BAS. The controller shall utilize electronic sensing and microprocessor-based digital control to perform the functions specified. The BAS and digital control and communications components installed shall be an integrated distributed processing system utilizing BACnet or LonWorks communication requirements as defined by ASHRAE/ANSI 135-2004 for all communication. System components shall be capable of communicating using native BACnet in accordance with the Standards and all current addenda and annexes, including all building controllers and application specific controllers. System may operate in proprietary protocol, and would interface with rooftop units as identified herein. Gateways to other communication protocols are not acceptable.
      b. Provide ventilation over-ride module.
      c. Furnish drives with by-pass contactors, in NEMA 3R enclosures, disconnect, drive cooling system, and 5%-line reactors. Equipment shall operate at minimum 97% efficiency at full-rated load, and shall have a 0.95 power factor.F.

O. See drawings for additional equipment requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings.

B. Verify that proper power supply is available.

C. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

D. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 INSTALLATION

A. Mount AC's on roof mounting curb providing water-tight enclosure to protect ductwork and utility services.

B. Install AC's level and in accordance with manufacturer's instructions.

C. Install condensate drain pipes from Unit drain pan to designated location shown on drawings. Provide minimum 1/8 inch per foot slope on all horizontal pipes.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field testing and inspection.
B. Operating Instruction
   1. Provide on-site instruction to review the operation of the system and detail any common troubleshooting or maintenance that is required to ensure normal operation.
   2. Provide one complete set of equipment operating, installation, and programming manuals that will remain at the installed location.

END OF SECTION

SECTION 23 59 00
HVAC INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. HVAC system thermostats.

B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 23 57 32 – Packaged Rooftop Air Conditioning Units.
   2. Division 1 - Commissioning Requirements

1.2 SUBMITTALS

A. Section 01 60 00 – Product Requirements, Product Data, and Samples: Procedures for submittals.
   1. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module
   2. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system. Submittals shall be furnished as a complete package prior to installation.
   3. Assurance/Control Submittals:
      a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
      b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
   4. Operating Instruction: Document training by furnishing a sign-in sheet with a description of the training provided; instructors name and organization, and those who received training. Refer to 0780 1.3, 1.4, and 1.5 for more specific training requirements.

B. Section 01 77 00 – Closeout Procedures and Training: Procedures for close-out submittals.
   1. Project Record Documents: Accurately record the following:

a. Actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.

2. Submit written special warranty with forms completed in Owner name and registered with manufacturer as specified in this Section.

1.3 QUALITY ASSURANCE

A. Qualifications:
1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

B. Regulatory Requirements:
1. Conform to requirements of NFPA 70 (National Electrical Code).
2. Products: Listed and classified by Underwriters Laboratories, Incorporated and suitable for the purpose specified and indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 – Product Requirements: Transport, handle, store, and protect Products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturer's offering Products which may be incorporated in the Work include the following:
1. Andover.
2. Alerton.
3. ALC.

B. Section 01 60 00 – Product Requirements: Product options and substitutions. Substitions: Permitted providing equal quality and performance, and as agreed to by Engineer.

C. Submit proposed hardware and material, and sequence of operations to owner for approval as part of bid submittal.

2.2 SYSTEM REQUIREMENTS

A. System shall provide equipment and hardware as indicated on the points list and in the system schematics, and as necessary to execute functions as indicated in the sequence of operations as indicated on the drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

B. Report in writing to Owner prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. At contract award, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.2 INSTALLATION:

A. Provide new control wiring as required for proper operation. All control wires installed under this contract shall be color coded, numbered or otherwise labeled for easy identification. All control wiring exposed to damage in workrooms shall be installed in conduit painted to match the mounting surface. All control wiring exposed in offices or other public spaces shall be installed in wiremold painted to match the mounting surface. All concealed control wiring shall be plenum rated. Provide and install batteries as required for proper operation. New installation shall be in accordance with manufacturer's recommendations.

B. Provide all necessary transformers, relays, contactors and other options as required for proper operation.

C. Provide line voltage (115v) service (conduit and wire) to control panels extended from available service in vicinity.

D. Provide low-voltage and signal wire and communication buss cable and associated conduit. All exposed wire and cable shall be installed in conduit.

E. Coordinate requirements for mounting window operators with window Contractor. Provide low voltage wire from pigtails at operators to vicinity of

window controllers. Provide conduit or wiremold as dictated by Owner, or route wires concealed with finish hardware form motors to controllers via raceways in mullions and in walls, grommet and junction box hardware, and additional measures (i.e. conduit and wiremold).

F. Microprocessor control panels installed in ambient conditions shall be provided in a nema 3r cabinet. Work shall be performed by supplier/installer.

G. Owner shall provide a workstation to meet the Supplier's specification (located in server room, unless otherwise agreed upon) for installation of the User Interface. Additional ancillaries shall be provided by the Owner.

3.3 SYSTEM PERFORMANCE

A. Supplier shall demonstrate system operability on a point-by-point basis to the owner's representative prior to acceptance by the owner.

B. The temperature control system is to maintain space temperature settings, within plus or minus 1-degree F. of space thermostat settings; inside air.

C. Where outside air capability is provided, set minimum position to be at 5 percent when fan is ON.

D. Operation Instruction
1. Provide 16 hours of structured on-site instruction to review the operation of the system and detail any common troubleshooting or maintenance required to ensure normal operation.
2. Provide one complete set equipment operating, installation, and programming manuals that will remain at the installed location.
3. Develop trending measures upon turnover of system by which the system automatically archives on-going information of all characteristics of the building operation.
4. Provide 80 hours of support for Owner's representative for modification of operating strategies

END OF SECTION

SECTION 26 05 00
ELECTRICAL

PART 1 - GENERAL

1.1 SCOPE

A. Provide all electrical work for a complete and operable system as shown on the drawings and as specified in this section including, but not limited to the following:
   1. Branch circuit-wiring system including wiring devices, wiring, conduit, pull boxes and equipment connections.
   2. Lighting system including light fixtures, lamps, ballasts, required mounting hardware, and occupancy sensors.
   3. Adjustment and test of the electrical work.
   4. Guarantee.

1.2 QUALITY ASSURANCE

A. All products and equipment herein specified or indicated on the drawings shall be new with UL label and in compliance with the California Electrical Code, state and local codes. Materials for similar use shall be of the same type and manufacture.

B. All work and materials shall be installed per the governing authorities. Nothing in the plans or specifications shall be deemed as permission to violate these codes or authorities and the Contractor shall be held responsible for any work, which is not accepted. Violations shown on the plans are to be brought to the attention of the Electrical Engineer before work is done.

1.3 SITE VISITATIONS: Prior to the submission of the bid, the Contractor shall visit the site and make a thorough examination of the existing conditions and thereby include allowances for this work in this bid.

1.4 PERMITS AND LICENSES: Contractor shall pay for and obtain all necessary permits, inspections, insurance and licenses required for the Electrical work. Deliver certificates for all permits and inspections to the Architect.

1.5 COORDINATION: Contractor to coordinate the Electrical work with other trades. Review drawings and specifications of all equipment requiring electrical connections prior to installation of the electrical system. Verify space, ventilation and clearances required to install electrical equipment. Exact locations of lights and wiring devices are shown on architectural drawings.

1.6 SUBMITTALS: Within thirty (30) days after award of contract, submit to the Architect six (6) sets of shop drawings consisting of product data sheets for light fixtures, receptacles, switches, plates, wiring devices, and material list.

Submittals not to include substitutions or deviations from the materials or methods specified unless prior approval has been given in writing. Make all submittals at one time in booklet form.

1.7 SUBSTITUTIONS: Where manufacturer's name and catalog number are called out, the phrase "or approved equal" can be assumed except the burden of proving equality is on the bidder.

1.8 DRAWINGS: During progress of work maintain a record of changes made on plans and "as-built" locations of buried conduits and ducts. On completion, present a professionally done reproducible drawing to the Architect.

1.9 VERIFICATION OF DIMENSIONS: All scaled and figured dimensions are approximate and are given for estimating purposes only. Where apparatus and equipment have been taken from typical equipment of the class indicated and before proceeding with the work, the Contractor shall carefully check and verify all dimensions and sizes and shall assume all responsibility for the fitting of his materials and equipment to other parts of the equipment and to the structure.

1.10 LOCATION: Prior to rough-in, minor adjustments to outlet locations may be made without additional compensation.

1.11 PROTECTION OF FINISH: Fully protect all finished parts during the progress of the work and until final completion.

1.12 GUARANTEE: All electrical work and equipment (except lamps) shall be guaranteed for one year from the date of acceptance on Contractor's letterhead and turned over to the Owner at the completion and final acceptance of the job.

PART 2 - PRODUCTS

2.1 CIRCUIT BREAKERS: Circuit breakers shall be bolt-on molded-case type with thermal magnetic trips. Provide with rated voltage, frame size, number of poles and trip setting as shown. NEMA interrupting capacity shall be 10,000 AIC at 120/208 volts or series rated 65,000 AIC at 277/480 volts, unless otherwise noted. Match existing.

2.2 CONDUIT: Conduit shall be rigid steel galvanized IMC for underground, exposed up to +5'-0" or in damp locations. No running threads will be permitted. Galvanized EMT shall be used in dry concealed locations and exposed above +5'-0". EMT connectors shall be watertight compression type. Galvanized flexible conduit shall be used only for motor and fixture connections in lengths not to exceed 6'. Conduits penetrating the roof are to be flashed and counter flashed. PVC schedule 40 may be used under floor slabs or underground with ground wire. PVC underground to have 24-inch cover. Install fittings, special

devices and material, which may be required for the proper installation of the conduit system.

2.3 CONDUCTORS: Conductors shall be 600-volt insulation type THHN/THWN copper. Conductors AWG #10 and smaller shall be solid, AWG #8 and larger to be stranded.

2.4 SPLICES: Splices on conductors #8 or smaller shall be Scotchlock spring connectors and for larger size cables use solderless connectors.

2.5 RECEPTACLES: Receptacles, 120-volt duplex grounding type, shall be specification grade 15-amp Leviton #5261-I. Where indicated WP install weatherproof gasket cover, mounted on FS box. Provide ground fault circuit interrupters where required by code. Dedicated receptacles shall be 20 amp, Leviton #5362-I.

2.6 LIGHT SWITCHES: Switches shall be toggle type specification grade 120/277 volts AC Leviton #1201-2I and #1203-2I for 3-way.

2.7 PLATES: Shall be stainless steel.

2.8 CHANNELS: Structural channels shall be by Kindorf, Kin-Line or Unistrut complete with all fittings, accessories, swivels, rods, etc. and installed to structural members as directed by the Structural Engineer.

2.9 LIGHTING FIXTURES: Furnish and install complete with lamps, ballasts and required mounting hardware. Prior to ordering fixtures, verify mounting methods and finishes. All fluorescent fixtures mounted in "T" bar ceilings to be independently suspended diagonally with 2 #10 steel wires. Installations in fire-rated areas to be done according to code requirements. Recessed portions of fixture enclosures, other than at points of support, shall be spaced at least 1/2 inch from combustible material. Thermal insulation shall not be installed within 3 inches from the recessed fixture enclosure, wiring compartment, or ballast and shall not be so installed above the fixture as to entrap heat and prevent the free circulation of air unless the fixture is otherwise identified for installation within thermal insulation. For pendant mounted fixtures, align stems to ceiling with laser beams.

2.10 LAMPS: Lamps shall be as shown on the fixture schedule. Provide lamps suitable for the use intended. Fluorescent lamps shall be 32-watt energy saver G.E. F32T8 RS SPX35 or approved equal by Sylvania or Philips. Metal halide lamps to be coated. Provide minimum 100 hours of "burn-in" of all fluorescent lamps.

2.11 BALLASTS: Fluorescent ballasts shall be rapid start, in-rush current limiting, electronic premium type CBM certified and ETL approved, high power factor and of voltage required. Ballasts shall be Advance, Universal, Magnetek or Motorola. Ballasts shall be compatible with occupancy sensors. HID ballasts shall be UL listed for the source, wattage and position of the lamp provided.

2.12 GROUND FAULT CIRCUIT INTERRUPTER (GFCI): Provide GFCI circuit breakers or outlets according to the National Electrical Code Section 210 (2) and (3), 210-8, and such ground fault circuit interrupter protection may be provided for other circuits, locations and occupancies, and where used, will provide additional protection against line-to-ground shock hazards.

PART 3 - EXECUTION

3.1 GENERAL:

A. The Electrical Drawings, which constitute an integral part of this contract, serve as the working drawings and indicate the general layout of the electrical systems. Field verifications of locations on plans are directed by field conditions. Check the Architectural, Structural and Mechanical Plans to avert possible installation conflicts and include all resulting cost in the bid.

B. Discrepancies between different plans, between plans and actual field conditions, or between plans and specifications shall be promptly brought to the attention of the Electrical Engineer for clarification or decision. Appurtenances and wiring not specifically indicated or referred to, but which are common to complete and operable electrical systems, shall be included in the bid.

C. Each empty conduit shall include a pull cord. All pull cords shall have a minimum diameter of 1/4" and a minimum average tensile strength of 1100 pounds. It shall be yellow in color. A contrasting tracer color may be included to identify the manufacturer. Flat braid is not acceptable.

3.2 INSTALLATION: Installation of materials and equipment shall be in strict accordance with manufacturer's recommendations, instructions, and industry standards, as indicated on the drawings and as specified herein. Provide all mounting facilities for securing or hanging fixtures, equipment and outlets to the satisfaction of the Engineer. Details shown on the plans are for the purpose of establishing the extent and general methods required. Provide all sleeves, inserts, expansion joints, vibration fitting, etc. Provide storage facilities and protect all work, materials and equipment from damage during process of work. Materials and equipment shall not be stored exposed to weather. Replace all damaged or defective work, materials and equipment without additional cost to the Owner.

3.3 CONDUIT AND WIRING: All conduit and wiring shall be installed concealed in walls, above ceilings and below floor slabs or exposed in accordance with applicable regulations and the Electrical Drawings. All penetrations of fire-rated walls or ceilings to be coordinated with Owner. Conduit runs are shown diagrammatically. Exact routing and location of the equipment to be determined in the field.

3.4 MOISTURE PROTECTION: Where required by regulations, all electrical devices in the spray radius of sprinklers shall be installed with weatherproof enclosures in compliance with these regulations.

3.5 GROUNDING: All metallic conduits, supports and enclosures shall be grounded in compliance with the National Electrical Code. Grounding bushings shall be used wherever conduits are required to be grounded.

3.6 TESTING: All new circuits shall be tested for short and open circuit to ground with a megger. Resistance to ground shall be in compliance with the requirements of the National Electrical Code. Furnish all necessary labor, instruments and equipment required for making tests to demonstrate that the operation of the system is in accordance with the intent of the contract documents. Also perform a complete "in service" operation of the entire electrical system to the full satisfaction of the Owner.

END OF SECTION

SECTION 26 05 19
LOW-VOLTAGE WIRES (600 VOLT AC)

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section.

B. Section Includes: Low-voltage wire, splices, terminations and installation.

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

PART 2 - PRODUCTS

2.01 WIRES

A. Wires shall be single conductor type THHN or THWN insulated with polyvinyl chloride and covered with a protective sheath of nylon, rated at 600 volts. Wires may be operated at 90 degrees C. maximum continuous conductor temperature in dry locations, and 75 degrees C. in wet locations and shall be listed by UL Standard 83 for thermoplastic insulated wires, listed by Underwriter's Laboratories (UL) for installation in accordance with Article 310 of the California Electrical Code (CEC). Conductors shall be solid copper for 12 AWG and smaller conductors, and stranded copper for 10 AWG and larger conductors. Conductors shall be insulated with PVC and sheathed with nylon. Wires shall be identified by surface markings indicating manufacturer's identification, conductor size and metal, voltage rating, UL symbol, type designations and optional rating. Indentations for lettering are not permitted. Wires shall be tested in accordance with the requirements of UL standard for types THWN, or THHN.

B. Conductors shall be solid Class B or stranded Class C, annealed uncoated copper in accordance with UL standards, or another Nationally Recognized Testing Laboratory (NRTL).

2.02 STANDARDS

A. THWN/THHN wires shall comply with the following standards:

1. UL 83 for thermoplastic insulated wires.

2. UL 1063 for machine tool wires and cables.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wires shall not be installed until debris and moisture is removed from conduits, boxes, and cabinets. Wires stored at site shall be protected from physical damage until they are installed and walls are completed.

B. Wire-pulling compounds furnished as lubricants for installation of conductors in raceways shall be compounds approved and listed by UL, NRTL, or equal. Oil, grease, graphite, or similar substances are not permitted. Pulling of 2 AWG or larger conductors shall be performed with a cable pull machine. Any runs shorter than 50 feet are exempt. When pulling conductors, do not exceed manufacturer's recommended values

C. The Project Inspector will observe installation of feeder cables. Notify the Project Inspector not less than two working days in advance of the proposed time of feeder installation.

D. At outlets for light, power, and signal equipment, pigtail splices with 8-inch circuit conductor leads for connection to fixtures, equipment, and devices.

E. Pressure cable connectors, pre-insulated 3M Scotchlok, Hubbell Power, O-Z/Gedney or equal, Y, R or B spring-loaded twist-on type, may be furnished in splicing number 8 AWG or smaller wires for wiring systems; except public address and telephone systems.

F. Joints, splices, taps, and connections to switchboard neutral, bonding or grounding conductors, conductors to ground busses, and transformer connections for wires 6 gage and larger shall be performed with high-pressure cable connectors approved for installation with copper conductors. Connectors shall be insulated with heavy wall heat shrink WCSM, or cold-applied roll-on sleeve RVS. Insulation level shall be a minimum of 600V and joints, splices, and taps shall be qualified to ANSI C 119.1, UL, NRTL, or equal listed mechanical pressure connections.

G. Connections to any bussing and high-press cable connectors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

H. Connection of any bonding or grounding conductors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

I. Wire switchboards, panel cabinets, pull boxes, and other cabinets except public address, shall be neatly grouped and tied in bundles with nylon ties at 10-inch intervals. In switchboards, panels and terminal blocks, wires shall be fanned out to terminals. If bundles are longer than 24 inches, a maximum of nine current carrying conductors may be bundled together.

J. Install conductor lengths with a minimum length within the wiring space. Conductors must be long enough to reach the terminal location in a manner that avoids strain on the connecting lug.

K. Maintain the conductor required bending radius.

L. Neutral conductors larger than 6 gage, which are not color identified throughout their entire length, shall be taped, painted white or natural gray, or taped white where they appear in switchboards, cabinet, gutters or pull boxes. Neutral conductors 6 gage and smaller shall be white color identified throughout their entire length.

M. Fire alarm and clock wiring shall be continuous from terminal cabinets or from equipment to each device. Splices are not permitted between devices and/or terminal cabinets at junction and pull boxes. Wiring shall be terminated at terminal blocks or devices only.

N. Wiring systems shall be free from short circuits and grounds, other than required grounds. The contractor shall be responsible for the testing of feeder and branch circuit conductor's insulation resistance. The insulation of the conductors shall be tested prior to connections to any panelboards, switchboards, variable frequency drives, lighting control systems, ballasts, and wiring devices such as but not limited to GFI receptacles, TVSS receptacles, or equipment. Insulation testing of panelboards and switchboards shall be independently performed from the insulation testing of any conductors as specified in other sections of this specification.

1. Utilize the services of an approved independent testing laboratory to perform megger time-resistance insulation testing of feeder conductors. Tests must be conducted with wires disconnected at both ends.

    a. Provide calibration program records to assure the testing instrument to be within rated accuracy. The test equipment accuracy shall be in accord with the requirements stated by the National Institute of Standards and Technology (NIST).

b. Test equipment shall be provided with a label stating the date of last calibration. As a minimum the equipment shall have been calibrated within the past 12 months.

c. Test reports shall include the following:

1) Identification of the testing organization.
2) Equipment identification.
3) Ambient conditions.
4) Identification of the testing technician.
5) Summary of project.
6) Description of equipment being tested.
7) Description of tests.
8) Test results.
9) Analysis, interpretation and recommendations.

2. Utilize the services of an approved independent testing laboratory or a qualified contractor's employee (Technician certified in accordance with ANSI/NETA ETT-2000 Standard for Certification of Electrical Testing Personnel) to perform megger time-resistance insulation testing of branch circuit conductors. Tests must be conducted with wires disconnected at both ends.

a. Test equipment and report requirements stipulated under paragraph 3.01.N.1 apply to branch circuit testing.

3. Tests shall be performed in the presence of the Project Inspector.

4. Insulation resistance shall not be less than 100 mega-ohms.

3.02 COLOR CODES

A. General Wiring:

1. Color code conductor insulation as follows:

SYSTEM VOLTAGE		
Conductor	208Y/120	480Y/277
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Natural Gray

Neutrals shall be colored-distinguished if circuits of two voltage systems are used in the same raceway.

2. For phase and neutral conductors 6 gage or larger, permanent plastic-colored tape may be furnished to mark conductor end instead of coded insulation. Tape shall cover not less than 2 inches of conductor insulation within enclosure.

B. Signal Systems: Wires for signal systems shall be color-coded and installed under observation of the Project Inspector. Except where otherwise specified, color-coding shall be as follows:

EDIT NOTE: IN NEW SCHOOLS AND SOME EXISTING SCHOOLS THE PROGRAM SIGNAL IS THROUGH THE PA SYSTEM; PROGRAM BELLS ARE NOT PRESENT. DELETE REFERENCE TO PROGRAM BELLS AS NEEDED.

SYSTEM	COLOR CODE
Clocks	Pink, Gray and Orange
Program Bells (some existing elementary schools)	White (Common)Black
Initiating Devices (Non-Addressable)	Red (+) and Black (-)
Program Bells (some existing secondary schools)	White (120 volt, common) Black (C.R. program) Blue (Shop program) Brown (Gym program) Yellow (Auditorium fire alarm)
Fire Alarm Horns	Pink (+) and Gray (-)
Fire Alarm Strobes	Orange (+) and Blue (-)
Un-Interruptible 24 Volt Power (Annunciator, Water Flow, and Audible Device)	Yellow (+) and White (-) Note: A single white wire may be common to both
Interruptible 24 Volt Power (4 wire smoke detectors, duct detectors)	Brown (+) and White (-) Note: A single white wire may be common to both
Switch-Leg Sprinkler Bell (Between water flow and audible device)	Violet (+) and White (-)
Door Holding Magnets (Non Power Limited)	Black (+) and White (-)

3.03 FEEDER IDENTIFICATION

A. Feeder wires and cables shall be identified at each point the conduit run is broken by a cabinet, box, gutter, etc. Where terminal ends are available, identification shall be by means of heat shrink wire markers, which provide terminal strain relief. Markers shall be by Tyco Electronics, Panduit, Brady Perma-Sleeve, or equal. Identification in other areas shall be by means of wrap-around tape markers from Tyco Electronics, Panduit, Brady Perma-Code or equal. Markers shall include feeder designation, size, and description.

3.04 TAPE AND SPLICE KITS

A. Splices, joints, and connectors joining conductors in dry and wet locations shall be covered with insulation equivalent to that provided on conductors. Free ends of conductors connected to energized sources shall be taped. Voids in irregular connectors shall be filled with insulating compound before taping. Thermoplastic insulating tape approved by UL, NRTL, or equal for installation as sole insulation of splices shall be furnished and shall be installed according to manufacturer's printed specifications.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wall switches.
   2. Receptacles.
   3. Device plates and box covers.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. As specified in Section 26 05 00 - Electrical.

1.2 REFERENCES

A. As specified in Section 26 05 00 - Electrical.

B. National Electrical Manufacturers Association (NEMA):
   1. NEMA WD 1 - General Requirements for Wiring Devices.
   2. NEMA WD 6 - Wiring Device -- Dimensional Requirements.

1.3 SUBMITTALS

A. As specified in Section 26 05 00 - Electrical.

1.4 QUALITY ASSURANCE

A. As specified in Section 26 05 00 - Electrical.

B. Qualifications:
   1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 5 years documented experience.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Hubbell, Inc.
   2. Leviton Manufacturing, Company, Inc.
   3. Pass & Seymour.
   4. Section 01 60 00 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Provide 20 Amp, 120/277V, specification grade, flush, single pole toggle switches with side and back wired screw terminals. All switches shall be equipped with grounding screws.

C. Single Pole Switch:
   1. Leviton Cat. No.1221-2.
   2. P&S Cat. No. PS20AC1I.
   3. Hubbell Cat. No. HBL1221.

D. Color: Ivory unless indicated otherwise.

2.2 RECEPTACLES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Leviton Manufacturing, Company, Inc.
   2. Pass & Seymour.
   3. Hubbell, Inc.
   4. Section 01 60 00 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Provide duplex, specification grade, 20 Amp, 120 Volt, 2 pole, 3 wire receptacles with grounding screw.

C. Duplex Convenience Receptacle:
   1. Leviton Cat. No. 5362.
   2. P&S Cat. No. 5362.
   3. Hubbell Cat. No. HBL5352.

D. GFCI Receptacle (Side Wired Feed-Thru):
   1. Leviton Cat. No. 6599.

2. P&S Cat. No. 2091-SHG.
3. Hubbell Cat. No. HBLGF5362.

E. Color: Ivory unless indicated otherwise.

2.3 WALL PLATES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
1. P&S Sierra.
2. Hubbell.
3. Leviton.
4. Section 01 60 00 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Cover Plate: White smooth thermoplastic.
1. Sierra TP8-W.

C. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device, listed as weather proof while in use.
1. Red Dot cast aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 26 05 00 - Electrical.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
1. Verify that outlet boxes are installed at proper height.
2. Verify that wall openings are neatly cut and will be completely covered by wall plates.
3. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install in accordance with NECA "Standard of Installation."

B. Install devices plumb and level.

C. Install switches with OFF position down.

D. Install receptacles with grounding pole on bottom.

E. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.

F. Connect wiring devices by wrapping conductor 2/3 of screw diameter in clockwise direction around screw terminal. Tighten screw to 12 pound-inches. Do not use spring pressure devices for wire connections.

G. Install cover plates on switch, receptacle, and blank outlets.

3.4 CONSTRUCTION

A. Interface with other work:

1. Coordinate locations of outlet boxes provided under Section 260533 to obtain mounting heights indicated on Drawings.

3.5 FIELD QUALITY CONTROL

A. As specified in Section 26 05 00 –Electrical.

B. Inspect each wiring device for defects.

C. Operate each wall switch with circuit energized and verify proper operation.

D. Verify that each receptacle device is energized.

E. Test each receptacle device for proper polarity.

F. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

A. Adjust devices and wall plates to be flush, level and plumb with wall.

3.7 CLEANING

A. Section 01 73 00 Execution: Cleaning installed work.

B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

Appendix A

SAMPLE CONTRACT TO BE EXECUTED

CITY OF COMMERCE

STANDARD PUBLIC WORKS AGREEMENT

Between

THE CITY OF COMMERCE

And

[ENTER CONTRACTOR NAME]

TABLE OF CONTENTS

TABLE OF EXHIBITS

CITY OF COMMERCE

STANDARD PUBLIC WORKS AGREEMENT

THIS STANDARD PUBLIC WORKS AGREEMENT (**"AGREEMENT"**) is dated [ENTER CONTRACT DATE] for reference purposes only and is made and entered into by and between the CITY OF COMMERCE, a Municipal corporation (the "CITY") and [ENTER CONTRACTOR NAME] (**"CONTRACTOR"**) whose address is [ENTER CONTRACTOR ADDRESS].

SEC. 1. RECITALS

WHEREAS, the CITY duly advertised a Notice Inviting Bids and received bids for the work described as [ENTER PROJECT NAME] ("PROJECT"), and;
WHEREAS, The City Council awarded a contract to the lowest responsible and responsive Contractor , and directed that a written contract be entered into with CONTRACTOR for the PROJECT.

NOW, THEREFORE, in consideration of the promises and the mutual covenants and agreements herein contained, the parties do hereby agree as follows:

SEC. 2. CONTRACT DOCUMENTS.

A. The CONTRACT DOCUMENTS for the PROJECT shall consist of the Notice Inviting Sealed Bids, the Instructions to Bidders, Bidders Proposal, Addendums, General Specifications and all referenced specifications, details, standard drawings (Project drawings) , and appendices, together with this Contract and all required bonds, and insurance certificates. All of the "Contract Documents" are intended to complement the other documents so that any work called for in one, and not mentioned in the others, or vice versa, is to be executed the same as if mentioned in all of said documents. The CONTRACT DOCUMENTS are incorporated herein by this reference and made part hereof as though they were fully set forth herein.

B. In case any of the CONTRACT DOCUMENTS conflict with each other, the order of preference for the CONTRACT DOCUMENTS is:

1. This AGREEMENT
2. Appendices
3. Standard drawings
4. Details
5. Special Provisions, if any
6. Addendums
7. General Provisions and all referenced specifications
8. Bidders Proposal

9. Instructions to Bidders

10. Notice Inviting Sealed Bids

SEC. 3. SCOPE OF PROJECT

The Scope of PROJECT consists generally of [ENTER PROJECT NAME] as more specifically set forth in the Plans, Specifications and other Contract Documents.

SEC. 4. COMPENSATION.

CONTRACTOR hereby agrees to receive and accept the total amount of [ENTER COMPENSATION AMOUNT], which is based on performing all of the work shown on Bidders Proposal as full compensation for furnishing all materials, performing all work, and fulfilling all obligations hereunder. Said compensation shall cover all expenses, losses, damages, and consequences arising out of the nature of the work during its progress or prior to its acceptance including those for well and faithfully completing the work and the whole thereof in the manner and time specified in the CONTRACT DOCUMENTS, and also including those arising from actions of the elements, unforeseen difficulties or obstructions encountered in the prosecution of the work, suspension or discontinuance of the work, and all other unknowns or risks of any description connected with the work. CITY shall herein retain five percent (5%) of said price until said time as the provisions of SEC. 18 herein have been met.

Sec. 4.1. Progress Payments

Progress Payments shall be made in accordance with applicable section of the General Provisions and the provisions of this Section 4.1. Upon receipt of a properly presented payment request, the CITY shall process the payment request in accordance with Public Contracts Code Section 20104.5. The CITY shall review the payment request as soon as possible. If the CITY rejects the payment request, it shall be returned to the CONTRACTOR within seven days of its receipt by the CITY with an explanation for the reasons of its rejection. If the payment request is approved in writing by the CITY, payment shall be made in thirty (30) days of receipt of an undisputed and properly presented payment request. Late payments shall bear interest at the legal rate of interest in accordance with Code of Civil Procedure 685.010. CITY shall pay CONTRACTOR a sum based upon ninety five percent (95%) of the contract price apportionment of the labor and materials incorporated into the work under the contract during the period covered by said statement. The remaining five percent (5%) thereof shall be retained as performance security. Refer to Section 4.2 of this Agreement for retention of funds.

Sec. 4.2. Retention of Funds

Progress payments shall be made in accordance with the provisions of Section 4.1 of this Agreement. In accordance with said section, CITY shall pay CONTRACTOR a sum based upon ninety five percent (95%) of the contract price apportionment of the labor and materials incorporated into the work under the contract during the month covered by said statement. The remaining five percent (5%) thereof shall be retained as performance security to be paid to the CONTRACTOR within sixty (60) days after final acceptance of the work by the City Council, after CONTRACTOR shall have furnished CITY with a release of all undisputed contract amounts, if required by CITY. In

the event there are any claims specifically excluded by CONTRACTOR from the operation of the release, the CITY may retain proceeds (per Public Contract Code 7107) of up to 150% of the amount in dispute. CITY's failure to deduct or withhold shall not affect CONTRACTOR's obligations hereunder.

Sec. 4.3. Substitution of Securities.

Pursuant to Public Contracts Code Sec. 22300 CONTRACTOR shall be allowed to substitute securities for any moneys withheld by the CITY to ensure performance under a contract, unless, federal regulations or policies, or both, do not allow the substitution of securities. At the request and expense of the CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the CITY, or with a state or federally chartered bank in this state as the escrow agent, who shall then pay those moneys to the CONTRACTOR. Upon satisfactory completion of the contract, the securities shall be returned to the contractor.

SEC. 5. UNDOCUMENTED WORKERS.

CONTRACTOR hereby promises and agrees to comply with all of the provisions of Federal and/or State law as the same shall apply to this PROJECT pertaining to the employment of unauthorized aliens as defined therein. Should CONTRACTOR so employ unauthorized aliens for the performance of work and/or services covered by this Contract, and should the Federal Government impose sanctions against the CITY for use of unauthorized aliens, CONTRACTOR hereby agrees to, and shall, hold harmless, indemnify and defend CITY for the cost of all such sanctions imposed, together with any and all costs, including attorneys' fees, incurred by the CITY in connection therewith.

SEC. 6. NOTICE TO PROCEED.

CONTRACTOR shall commence work on the date specified in the Notice to Proceed to be issued in writing to CONTRACTOR by the CITY and shall complete work on the PROJECT within [ENTER WORKING DAYS] Working Days from the commencement thereof to avoid liquidated damages to be assessed by the City if project completion is delayed unless the delay is caused by act of God or beyond Contractor's control. .

SEC. 7. DISCOVERY OF HAZARDOUS OR LATENT CONDITIONS.

A. CONTRACTOR shall, without disturbing the condition, notify CITY in writing as soon as CONTRACTOR, or any subcontractor, agent or employees have knowledge and reporting is possible, of the discovery of any of the following conditions:

1. The presence of any material that the CONTRACTOR believes is hazardous waste, as defined in Section 25117 of the Health and Safety Code;
2. Subsurface or latent physical conditions at the site differing from those indicated in the specifications; or,

3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract.

B. Pending a determination by the CITY of appropriate action to be taken, CONTRACTOR shall provide security measures (e.g., fences) adequate to prevent the hazardous waste or physical conditions from causing bodily injury to any person.

C. CITY shall promptly investigate the reported conditions. If CITY, through the Director of Public works or City Engineer or his/her designee, and in the exercise of its sole discretion, determines that the conditions do materially differ, or do involve hazardous waste, and will cause a decrease or increase in the CONTRACTOR's cost of or time required for performance of any part of the work, then CITY shall issue a change order.

D. In the event of a dispute between CITY and CONTRACTOR as to whether the conditions materially differ or involve hazardous waste or cause a decrease or increase in the CONTRACTOR's cost of, or time required for performance of any part of the work, CONTRACTOR shall not be excused from any schedule completion date, and shall proceed with all work to be performed under the Contract. CONTRACTOR shall retain any and all rights which pertain to the resolution of disputes and protests between the parties.

SEC. 8. MISCELLANEOUS STATUTORY REQUIREMENTS

Sec. 8.1. Contractor License.

CONTRACTOR and its Subcontractor shall possess a valid Contractor's license issue by State of California and authorized for the performance of the Project. The Contractor and all subcontractors shall obtain a City of Commerce business license before commencing work on the Project.

Sec. 8.2. Ineligible Contractor Prohibited.

Any contractor or subcontractor who is ineligible to perform work on a public works project pursuant to Section 1777.1 or 1777.7 of the Labor Code is prohibited from performing work under this Agreement.

Sec. 8.3. Compliance with SB 854 Registration.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. No prime contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. No prime contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The CONTRACTOR will be required to post job site notices as described in 8 California Code of Regulation section 16451(d).

Sec. 8.4. Trench and Pipeline Safety.

If this Contract is for more than $25,000 or an amount established by the state law and

involves excavation of any trench five feet or more in depth, the CONTRACTOR shall submit a detailed plan of shoring, bracing, sloping or other provisions to be made for worker protection in accordance with Labor Code Section 6705. Such plan shall be approved by a qualified representative of the CITY in advance of commencing excavation work.

Sec. 8.5. Utility Relocation.

CITY is responsible for removal, relocation, or protection of city owned existing conflicting main or trunk line utilities to the extent such utilities were not identified in the invitation for bids or specifications. CITY shall reimburse contractor for any costs incurred in locating, repairing damage not caused by contractor and removing or relocating such unidentified utility facilities, including equipment idled during such work. CONTRACTOR shall not be assessed liquidated damages for delay arising from the removal or relocation of such unidentified utility facilities. Contractor is responsible to contact Underground SERVICE Dig Alert (USA) and mark all utilities in compliance with the state law in advance of any excavation..

Sec. 8.6. Third Party Claims Notification.

The CITY shall timely notify the CONTRACTOR in writing of any third party claims relating to the Agreement.

Sec. 8.7. Unfair Business Practices Claims.

The CONTRACTOR or subcontractor offers and agrees to assign to the CITY all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2, (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the CITY renders final payment to the CONTRACTOR without further acknowledgment by the parties. (Section 7103.5, California Public Contract Code.).

Sec. 8.8. Day's Work.

CONTRACTOR acknowledges that under California Labor Code sections 1810 and following, 8 hours of labor constitutes a legal day's work. CONTRACTOR will forfeit as a penalty to CITY the sum of $25.00 or other amounts established by law for each worker employed in the execution of this Contract by CONTRACTOR or any subcontractor for each calendar day during which such worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of Labor Code section 1810. (Labor Code § 1813).

Sec. 8.9. Payroll Records.

CONTRACTOR shall maintain the certified payroll records required by Labor Codes Sec. 1776 and shall report such records directly to the California Labor Commissioner as required by Labor Code Sec. 1771.4. The CONTRACTOR shall inform the CITY of the location of the records enumerated under Labor Code Sec. 1776, including the street address, city, and county, and shall, within five working days, provide a notice of a change of location and address. Contractor shall submit payroll records if and when requested by the city in a timely manner.

Sec. 8.10. Employment of Apprentices.

Nothing in this Contract prevents CONTRACTOR or any subcontractor from employing properly registered apprentices in the execution of the Contract. CONTRACTOR is responsible for compliance with Labor Code section 1777.5 for all apprenticeable occupations. This statute requires that contractors and subcontractors must submit contract award information to the applicable joint apprenticeship committee, must employ apprentices in apprenticeable occupations in a ratio of not less than one hour of apprentice's work for every five hours of labor performed by a journeyman (unless an exception is granted under §1777.5), must contribute to the fund or funds in each craft or trade or a like amount to the California Apprenticeship Council, and that contractors and subcontractors must not discriminate among otherwise qualified employees as apprentices solely on the ground of sex, race, religion, creed, national origin, ancestry or color. Only apprentices defined in Labor Code section 3077, who are in training under apprenticeship standards and who have written apprentice contracts, may be employed on public works in apprenticeable occupations.

Sec. 8.11. Records Audit

In accordance with Government Code, Section 8546.7, records of both the CITY and the CONTRACTOR shall be subject to examination and audit by the Auditor General for a period of three (3) years after final payment.

SEC. 9. PREVAILING WAGES

A. CONTRACTOR and its Subcontractor shall pay prevailing Wage rates for this Project in accordance with the "General Wage Determination Made by the Director of Industrial Relations Pursuant To California Labor Code, Part 7, Chapter 1, Article 2, Sections 1770, 1773 and 1773.1", for Los Angeles County. Wage rates shall conform with those available at the City of Commerce Public Works Department and posted at the Project site.

B. The following Labor Code sections are hereby referenced and made a part of this Agreement:

1. Section 1775 - Penalty for Failure to Comply with Prevailing Wage Rates.
2. Section 1777.4 - Apprenticeship Requirements.
3. Section 1777.5 - Apprenticeship Requirements.
4. Section 1813 - Penalty for Failure to Pay Overtime.
5. Sections 1810 and 1811 - Working Hour Restrictions.
6. Section 1775 - Payroll Records.
7. Section 1773.8 - Travel and Subsistence Pay.

SEC. 10. INDEMNITY, DEFENSE AND HOLD HARMLESS

A. CONTRACTOR shall indemnify, defend with legal counsel approved by CITY, and hold harmless CITY, its officers, officials, employees and volunteers from and against all liability, loss, damage, expense, cost (including without limitation reasonable legal counsel fees, expert fees and all other costs and fees of litigation) of every nature arising out of or in connection with CONTRACTOR's negligence, recklessness or willful misconduct in the performance of work

hereunder or its failure to comply with any of its obligations contained in this Agreement, except such loss or damage which is caused by the sole or active negligence or willful misconduct of the CITY. Should conflict of interest principles preclude a single legal counsel from representing both CITY and CONTRACTOR, or should CITY otherwise find CONTRACTOR's legal counsel unacceptable, then CONTRACTOR shall reimburse the CITY its costs of defense, including without limitation reasonable legal counsel fees, expert fees and all other costs and fees of litigation. The CONTRACTOR shall promptly pay any final judgment rendered against the CITY (and its officers, officials, employees and volunteers) with respect to claims determined by a trier of fact to have been the result of the CONTRACTOR's negligent, reckless or wrongful performance. It is expressly understood and agreed that the foregoing provisions are intended to be as broad and inclusive as is permitted by the law of the State of California and will survive termination of this Agreement.

B. CONTRACTOR obligations under this section apply regardless of whether such claim, charge, damage, demand, action, proceeding, loss, stop notice, cost, expense, judgment, civil fine or penalty, or liability was caused in part or contributed to by an Indemnitee. However, without affecting the rights of CITY under any provision of this agreement, CONTRACTOR shall not be required to indemnify and hold harmless CITY for liability attributable to the active negligence of CITY, provided such active negligence is determined by agreement between the parties or by the findings of a court of competent jurisdiction. In instances where CITY is shown to have been actively negligent and where CITY'S active negligence accounts for only a percentage of the liability involved, the obligation of CONTRACTOR will be for that entire portion or percentage of liability not attributable to the active negligence of CITY.

SEC. 11. BONDS.

A. CONTRACTOR, before commencing said PROJECT, shall furnish and file with CITY, a Performance Bond, in the sum of one hundred percent (100%) of the Agreement price thereof conditioned upon the faithful performance of this Agreement in the form attached hereto as Exhibit "B."..

B. CONTRACTOR, before commencing said PROJECT, shall furnish and file with CITY, a Labor and Materials Payment Bond in the sum of 100% of the Agreement price, conditioned upon the payment of all labor and materials furnished in connection with this Agreement in the form attached hereto as Exhibit "C."

C. CONTRACTOR, before commencing said PROJECT, shall furnish and file with CITY, a Warranty Bond in the amount of 50% of the Contract price, conditioned upon the guaranty and warranty of the work and labor and materials in connection with the work performed on the Project pursuant to this Agreement for a period of one year from the date of project completion and acceptance in the form attached hereto as Exhibit "D."

SEC. 12. INSURANCE REQUIREMENTS.

Prior to commencing work hereunder, CONRACTOR shall provide the CITY with proof of insurance naming the CITY and each of its directors, officers, agents, and employees as additional-named insureds on a policy or policies of insurance providing and maintaining the coverages set forth in the Insurance Schedule attached hereto as Exhibit A. CITY shall have the right to hold the policies and

policy renewals, and CONTRACTOR shall promptly furnish to CITY all renewal notices and all receipts of paid premiums. CITY may make proof of loss if not made promptly by CONTRACTOR.

SEC. 13. LIQUIDATED DAMAGES.

See Section 6-9 Liquidated Damages of the General Provisions. In addition, pursuant to the authority of California Public Contracts Code Section 7102, CITY and CONTRACTOR agree that the determination of actual damages for any unreasonable delay in performance of this Agreement caused by CITY would be extremely difficult or impractical to determine in the event of a breach of this Agreement by CITY. Therefore, if the CITY is determined to be liable for such unreasonable delays, the CITY and its sureties shall be liable to the CONTRACTOR for the sum of two hundred dollars ($200.00) as liquidated damages for each working day of delay in the performance of any service required hereunder

SEC. 14. DISPUTE RESOLUTION

Sec. 14.1. Claims of $375,000 or Less

A. A claim by the CONTRACTOR for a time extension, for money damages for work, or a payment disputed by the CITY must be submitted to a resolution process in accordance with Public Contracts Code Sections 21040-21040.4. A summary of Sections 21040-21040.4 are as follows:

(1) Informal negotiation between the CITY and CONTRACTOR.

(2) Mediation with the CONTRACTOR.

(3) Court mandated Arbitration.

(4) Court trial. If the party requesting the court trial does not prevail, then that party must pay all court costs and attorney's fees.

Sec. 14.2 Public Contracts Code 9204 Claims

CONTRACTOR shall comply with the procedure set forth in Public Contracts Code section 9204 for any claim, as that term is defined therein, for one or more of the following: 1) a time extension, including, without limitation, for relief from damages or penalties for delay, 2) payment of money or damages arising from work done pursuant to this Agreement, and/or 3) payment of an amount disputed by the CITY under this Agreement. A summary of the provisions of Public Contracts Code Section 9204 is as follows:

1. CONTRACTOR must send a claim to the CITY for a time extension, payment for work not in the Agreement, or payments disputed by the CITY by registered mail or certified mail with return receipt requested.

2. CITY must respond within 45 days as to which claims are disputed and undisputed.

3. If claim remains in dispute, CONTRACTOR may request informal meet and confer meeting with CITY.

4. After meet and confer, an disputed claim remaining shall be submitted to non-binding mediation.

5. All undisputed claims shall be paid within 60 days.

SEC. 15. TERMINATION.

Sec. 15.1. Termination for Convenience.

The CITY may terminate this contract, in whole or in part, with 30 days written notice to the CONTRACTOR when it is in the CITY's best interest. The CONTRACTOR shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The CONTRACTOR shall promptly submit its termination claim to CITY to be paid the CONTRACTOR. If the CONTRACTOR has any property in its possession belonging to the CITY, the CONTRACTOR will account for the same, and dispose of it in the manner the CITY directs. The CONTRACTOR may terminate this contract, in whole, with 90 days written notice to the CITY.

Sec. 15.2 Termination for Default.

If at any time the CONTRACTOR is determined to be in material breach of the Contract, a Notice of Potential Breach of Contract shall be prepared by the CITY, and will be served upon the CONTRACTOR and its sureties. If the CONTRACTOR continues to neglect or refuses to comply with the Contract or with the Notice of Potential Breach of Contract to the satisfaction of the CITY within the time specified in such Notice, the CITY shall have the authority to terminate the Contract for this Project.

Sec. 15.3 Waiver of Remedies for any Breach.

In the event that CITY elects to waive its remedies for any breach by CONTRACTOR of any covenant, term or condition of this Contract, such waiver by CITY shall not limit CITY's remedies for any succeeding breach of that or of any other term, covenant, or condition of the Contract.

SEC. 16. CONTRACTOR'S FAILURE TO PROCURE COMPLETION OF PROJECT

In the event CONTRACTOR fails to furnish tools, equipment, or labor in the necessary quantity or quality, or fails to prosecute the work or any part thereof contemplated by this Agreement in a diligent and workmanlike manner, and if the CONTRACTOR for a period of three (3) calendar days after receipt of written demand from CITY or its designated representative to do so, fails to furnish tools, equipment, or labor in the necessary quantity or quality, and to prosecute its work and all parts thereof in a diligent and workmanlike manner, or after commencing to do so within said three (3) calendar days, fails to continue to do so; then the CITY may exclude the CONTRACTOR from the premises, or any portion thereof, and take possession of said premises or any portion thereof, together with all material and equipment thereon, and may complete the work contemplated by this Agreement or any portion of said work, either by furnishing the tools, equipment, labor or material necessary, or by letting the unfinished portion of said work, or the portion taken over by the CITY to another contractor or by a combination of such methods. In any event, the procuring of the completion of said work, or the portion thereof taken over by the CITY, shall be a charge against the CONTRACTOR, and may be deducted from any money due or becoming due to CONTRACTOR from the CITY, or the CONTRACTOR shall pay the CITY the amount of said charge, or the portion thereof unsatisfied. The sureties, provided for under this Agreement shall become liable for payment should CONTRACTOR fail to pay in full any said cost incurred by the CITY.

SEC. 17. COMPLIANCE WITH APPLICABLE LAWS.

CONTRACTOR hereby promises and agrees to comply with all of the provisions of all applicable local, state and federal laws in connection with the performance of its obligations under this Contract.

SEC. 18. NOTICE OF COMPLETION.

Upon completion of the PROJECT and acceptance of same by the City Council, the CITY Administrator shall cause to be recorded a Notice of Completion with the office of the Los Angeles County Recorder; and, after sixty (60) days from the date said Notice of Completion is recorded, the Director of Finance of CITY at the request of the Public Works Department, shall release any undisputed funds retained pursuant to SEC. 4 hereof; but not later than 60 days after completion of the Project, provided there have been no mechanics' liens or stop notices filed against said work which have not been paid, withdrawn or eliminated as liens against said work.

SEC. 19. AUTHORITY.

Any person executing this Contract on behalf of the CONTRACTOR warrants and represents that he or she has the authority to execute this Contract on behalf of the CONTRACTOR and has the authority to bind the CONTRACTOR to the performance of its obligations hereunder.

SEC. 20. ENTIRE CONTRACT.

This Contract, including the Contract Documents and any other documents incorporated herein by specific reference, represents the entire and integrated Contract between the CITY and the CONTRACTOR. This Contract supersedes all prior oral or written negotiations, representations or agreements. This Contract may not be modified or amended, nor any provision or breach waived, except in a writing signed by both parties that expressly refers to this Contract.

SEC. 21. ATTORNEY'S FEES AND COSTS.

If either party to this Contract is required to initiate or defend or made a party to any action or proceeding in any way connected with this Contract, the prevailing party in such action or proceeding, in addition to any other relief which may be granted, whether legal or equitable, shall be entitled to reasonable attorney's fees. Attorney's fees shall include attorney's fees on any appeal, and in addition a party entitled to attorney's fees shall be entitled to all other reasonable costs for investigating such action, taking depositions and discovery and all other necessary costs the court allows which are incurred in such litigation. All such fees shall be deemed to have accrued on commencement of such action and shall be enforceable whether or not such action is prosecuted to judgment.

SEC. 22. INDEPENDENT CONTRACTOR

The CONTRACTOR is and shall at all times remain as to the CITY, a wholly independent contractor. Neither the CITY, nor any of its officers, employees or agents shall have control over the conduct of the CONTRACTOR or any of the CONTRACTORs' officers, employees or agents, except as herein set forth. The CONTRACTOR shall not at any time or in any manner represent that it or any of its officers, employees or agents are in any manner officers, employees or agents of the CITY, nor shall CITY officers, employees or agents be deemed the officers, employees, or agents of CONTRACTOR as a result of this Contract.

SEC. 23. NOTICE.

Any notice, demand, request, document, consent, approval, or communication either party desires or is required to give to the other party or any other person shall be in writing and shall be deemed to be given when served personally or deposited in the U.S. Mail, prepaid, first-class mail, return receipt requested, addressed as follows:

To CITY: City of Commerce
2535 Commerce Way
Commerce, CA 90040
Attention: Director of Public Works

To CONTRACTOR: [ENTER CONTRACTOR NAME]
[ENTER ADDRESS LINE 1]
[ENTER ADDRESS LINE 2]
Attention: [ENTER ATTENTION NAME]

SEC. 24. PROHIBITION AGAINST ASSIGNMENT.

The experience, knowledge, capability and reputation of CONTRACTOR, its principals and employees were a substantial inducement for the CITY to enter into this Contract. Neither this Contract nor any interest herein may be transferred, assigned, conveyed, hypothecated or encumbered voluntarily or by operation of law, whether for the benefit of creditors or otherwise, without the prior written approval of CITY. Transfers restricted hereunder shall include the transfer to any person or group of persons acting in concert of more than twenty five percent (25%) of the present ownership and/or control of CONTRACTOR, taking all transfers into account on a cumulative basis. In the event of any such unapproved transfer, including any bankruptcy proceeding, this Contract shall be void. No approved transfer shall release the CONTRACTOR or any surety of CONTRACTOR of any liability hereunder without the express consent of CITY.

SEC. 25. CUMULATIVE REMEDIES.

The provisions of this Contract are cumulative and in addition to and not in limitation of any rights or remedies available to CITY.

SEC. 26. COUNTERPARTS.

This Contract may be executed in counterpart originals, duplicate originals, or both, each of which is deemed to be an original for all purposes.

IN WITNESS WHEREOF the parties hereto have caused this Contract to be executed on the date next to their respective officers duly authorized signatures in that behalf.

(SIGNATURES APPEAR ON NEXT PAGE)

CITY OF COMMERCE

By: _____
Mayor

Date: _____

ATTEST:

_____
Lena Shumway, City Clerk

APPROVED AS TO FORM

_____
Noel Tapia, City Attorney

CONTRACTOR

By: _____

Date: _____

By: _____

Date: _____

EXHIBIT "A"
INSURANCE REQUIREMENTS

Prior to the beginning of and throughout the duration of the Project, CONTRACTOR and its subcontractors shall maintain insurance in conformance with the requirements set forth below. CONTRACTOR will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth herein, CONTRACTOR agrees to amend, supplement or endorse the existing coverage to do so.

CONTRACTOR acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to CONTRACTOR or its subcontractors in excess of the limits and coverage identified in this Agreement and which is applicable to a given loss, claim or demand, will be equally available to CITY.

A. CONTRACTOR shall provide the following types and amounts of insurance:

Without limiting CONTRACTOR's indemnification of CITY, and prior to commencement of Work, CONTRACTOR shall obtain, provide and maintain at its own expense during the term of this Agreement, policies of insurance of the type and amounts described below and in a form satisfactory to CITY.

General liability insurance. CONTRACTOR shall maintain commercial general liability insurance with coverage at least as broad as Insurance Services Office form CG 00 01, in an amount not less than $1,000,000 per occurrence, $2,000,000 general aggregate, for bodily injury, personal injury, and property damage, and a $2,000,000 completed operations aggregate. The policy must include contractual liability that has not been amended. Any endorsement restricting standard ISO "insured contract" language will not be accepted.

Automobile liability insurance. CONTRACTOR shall maintain automobile insurance at least as broad as Insurance Services Office form CA 00 01 covering bodily injury and property damage for all activities of the CONTRACTOR arising out of or in connection with Project to be performed under this Agreement, including coverage for any owned, hired, non-owned or rented vehicles, in an amount not less than $1,000,000 combined single limit for each accident.

Umbrella or excess liability insurance. [Optional depending on limits required] CONTRACTOR shall obtain and maintain an umbrella or excess liability insurance that will provide bodily injury, personal injury and property damage liability coverage at least as broad as the primary coverages set forth above, including commercial general liability, automobile liability, and employer's liability. Such policy or policies shall include the following terms and conditions:

- A drop-down feature requiring the policy to respond in the event that any primary insurance that would otherwise have applied proves to be uncollectable in whole or in part for any reason;
- Pay on behalf of wording as opposed to reimbursement;
- Concurrency of effective dates with primary policies;
- Policies shall "follow form" to the underlying primary policies; and
- Insureds under primary policies shall also be insureds under the umbrella or excess policies.

Workers' compensation insurance. CONTRACTOR shall maintain Workers' Compensation Insurance (Statutory Limits) and Employer's Liability Insurance (with limits of at least $1,000,000) for CONTRACTOR's employees in accordance with the laws of the State of California, Section 3700 of the Labor Code. In addition, CONTRACTOR shall require each subcontractor to similarly maintain Workers' Compensation Insurance and Employer's Liability Insurance in accordance with the laws of the State of California, Section 3700 for all of the subcontractor's employees.

CONTRACTOR shall submit to CITY, along with the certificate of insurance, a Waiver of Subrogation endorsement in favor of CITY, its officers, agents, employees and volunteers.

Pollution liability insurance. Environmental Impairment Liability Insurance shall be written on a CONTRACTOR's Pollution Liability form or other form acceptable to CITY providing coverage for liability arising out of sudden, accidental and gradual pollution and remediation. The policy limit shall be no less than $1,000,000 dollars per claim and in the aggregate. All activities contemplated in this Agreement shall be specifically scheduled on the policy as "covered operations." The policy shall provide coverage for the hauling of waste from the project site to the final disposal location, including non-owned disposal sites.

Builder's risk insurance. Upon commencement of construction and with approval of CITY, CONTRACTOR shall obtain and maintain builder's risk insurance for the entire duration of the Project until only the CITY has an insurable interest. The Builder's Risk coverage shall include the coverages as specified below.

The named insureds shall be CONTRACTOR and CITY, including its officers, officials, employees, and agents. All Subcontractors (excluding those solely responsible for design Work) of any tier and suppliers shall be included as additional insureds as their interests may appear. CONTRACTOR shall not be required to maintain property insurance for any portion of the Project following transfer of control thereof to CITY. The policy shall contain a provision that all proceeds from the builder's risk policy shall be made payable to the CITY. The CITY will act as a fiduciary for all other interests in the Project.

Policy shall be provided for replacement value on an "all risk" basis for the completed value of the project. There shall be no coinsurance penalty or provisional limit provision in any such policy. Policy must include: (1) coverage for any ensuing loss from faulty workmanship, Nonconforming Work, omission or deficiency in design or specifications; (2) coverage against machinery accidents and operational testing; (3) coverage for removal of debris, and insuring the buildings, structures, machinery, equipment, materials, facilities, fixtures and all other properties constituting a part of the Project; (4) Ordinance or law coverage for contingent rebuilding, demolition, and increased costs of construction; (5) transit coverage (unless insured by the supplier or receiving contractor), with sub-limits sufficient to insure the full replacement value of any key equipment item; (6) Ocean marine cargo coverage insuring any Project materials or supplies, if applicable; (7) coverage with sub-limits sufficient to insure the full replacement value of any property or equipment stored either on or off the Site or any staging area. Such insurance shall be on a form acceptable to CITY to ensure adequacy of terms and sublimits and shall be submitted to the CITY prior to commencement of construction.

Other provisions or requirements

Proof of insurance. CONTRACTOR shall provide certificates of insurance to CITY as evidence of the insurance coverage required herein, along with a waiver of subrogation endorsement for workers' compensation. Insurance certificates and endorsements must be approved by CITY's risk manager prior to commencement of performance. Current certification of insurance shall be kept on file with CITY at all times during the term of this contract. CITY reserves the right to require complete, certified copies of all required insurance policies, at any time.

Duration of coverage. CONTRACTOR shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property, which may arise from or in connection with the performance of the Project hereunder by CONTRACTOR, his agents, representatives, employees or subcontractors. CONTRACTOR must maintain general liability and umbrella or excess liability insurance for as long as there is a statutory exposure to completed operations claims. CITY and its officers, officials, employees, and agents shall continue as additional insureds under such policies.

Primary/noncontributing. Coverage provided by CONTRACTOR shall be primary and any insurance or self-insurance procured or maintained by CITY shall not be required to contribute with it. The limits of insurance required herein may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of CITY before the CITY's own insurance or self-insurance shall be called upon to protect it as a named insured.

Products/completed operations coverage. Products/completed operations coverage shall extend a minimum of three (3) years after project completion. Coverage shall be included on behalf of the insured for covered claims arising out of the actions of independent contractors. If the insured is using subcontractors, the Policy must include work performed "by or on behalf" of the insured. Policy shall contain no language that would invalidate or remove the insurer's duty to defend or indemnify for claims or suits expressly excluded from coverage. Policy shall specifically provide for a duty to defend on the part of the insurer. The CITY, its officials, officers, agents, and employees, shall be included as additional insureds under the Products and Completed Operations coverage.

CITY's rights of enforcement. In the event any policy of insurance required under this Agreement does not comply with these requirements or is canceled and not replaced, CITY has the right but not the duty to obtain the insurance it deems necessary and any premium paid by CITY will be promptly reimbursed by CONTRACTOR or CITY will withhold amounts sufficient to pay premium from CONTRACTOR payments. In the alternative, CITY may cancel this Agreement.

Acceptable insurers. All insurance policies shall be issued by an insurance company currently authorized by the Insurance Commissioner to transact business of insurance or is on the List of Approved Surplus Line Insurers in the State of California, with an assigned policyholders' Rating of A- (or higher) and Financial Size Category Class VII (or larger) in accordance with the latest edition of Best's Key Rating Guide, unless otherwise approved by the CITY's risk manager.

Waiver of subrogation. All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against CITY, its elected or appointed officers, agents, officials, employees and volunteers or shall specifically allow CONTRACTOR or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a

loss. CONTRACTOR hereby waives its own right of recovery against CITY, and shall require similar written express waivers and insurance clauses from each of its subconsultants.

Enforcement of contract provisions (non estoppel). CONTRACTOR acknowledges and agrees that any actual or alleged failure on the part of the CITY to inform CONTRACTOR of non-compliance with any requirement imposes no additional obligations on the CITY nor does it waive any rights hereunder.

Requirements not limiting. Requirements of specific coverage features or limits contained in this Section are not intended as a limitation on coverage, limits or other requirements, or a waiver of any coverage normally provided by any insurance. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue and is not intended by any party or insured to be all inclusive, or to the exclusion of other coverage, or a waiver of any type. If the CONTRACTOR maintains higher limits than the minimums shown above, the CITY requires and shall be entitled to coverage for the higher limits maintained by the CONTRACTOR. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the CITY.

Notice of cancellation. CONTRACTOR agrees to oblige its insurance agent or broker and insurers to provide to CITY with a thirty (30) day notice of cancellation (except for nonpayment for which a ten (10) day notice is required) or nonrenewal of coverage for each required coverage.

Additional insured status. General liability policies shall provide or be endorsed to provide that CITY and its officers, officials, employees, agents, and volunteers shall be additional insureds under such policies. This provision shall also apply to any excess/umbrella liability policies.

Prohibition of undisclosed coverage limitations. None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to CITY and approved of in writing.

Separation of insureds. A severability of interests provision must apply for all additional insureds ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the insurer's limits of liability. The policy(ies) shall not contain any cross-liability exclusions.

Pass through clause. CONTRACTOR agrees to ensure that its subconsultants, subcontractors, and any other party involved with the project who is brought onto or involved in the project by CONTRACTOR, provide the same minimum insurance coverage and endorsements required of CONTRACTOR. CONTRACTOR agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. CONTRACTOR agrees that upon request, all agreements with consultants, subcontractors, and others engaged in the project will be submitted to CITY for review.

CITY's right to revise requirements. The CITY reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving the CONTRACTOR a ninety (90) day advance written notice of such change. If such change results in substantial additional cost to the CONTRACTOR, the CITY and CONTRACTOR may renegotiate CONTRACTOR's compensation.

Self-insured retentions. Any self-insured retentions must be declared to and approved by CITY. CITY reserves the right to require that self-insured retentions be eliminated, lowered, or replaced by a deductible. Self-insurance will not be considered to comply with these specifications unless approved by CITY.

Timely notice of claims. CONTRACTOR shall give CITY prompt and timely notice of claims made or suits instituted that arise out of or result from CONTRACTOR's performance under this Agreement, and that involve or may involve coverage under any of the required liability policies.

Additional insurance. CONTRACTOR shall also procure and maintain, at its own cost and expense, any additional kinds of insurance, which in its own judgment may be necessary for its proper protection and prosecution of the Project.

(Use of City Bond Form is Required)

EXHIBIT "B"
Faithful Performance Bond

FAITHFUL PERFORMANCE BOND
PUBLIC WORK (CALIFORNIA)

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the Principal and the Obligee have entered into a written contract, hereinafter called the Contract, a copy of which is or may be attached hereto, dated the _____ day of _____, _____ referred to and made a part hereof for _____ and all appurtenant work in accordance with Project No. _____, which agreement requires the Principal to provide Obligee with this bond.

NOW THEREFORE, we, _____, as Principal, and _____, a corporation organized under the laws of _____, and duly authorized to transact business in the State of California, as Surety, are held firmly bound unto the City of _____, as Obligee, in the sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment whereof well and truly to be made the Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

The address at which the Surety may be served with notices, papers and other documents is:
_____
_____
_____

The address at which the Principal may be served with notices, papers and other documents is:
_____
_____
_____

The condition of the foregoing obligation is such that if the Principal, his or its heirs, executors, administrators, successors or assigns, and each of his or its subcontractors shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

As part of the obligation secured hereby and in addition to the face amount specified therefor, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by the obligee in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

This document is signed by the respective parties on the dates next to their names.

Principal

By: _____ Date: _____

Title: _____

Surety

By: _____ Date: _____

Title: _____

I declare under penalty of perjury under the laws of the State of California that the contents of the above Faithful Performance Bond are true and correct, and that I have been duly authorized to sign this Faithful Performance Bond on behalf of Surety. This Declaration is signed on _____., in the City of _____, State of California.

--OR--

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

State of California)
)
County of _____)

On _____ before me, _____(here insert name and title of the officer), personally appeared _____,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

-- AND –

(Proof of signature authorization or power of attorney must be attached)

APPROVED AS TO FORM:

_____

City Attorney

EXHIBIT "C"
Labor and Materials Payment Bond

(Use of City Bond Form is Required)

LABOR AND MATERIAL PAYMENT BOND
PUBLIC WORK (CALIFORNIA)

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, _____, as Principal, has entered into a contract dated _____, _____, (the "Contract") with the City of _____ (Obligee) referred to and made a part hereof to perform the following work of public improvement, to wit:

_____

_____

_____and all appurtenant work in accordance with the plans and specifications for Project No._____, which requires Principal to file this bond to secure claims made under Civil Code Section 3082 et seq.

NOW THEREFORE, we, _____, as Principal, and _____, a corporation organized under the laws of _____ and duly authorized to transact business in the State of California, as Surety, are held firmly bound unto the City of _____, as Obligee, and all subcontractors, laborers, materialpersons and other persons employed in the performance of the referenced agreement, in the sum of _____ Dollars ($_____), lawful money of the United States of America, which is 100% of the amount of the Contract, for the payment whereof well and truly to be made the Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

The address at which the Surety may be served with notices, papers and other documents is:
_____
_____
_____

The address at which the Principal may be served with notices, papers and other documents is:
_____
_____
_____

If the above bounden Principal, his or its heirs, executors, administrators, successors, assigns, or any of his or its subcontractors, fails to pay for any materials, provisions, provender, or other supplies, or teams, implements or machinery, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor to persons named in Section 9100 of the Civil Code, or for amounts due under the

Unemployment Insurance Code with respect to such work or labor performed under the Contract, or for any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, then the Surety on this bond will pay the same, in an amount not exceeding the sum specified in this bond, and also, in case suit is brought upon this bond, a reasonable attorney's fee, which shall be awarded by the court to the prevailing party in said suit, said attorney's fee to be taxed as costs in said suit and to be included in the judgment herein rendered.

As part of the obligation secured hereby, the Surety shall not be exonerated or released from the obligation of the bond by any change, alteration, or modification in or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement or pertaining or relating to the furnishing of labor, materials, or equipment therefor, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme of work of improvement, nor by any rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement, or under the bond, nor, where the bond is given for the benefit of claimants, by any fraud practiced by any person other than the claimant seeking to recover on the bond.

This bond shall inure to the benefit of any and all persons, companies and corporations named in Civil Code Section 9100 so as to give them a right of action in a suit on this bond.

This bond is executed for the purpose of complying with the laws of the State of California designated as Title 3, Chapter 5, Payment Bond, commencing with Section 9550 of the Civil Code of the State of California and all amendments thereto, and shall inure to the benefit of any of the persons named in Section 9100 of the Civil Code of the State of California.

This document is signed by the respective parties on the dates next to their names.

Principal

By: _____ Date: _____

Title: _____

Surety

By: _____ Date: _____

Title: _____

I declare under penalty of perjury under the laws of the State of California that the contents of the above Labor and Materials Payment Bond are true and correct, and that I have been duly authorized to sign this Labor and Materials Payment Bond on behalf of Surety. This Declaration is signed on _____, in the City of _____, State of California.

--OR--

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

State of California)
)
County of _____)

On _____ before me, _____(here insert name and title of the officer), personally appeared _____,
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

-- AND –

(Proof of signature authorization or power of attorney must be attached)

APPROVED AS TO FORM:

_____
City Attorney

EXHIBIT "D"
Warranty Bond

(Use of City Bond Form is Required)

WARRANTY BOND
PUBLIC WORKS

WHEREAS, the City Council of the City of _____, State of California, and _____, (hereinafter designated as "Principal") have entered into a written contract (the "Contract") dated _____ whereby Principal agrees to install and complete certain designated public improvements, which Contract is hereby referred to and made a part hereof; and

WHEREAS, said Principal is required under the terms of said Contract to furnish a bond for the guarantee and warranty of the work for a period of one (1) year following the completion and acceptance thereof against any defective work or labor done or defective materials furnished.

NOW, THEREFORE, we, the Principal and _____ _____, a corporation organized under the laws of _____, and duly authorized to transact business in the State of California, as Surety, are held and firmly bound unto the City of _____, (hereinafter called "City"), in the penal sum of _____Dollars, ($_____) lawful money of the United States, which is 50% of the amount of the Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, firmly by these presents.

The address at which the Surety may be served with notices, papers and other documents is:
_____
_____
_____

The address at which the Principal may be served with notices, papers and other documents is:
_____
_____
_____

The condition of this obligation is such that if the above bounded principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless City, its officers, agents and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefor, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by City in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the specifications accompanying the same shall in anywise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications.

This document is signed by the respective parties on the dates next to their names.

Principal

By: _____ Date: _____

Title: _____

Surety

By: _____ Date: _____

Title: _____

I declare under penalty of perjury under the laws of the State of California that the contents of the above Warranty Bond are true and correct, and that I have been duly authorized to sign this Warranty Bond on behalf of Surety. This Declaration is signed on _____, in the City of _____ _____ , State of California.

--OR--

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

State of California)
)
County of _____)

On _____ before me, _____(here insert name and title of the officer), personally appeared _____
_____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

-- AND –

(Proof of signature authorization or power of attorney must be attached)

APPROVED AS TO FORM:

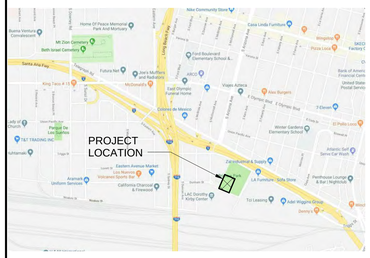
_____

City Attorney

CITY OF COMMERCE
BRISTOW PUBLIC LIBRARY
ROOFING AND HVAC REPLACEMENT

1466 S McDONNELL AVE, COMMERCE, CA 90040

00001



VICINITY MAP

BUILDING LOCATION

APPLICABLE STATE CODES (WITH CITY OF BANNING AMENDMENTS)

CALIFORNIA BUILDING CODE - TITLE 24, PART 2	2019
CALIFORNIA RESIDENTIAL CODE - TITLE 24, PART 2.5	2019
CALIFORNIA GREEN BUILDING STANDARDS CODE TITLE 24, PART 11	2019
CALIFORNIA MECHANICAL CODE - TITLE 24, PART 4	2019
CALIFORNIA ELECTRICAL CODE - TITLE 24, PART 3	2019
CALIFORNIA PLUMBING CODE - TITLE 24, PART 5	2019
CALIFORNIA BUILDING ENERGY CODE - TITLE 24, PART 6	2019

IBC 2020 LACO BUILDING CODE
IRC 2020 LACO RESIDENTIAL CODE
NEC 2020 LACO ELECTRICAL CODE
UMC 2020 LACO MECHANICAL CODE
UPC 2020 LACO PLUMBING CODE

FEDERAL STANDARDS

ADA STANDARDS	2010

APPLICABLE CODES

OCCUPANCY GROUP:	A-3. EXCEPT E-3 FOR ROOM 7
CONSTRUCTION TYPE:	III N
EXISTING BUILDING AREA:	14,400 S.F.
ROOF AREA TO BE RENOVATED:	14,116 S.F.
FIRE SPRINKLERS:	NO
BUILDING STORIES:	1

BUILDING DATA

OWNER
CITY OF COMMERCE
PUBLIC WORKS DEVELOPMENT SERVICES DEPARTMENT
2535 COMMERCE WAY,
COMMERCE, CA 90040
CONTACT: CHIDI UGWUEZE, CCM
FACILITY CIP PROJECT MANAGER
T: 323-722-4805
E: CUGWUEZE@CI.COMMERCE.CA.US

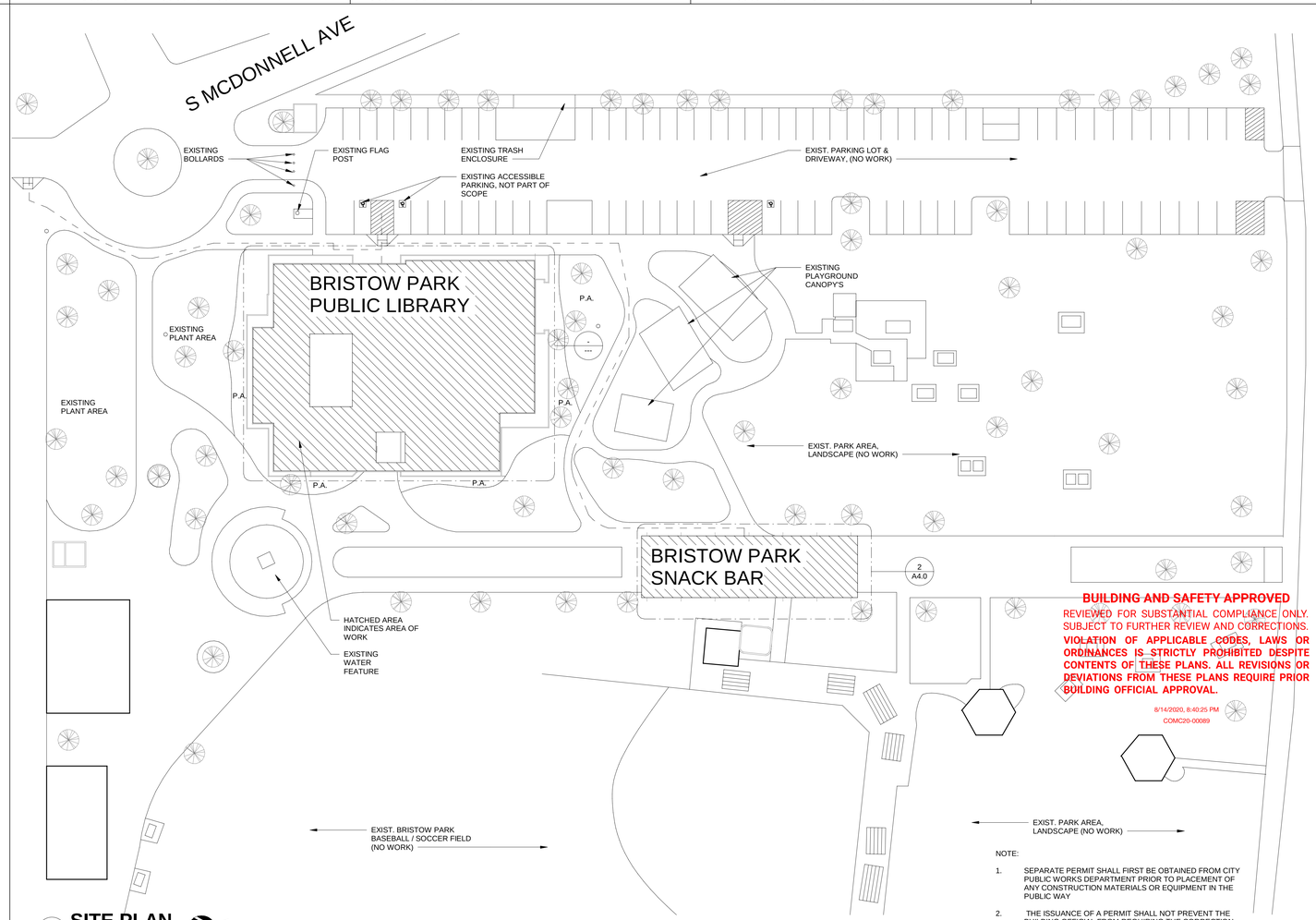
ARCHITECT
BOA ARCHITECTURE
1511 COTA AVENUE
LONG BEACH, CA 90813
CONTACT: EDWARD LOK NG
P: (562) -912-7900
E: LOK.NG@BOAARCHITECTURE.COM

MECHANICAL ENGINEER
ENGINEERING DESIGN ANALYSIS INC.
17601 E. 17TH STREET, SUITE 225
TUSTIN, CA 91780
CONTACT: KEVIN FRIEDMAN
T: 714-913-8393

PROJECT DIRECTORY

1. REMOVE EXISTING BUILT-UP ROOFING MATERIAL, FLASHINGS, AND SOME ROOF ACCESSORIES AS DETAILED ON THE DRAWINGS.
2. REMOVE EXISTING ROOFTOP PACKAGE HVAC EQUIPMENT, EXHAUST FANS, HEATING VENTILATION UNITS, EQUIPMENT CURBS, AND ASSOCIATED CONNECTIONS.
3. PROVIDE AND INSTALL NEW WHITE POLYVINYL-CHLORIDE ROOFING SYSTEM WITH WALKING PADS W/ 2% MIN. SLOPE OVER NEW RIGID INSULATION, NEW SHEET METAL FLASHING, NEW RAIN GUTTERS, NEW CONDUITS IN RIGID INSULATION WITH RUBBER CONDUIT BLOCKS, AND MISCELLANEOUS ROOFING ACCESSORIES.
4. PROVIDE NEW ROOFTOP PACKAGE HVAC EQUIPMENT, EXHAUST FANS, HEATING VENTILATION UNITS, EQUIPMENT CURBS, CURB ADAPTERS, NEW WATER HEATER, AND ASSOCIATED CONNECTIONS.
5. PROVIDE NEW SAFETY POST TO EXISTING ROOF ACCESS LADDER AND RE-INSTALL EXISTING ROOF HATCH DOOR.
6. THERE IS NO SITE IMPROVEMENTS IN THIS PROJECT.
7. THERE IS NO BUILDING EXPANSION / ADDITION OF EXISTING FLOOR AREA IN THIS PROJECT
8. THERE IS NO CHANGE TO THE BUILDING EXISTING OCCUPANCY OR USE.

SCOPE OF WORK



1 **SITE PLAN**
SCALE: 1" = 30'-0"

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY. SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.
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NOTE:
1. SEPARATE PERMIT SHALL FIRST BE OBTAINED FROM CITY PUBLIC WORKS DEPARTMENT PRIOR TO PLACEMENT OF ANY CONSTRUCTION MATERIALS OR EQUIPMENT IN THE PUBLIC WAY
2. THE ISSUANCE OF A PERMIT SHALL NOT PREVENT THE BUILDING OFFICIAL FROM REQUIRING THE CORRECTION OF ERRORS ON THESE PLANS OR FROM PREVENTING ANY VIOLATION OF THE CODES ADOPTED BY THE CITY, RELEVANT LAWS, ORDINANCES, RULES AND OR EQUATIONS

SHEET INDEX

GENERAL NOTES

1. AT TIME OF PERMIT ISSUANCE, CONTRACTOR SHALL SHOW THEIR VALID WORKER'S COMPENSATION INSURANCE CERTIFICATION
2. ALL WORK SHALL CONFORM TO ALL REQUIREMENTS OF STATE OF CALIFORNIA TITLE 24 REGARDLESS OF THE INFORMATION INDICATED ON THESE PLANS. IT IS THE RESPONSIBILITY OF THE INDIVIDUAL SUPERVISING THE CONSTRUCTION TO ENSURE THAT THE WORK IS DONE IN ACCORDANCE WITH CODE REQUIREMENTS PRIOR TO REQUESTING INSPECTION.
3. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
4. SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) SHALL BE NOTIFIED IN ACCORDANCE WITH CALIFORNIA STATE LAW PRIOR TO START OF ANY DEMOLITION, ADDITION, AND/OR REMODEL WORK. THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT OFFICE IS LOCATED AT 21865 COPLEY DRIVE IN DIAMOND BAR, PHONE NO. (909) 396-2000. BE ADVISED, SCAQMD MAY REQUIRE A 10 DAY WAIT PERIOD PRIOR TO START OF WORK.
5. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIAL MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.
TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
FUELS, OILS, SOLVENTS AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM

STATE REQUIREMENTS

ABBREVIATIONS

&	AND	INSUL	INSULATION
∠	ANGLE	INT	INTERIOR
@	AT	JAN	JANITOR
C	CENTERLINE	JT	JOINT
℄	DIAMETER OR ROUND	KIT	KITCHEN
⊥	PERPENDICULAR	LAM	LAMINATE
#	POUND OR NUMBER	LAV	LAVATORY
ACC.	ACCESSIBLE	LT	LIGHT
A/C	AIR CONDITIONING	MAX	MAXIMUM
ACOUS.	ACOUSTICAL	M.C.	MEDICINE CABINET
A.D.	AREA DRAIN	MECH	MECHANICAL
ADJ.	ADJUSTABLE	MEMB	MEMBRANE
AL.	ALUMINUM	MTL	METAL
APPROX.	APPROXIMATE	MFR	MANUFACTURER
ARCH.	ARCHITECTURAL	MIN	MINIMUM
ASPH.	ASPHALT	MISC	MISCELLANEOUS
A.T.	ACOUSTICAL TILE	M.O.	MASONRY OPENING
BD.	BOARD	MTD	MOUNTED
BITUM.	BITUMINOUS	MRG	MOISTURE RESISTANT
BLDG.	BUILDING		GYP. BD.
BLK	BLOCK	MUL	MULLION
BM	BEAM	N	NORTH
BOT	BOTTOM	N.I.C.	NOT IN CONTRACT
CAB	CABINET	NO.	NUMBER
C.B.	CATCH BASIN	NOM	NOMINAL
CEM	CEMENT	N.T.S.	NOT TO SCALE
CER	CERAMIC	O/	OVER
C.I.	CAST IRON	OBS	OBSCURE
CLG.	CEILING	O.C.	ON CENTER
CLKG	CALKING	O.D.	OUTSIDE DIAMETER
CLR.	CLEAR		(DIMENSION)
CMU	CONCRETE MASONRY UNIT	OFF.	OFFICE
COL	COLUMN	OPNG	OPENING
CONC.	CONCRETE	OPP	OPPOSITE
CONN.	CONNECTION	PRCST	PRECAST
CONST.	CONSTRUCTION	PL	PLATE
CONT.	CONTINUOUS	P. LAM.	PLASTIC LAMINATE
C.T.	CERAMIC TILE	PLAS	PLASTER
CTR	CENTER	PLYWD	PLYWOOD
DBL	DOUBLE	PR	PAIR
DEPT.	DEPARTMENT	PT	POINT
D.F.	DRINKING FOUNTAIN	Q.T.	QUARRY TILE
DIA.	DIAMETER	R	RISER
DET	DETAIL	RAD	RADIUS
DIM	DIMENSION	R.D.	ROOF DRAIN
DISP	DISPENSER	REF.	REFERENCE
DN	DOWN	REFR	REFRIGERATOR
DR	DOOR	REINF	REINFORCED
DS	DOWNSPOUT	REQ	REQUIRED
DWG	DRAWING	RESIL	RESILIENT
E	EAST	RM	ROOM
EA.	EACH	R.O.	ROUGH OPENING
EL	ELEVATION	RWD	REDWOOD
ELEC	ELECTRICAL	S	SOUTH
ELEV	ELEVATOR	SC	SOLID CORE
EMER	EMERGENCY	SCHED	SCHEDULE
ENCL	ENCLOSURE	SECT	SECTION
EQ	EQUAL	SH	SHELF
EQPT	EQUIPMENT	SHR	SHOWER
(E) OR EXIST	EXISTING	SHT	SHEET
EXPO	EXPOSED	SIM	SIMILAR
EXP	EXPANSION	SPEC	SPECIFICATION
E.J.	EXPANSION JOINT	SQ	SQUARE
EXT	EXTERIOR	S.STL.	STAINLESS STEEL
F.A.	FIRE ALARM	S.SK.	SERVICE SINK
F.D.	FLOOR DRAIN	STA	STATION
FND	FOUNDATION	STD	STANDARD
F.E.	FIRE EXTINGUISHER	STL	STEEL
F.E.C.	FIRE EXTINGUISHER CABINET	STOR	STORAGE
FIN	FINISH	STRUC	STRUCTURAL
FL	FLOOR	SUSP	SUSPENDED
FLASH	FLASHING	SYM	SYMMETRICAL
FLUOR	FLUORESCENT	TRD	TREAD
F.O.C.	FACE OF CONCRETE	T.B.	TOWEL BAR
F.O.F.	FACE OF FINISH	T.C.	TOP OF CURB
F.O.S.	FACE OF STUD	TEL	TELEPHONE
FPRF	FIREPROOF	T&G	TONGUE AND GROOVE
FT	FOOT OR FEET	THK	THICK
FTG	FOOTING	T.P.	TOP OF PAVEMENT
FURR	FURRING	TV	TELEVISION
GA	GAUGE	T.W.	TOP OF WALL
GALV	GALVANIZED	TYP.	TYPICAL
G.I.	GALVANIZED IRON	UNF	UNFINISHED
GL	GLASS	U.N.O.	UNLESS OTHERWISE
GND	GROUND		NOTED
GR	GRADE	UR	URINAL
GYP.	GYPSUM	VERT	VERTICAL
H.B.	HOSE BIB	VEST	VESTIBULE
H.C.	HOLLOW CORE	W	WEST
HDWD	HARDWOOD	W/	WITH
HDWE	HARDWARE	W.C.	WATER CLOSET
HM	HOLLOW METAL	WD	WOOD
HORIZ	HORIZONTAL	W/O	WITHOUT
HR	HOUR	WP	WATERPROOF
HT	HEIGHT	WSCT	WAINSCOT
I.D.	INSIDE DIAMETER (DIMENSION)	WT	WEIGHT
		W.I.	WROUGHT IRON

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Architecture
Interiors
Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562- 912- 7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY/ CHK

Designer: LA
CAD Draft: BS
Architect: LOK
Engineer: EDA INCORPORATED
Client: CITY OF COMMERCE
Date Issue: 6- 25- 2020
Job Number: 2860

Client:
MR. CHIDI AUWUEZE, CITY PUBLIC WORKS DEPT. HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

LICENSED ARCHITECT
Edward Lok Ng
C-16840
REN:11/30/21
STATE OF CALIFORNIA

- TITLE SHEET, SITE PLAN, & NOTES

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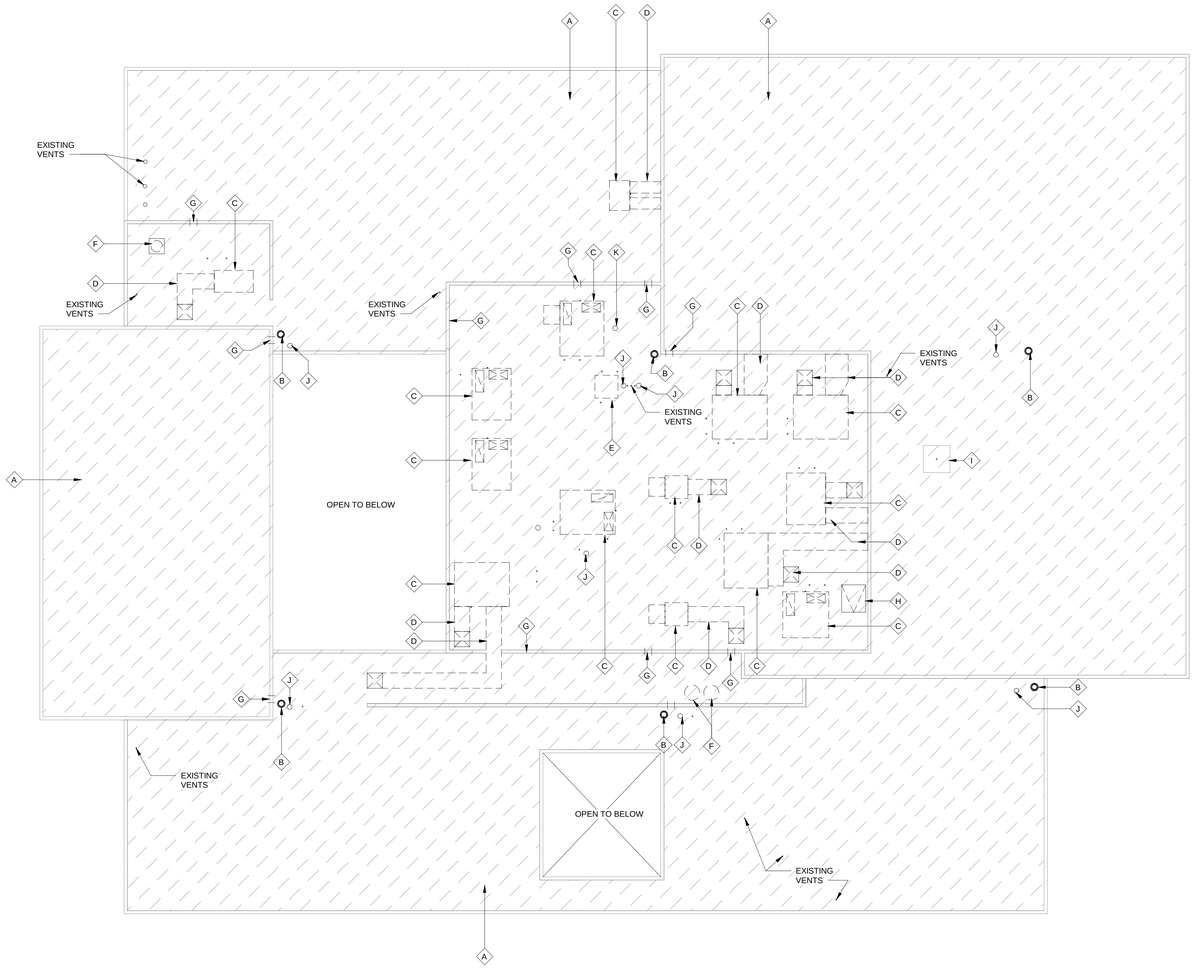

1 DEMOLITION ROOF PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION KEYNOTES

A	REMOVE ALL EXISTING ROOF SYSTEM: ROOFING, FELT PAPER, FLASHING AT BOTTOM OF WALLS, SIDE WALLS, ROOF EDGES, AND ALL METAL CAPS AT TOP OF PARAPETS. PROTECT EXISTNG STUCCO AND PREPARE FOR NEW WORK.
B	REMOVE EXISTING ROOF DRAIN: PATCH, REPAIR, AND PREPARE FOR NEW WORK.
C	REMOVE EXISTING 2-5 TON HVAC UNITS & ASSOCIATED EQUIPMENT CURB AND PREPARE FOR NEW WORK.
D	REMOVE EXISTING HVAC DUCT WORK AND DISPOSE OFF. SEE MECHANICAL DRAWINGS.
E	REMOVE EXISTING WATER HEATER & PREPARE AREA FOR NEW WORK.
F	REMOVE EXISTING EXHAUST FAN AND SALVAGE FOR REUSE.
G	REMOVE EXISTING GUTTER & PARAPET OPENING FLASHING. PATCH, REPAIR, AND PREPARE AREA FOR NEW WORK.
H	REMOVE EXISTING ROOF HATCH AND SAFE FOR RE-INSTALLATION. SEE RENOVATION PLAN
I	REMOVE EXISTING ANTENA POST, SAVE, AND REINSTALL. COORDINATE WITH OWNER PRIOR TO INSTALLATION.
J	REMOVE EXISTING OVERFLOW DRAIN AT ROOF. PATCH, REPAIR, & PREPARE FOR NEW WORK.
K	REMOVE EXISTING ABANDONED ELECTRICAL TUBE. VERIFY PRIOR TO REMOVAL WITH OWNER.

DEMOLITION NOTES

1. CAP ALL EXISTING UTILITIES & PREPARE FOR NEW WORK AS REQUIRED.
2. PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO COMPLETE DEMOLITION WORK AS INDICATED ON DRAWINGS AND SPECIFICATIONS AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION.
3. PATCH, REPAIR, AND RESTORE ALL AREAS DAMAGED BY THE CONSTRUCTION WORK AND DEMOLITION TO MATCH CONDITION OF ADJACENT UNDISTURBED SURFACES.
4. REMOVE FROM THE SITE ALL MATERIAL RESULTING FROM THE DEMOLITION WORK IN SUCH A MANNER AS TO AVOID CREATING A NUISANCE. DISPOSE OF ALL MATERIALS FROM THE SITE ON ON A DAILY BASIS AT NO ADDITIONAL COST TO THE OWNER
5. DISPOSE OF ALL MATERIAL RESULTING FROM THE DEMOLITION WORK IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING THOSE GOVERNING NOISE, DUST, AND DIRT CONTROL; DISPOSAL OF HAZARDOUS MATERIALS; AND REQUIREMENTS OF THE LOCAL AIR QUALITY MANAGEMENT DISTRICT.
6. ALL DEMOLITION AND ALL HEAVY NOISE CONSTRUCTION MUST BE LIMITED TO WEEKDAYS, BETWEEN 8AM TO 4 PM. NO ON-SITE WORK SHALL TAKE PLACE DURING STATE OR FEDERAL HOLIDAYS. KEEP NOISE LEVELS TO MINIMUM POSSIBLE AND COMPLY WITH CITY MUNICIPALITIES.

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.

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COMC20-00089

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LICENSED ARCHITECT
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C-16840
REN.11/30/21
STATE OF CALIFORNIA

- DEMO ROOF PLAN
-
-

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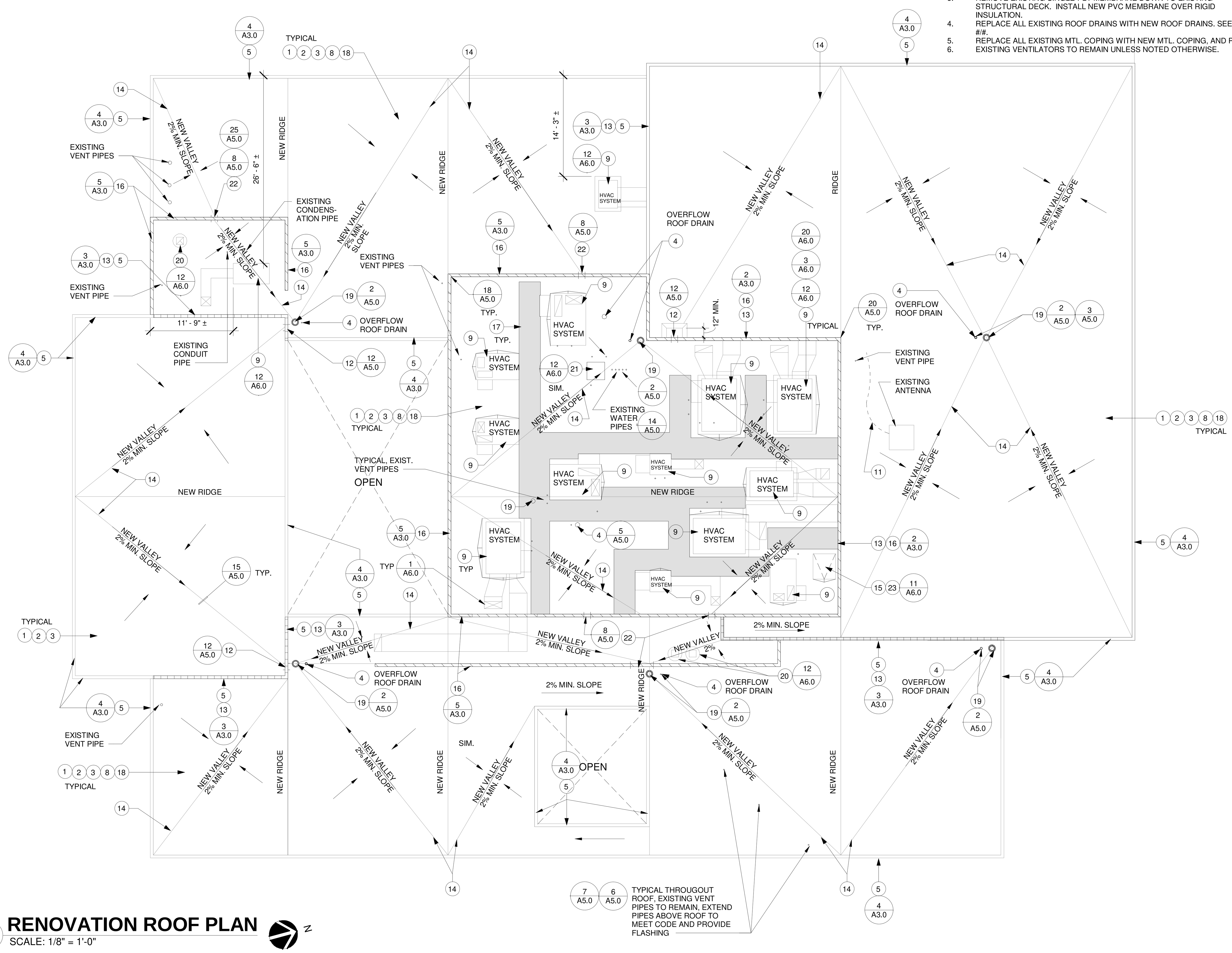

TYPICAL
EXISTING VENT PIPES
EXISTING CONDENSATION PIPE
EXISTING VENT PIPE
EXISTING CONDUIT PIPE
OVERFLOW ROOF DRAIN
NEW VALLEY 2% MIN. SLOPE
NEW RIDGE
RIDGE
HVAC SYSTEM
EXISTING WATER PIPES
TYPICAL, EXIST. VENT PIPES
OPEN
EXISTING ANTENNA
2% MIN. SLOPE
TYPICAL THROUGOUT ROOF, EXISTING VENT PIPES TO REMAIN, EXTEND PIPES ABOVE ROOF TO MEET CODE AND PROVIDE FLASHING
11' - 9" ±
26' - 6" ±
14' - 3" ±
12" MIN.

1 RENOVATION ROOF PLAN
SCALE: 1/8" = 1'-0"

ROOF NOTES

1. TOTAL FLAT ROOF S.F. = 14,116 S.F. CONTRACTOR TO VERIFY.
2. ALL ROOF SLOPES TO PROVIDE 2% MINIMUM DRAINAGE
3. REMOVE EXISTING SINGLE-PLY MEMBRANE DOWN TO EXISTING STRUCTURAL DECK. INSTALL NEW PVC MEMBRANE OVER RIGID INSULATION.
4. REPLACE ALL EXISTING ROOF DRAINS WITH NEW ROOF DRAINS. SEE DETAIL #/#.
5. REPLACE ALL EXISTING MTL. COPING WITH NEW MTL. COPING, AND PAINT.
6. EXISTING VENTILATORS TO REMAIN UNLESS NOTED OTHERWISE.

IMPORTANT NOTES

1. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECS.
2. MAXIMUM 150 DEGREES FAHRENHEIT AT SURFACE OF OUTER SHEET METAL FLASHING.
3. REPLACE ANY BROKEN COMPONENTS (DRAINS, RINGS, BOLTS, ETC).
4. PROVIDE FLASHING AT ROOF PENETRATIONS, PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
5. CONTRACTOR SHALL NOTE THAT THERE ARE MANY PIPES W/ PENETRATIONS ON THE ROOF. CONTRACTOR IS REQUIRED TO INSTALL ROOFING AND PUT BACK PIPES, CONDUITS AND TO RAISED THESE FROM NEW ROOFING W/ RUBBER BLOCKING @ 5'-0" O.C.
6. CONTRACTOR TO IMPLEMENT LEAD & ASBESTOS REPORT AND MOLD REPORT "LIMITED PRELIMINARY MICROBIAL ASSESSMENT REPORT" DATED FEBRUARY 14, 2017.
7. PROVIDE NEW CRICKETS, SADDLES, AND FLASHING SYSTEMS TO COMPLETE ROOF DRAINAGE SYSTEM.
8. SEE SHEET A3, A4, & A5 FOR ROOF DETAILS.
9. CLEAN 4'-0" MINIMUM OF EXISTING HVAC DUCTS @ SUPPLY & RETURN REGISTERS; PROPERLY RECONNECT ANY EXISTING DUCTWORK, THERMOSTATS, SWITCHES, AND OTHER EXISTING ELECT/MECH EQUIPMENT AND DEVICES REMOVED DURING THE WORK BUT NOT INDICATED TO BE REMOVED IN THE DRAWINGS.
10. IF EXISTING WOOD STRUCTURE ABOVE GYP BOARD HAS EVIDENCE OF MOLD; CONTACT OWNER REPRESENTATIVE.
11. THERE IS NO REFLECTIVE CEILING PLAN IN THE SET. CONTRACTOR TO PROTECT EXISTING CEILING DURING INSTALLATION OF NEW HVAC EQUIPMENT.
12. EXISTING HVAC VENT AND RETURN GRILL TO REMAIN; CLEAN EXISTING DUCTS.
13. CONTRACTOR PROVIDE NEW CONDENSATION LINES EXPOSED ON NEW ROOFING FROM HVAC UNITS.
14. CONTRACTOR PROVIDE ALL ELECTRICAL CONDUITS BELOW ROOFING IN RIGID INSULATION W/ ACCESS PANELS AT LOCATIONS W/ J-BOXES.
15. CONTRACTOR TO EXTEND EXISTING VENT PIPES TO CODE REQUIREMENT HEIGHT AND PROVIDE METAL FLASHING.
16. NEW ROOFTOP EQUIPMENT TO BE INTEGRATED WITH SEISMIC CONTROLS OR OTHER MANUFACTURER THERMOSTATS. SEE MECHANICAL & ELECTRICAL DRAWINGS.

RENOVATION NOTES

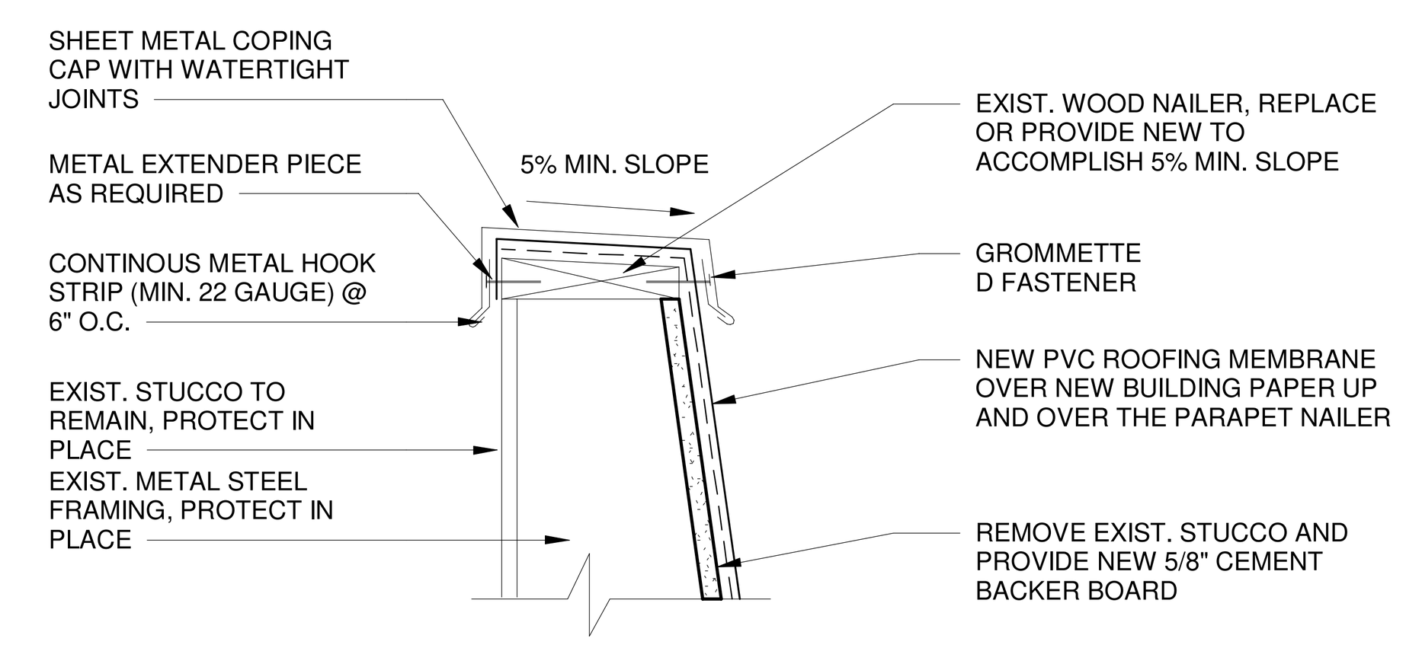
A. MAINTAIN AND EXTEND EXISTING PLUMBING SUPPLY, DRAIN, AND VENT PIPING TO ACCOMMODATE NEW EQUIPMENT LAYOUT. PROVIDE PIPE OF SIZES AND MATERIALS TO COMPLY WITH CODE AS REQUIRED FOR PROPER OPERATION. CAP AND REMOVE ALL ABANDONED PIPING.
B. ELECTRICAL / MECHANICAL EQUIPMENT AND DEVICES: REINSTALL AND PROPERLY RECONNECT EXISTING DUCTWORK; SWITCHES; THERMOSTATS; AND OTHER EXISTING ELEC./MECH., EQUIPMENT AND DEVICES REMOVED DURING THE WORK BUT NOT INDICATED TO BE REMOVED. REINSTALL ONLY EQUIPMENT AND DEVICES THAT ARE IN GOOD CONDITION. DISCARD EQUIPMENT AND DEVICES THAT ARE NOT IN CONDITION AT LEAST AS GOOD AS EXISTED BEFORE REMOVAL, AND PROVIDE NEW EQUIVALENT EQUIPMENT AND DEVICES. NEW EQUIPMENT AND DEVICES SHALL EXACTLY MATCH THOSE REMOVED IN TYPE, SIZE, FINISH, CONFIGURATION , AND OPERATING CHARACTERISTICS, UNLESS NOTED OTHERWISE. ALL INSTALLATION SHALL MEET CURRENT BUILDING CODE.
C. PROVIDE NEW MATERIALS TO MATCH EXISTING UNDISTURBED WORK FOR CLOSING OF OPENINGS, REPAIRS, AND RENOVATION. NEW FINISH MATERIALS AND SUBSTRATES TO MATCH EXISTING SHALL BE THE SAME TYPES, SIZES, QUALITIES, AND COLORS AS EXISTING ADJACENT MATERIAL. REPAIR ALL DAMAGED OR DEFACED FLOOR, WALL, AND CEILING FINISHES ASSOCIATED WITH THESE ALTERATIONS.
D. PROVIDE REQUIRED BACKING FOR SUPPORT OF ALL NEW PLUMBING FIXTURES.
E. WHERE EXISTING PLUMBING VENT PIPES ARE REMOVED FROM THE ROOF AND NEW ONES ARE INSTALLED THE CONTRACTOR SHALL PATCH AND REPAIR THE ROOF. THE PATCHING AND REPAIR SHALL BE DONE USING A SUB-CONTRACTOR EXPERIENCE WITH ROOFING IN GENERAL AND ROOFING REPAIRS.

RENOVATION KEYNOTES

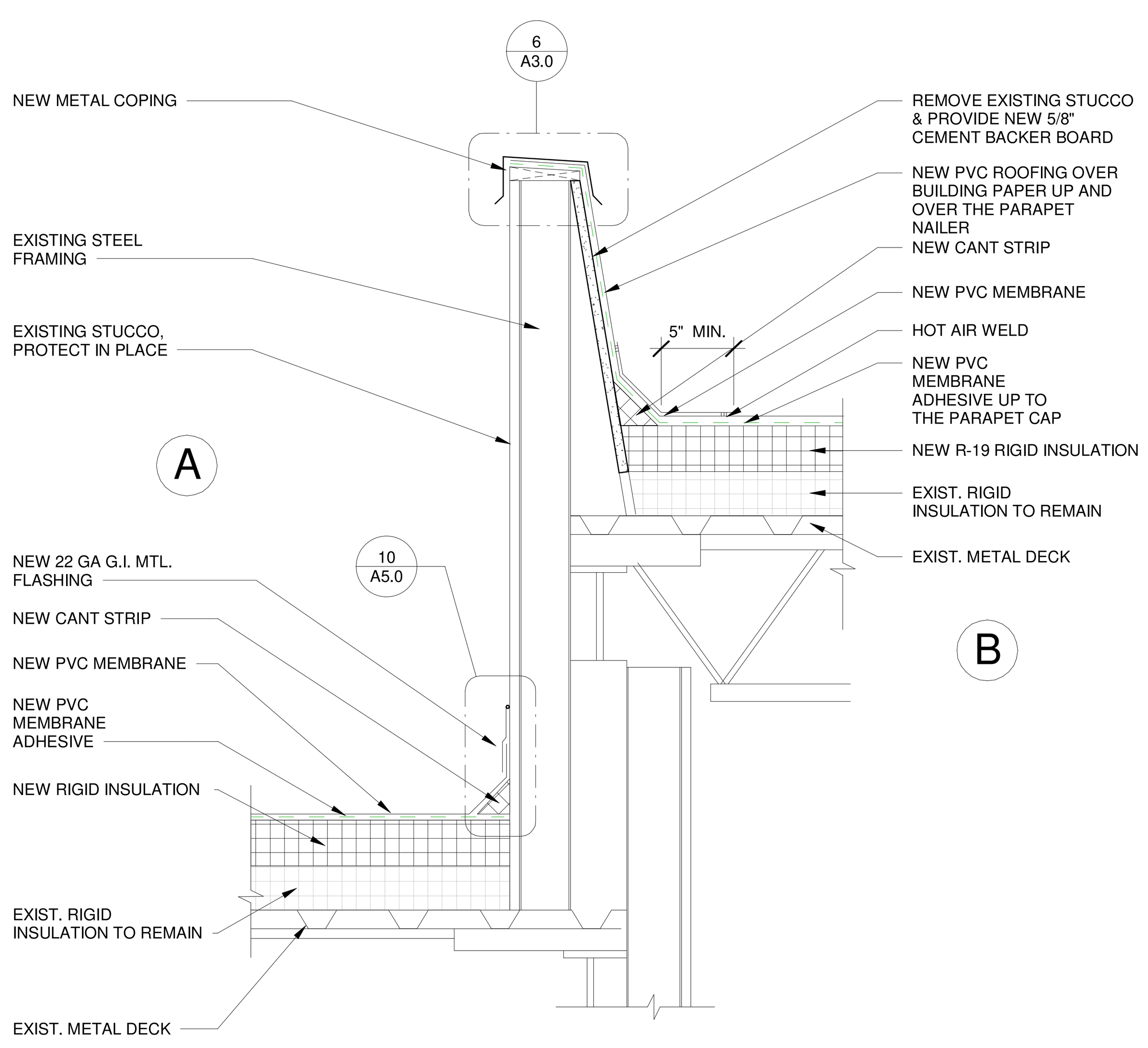
1	EXISTING ROOF METAL DECK & FRAMING TO REMAIN.
2	PROVIDE NEW SINGLE PLY PVC/TPO ROOFING SYSTEM MEMBRANE (WHITE COLOR OVER 5 1/2" OF RIDID INSULATION (POLYSTYRENE) R-30 W/ REFLECTIVE FACE FACING UP. ROVIDE NEW FLASHING AS REQUIRED. ROOFING MATERIAL TO COMPLY WITH ICC LISTING REPORT NUMBER ESR-2852.
3	CUT NEW INSULATION TO FIT AROUND EXISTING DUCT SUPPORT AND CONTINUE THE INSULATION UNDER DUCT. SEAL NEW ROOFING AROUND SUPPORTS.
4	NEW FLASHING AT ALL PIPE, DUCTS, AND VENTS AS REQUIRED. EXTEND EXISTING PIPE VENT ABOVE ROOF TO CONFORM WITH MIN. CODE REQUIREMENTS.
5	NEW G.I. SHEET METAL EDGE FLASHING. PAINT TO MATCH EXISTING FLASHING.
8	CONTRACTOR SHALL LOWER AS MUCH ALL PIPE CONDUITS AS CLOSE AS POSSIBLE TO THE EXISTING ROOF DECK. SECURE TO THE EXISTING ROOF WITH METAL PLUMBING STRAPS @ 6'-0" O.C. MAX.
9	REPLACE EXISTING 5-7.5 TON WITH NEW 5-7.5 TON GAS/ELECTRIC HVAC ROOF TOP UNIT. PROVIDE SELF CURBING.CONTROLS FOR OPPERATING HVAC UNITS TO COMPLY WITH CBC 11B-308.1.1. CONTROLS TO BE UNOBSTRUCTED AND SHALL MOUNTED 48" MAXIMUM FROM FINISH FLOOR. CONTRACTOR TO PROVIDE CUT SHEETS. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
11	PROVIDE NEW CONDUIT IN RIGID INSULATION FOR EXISTING ANTENA CABLE.
12	REPLACE EXISTING RAIN GUTTER W/ NEW SEAMLESS GALVANIZE STEEL RAIN GUTTER TO EXTEND 6" BEYOND WALL. MATCH EXISTING SIZE AND SHAPE. PAINT TO MATCH EXISTING WALL. SEE DETAIL.
13	PROVIDE NEW ROOF FLASHING, COUNTER FLASHING, & TOP METAL COPING BETWEEN PARAPET WALL AND ROOF SHOWN AT DIAGONAL HATCH AREAS.
14	PROVIDE NEW VALLEY AT ROOF WITH 2:12 MIN. SLOPE.
15	RE-INSTALL EXISTING ROOF HATCH DOOR AND PROVIDE NEW FLASHING AND NEW FASTENERS.
16	PROTECT IN PLACE EXISTING PARAPET SHEET METAL COPING CAP AT PERIMETER OF ROOF.
17	INSTALL NEW CONTINOUS PVC/TPO WALKING PADS AROUND EXISTING SERVICEABLE EQUIPMENT AS SHOWN IN SOLID GRAY COLOR HATCH.
18	INSTALL NEW RUBBER CONDUIT BLOCKS UNDER ALL EXISTING CONDUITS, WATER LINES, AND GAS LINES.
19	PROVIDE NEW ROOF DRAIN SYSTEM W/ NEW DRAIN COVERS & OVERFLOW DRAINS.
20	PROVIDE NEW EXHAUST FAN. SEE MECHANICAL SHEETS FOR ADDITIONAL INFORMATION.
21	PROVIDE NEW 75 GALLON WATER HEATER WITH SEISMIC STRAPS. SEE PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
22	REPLACE EXISTING RAIN GUTTER W/ NEW SEAMLESS GALVANIZE STEEL RAIN GUTTER. MATCH EXISTING SIZE AND SHAPE. PAINT TO MATCH EXISTING WALL. SEE DETAIL.
23	PROVIDE NEW GALVANIZE ROOF HATCH AT LOCATIONS REQUIRING J-BOXES FOR SERVICE ACCESS.

FINISH MATERIAL

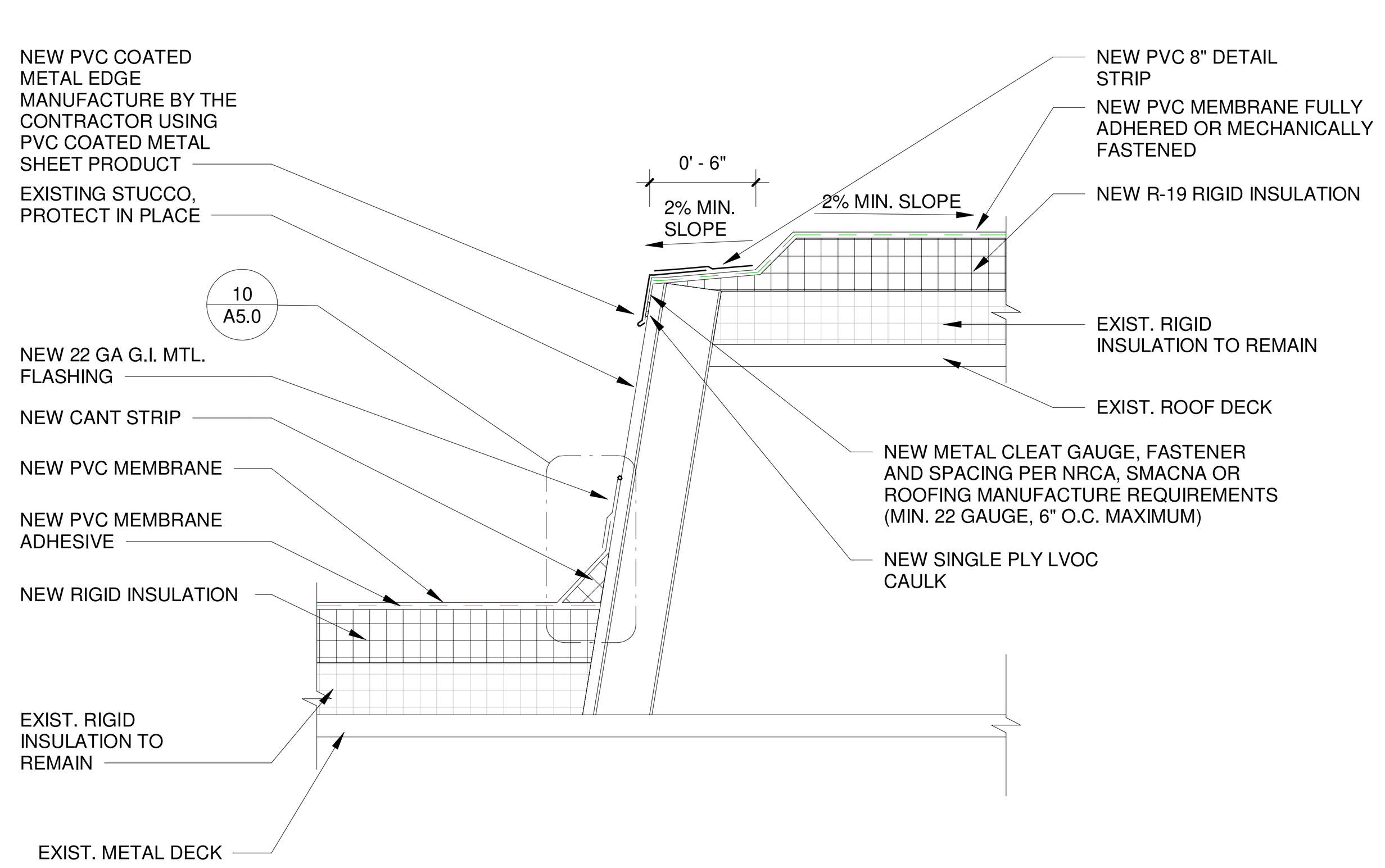
1. UNLESS SPECIFICALLY INDICATED OTHERWISE, PRODUCTS SCHEDULED INDICATE QUALITY STANDARD REQUIRED, BUT ARE NOT INTENDED TO LIMIT COMPETITION. LISTED COLORS AND FINISHES ESTABLISH COLOR AND FINISH REQUIRED. EXCEPT FOR PRODUCTS NOTED AS "OWNER'S STANDARD," APPROVED EQUAL PRODUCTS MAY BE SUBMITTED FOR OWNER REPRESENTATIVE'S REVIEW AND APPROVAL. CONTRACTOR MAY REQUEST APPROVAL FROM OWNER TO USE OR SUBSTITUTE ENVIRONMENTALLY PREFERABLE PRODUCTS AND RECYCLED PRODUCTS.
2. COLORS AND FINISHES SHALL MATCH SAMPLES AVAILABLE FOR VIEW BY CONTRACTOR AT OWNER REPRESENTATIVE'S PROJECT SITE OFFICE. ARCHITECT IS SOLE JUDGE OF COLOR AND FINISH MATCH.
3. WHERE "MATCH EXISTING" IS INDICATED, PROVIDE NEW MATERIAL AS NECESSARY TO PATCH OR EXTEND EXISTING MATERIAL. UNLESS AN EXCEPTION IS SPECIFICALLY NOTED, NEW MATERIAL SHALL MATCH EXISTING IN TYPE, MATERIAL, SIZE, THICKNESS, COLOR, AND PATTERN.
4. WHERE CONTRACT DOCUMENTS REQUIRE COLOR MATCH, BUT EXISTING COLOR'S NAME IS UNKNOWN, MATCH COLORS AS NEARLY AS PRACTICABLE BY FIELD COMPARISON. ARCHITECT IS SOLE JUDGE OF COLOR MATCH ACCURACY. MISMATCHED COLORS WHERE MATCH IS REQUIRED WILL BE REJECTED.


SHEET METAL COPING CAP WITH WATERTIGHT JOINTS
METAL EXTENDER PIECE AS REQUIRED
CONTINOUS METAL HOOK STRIP (MIN. 22 GAUGE) @ 6" O.C.
EXIST. STUCCO TO REMAIN, PROTECT IN PLACE
EXIST. METAL STEEL FRAMING, PROTECT IN PLACE
5% MIN. SLOPE
EXIST. WOOD NAILER, REPLACE OR PROVIDE NEW TO ACCOMPLISH 5% MIN. SLOPE
GROMMETTE D FASTENER
NEW PVC ROOFING MEMBRANE OVER NEW BUILDING PAPER UP AND OVER THE PARAPET NAILER
REMOVE EXIST. STUCCO AND PROVIDE NEW 5/8" CEMENT BACKER BOARD

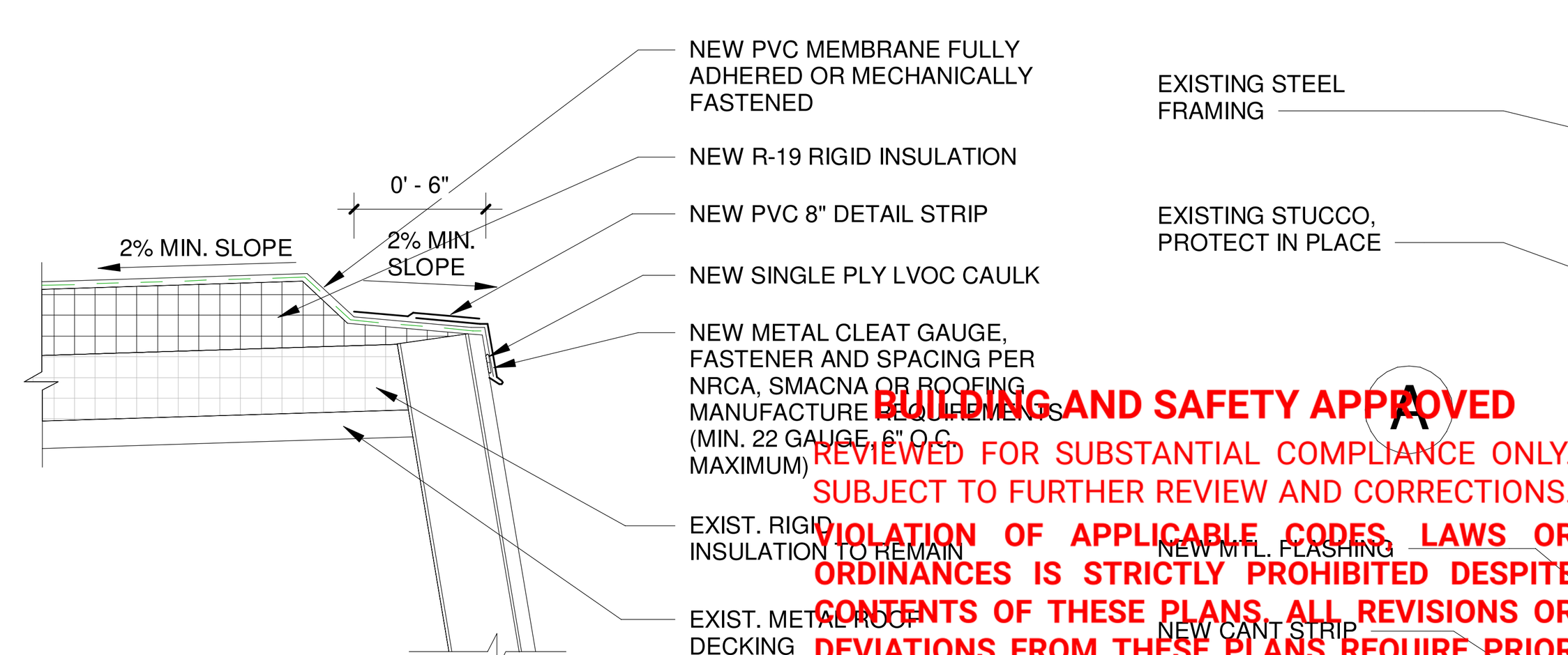
6 TYPICAL PARAPET COPING
SCALE: 1 1/2" = 1'-0"


NEW METAL COPING
EXISTING STEEL FRAMING
EXISTING STUCCO, PROTECT IN PLACE
A
NEW 22 GA G.I. MTL. FLASHING
NEW CANT STRIP
NEW PVC MEMBRANE
NEW PVC MEMBRANE ADHESIVE
NEW RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL DECK
REMOVE EXISTING STUCCO & PROVIDE NEW 5/8" CEMENT BACKER BOARD
NEW PVC ROOFING OVER BUILDING PAPER UP AND OVER THE PARAPET NAILER
NEW CANT STRIP
NEW PVC MEMBRANE
HOT AIR WELD
NEW PVC MEMBRANE ADHESIVE UP TO THE PARAPET CAP
NEW R-19 RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL DECK
5" MIN.
B

2 ROOF SECTION AT HIGH ROOF
SCALE: 1 1/2" = 1'-0"


NEW PVC COATED METAL EDGE MANUFACTURE BY THE CONTRACTOR USING PVC COATED METAL SHEET PRODUCT
EXISTING STUCCO, PROTECT IN PLACE
NEW 22 GA G.I. MTL. FLASHING
NEW CANT STRIP
NEW PVC MEMBRANE
NEW PVC MEMBRANE ADHESIVE
NEW RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL DECK
0' - 6"
2% MIN. SLOPE
2% MIN. SLOPE
NEW PVC 8" DETAIL STRIP
NEW PVC MEMBRANE FULLY ADHERED OR MECHANICALLY FASTENED
NEW R-19 RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. ROOF DECK
NEW METAL CLEAT GAUGE, FASTENER AND SPACING PER NRCA, SMACNA OR ROOFING MANUFACTURE REQUIREMENTS (MIN. 22 GAUGE, 6" O.C. MAXIMUM)
NEW SINGLE PLY LVOC CAULK

3 ROOF SECTION B
SCALE: 1 1/2" = 1'-0"


2% MIN. SLOPE
0' - 6"
2% MIN. SLOPE
NEW PVC MEMBRANE FULLY ADHERED OR MECHANICALLY FASTENED
NEW R-19 RIGID INSULATION
NEW PVC 8" DETAIL STRIP
NEW SINGLE PLY LVOC CAULK
NEW METAL CLEAT GAUGE, FASTENER AND SPACING PER NRCA, SMACNA OR ROOFING MANUFACTURE REQUIREMENTS (MIN. 22 GAUGE, 6" O.C. MAXIMUM)
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL ROOF DECKING

4 ROOF SECTION C
SCALE: 1 1/2" = 1'-0"

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
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VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.
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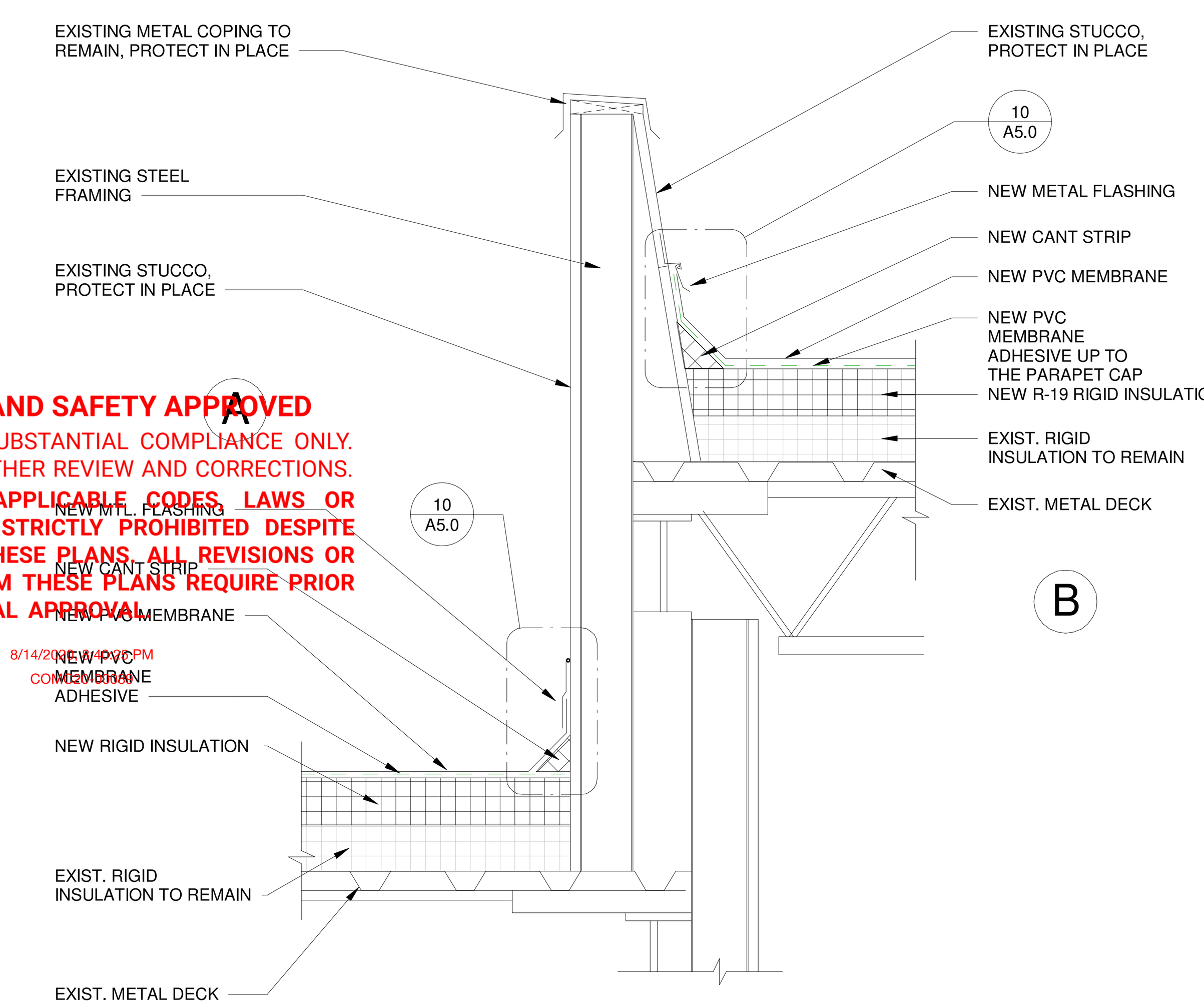
EXISTING METAL COPING TO REMAIN, PROTECT IN PLACE
EXISTING STEEL FRAMING
EXISTING STUCCO, PROTECT IN PLACE
A
NEW MTL. FLASHING
NEW CANT STRIP
NEW PVC MEMBRANE
NEW PVC MEMBRANE ADHESIVE
NEW RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL DECK
EXISTING STUCCO, PROTECT IN PLACE
NEW METAL FLASHING
NEW CANT STRIP
NEW PVC MEMBRANE
NEW PVC MEMBRANE ADHESIVE UP TO THE PARAPET CAP
NEW R-19 RIGID INSULATION
EXIST. RIGID INSULATION TO REMAIN
EXIST. METAL DECK
B

5 ROOF SECTION AT LOW ROOF
SCALE: 1 1/2" = 1'-0"

CITY OF COMMERCE
INCORPORATED JANUARY 28, 1960
CALIFORNIA

BOA
Architecture
Interiors
Planning
1511 Cota Ave. Long Beach, CA 90813 Tel. 562- 912- 7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: LA
CAD Draft: LA
Architect: LOK
Engineer: EDA INCORPORATED
Client: CITY OF COMMERCE
Date Issue: 6- 25- 2020
Job Number: 2860

Client:
MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

LICENSED ARCHITECT
Edward Lok Ng
C-16840
REN.11/30/21
STATE OF CALIFORNIA

- ROOF RENOVATION PLAN
-
-

A3.0

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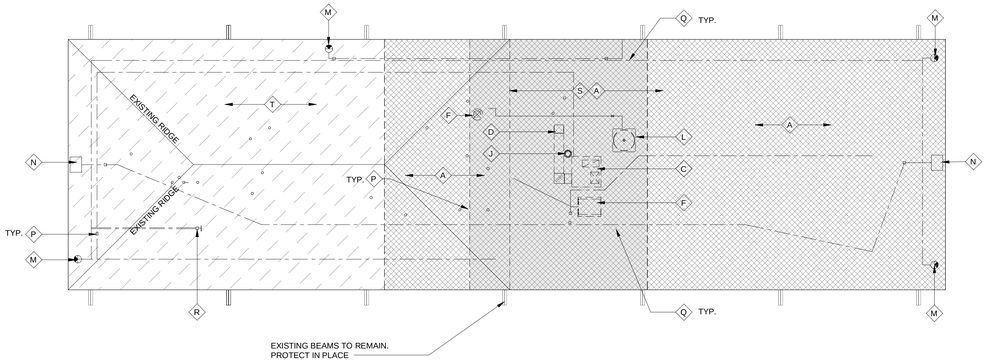
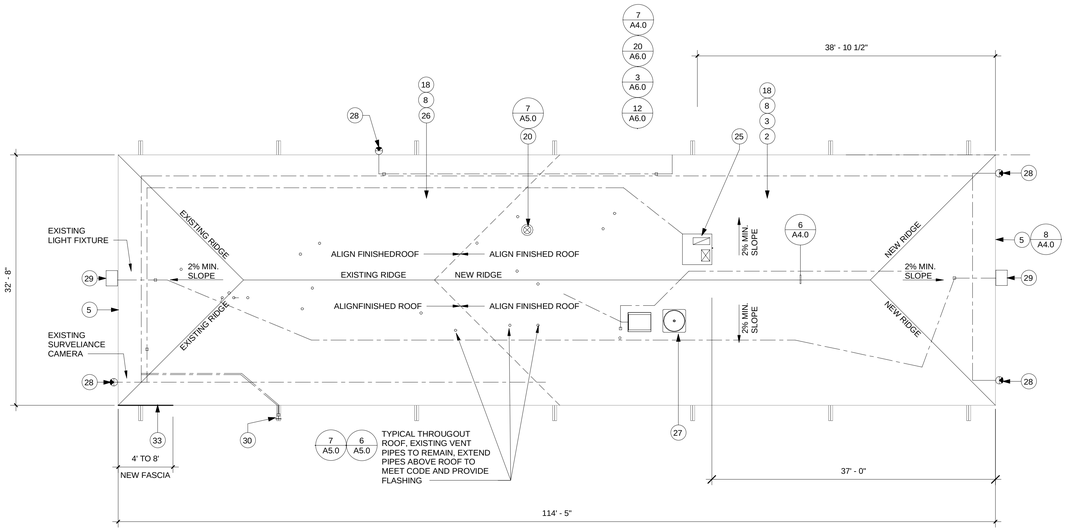
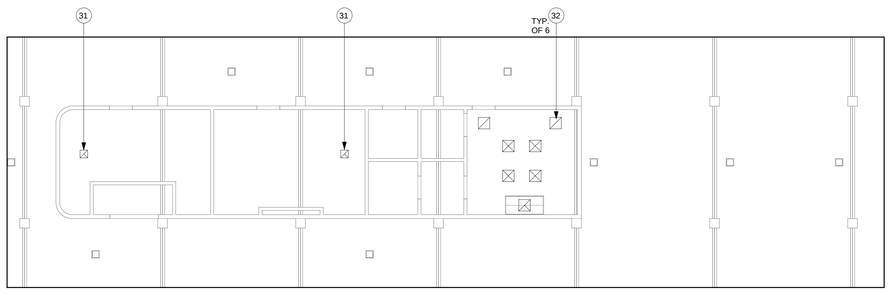


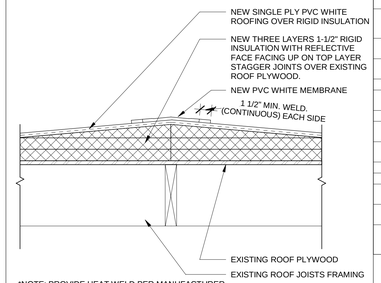
1 SNACK BAR DEMOLITION ROOF PLAN
SCALE: 1/8" = 1'-0"



2 SNACK BAR RENOVATION ROOF PLAN
SCALE: 1/8" = 1'-0"

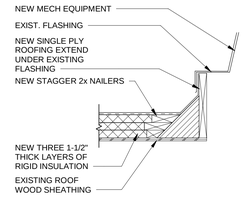


3 SNACK BAR REFLECTIVE CEILING PLAN
SCALE: 1/8" = 1'-0"



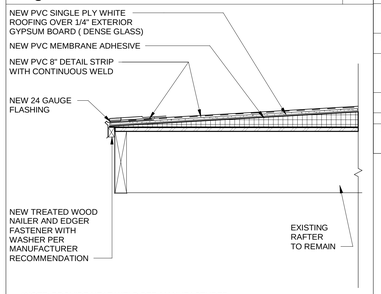
*NOTE: PROVIDE HEAT WELD PER MANUFACTURER RECOMMENDATIONS AT ALL TRANSITION CONDITIONS

RIDGE TRANSITION 1 1/2" = 1'-0" 6



*NOTE: PROVIDE THEAT WELD PER MANUFACTURE RECOMMENDTATIONS AT ALL TRANSTION CONDITIONS

EQUIPMENT SUPPORT 1" = 1'-0" 7



*NOTE: PROVIDE HEAT WELD PER MANUFACTURER RECOMMENDATIONS AT ALL TRANSITION CONDITIONS

DRIP EDGE. 1 1/2" = 1'-0" 8

BUILDING AND SAFETY APPROVED

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DEMOLITION KEYNOTES

A	REMOVE ALL EXISTING ROOF SYSTEM: ROOFING, FELT PAPER, FLASHING AT BOTTOM OF WALLS, SIDE WALLS, ROOF EDGES, AND ALL METAL CAPS AT TOP OF PARAPETS. PROTECT EXISTING STUCCO AND PREPARE FOR NEW WORK.
C	REMOVE EXISTING 2-5 TON HVAC UNITS & ASSOCIATED EQUIPMENT CURB AND PREPARE FOR NEW WORK.
D	REMOVE EXISTING HVAC DUCT WORK AND DISPOSE OFF. SEE MECHANICAL DRAWINGS.
F	REMOVE EXISTING EXHAUST FAN AND SALVAGE FOR REUSE.
J	REMOVE EXISTING OVERFLOW DRAIN AT ROOF. PATCH, REPAIR, & PREPARE FOR NEW WORK.
L	REMOVE EXISTING EVAPORATIVE COOLER UNIT AND PREPARE FOR NEW WORK.
M	REMOVE EXISTING SURVEILANCE CAMERA CLEAN, STORE, AND SAVE FOR RE-INSTALLATION. SEE RENOVATION PLAN.
N	REMOVE EXISTING LIGHT FIXTURE CLEAN, STORE, AND SAVE FOR RE-INSTALLATION. SEE RENOVATION PLAN.
P	EXISTING VENTS TO REMAIN PROTECT IN PLACE.
Q	EXISTING ELECTRICAL LINES AND J BOXES TO REMAIN PROTECT IN PLACE.
R	REMOVE EXISTING SURVEILANCE ANTENNA/SENSOR, CLEAN, STORE, AND SAVE FOR RE-INSTALLATION. SEE RENOVATION PLAN.
S	REMOVE EXISTING PLYWOOD AND REPLACE ANY EXISTING FRAMING NEEDED DUE TO WATER DAMAGE OR NEW WORK.
T	REMOVE ROOFING MEMBRANE, FELT PAPER, FLASHING AT BOTTOM OF WALLS, SIDE WALLS, ROOF EDGES, AND ALL METAL CAPS AT TOP OF PARAPETS. PROTECT EXISTING STUCCO AND PREPARE FOR NEW WORK.

RENOVATION KEYNOTES

2	PROVIDE NEW SINGLE PLY PVC/TPO ROOFING SYSTEM MEMBRANE (WHITE COLOR OVER 5 1/2" OF RIDID INSULATION (POLYSTYRENE) R-30 W/ REFLECTIVE FACE FACING UP. ROVIDE NEW FLASHING AS REQUIRED. ROOFING MATERIAL TO COMPLY WITH ICC LISTING REPORT NUMBER ESR-2852.
3	CUT NEW INSULATION TO FIT AROUND EXISTING DUCT SUPPORT AND CONTINUE THE INSULATION UNDER DUCT. SEAL NEW ROOFING AROUND SUPPORTS.
5	NEW G.I. SHEET METAL EDGE FLASHING. PAINT TO MATCH EXISTING FLASHING.
8	CONTRACTOR SHALL LOWER AS MUCH ALL PIPE CONDUITS AS CLOSE AS POSSIBLE TO THE EXISTING ROOF DECK. SECURE TO THE EXISTING ROOF WITH METAL PLUMBING STRAPS @ 6'-0" O.C. MAX.
18	INSTALL NEW RUBBER CONDUIT BLOCKS UNDER ALL EXISTING CONDUITS, WATER LINES, AND GAS LINES.
20	PROVIDE NEW EXHAUST FAN. SEE MECHANICAL SHEETS FOR ADDITIONAL INFORMATION.
25	REPLACE EXISTING 2TON WITH NEW 4 TON UNIT AT NEW LOCATION. PROVIDE SELF CURBING. CONTROLS FOR OPPERATING HVAC UNITS TO COMPLY WITH CBC 11B-308.1.1. CONTROLS TO BE UNOBSTRUCTED AND SHALL MOUNTED 48" MAXIMUM FROM FINISH FLOOR. CONTRACTOR TO PROVIDE CUT SHEETS. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
26	PROVIDE NEW SINGLE PLY PVC/TPO ROOFING SYSTEM MEMBRANE. PROVIDE NEW FLASHING AS REQUIRED. ROOFING MATERIAL TO COMPLY WITH ICC LISTING REPORT NUMBER ESR-2852.
27	REPLACE EXISTING NEW EVAPORATIVE COOLER UNIT AT NEW LOCATION. PROVIDE SELF CURBING. CONTROLS FOR OPPERATING UNITS TO COMPLY WITH CBC 11B-308.1.1. CONTROLS TO BE UNOBSTRUCTED AND SHALL MOUNTED 48" MAXIMUM FROM FINISH FLOOR. CONTRACTOR TO PROVIDE CUT SHEETS. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
28	RE-INSTALL EXISTING SURVEILANCE CAMERA ON ROOF WOOD FASCIA PER RENOVATION PLAN AND EXTEND CONDUIT/DATA AS NEEDED. CONTRACTOR TO COORDINATE WITH VENDOR TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
29	RE-INSTALL EXISTING LIGHT FIXTURE ON ROOF WOOD FASCIA PER RENOVATIN PLAN.
30	RE-INSTALL EXISTING SURVEILANCE CAMERA ANTENA/SENSOR TO ROOF WOOD FASCIA PER RENOVATION PLAN AND EXTEND CONDUIT/DATA AS NEEDED. CONTRACTOR TO COORDINATE WITH VENDOR TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
31	REPLACE EXISTING ELECTRICAL EXHAUST FAN. PATCH AND REPAIR TO MATCH ADJACENT FINISHES. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
32	PROVIDE NEW DIFFUSERS, REGISTERS, AND GRILLES. SEE MECHANICAL DRAWINGS.
33	SAWCUT EXISTING ROTTEN FASCIA BOARD AND REPLACE WITH NEW TYPE TO MATCH SIZE, COLOR AND ADJACENT FINISHES. PROTECT EXISTING STUCCO AND FLASHING AT EAVE.

DEMOLITION NOTES

1. CAP ALL EXISTING UTILITIES & PREPARE FOR NEW WORK AS REQUIRED.
2. PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO COMPLETE DEMOLITION WORK AS INDICATED ON DRAWINGS AND SPECIFICATIONS AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION.
3. PATCH, REPAIR, AND RESTORE ALL AREAS DAMAGED BY THE CONSTRUCTION WORK AND DEMOLITION TO MATCH CONDITION OF ADJACENT UNDISTURBED SURFACES.
4. REMOVE FROM THE SITE ALL MATERIAL RESULTING FROM THE DEMOLITION WORK IN SUCH A MANNER AS TO AVOID CREATING A NUISANCE. DISPOSE OF ALL MATERIALS FROM THE SITE ON ON A DAILY BASIS AT NO ADDITIONAL COST TO THE OWNER
5. DISPOSE OF ALL MATERIAL RESULTING FROM THE DEMOLITION WORK IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS, INCLUDING THOSE GOVERNING NOISE, DUST, AND DIRT CONTROL; DISPOSAL OF HAZARDOUS MATERIALS; AND REQUIREMENTS OF THE LOCAL AIR QUALITY MANAGEMENT DISTRICT.
6. ALL DEMOLITION AND ALL HEAVY NOISE CONSTRUCTION MUST BE LIMITED TO WEEKDAYS, BETWEEN 8AM TO 4 PM. NO ON-SITE WORK SHALL TAKE PLACE DURING STATE OR FEDERAL HOLIDAYS. KEEP NOISE LEVELS TO MINIMUM POSSIBLE AND COMPLY WITH CITY MUNICIPALITIES.

RENOVATION NOTES

A. MAINTAIN AND EXTEND EXISTING PLUMBING SUPPLY, DRAIN, AND VENT PIPING TO ACCOMMODATE NEW EQUIPMENT LAYOUT. PROVIDE PIPE OF SIZES AND MATERIALS TO COMPLY WITH CODE AS REQUIRED FOR PROPER OPERATION. CAP AND REMOVE ALL ABANDONED PIPING.

B. ELECTRICAL / MECHANICAL EQUIPMENT AND DEVICES: REINSTALL AND PROPERLY RECONNECT EXISTING DUCTWORK; SWITCHES; THERMOSTATS; AND OTHER EXISTING ELEC./MECH., EQUIPMENT AND DEVICES REMOVED DURING THE WORK BUT NOT INDICATED TO BE REMOVED. REINSTALL ONLY EQUIPMENT AND DEVICES THAT ARE IN GOOD CONDITION. DISCARD EQUIPMENT AND DEVICES THAT ARE NOT IN CONDITION AT LEAST AS GOOD AS EXISTED BEFORE REMOVAL, AND PROVIDE NEW EQUIVALENT EQUIPMENT AND DEVICES. NEW EQUIPMENT AND DEVICES SHALL EXACTLY MATCH THOSE REMOVED IN TYPE, SIZE, FINISH, CONFIGURATION, AND OPERATING CHARACTERISTICS, UNLESS NOTED OTHERWISE. ALL INSTALLATION SHALL MEET CURRENT BUILDING CODE.

C. PROVIDE NEW MATERIALS TO MATCH EXISTING UNDISTURBED WORK FOR CLOSING OF OPENINGS, REPAIRS, AND RENOVATION. NEW FINISH MATERIALS AND SUBSTRATES TO MATCH EXISTING SHALL BE THE SAME TYPES, SIZES, QUALITIES, AND COLORS AS EXISTING ADJACENT MATERIAL. REPAIR ALL DAMAGED OR DEFACED FLOOR, WALL, AND CEILING FINISHES ASSOCIATED WITH THESE ALTERATIONS.

D. PROVIDE REQUIRED BACKING FOR SUPPORT OF ALL NEW PLUMBING FIXTURES.

E. WHERE EXISTING PLUMBING VENT PIPES ARE REMOVED FROM THE ROOF AND NEW ONES ARE INSTALLED THE CONTRACTOR SHALL PATCH AND REPAIR THE ROOF. THE PATCHING AND REPAIR SHALL BE DONE USING A SUB-CONTRACTOR EXPERIENCE WITH ROOFING IN GENERAL AND ROOFING REPAIRS.

CITY OF COMMERCE — INCORPORATED JANUARY 26, 1960

Architecture
Interiors
Planning

BOA

1511 Cota Ave. Long Beach, CA 90813 Tel. 562- 912- 7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO	DATE	REV.	BY	CHK

Designer: JS
CAD Draft: JS
Architect: LOK
Engineer: -
Client: CITY OF COMMERCE
Date Issue: 6- 25- 2020
Job Number: 2860

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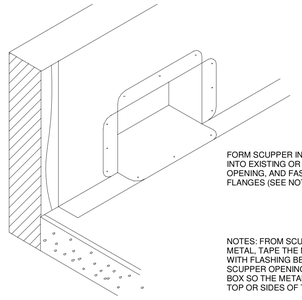
MR. CHOI AUWEEE, CITY MANAGER, CITY HALL
2535 COMMERCE WAY
COMMERCE, CA 90040

Consultant:

LICENSED ARCHITECT
Edward Lok Ng
C-16840
REN:11/30/21
STATE OF CALIFORNIA

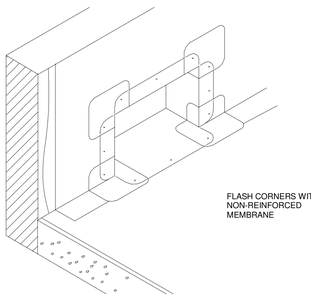
- SNACK BAR ROOF DEMO/ RENOVATION/ DETAILS
-

A4.0

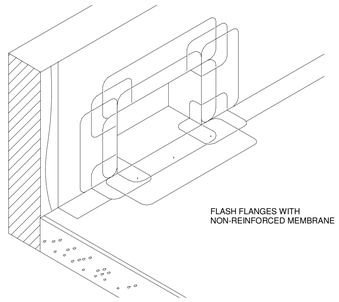


FORM SCUPPER INSERT INTO EXISTING OR NEW OPENING, AND FASTEN FLANGES (SEE NOTE)

NOTES: FROM SCUPPER BOX OF PVC COATED METAL, TAPE THE METAL SEAM, AND OVERLAY WITH FLASHING BEFORE INSERTING INTO SCUPPER OPENING. POSITION THE SCUPPER BOX SO THE METAL SEAM IS LOCATED ON THE TOP OR SIDES OF THE SCUPPER.



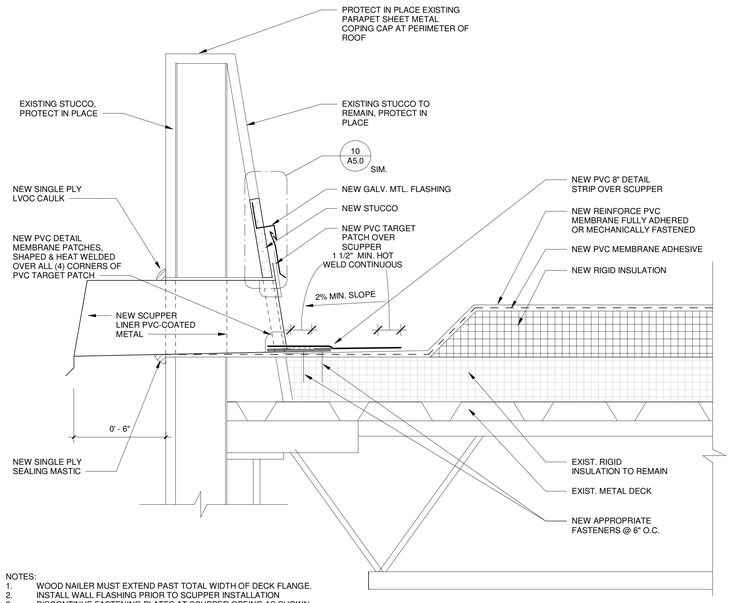
FLASH CORNERS WITH NON-REINFORCED MEMBRANE



FLASH FLANGES WITH NON-REINFORCED MEMBRANE

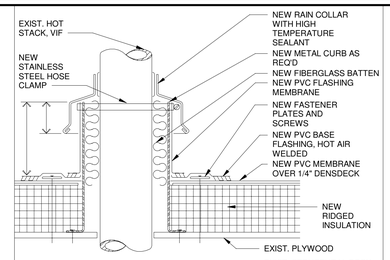
THROUGH WALL SCUPPER

SCALE: 3" = 1'-0"



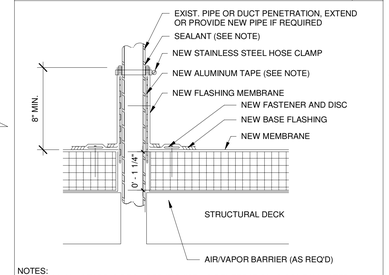
NOTES:
1. WOOD NAILER MUST EXTEND PAST TOTAL WIDTH OF DECK FLANGE.
2. INSTALL WALL FLASHING PRIOR TO SCUPPER INSTALLATION
3. DISCONTINUE FASTENING PLATES AT SCUPPER OPEING AS SHOWN.
4. MINIMUM 2" SPLICE FROM NAIL HEAD.
5. SEALANT IS REQUIRED AT FLASHING EDGE ON SCUPPER EDGE. PRIMER MUST BE USED TO PREPARE SURFACES PRIOR TO APPLYING SEALANT.

HEATED STACK FLASH'G 6



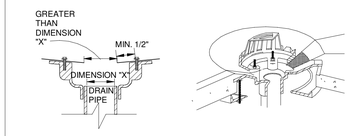
NOTES:
1. PVC MEMBRANE SHALL NOT BE IN CONTACT WITH SURFACES HAVING SUSTAINED TEMPERATURES ABOVE 160°F.
2. APPROXIMATELY 1/8" DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED MEMBRANE.

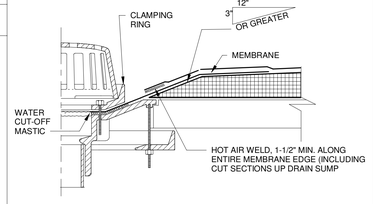
PIPE/DUCT PENETRATION 7



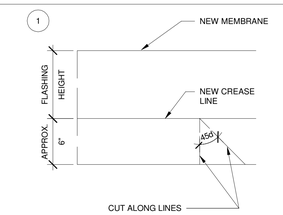
NOTES:
1. MINIMUM TAPE IS REQUIRED IF EXISTING PENETRATION IS CONTAMINATED.
2. SEALANT IS A MAINTENANCE ITEM, MAINTENANCE MAY NOT COVERED UNDER WARRANTY.
3. VAPOR BARRIER SHALL BE SEALED AT EDGES.

ROOF DRAIN 2

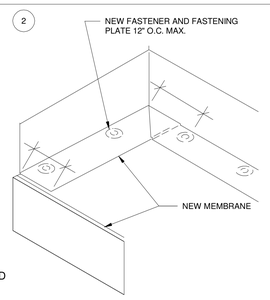


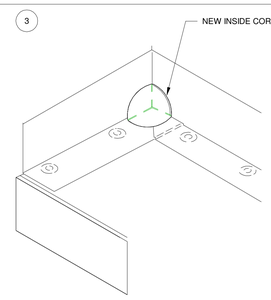


NOTES:
1. ROOF DRAIN SIZE AND NUMBER OF DRAINS SHALL BE IN ACCORDANCE WITH LOCAL CODES.
2. THE HOLE IN THE MEMBRANE SHALL EXCEED THE DIAMETER OF TEH DRAIN PIPE, BUT SHALL BE NO LESS THAN 1/2" FROM THE ATTACHEMENT POINTS OF THE DRAIN CLAMPING RING.
3. ALL BOLTS OR CLAMPS MUST BE IN PLACE TO PROVIDE CONSTANT COMPRESSION ON WATER CUT-OFF MASTIC
4. REMOVE EXISTING LEAD, FLASHING MATERIAL AND ENSURE THE DRAIN RING IS COMPLETELY CLEAN DOWN TO BARE METAL.



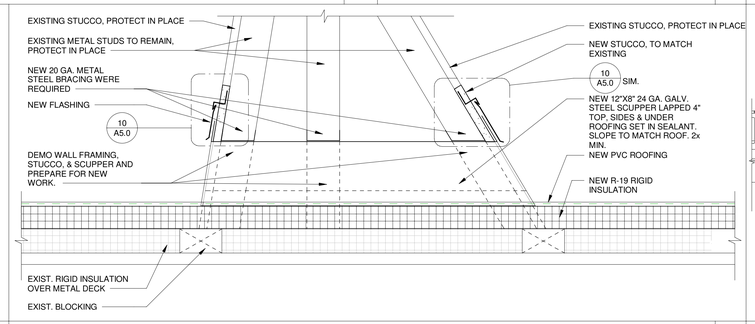
NOTES:
1. BEGIN INSTALLATION OF FASTENING PLATES 6" TO 9" FROM THE CORNER
2. POSITION FASTENING PLATES 1/2" TO 1" FROM EDGE OF MEMBRANE.
3. APPROXIMATELY 1/8" DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED MEMBRANE.





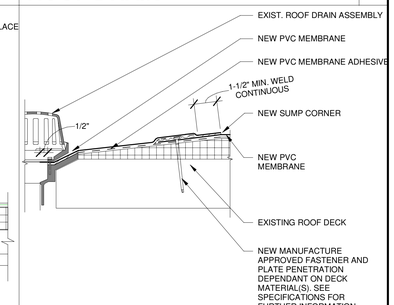
INSIDE CORNER

SCALE:1 1/2" = 1'-0" 18

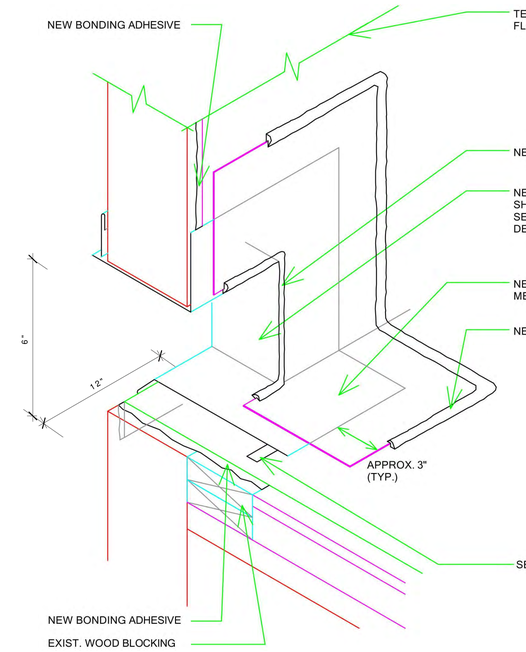


SCUPPER THRU WALL

SCALE:1 1/2" = 1'-0" 8

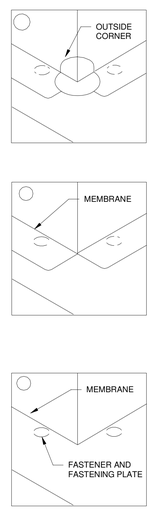


TYPICAL ROOF DRAIN 3



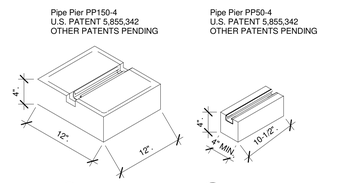
FLASHING @ THROUGH-WALL SCUPPER

SCALE: 1" = 1'-0" 25



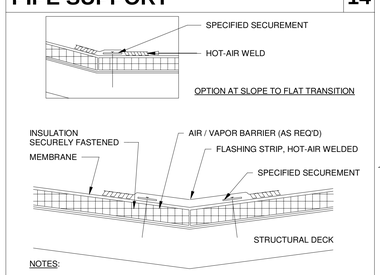
NOTES:
1. BEGIN INSTALLATION OF FASTENING PLATES APPROXIMATELY 6" FROM CORNER.
2. POSITION FASTENING PLATES 1/2" TO 1" FROM EDGE OF DECK MEMBRANE.
3. APPROXIMATLY 1/8" DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED MEMBRANE.

OUTSIDE CORNER FLASHING 20



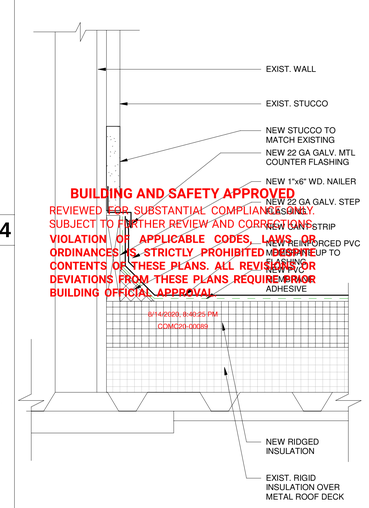
NOTES:
1. THE MAXIMUM LOAD FOR BLOCK PP150-4 IS 150 LBS.
2. THE MAXIMUM LOAD FOR BLOCK PP50-4 IS 50 LBS.
3. THE LOAD SHOULD BE CENTERED ON THE STRUT TO DISTRIBUTE THE WEIGHT EVENLY ACROSS THE ASSEMBLY.
4. PIPING SHOULD BE ATTACHED USING STANDARD STRUT CLAMPS & ACCESSORIES.

PIPE SUPPORT 14



NOTES:
1. WOOD NAILER TO MATCH HEIGHT OF INSULATION MAY BE REQUIRED AT VALLEY IF INSULATION THICKNESS EXCEEDS 2 INCHES.
2. OPTION DETAIL USING FASTENERS AND SPACING MAY VARY.
3. VAPOR BARRIER SHALL BE SEALED AT EDGES.

SLOPE TRANSITION 15



BUILDING AND SAFETY APPROVED
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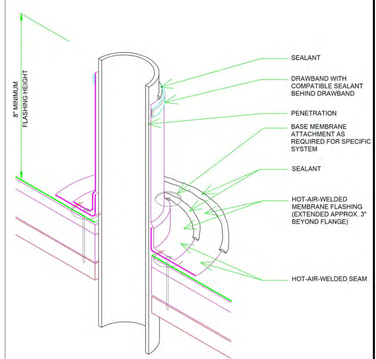
WALL FLASHING 10



PENETRATION (FIELD WRAP) 5

BOA Architecture Interiors Planning
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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: LA
CAD Drafter: BS
Architect: LOK
Engineer: EDA INCORPORATED
Client: CITY OF COMMERCE
Date Issue: 6- 25- 2020
Job Number: 2860

Client:
MR. CHIDI AUMEZIE, CITY MANAGER, CITY HALL
2555 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

LICENSED ARCHITECT
Edward Lok Ng
C-16840
REN:11/30/21
STATE OF CALIFORNIA

- ROOF DETAILS
-
-

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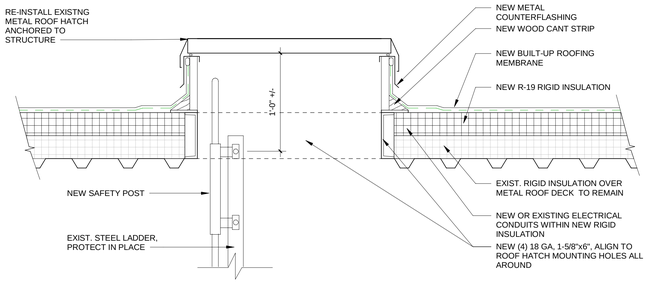


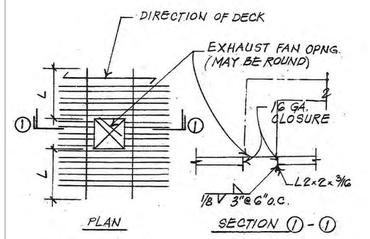
ROOF HATCH

SCALE:1 1/2" = 1'-0" **11**

CONSTRUCTION NOTES

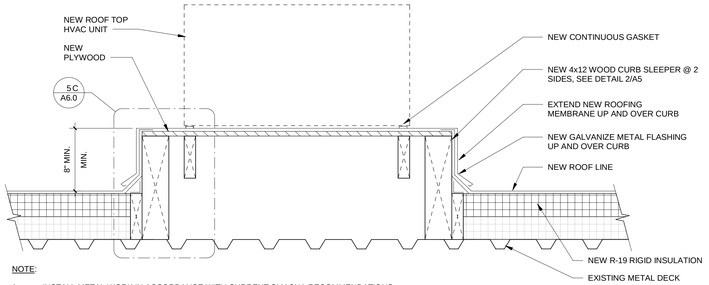
1. CODE: 2019 CALIFORNIA BUILDING CODE.
2. LUMBER: DOUGLAS FIR LARCH NO.2 U.N.O.
3. PLYWOOD: SHALL CONFORM TO U.S. PRODUCT STANDARDS ——— DOUGLAS FIR "CDX."
4. NAILS: COMMON WIRE NAILS U.N.O.
   STRUCTURAL STEEL: A36 F_y=36 KSI TYP.
   WITH "E70XX" WELDING
5. BOLTS OR LAG BOLTS "A307" MACHINE BOLTS

NOTE: USE THIS DETAIL WHERE SMALL DUCT OPNG. IS REQ'D.



METAL DECKING OPNG.

1



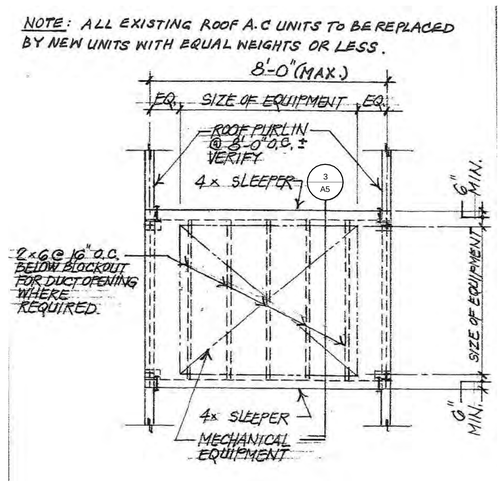
NOTE:

1. INSTALL METAL WORK IN ACCORDANCE WITH CURRENT SMACNA RECOMMENDATIONS.
2. FASTENER PLATES & SCREWS 6" O.C. REQ'D FOR BA SYSTEMS.
3. APPROXIMATELY 1/8" DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED MEMBRANE.

ROOF MOUNTING DETAIL

SCALE:1 1/2" = 1'-0" **12**

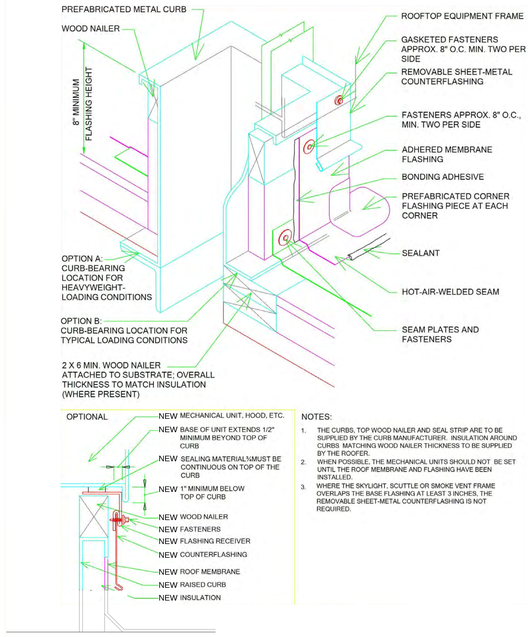
NOTE: ALL EXISTING ROOF A.C UNITS TO BE REPLACED BY NEW UNITS WITH EQUAL WEIGHTS OR LESS.



SEE MECH. DWGS. FOR INFORMATION

MECH. EQUIP. PLATFORM

SCALE: 1/2" = 1'-0" **3**

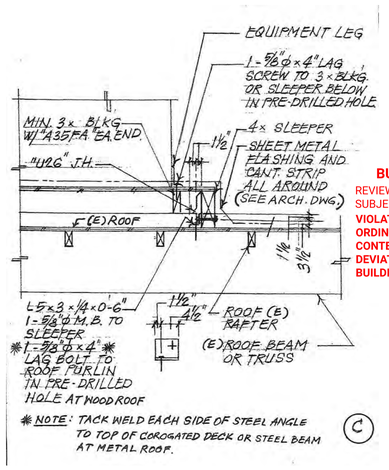


NOTES:

1. THE CURBS, TOP WOOD NAILER AND SEAL STRIP ARE TO BE SUPPLIED BY THE CURB MANUFACTURER. INSULATION AROUND CURBS MATCHING WOOD NAILER THICKNESS TO BE SUPPLIED BY THE ROOFER.
2. WHEN POSSIBLE, THE MECHANICAL UNITS SHOULD NOT BE SET UNTIL THE ROOF MEMBRANE AND FLASHING HAVE BEEN INSTALLED.
3. WHERE THE SKYLIGHT, SCUTTLE OR SMOKE VENT FRAME OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.

BASE FLASHING AT PREFABRICATED METAL CURB

SCALE: 12" = 1'-0" **20**



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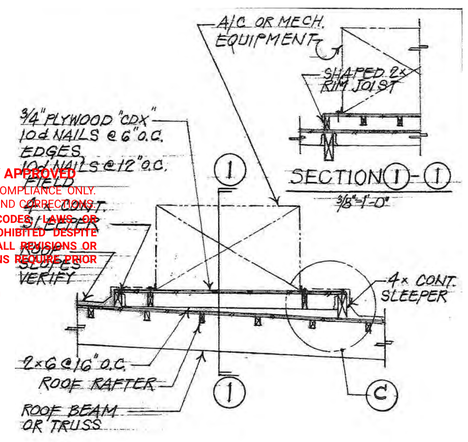

EQUIPMENT PLATFORM

5

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- ROOF TOP EQUIPMENT DETAILS
-
-

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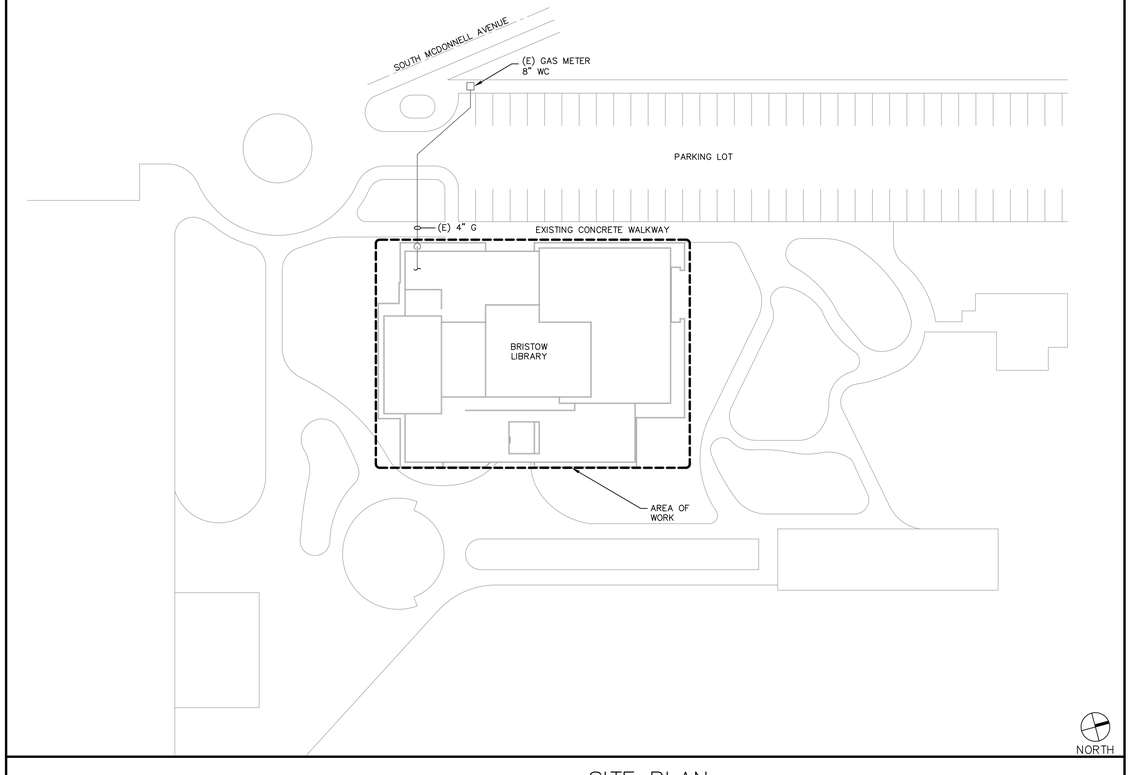
UTILITY SCHEDULE

*WATER (FLUSH VALVE)	FIXTURE UNITS		GPM	FUTURE F.U.	TOTAL F.U.	TOTAL GPM	METER SIZE	STREET PRESSURE PSI	PRV SETTING PSI	WATER HARDNESS	WATER SIZING PSI/100'
	–		–	–	–	–	–	–	–	–	–
*SEWER/STORM DRAIN	FIXTURE UNITS			BUILDING SEWER		LATERAL OR WYE		STREET SEWER		DESIGN SLOPE	
	–			–		–		–		1/4"/FT SLOPE UNLESS OTHERWISE NOTED	
GAS CFH	HOUSE PRESSURE	MAX LENGTH OF RUN		SPACE HEATING		WATER HEATING		DRYERS		TOTAL CFH	
	–	–		1030		73		–		1103	

* NO INCREASE IN CONNECTED LOAD TO WASTE, WATER AND GAS SERVICES FOR REMODEL OF SUBJECT SPACES AND HIGH-EFFICIENCY FIXTURES; NO WATER CALCULATION PROVIDED HEREIN

FIXTURE SCHEDULE

MARK	SERVICE	CW	HW	W (SD)	V	REMARKS
WH-1	WATER HEATER	1/2"	1/2"	–	–	72CFH; 75 GALLONS; SEALED COMBUSTION CHAMBER, FURNISH DIRECT VENT HARDWARE
RD-1	ROOF DRAIN	–	–	(4")	–	JR SMITH 1070 ROOF DRAIN; CAST IRON NO HUB OUTLET UNDER DECK CLAMP; IAPMO LISTING
RR-1	ROOF RECEPTOR	–	–	3"	–	JR SMITH 3970 ROOF RECEPTOR, WITH UNDER-DECK CLAMP, IAPMO LISTING
CP-1	CIRCULATION PUMP	–	3/4"	–	–	GRUNDFOS UP 15-42 B7/TLC; 115V, 1A; SWEAT CONNECTION WITH TIMER, WEATHER COVER, FACTORY FURNISHED, MANUFACTURED, OR FIELD FABRICATED
CP-2	CIRCULATION PUMP	–	3/4"	–	–	GRUNDFOS UP 15-42 B7/TLC; 115V, 1A; SWEAT CONNECTION, TH TIMER, WEATHER COVER, FACTORY FURNISHED, MANUFACTURED, OR FIELD FABRICATED



SITE PLAN

SCALE: 1/32"=1'-0"

LEGEND

SYMBOL	DESCRIPTION
	WASTE BELOW GRADE FLOOR (E)
	WASTE BELOW GRADE FLOOR (N)
	WASTE ABOVE GRADE FLOOR (N)
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	GAS PIPING
	FLOOR SINK
	FLOOR DRAIN
	PRESSURE REDUCING VALVE/ PRESSURE REGULATING VALVE
	SHUT-OFF VALVE
	GAS SHUT-OFF VALVE
	CHECK VALVE
	TEMPERATURE AND PRESSURE RELIEF VALVE
	THERMOMETER
	UNION
	FLOOR CLEAN OUT
	WALL CLEAN OUT
	CLEAN OUT TO GRADE
	POINT OF CONNECTION
	SHUT-OFF VALVE (RISER VIEW)
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
BFP	BACK FLOW PREVENTER
CW	COLD WATER
DHW	DOMESTIC HOT WATER
DL	DEVELOPED LENGTH
DN	DOWN
FU	FIXTURE UNIT
G	GAS
MPG	MEDIUM PRESSURE GAS
PRV	PRESSURE REDUCING VALVE
ST	STORAGE TANK
VTR	VENT THROUGH ROOF
V	VENT
W	WASTE
WH	WATER HEATER

SHEET INDEX

SCOPE OF WORK

1. DEMO:
   - A. PREPARE ROOF RECEPTOR SERVICE / INSTALLATION FOR MODIFICATION, FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION
   - B. PREPARE V SERVICE TERMINATION FOR ADDED HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION
   - C. DEMO WH, ASSOCIATED ENCLOSURE, ASSOCIATED PLATFORM
   - E. DEMO CW, DHW, DHWR (X2) SERVICES, CP (X2) FROM POINTS OF DISCONNECT AT OR ABOVE ROOFLINE; PREPARE POINTS OF DISCONNECT FOR FIT TO NEW SERVICES AT OR ABOVE ROOFLINE TO WATER HEATER
   - E. FIELD VERIFY VICINITY OF SERVICE UP THROUGH ROOF FOR ADEQUACY OF OPPORTUNITY TO MAINTAIN LOCATION RELATIVE TO EQUIPMENT AND HARDWARE LOCATIONS AND REQUIREMENTS FOR ROOFING; RELOCATE SERVICES ABOVE ROOFLINE AND / OR UP THROUGH ROOF AS NECESSARY; COORDINATE REQUIREMENTS FOR ACCESS AND REPAIR OF STRUCTURE AND TREATMENTS WITH GENERAL CONTRACTOR AS NECESSARY
   - F. DEMO GAS SERVICES FROM POINTS OF DISCONNECT AT OR BELOW OR ABOVE ROOFLINE; PREPARE POINTS OF DISCONNECT FOR FIT TO NEW SERVICES ABOVE ROOFLINE TO SUB-MAINS AND RUNOUTS TO AC'S, HVS, MA, AND WH; MAINTAIN POINTS OF DISCONNECT FOR ADDED HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION
   - G. DEMO ROOF DRAIN / OVERFLOW DRAIN TRIM / GRATE / DOME / DAM TOPSIDE TO BODIES; MAINTAIN MOUNTING AND SET HARDWARE WHERE POSSIBLE, FOR REFIT OF NEW TRIM / GRATE / DOME / DAM; COORDINATE FIT OF ROOF INSULATION TO EXISTING ROOF DRAINS / OVERFLOW DRAINS
2. RENO:
   - A. SET MANUFACTURED ROOF CURB SYSTEM ABOUT ROOF RECEPTOR SERVICE / INSTALLATION FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION; DEVELOP NEW CONDENSATE DRAIN / DOMESTIC HOT WATER DRAIN AND TP&R SERVICES; DEVELOP INSTALLATION FOR SIDE ENTRY OF SERVICES, REMOVEABLE COVER FOR INSPECTION
   - B. EXTEND V SERVICE TERMINATION WITH STAINLESS STEEL BANDS; PROVIDE OVERSIZED CAST IRON COLLAR WITH SET SCREWS HIGH, (3) SET SCREWS LOW FOR RIGIDITY, CONCEALED WITH IN ROOF CURB FOR RIGIDITY; HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION
   - C. PROVIDE WH, ASSOCIATED ENCLOSURE, ASSOCIATED PLATFORM; SECURE WH WITHIN ENCLOSURE, ENCLOSURE TO PLATFORM, PLATFORM TO STRUCTURE; PROVIDE SEISMIC RESTRAINT FOR WH TO STRUCTURE VIA ADDITIONAL MOUNTING AND SUPPORT HARDWARE
   - D. EXTEND CW, DHW, DHWR (X2) SERVICES, CP (X2) FROM POINTS OF CONNECTION TO WATER HEATER
   - E. RELOCATE SERVICES UP THROUGH ROOF RELATIVE TO EQUIPMENT AND HARDWARE LOCATIONS TO ACCOMMODATE REQUIREMENTS FOR ROOFING; RELOCATE SERVICES ABOVE ROOFLINE AND / OR UP THROUGH ROOF AS NECESSARY; COORDINATE REQUIREMENTS FOR ACCESS AND REPAIR OF STRUCTURE AND TREATMENTS WITH GENERAL CONTRACTOR AS NECESSARY
   - F. SET MANUFACTURED ROOF CURB SYSTEM ABOUT G RISER SERVICE / INSTALLATION; PROVIDE GAS SERVICES FROM POINTS OF CONNECTION AT OR BELOW OR ABOVE ROOFLINE; EXTEND NEW SERVICES ABOVE ROOFLINE TO SUB-MAINS AND RUNOUTS TO AC'S, HVS, MA, AND WH; PROVIDE WELDED JOINTS CONCEALED WITHIN ROOF CURBS; DEVELOP INSTALLATION FOR SIDE ENTRY OF SERVICES, REMOVEABLE COVER FOR INSPECTION
   - G. PROVIDE ROOF DRAIN / OVERFLOW DRAIN TRIM / GRATE / DOME / DAM TOPSIDE TO BODIES; MOUNT AND SET HARDWARE WHERE POSSIBLE, FOR REFIT OF NEW TRIM / GRATE / DOME / DAM; COORDINATE FIT OF ROOF INSULATION TO EXISTING ROOF DRAINS / OVERFLOW DRAINS

GENERAL NOTES

1. CODE COMPLIANCE: ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY:
   - A. CALIFORNIA BUILDING CODE 2019
   - B. CALIFORNIA MECHANICAL CODE 2019
   - C. CALIFORNIA PLUMBING CODE 2019
   - D. CALIFORNIA ELECTRICAL CODE 2019
   - E. CALIFORNIA ADMINISTRATIVE CODE TO INCLUDE TITLE 24 ENERGY CODE

   NOTHING IN THESE DRAWINGS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING WITH THESE CODES OR OTHER APPLICABLE CODES APPLICABLE TO THIS PROJECT.
2. NOT USED
3. NOT USED
4. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL NEW PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
5. CITY INSPECTOR AND ENGINEER TO APPROVE BEFORE PERMANENTLY COVERING.
6. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITERS' LABEL (UL) AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.
7. THE CONTRACTOR SHALL NOT BORE, NOTCH OR IN ANY WAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
8. THE CONTRACTOR SHALL PROVIDE SUPPORT FOR ALL FIXTURES, EQUIPMENT, AND HARDWARE TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, SMACNA STANDARDS, AND ALL LOCAL ORDINANCES.
9. THE CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS, SERVICE REQUIREMENTS AND EXACT LOCATIONS OF SERVICE FACILITIES BEFORE SUBMITTING BID. FIELD VERIFY ALL MEASUREMENTS AND COORDINATE WORK WITH ALL TRADES.
10. BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS, ELEVATIONS, AND CHARACTERISTICS OF ALL UTILITIES AND PIPING AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
11. EXACT LOCATIONS, MOUNTING HEIGHTS AND COLORS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND THE MANUFACTURER'S PUBLISHED DATA.
12. UTILITY COORDINATION: CONTRACTOR SHALL COORDINATE GAS, WATER, AND WASTE SERVICE WITH RESPECTIVE UTILITY COMPANIES.
13. INSULATION:
   - A. PIPE INSULATION: ALL HOT WATER SERVICES TO POINTS OF USE AND HOT WATER RETURN RECIRCULATION PIPING SHALL BE INSULATED WITH 1" THICK FOR SIZES UP TO 2". HOT WATER SERVICES FROM WATER HEATER TO STORAGE TANK SHALL BE 1-1/2" THICK. MINIMUM THERMAL RESISTANCE SHALL BE R=4.0 TO 4.6 PER INCH.
   - B. ST-1 SHALL BE INSULATED WITH MINIMUM R-12.
   - C. PROVIDE ARMSTRONG "ARMAFLEX" OR EQUAL INSULATION AND DRAIN PIPING BELOW HANDICAP LAVATORIES AND SINKS
14. PIPING:
   - A. WASTE & VENT
     1. INSIDE AND OUTSIDE BUILDING, ABOVE AND BELOW GROUND (UNLESS OTHERWISE IDENTIFIED)
        - A. WASTE & VENT: SERVICE WEIGHT HUBLESS CAST IRON PIPE AND FITTINGS WITH NEOPRENE GASKETS AND CAST IRON CLAMPS AND STAINLESS STEEL NUTS, BOLTS AND WASHERS, OR SCHEDULE 40 ABS WITH SCHEDULE 40 FITTINGS & SOLVENT WELDS.
        - B. ALL WASTE PIPING SHALL SLOPE AT 2% UNLESS OTHERWISE NOTED; PIPING MAY BE INSTALLED AT 1% SLOPE, FOR DE-RATE TO 80% OF ASSIGNED FOR CAPACITY
        - C. CLEAN OUTS: ALL CLEAN OUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEAN OUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
        - D. VENT TERMINATION: ALL PLUMBING FIXTURE VENTS TO TERMINATE A MINIMUM OF 36 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM OR TERMINATED 3'-0" ABOVE ANY OUTSIDE AIR INTAKES.
        - E. STORAGE TANK DRAIN: PROVIDE 1-1/4" STORAGE TANK DRAIN TO FS-1 AND 3/4" DRAIN FROM PRESSURE RELIEF VALVE FROM STORAGE TANK PIPE TO FS-1 IN VICINITY
        - F. AIR GAP: ALL PIPING DISCHARGING INTO FLOOR-SINKS, STAND PIPES AND DRAINS TO HAVE A MINIMUM AIR-GAP AS REQUIRED BY LOCAL CODES.
     2. ABOVE GROUND WASTE & VENT:
   - B. WATER PIPING
     1. INSIDE BUILDING:
        - A. COLD WATER, DOMESTIC HOT WATER UNLESS OTHERWISE INDICATED: COPPER TYPE "L", WITH SILVER SOLDER UNLESS OTHERWISE NOTED (95/5 TIN/ANTIMONY SOLDER AT VALVES), WROT COPPER FITTINGS WITHIN BUILDING ABOVE GROUND
     2. OUTSIDE BUILDING:
        - A. COLD WATER, BELOW GROUND: COPPER TYPE "K" WITH SILVER SOLDER, WROT COPPER FITTINGS BELOW GROUND
   - D. PROVIDE PIPING SUPPORT AND SEISMIC BRACING PER CPC 313, AND AUTHORITY HAVING JURISDICTION
15. EQUIPMENT AND HARDWARE: SEE FIXTURE SCHEDULE
16. ALL FIXTURES IN ACCESSIBLE RESTROOMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 CBC CHAPTER 11B AND THE LOCAL AUTHORITY HAVING JURISDICTION
17. PLUMBING FIXTURES SHALL BE ISOLATED IN BANKS OR INDEPENDENTLY VIA VALVES
18. NEW OR REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE ACCORDING TO THE METHOD SET IN SEC. 609.9 OF CALIFORNIA PLUMBING CODE
19. THE PREMISE OWNER OR RESPONSIBLE PERSON SHALL HAVE THE BACKFLOW PREVENTION ASSEMBLY TESTED BY A CERTIFIED BACKFLOW ASSEMBLY TESTER AT THE TIME OF INSTALLATION.
20. ALL REQUIRED CLEANOUTS SHOULD BE INSTALLED AS PER SEC. 707.0 & 719.0 OF THE CALIFORNIA PLUMBING CODE.
21. PLUMBING VENT THROUGH ROOF SHALL TERMINATE VERTICALLY NOT LESS THAN ONE (1) FOOT FROM ANY VERTICAL SURFACE AND NOT LESS THAN TEN (10) FEET HORIZONTALLY OR AT LEAST THREE (3) FEET ABOVE ANY WINDOW, DOOR, OPENING, AIR INTAKE OR SHAFT.
22. SANITARY WASTE VENTS SHALL RISE VERTICALLY TO A POINT NOT LESS THAN SIX (6) INCHES IN HEIGHT ABOVE THE FLOOD LEVEL RIM OF THE FIXTURE BEFORE BEING CONNECTED TO ANY OTHER VENT.
23. APPLICANT SHALL CONTACT DIG ALERT / USA / SC PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION OR EARTH DISTURBANCE.

CONTRACTOR SHALL VERIFY AVAILABILITY OF ALL UTILITIES PRIOR TO INITIATION OF CONSTRUCTION

REFIT OF PLUMBING SERVICES RESULTS IN NO NET INCREASE IN CONNECTED FIXTURE UNITS FOR WASTE AND COLD WATER SERVICES

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CITY OF COMMERCE
INCORPORATED JANUARY 24, 1960

Architecture
Interiors
Planning
BOA
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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

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Consultant:

- NOTES, LEGEND,
- SCHEDULES, INDEX,
- ABBREVIATIONS,
- SITE PLAN

P-1

DEMO NOTE:

(1) PREPARE V SERVICE TERMINATION FOR ADDED HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION

(2) DEMO CW, DHW, DHWR (X2) SERVICES, CP (X2) FROM POINTS OF DISCONNECT AT OR ABOVE ROOFLINE; PREPARE POINTS OF DISCONNECT FOR FIT TO NEW SERVICES AT OR ABOVE ROOFLINE TO WATER HEATER

(3) DEMO GAS SERVICES FROM POINTS OF DISCONNECT AT OR BELOW OR ABOVE ROOFLINE; PREPARE POINTS OF DISCONNECT FOR FIT TO NEW SERVICES ABOVE ROOFLINE TO SUB–MAINS AND RUNOUTS TO AC'S, HV'S, MA, AND WH; MAINTAIN POINTS OF DISCONNECT FOR ADDED HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION

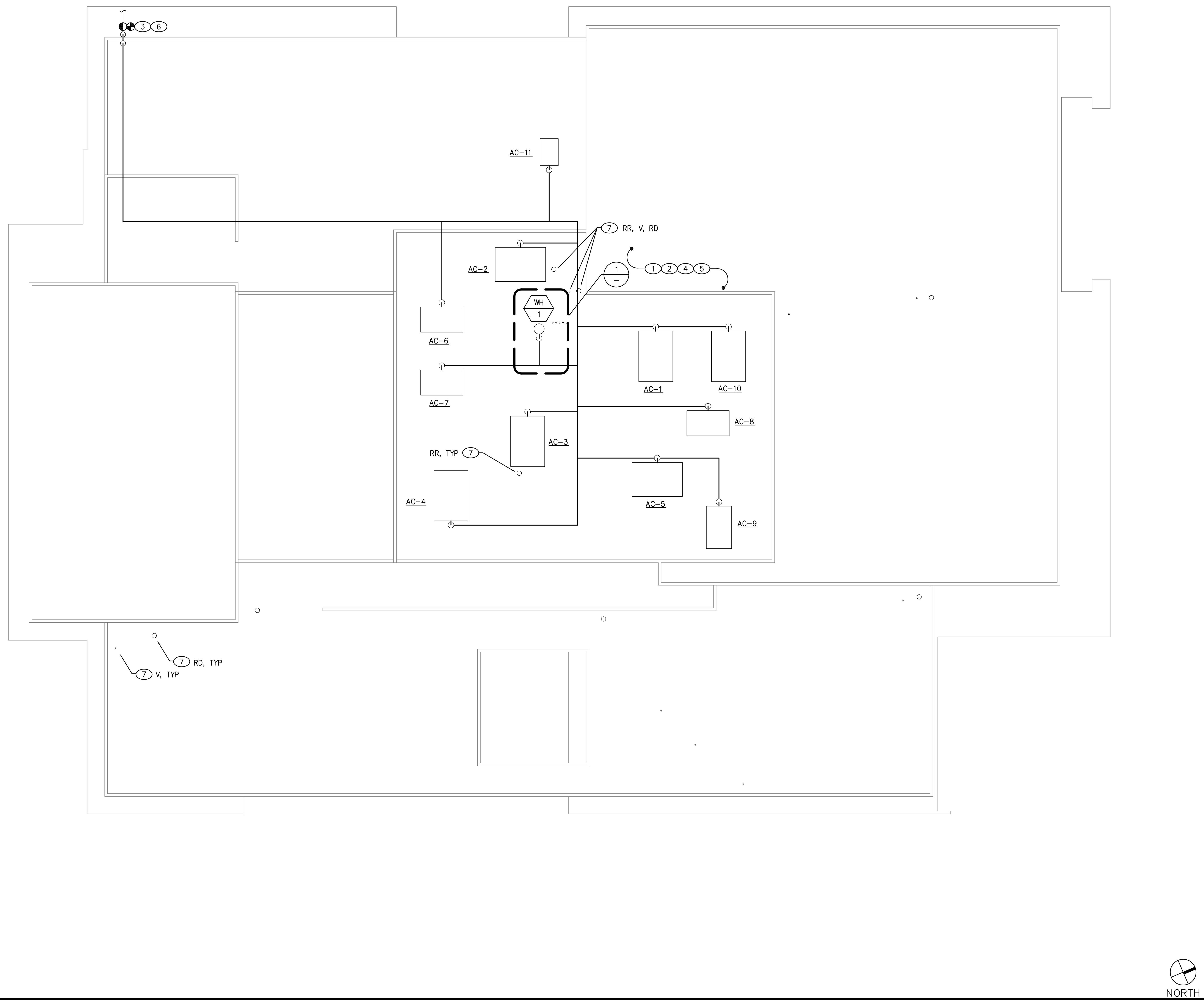
RENO NOTE:

(4) EXTEND V SERVICE TERMINATION WITH STAINLESS STEEL BANDS; PROVIDE OVERSIZED CAST IRON COLLAR WITH SET SCREWS HIGH, (3) SET SCREWS LOW FOR RIGIDITY, CONCEALED WITH IN ROOF CURB FOR RIGIDITY; HARDWARE, INCREASED HEIGHT ABOVE ROOF FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION

(5) EXTEND CW, DHW, DHWR (X2) SERVICES, CP (X2) FROM POINTS OF CONNECTION TO WATER HEATER

(6) SET MANUFACTURED ROOF CURB SYSTEM ABOUT G RISER SERVICE / INSTALLATION; PROVIDE GAS SERVICES FROM POINTS OF CONNECTION AT OR BELOW OR ABOVE ROOFLINE; EXTEND NEW SERVICES ABOVE ROOFLINE TO SUB–MAINS AND RUNOUTS TO AC'S, HV'S, MA, AND WH; PROVIDE WELDED JOINTS CONCEALED WITHIN ROOF CURBS; DEVELOP INSTALLATION FOR SIDE ENTRY OF SERVICES, REMOVEABLE COVER FOR INSPECTION

(7) SEE SHEET P–3 FOR MODIFICATIONS TO ROOF DRAINS, ROOF RECEPTORS, AND VENTS



ROOF PLAN – GAS

SCALE: 1/8"=1'–0"

NOTES:

(A) WATER HEATER; SET IN ENCLOSURE; PROVIDE ANCILLARIES AND TRIM AS IDENTIFIED HEREIN

(B) PROVIDE FLAT BAR / TABBED HARDWARE WITH AIR CRAFT CABLE, TURN–BUCKLE AND CLAMPING HARDWARE, EYE–BOLTS FOR ATTACHMENT TO PLATFORM (SET IN MASTIC)

(C) PROVIDE CONNECTIONS FOR CW, DHW, DHWR, G SERVICES

(D) PROVIDE D SERVICE WITH THREADED OUTPLET, WITH CONNECTION TO WH FOR DHWR SERVICE

(E) PROVIDE TP & R SERVICE FROM CONNECTION AT VALVE ON WH TO TELL–TALE TERMINATION ON ROOF; SECURE FOR MANSAFE INSTALLATION

(F) PROVIDE MANUFACTURED OUTDOOR WATER HEATER ENCLOSURE; SECURE TO PLATFORM (VIA HARDWARE SET IN MASTIC); PROVIDE ADDITIONAL HARDWARE AS NECESSARY (I.E. CLIPS, BOLTS, LAG SCREWS)

(G) PLATFORM BY GENERAL CONTRACTOR

(H) PROVIDE CW, DWH, DHWR (X2) SERVICES WITH CIRC PUMP (X2) FROM POINTS OF CONNECTION ABOVE ROOF LINE TO CONNECTIONS AT EQUIPMENT

(J) PROVIDE G SERVICES FROM RUNOUT FROM ROOFTOP SERVICES

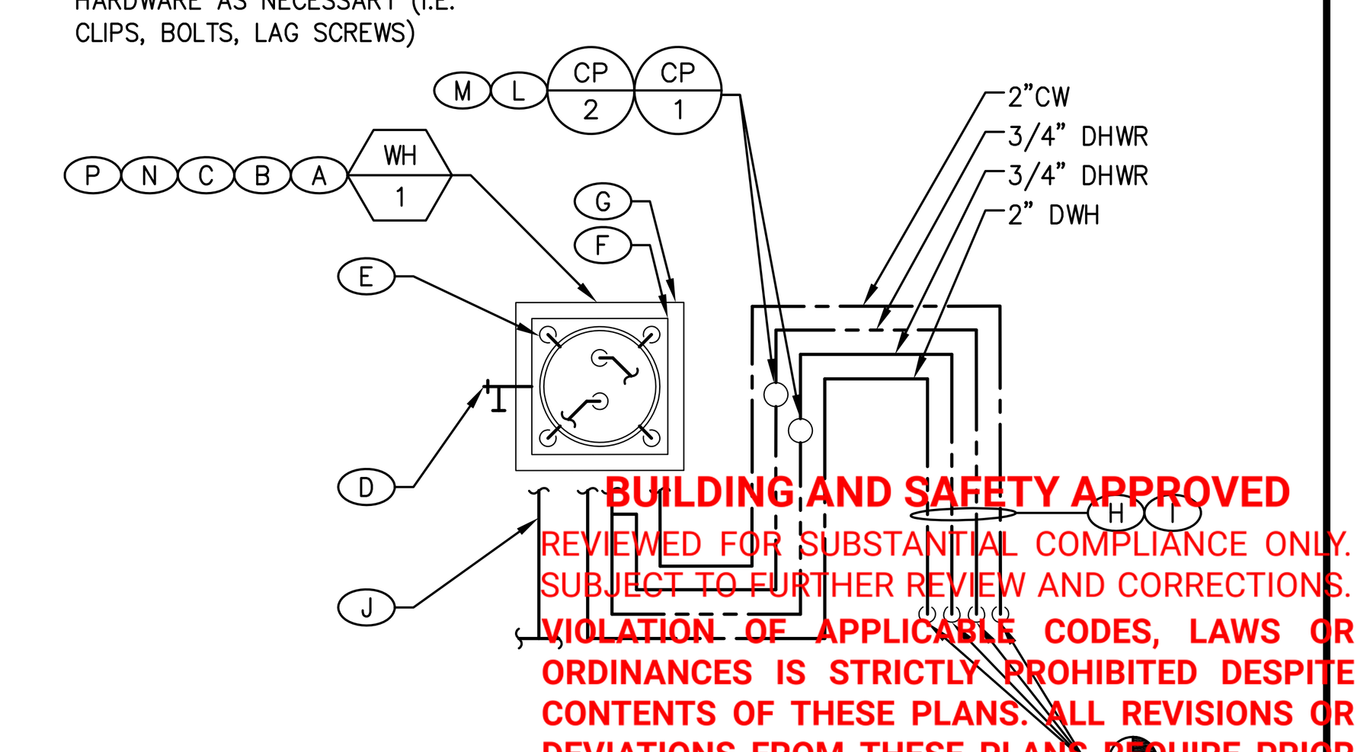
(K) SUPPORT PIPING ON MANUFACTURED PIPE SUPPORTS SET INTO ROOF REHAB, AT EACH ELBOW, AND MAXIMUM 6' ON CENTER

(L) CIRC PUMPS

(M) SET EQUIPMENT WITH SUPPORT FROM PIPING, EACH SIDE IN IMMEDIATE VICINITY

(N) PLATFORM BY GENERAL CONTRACT

(P) ELECTRICAL CONDUIT AND WIRE (TO INCLUDE CONTROL CIRCUITING) BY ELECTRICAL CONTRACTOR



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ENLARGED WATER HEATER PLAN

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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

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Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M–27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

- FLOOR PLAN
-
-

P-2

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DEMO NOTE:

(1) PREPARE ROOF RECEPTOR SERVICE / INSTALLATION FOR MODIFICATION, FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION

(2) DEMO WH, ASSOCIATED ENCLOSURE, ASSOCIATED PLATFORM

(3) FIELD VERIFY VICINITY OF SERVICE UP THROUGH ROOF FOR ADEQUACY OF OPPORTUNITY TO MAINTAIN LOCATION RELATIVE TO EQUIPMENT AND HARDWARE LOCATIONS AND REQUIREMENTS FOR ROOFING; RELOCATE SERVICES ABOVE ROOFLINE AND / OR UP THROUGH ROOF AS NECESSARY; COORDINATE REQUIREMENTS FOR ACCESS AND REPAIR OF STRUCTURE AND TREATMENTS WITH GENERAL CONTRACTOR AS NECESSARY

(4) DEMO ROOF DRAIN / OVERFLOW DRAIN TRIM / GRATE / DOME / DAM TOPSIDE TO BODIES; MAINTAIN MOUNTING AND SET HARDWARE WHERE POSSIBLE, FOR REFIT OF NEW TRIM / GRATE / DOME / DAM; COORDINATE FIT OF ROOF INSULATION TO EXISTING ROOF DRAINS / OVERFLOW DRAINS

RENO NOTE:

(5) SET MANUFACTURED ROOF CURB SYSTEM ABOUT ROOF RECEPTOR SERVICE / INSTALLATION FOR INSTALLATION OF INCREASED THICKNESS OF ROOF INSULATION; DEVELOP NEW CONDENSATE DRAIN / DOMESTIC HOT WATER DRAIN AND TP&R SERVICES; DEVELOP INSTALLATION FOR SIDE ENTRY OF SERVICES, REMOVEABLE COVER FOR INSPECTION

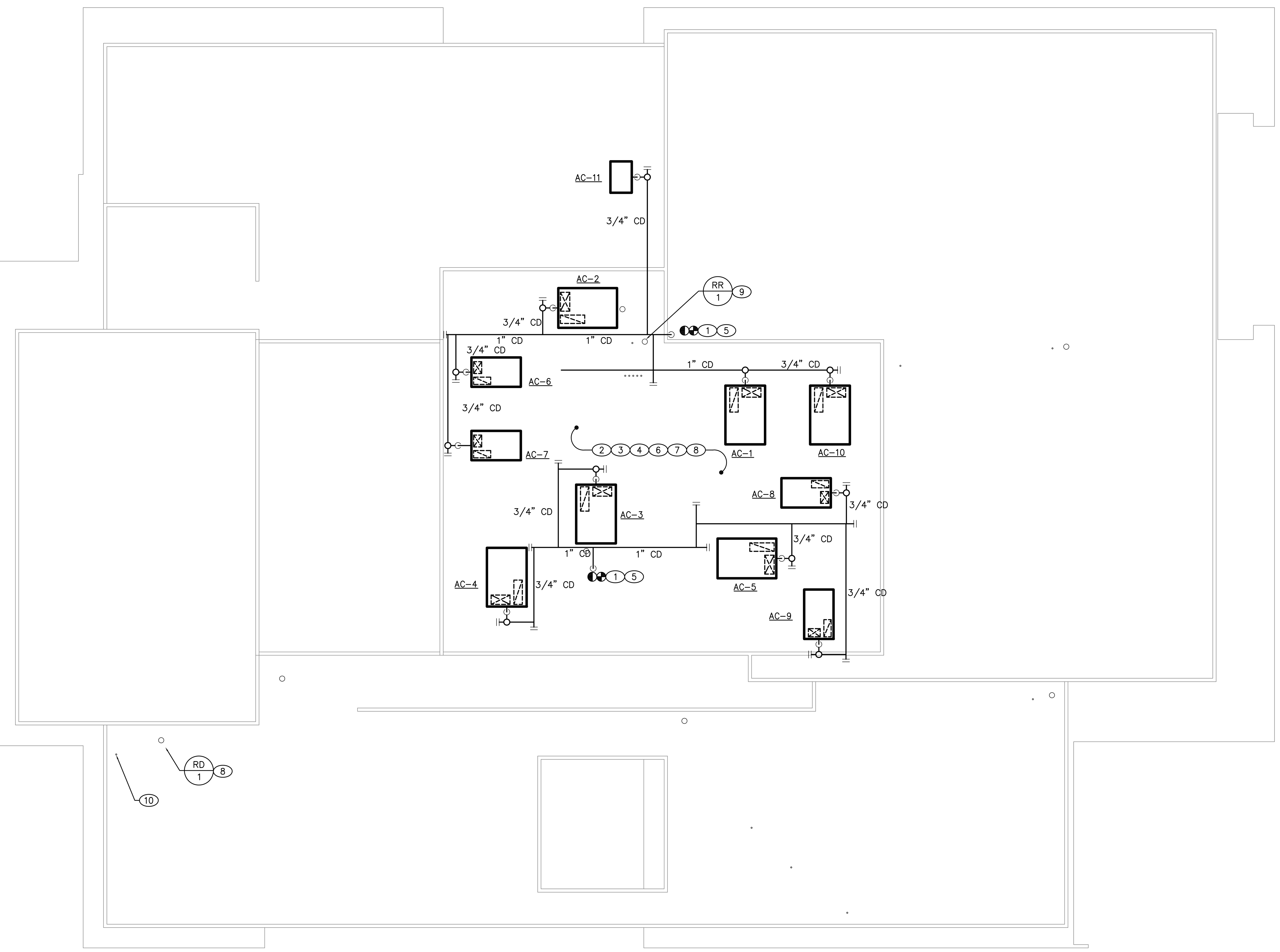
(6) PROVIDE WH, ASSOCIATED ENCLOSURE, ASSOCIATED PLATFORM; SECURE WH WITHIN ENCLOSURE, ENCLOSURE TO PLATFORM, PLATFORM TO STRUCTURE; PROVIDE SEISMIC RESTRAINT FOR WH TO STRUCTURE VIA ADDITIONAL MOUNTING AND SUPPORT HARDWARE

(7) RELOCATE SERVICES UP THROUGH ROOF RELATIVE TO EQUIPMENT AND HARDWARE LOCATIONS TO ACCOMMODATE REQUIREMENTS FOR ROOFING; RELOCATE SERVICES ABOVE ROOFLINE AND / OR UP THROUGH ROOF AS NECESSARY; COORDINATE REQUIREMENTS FOR ACCESS AND REPAIR OF STRUCTURE AND TREATMENTS WITH GENERAL CONTRACTOR AS NECESSARY

(8) PROVIDE ROOF DRAIN / GRATE / DOME / BODIES; MOUNT AND SET HARDWARE, FOR REFIT OF NEW TRIM / GRATE / DOME / DAM; COORDINATE FIT OF ROOF INSULATION TO EXISTING ROOF DRAINS

(9) PROVIDE ROOF RECEPTOR; MOUNT AND SET HARDWARE WHERE POSSIBLE, FOR REFIT OF NEW TRIM / GRATE / DOME / DAM; COORDINATE FIT OF ROOF INSULATION TO EXISTING ROOF RECEPTOR; TYP UNLESS OTHERWISE NOTED

(10) EXTEND V SERVICES TO 3' ABOVE (N) HEIGHT OF ROOF LINE FOR (N) ROOFING



ROOF PLAN – LIBRARY CONDENSATE

SCALE: 1/8"=1'–0"

(A) PIPE ON ROOF; SUPPORT PER CPC TABLE 1210.2.4.1; TABULATION PROVIDED HEREIN

(B) MANUFACTURED PIPE STRAP

(C) MANUFACTURED NUT ASSEMBLY

(D) MANUFACTURED C–CHANNEL HARDWARE

(E) ATTACHMENT PLATE

(F) MANUFACTURED PIPE SUPPORT

(G) ATTACHMENT TO BLOCKING

(H) CANT STRIP

(J) INTERIM HARDWARE

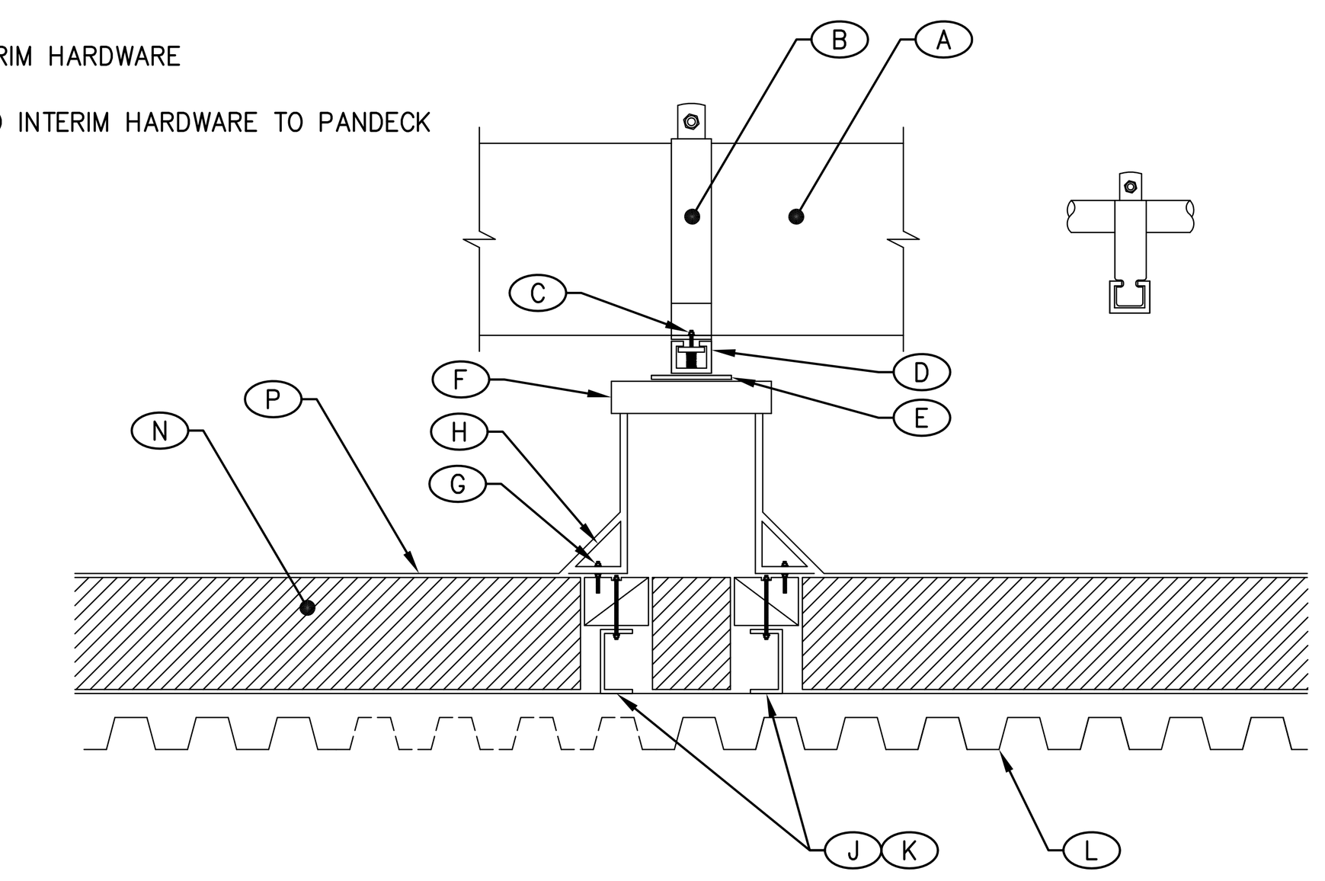
(K) WELD INTERIM HARDWARE TO PANDECK

(L) EXISTING PAN DECK

(M) PAN DECK

(N) (N) RIGID INSULATION

(P) ROOFING



GAS PIPE SUPPORT REQUIREMENTS (CPC Table 1210.2.4.1)	
Size of Pipe	**Pipe Support Distance (maximum)**
1/2" Tubing	4 feet
1/2" Steel Pipe 5/8" or 3/4" Tubing	6 feet
3/4" to 1" Steel Pipe 7/8" or 1" (Horizontal) Tubing	8 feet
1-1/4" or larger (Horizontal) Steel Pipe	10 feet
1-1/4" or larger (Vertical) Steel Pipe 1" or Larger (Vertical) Tubing	Every Floor

PIPE SUPPORT

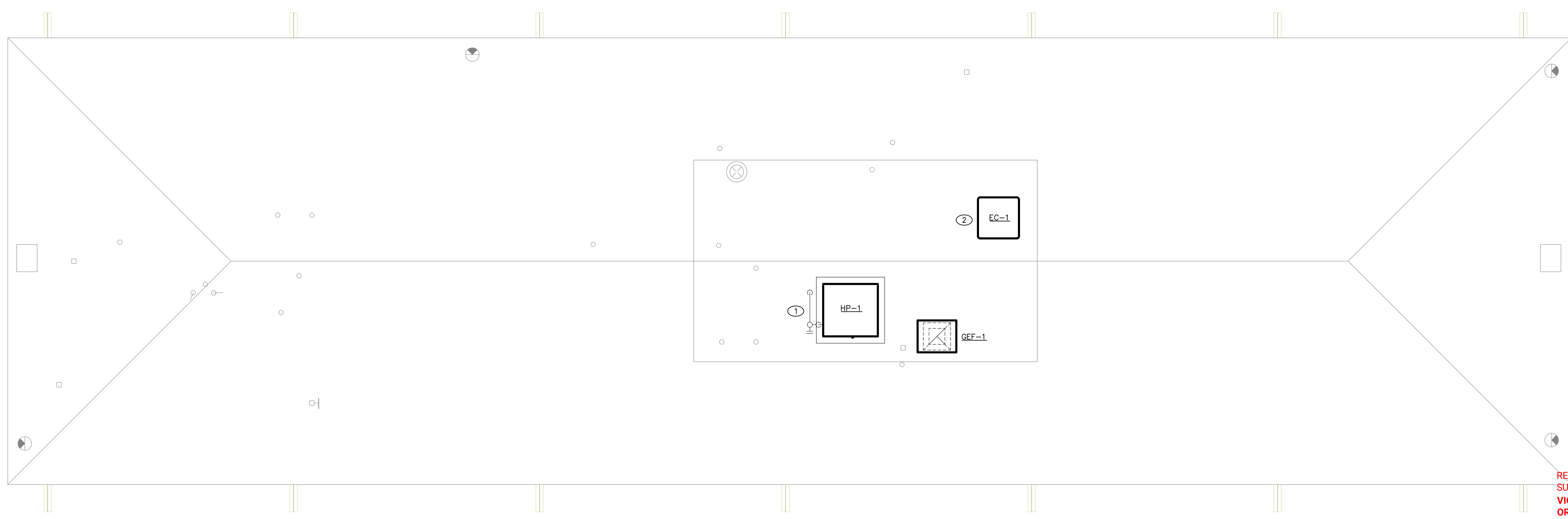
NO SCALE

1

RENO NOTE:

(1) DISCONNECT / RECONNECT EXISTING CONDENSATE SERVICE FOR HP–1; EXTEND AS NECESSARY FOR RELOCATION OF HP–1

(2) DISCONNECT / RECONNECT EXISTING CW AND DRAIN SERVICE FOR EVAPORATIVE COOLER, EC–1; EXTEND AS NECESSARY FOR RELOCATION OF EC–1



ROOF PLAN – SNACK BAR CONDENSATE

SCALE: 1/4"=1'–0"

NORTH

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CITY OF COMMERCE INCORPORATED JANUARY 28, 1960 CALIFORNIA

Architecture
Interiors
Planning

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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
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Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

- ROOF PLAN

P-3

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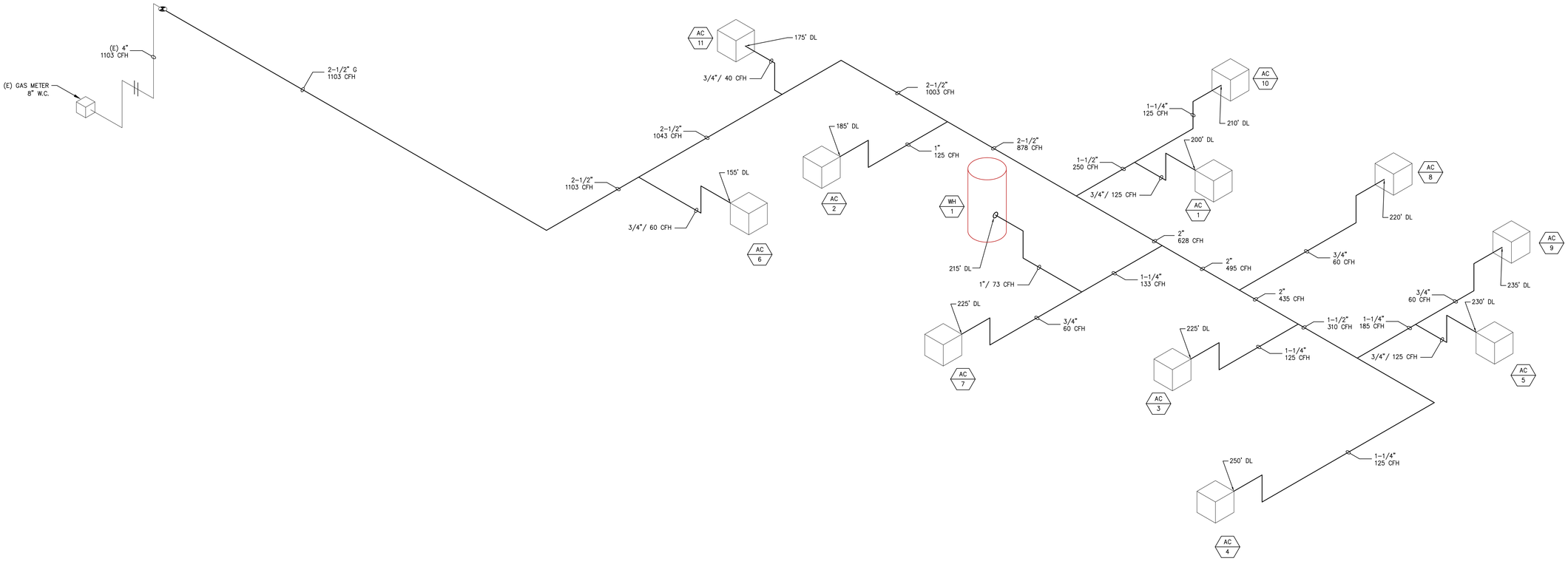
LOW PRESSURE GAS						
GAS PIPE SIZING (NATURAL GAS OF 0.60 SPECIFIC GRAVITY BASED ON PRESSURE DROP OF 0.5 INCH WATER COLUMN)						
PIPE SIZE, INCHES	LENGTH IN FEET					
	125	150	175	200	250	300
1/2	44	40	37	34	30	27
3/4	92	83	77	71	63	57
1	173	157	144	134	119	108
1-1/4	355	322	296	275	244	221
1-1/2	532	482	443	412	366	331
2	1020	928	854	794	704	638
2-1/2	1630	1480	1360	1270	1120	1020
3	2890	2610	2410	2240	1980	1800
4	5890	5330	4910	4560	4050	3670
5	10600	9650	8880	8260	7320	6630
* INFORMATION ADAPTED FROM 2016 CALIFORNIA PLUMBING CODE TABLE 1216.2(1)						

GAS ISOMETRIC

NOTES:

1. GAS SERVICE SHALL BE BLACK STEEL SCHEDULE 40 WITH BLACK SCREWED MALLEABLE IRON FITTINGS
2. EACH WATER HEATER IS RATED AT 73 CFH; EACH AC IS RATED AT 40 CFH; EACH AC IS RATED AT 60 CFH; EACH AC IS RATED AT 125 CFH
3. MAXIMUM DEVELOPED LENGTH FROM GAS METER TO FURTHEST APPLIANCE IS 250' DL
4. PROVIDE GAS SHUT-OFF VALVE FOR EACH OUTLET
5. PROVIDE DIRT-LEG AT EACH APPLIANCE



Architecture
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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	DATE

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
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Consultant:

REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
MECHANICAL
10/2/2020

- GAS ISOMETRICS
-
-

P-4

SCOPE OF WORK:

LIBRARY:

DEMO:

1. DEMO HVAC EQUIPMENT (AC–A, B, C, D, E, F, G, H, J, K, L, AND HV–A, B, AND MAU–A, AND EF–A,B, E)
2. DEMO SUPPLY, RETURN EXHAUST AIR SERVICES TO POINTS OF DISCONNECT ROOF LINE; REMOVE HARDWARE ABOVE ROOFING WITH EQUIPMENT, MAINTAIN / MODIFY SERVICES UP THROUGH THE ROOF FOR RECONNECTION (AC–B, C, F, G, J AND EF–A, B, E)
3. DEMO SUPPLY, RETURN AIR SERVICES ABOVE ROOF LINE TO POINTS OF DISCONNECT, MAINTAIN / MODIFY SERVICES UP THROUGH ROOF FOR RECONNECTION (AC–A, D, E, H, K, AND HV–A, B, AND MAU–A)
4. DEMO SUPPLY, RETURN AIR SERVICES ABOVE ROOF LINE AND WITHIN (OR ACROSS) WALL OF MECHANICAL WELL TO POINTS OF DISCONNECT; MODIFY SERVICES FOR RECONNECTION (AC–A, D, E, H, K, L)

RENO:

5. PROVIDE HVAC EQUIPMENT ASSOCIATED HEREIN; SET TO ROOFTOP INSTALLATION AS IDENTIFIED HEREIN
6. PROVIDE AIR SUPPLY, RETURN, EXHAUST AIR SERVICES AS REQUIRED TO CONNECT NEW EQUIPMENT TO (E) SERVICES MAINTAAINED FOR RECONNECTION
7. COORDINATE REQUIREMENTS FOR INSTALLATION, AND AS IDENTIFIED HEREIN AS PROVIDED UNDER THIS SCOPE OF WORK, BY OTHERS AND AS REQUIRED FOR EQUIPMENT & OR INSTALLATION

SNACK BAR / RESTROOMS:

DEMO:

8. DEMO (E) ROOFTOP PACKAGE UNIT, AC–A. DEMO ASSOCIATED ROOF PLATFORM, SUPPLY AIR, RETURN AIR RISERS AND RUNOUTS.
9. DEMO (E) EVAPORATIVE COOLER, EC–A. DEMO ASSOCIATED SUPPLY AIR SERVICE RISER.
10. DEMO (E) CEILING DIFFUSERS, RETURN GRILLES.
11. DEMO (E) ROOFTOP GREASE EXHAUST FAN, EF–A. DEMO EXHAUST AIR SERVICE RISER.
12. MAINTAIN (E) TYPE 1 GREASE EXHAUST HOOD, H–A
13. DEMO (E) CEILING EXHAUST FAN SERVING RESTROOMS. DEMO (E) UNPROTECTED EXHAUST DISCHARGE ON ROOF AND ASSOCIATED EXHAUST AIR SERVICES.

RENO:

14. PROVIDE ROOFTOP PACKAGE UNIT, AC–1, IN (N) LOCATION. PROVIDE ASSOCIATED ROOF PLATFORM, SUPPLY AIR, RETURN AIR RISERS AND RUNOUTS.
15. PROVIDE EVAPORATIVE COOLER, EC–1, IN (N) LOCATION FOR MAKE–UP AIR SERVICE TO H–A. DEMO ASSOCIATED SUPPLY AIR SERVICE RISER.
16. PROVIDE CEILING DIFFUSERS, RETURN GRILLES.
17. PROVIDE ROOFTOP GREASE EXHAUST FAN, EF–1, IN (E) LOCATION. PROVIDE EXHAUST AIR SERVICE RISER.
18. MAINTAIN (E) TYPE 1 GREASE EXHAUST HOOD, H–A
19. PROVIDE ROOFTOP EXHAUST FANS, EF–6, 7 FOR RESTROOMS. PROVIDE EXHAUST AIR SERVICE RISERS. PROVIDE EXHAUST REGISTERS.

GENERAL:

20. REPAIR TO ROOF OPENINGS BY GENERAL CONTRACTOR
21. ELECTRICAL SERVICES TO INCLUDE DISCONNECT, RECONNECT WHERE POSSIBLE, BY ELECTRICAL CONTRACTOR
22. MODIFICATION OF (E) PLUMBING SERVICES (CONDENSATE, DRAIN) FOR DISCONNECT, RECONNECT BY PLUMBING CONTRACTOR

LEGEND

MARK	DESCRIPTION
	FILTER
	COOLING COIL/HEATING COIL
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	POINT OF CONNECTION
	POINT OF DISCONNECTION
	EXISTING (LIGHT OR UNFILLED)
	NEW (DARK OR HATCHED)
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
	REDUCER
	FLOW
	PRESSURE GAUGE
16"W UG	UNDERGROUND DUCT (AS SHOWN ON FLOOR PLAN)
	90° ELBOW W/ TURNING VANES
	ROUND DUCT RISER
	EXHAUST DUCT SECTION (UP – SA/RA/EA)
	EXHAUST DUCT SECTION (DOWN – SA/RA/EA)
	CEILING DIFFUSER/RETURN GRILLE/EXHAUST GRILLE
	SHOE TAP
MVD	MANUAL VOLUME DAMPER
BDD	BACKDRAFT DAMPER
T	THERMOSTAT
S	TEMPERATURE SENSOR
SD	SMOKE DETECTOR
	PRESSURE GAUGE
	AIR INTAKE
	RETURN AIR INTAKE
	RATED CONSTRUCTION

SHEET INDEX

ABBREVIATIONS

MARK	DESCRIPTION
AC	AIR CONDITIONING UNIT
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
AMB	AMBIENT
BTUH	BRITISH THERMAL UNIT PER HOUR
BHP	BRAKE HORSEPOWER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CSFD	COMBINATION SMOKE FIRE DAMPER
DB	DRY BULB TEMPERATURE
DEG	DEGREE
(E)	EXISTING
EAT	ENTERING AIR TEMPERATURE
EA	EXHAUST AIR
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EER	ENERGY EFFICIENCY RATIO
EFF	EFFICIENCY
EG	EXHAUST GRILLE
ESP	EXTERNAL STATIC PRESSURE
FC	FAN COIL
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FT	FLOW TRANSMITTER/TRANSDUCER
FV	FACE VELOCITY
GA	GAUGE
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HZ	HERTZ
HS	HIGH SPEED STATUS
HSS	HIGH SPEED START STOP
IN	INCHES
IW	INDIRECT WASTE
KW	KILOWATT
LBS	POUNDS
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MFGR	MANUFACTURER
MOCP	MAXIMUM OVERLOAD CURRENT PROTECTION
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
(N)	NEW
NTS	NOT TO SCALE
OADB	OUTSIDE AIR DRY BULB
OPER	OPERATING
OSA	OUTSIDE AIR
PD	PRESSURE DROP
PH	PHASE
POC	POINT OF CONNECTION
POD	POINT OF DISCONNECTION
PSIG	POUNDS PER SQUARE INCH GAUGE
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
RA	RETURN AIR
RAR	RETURN AIR REGISTER
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SMBH	SENSIBLE BTUH (X1000)
SD	SMOKE DETECTOR
SR	SUPPLY REGISTER
SL	SOUND LINED
TEMP	TEMPERATURE
TMBH	TOTAL BTUH (1000)
TYP	TYPICAL
TG	TRANSFER GRILLE
TP	TRANSFER PUMP
TSP	TOTAL STATIC PRESSURE
V	VOLTS
VVT	VARIABLE VOLUME TEMPERATURE
WB	WET BULB TEMPERATURE
W.C.	WATER COLUMN

GENERAL NOTES

1. CODE COMPLIANCE: ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY:
   - A. CALIFORNIA BUILDING CODE (2019)
   - B. CALIFORNIA MECHANICAL CODE (2019)
   - C. CALIFORNIA PLUMBING CODE (2019)
   - D. CALIFORNIA ELECTRICAL CODE (2019)
   - E. CALIFORNIA ADMINISTRATIVE CODE TITLE 24 (2019)

   NOTHING IN THESE DRAWINGS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING WITH THESE CODES OR OTHER APPLICABLE CODES APPLICABLE TO THIS PROJECT.
2. SPECIFICATIONS AS PROVIDED FOR THE CONSTRUCTION OF THE SHELL BUILDING SHALL BE CONSIDERED AS PART OF THIS CONTRACT DOCUMENT. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS AND/OR SPECIFICATIONS OR WITH CODE REQUIREMENTS, THE NOTE SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.

00002 THE CONTRACTOR SHALL FURNISH ALL PERMITS. PERMIT FEES SHALL BE INTERNALLY PROCESSED THROUGH THE CITY OF LONG BEACH (AS OWNER, AND AS AUTHORITY HAVING JURISDICTION).

4. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL NEW HVAC SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO REFLECT EQUIPMENT AND HARDWARE FOR SPECIFIC MANUFACTURERS AND MODEL NUMBERS, AND FOR SIZES AND ARRANGEMENTS OF PROPOSED INSTALLATION. INSTALLATIONS COMMENSURATE TO AND DEVIANT FROM PLANS AS IDENTIFIED HEREIN SHALL BE APPROVED IN WRITING FOR SAID SUBMITTALS.
6. INSTALLATIONS SHALL BE PLUMB AND LEVEL AND CRAFTSMAN–LIKE. EQUIPMENT AND HARDWARE SHALL BE ACCESSIBLE UPON INSTALLATION.
7. REPRESENTATIVE OF THE OWNER INSPECTIONS TO BE MADE AND DUCTWORK APPROVED BEFORE COVERING WITH INSULATION.
8. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITERS' LABEL (UL) AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED PER CMC 307.1 AND TABLE 1701.1
9. THE CONTRACTOR SHALL NOT BORE, NOTCH OR IN ANY WAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE ARCHITECT.
10. THE CONTRACTOR SHALL PROVIDE SUPPORT FOR ALL FIXTURES AND MECHANICAL EQUIPMENT TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE UNIFORM BUILDING CODE, SMACNA STANDARDS, AND ALL LOCAL ORDINANCES.
11. THE CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS, SERVICE REQUIREMENTS AND EXACT LOCATIONS OF SERVICE FACILITIES BEFORE SUBMITTING BID. FIELD VERIFY ALL MEASUREMENTS AND COORDINATE WORK WITH ALL TRADES.
12. REFER TO THE (E) REFLECTED CEILING PLAN AND THE (E) ARCHITECTURAL FLOOR PLANS FOR THE EXACT LOCATIONS OF ALL LIGHTING FIXTURES AND REGISTERS.
13. THE CONTRACTOR SHALL PROVIDE A SET OF AS–BUILT DRAWINGS INDICATING ALL CHANGES MADE DURING CONSTRUCTION AND ANY DEVIATIONS FROM THE MECHANICAL DRAWINGS.
14. DUCT INSULATION AND LINING SHALL BE INSTALLED IN COMPLIANCE WITH CHAPTER 6 OF THE UNIFORM MECHANICAL CODE AND TITLE 24, INSULATE ALL JOINTS, FITTINGS AND FLANGES. DUCT INSULATION MATERIALS SHALL BE AS FOLLOWS:
   - A. DUCT WRAP: 1–1/2", 3/4# PCF WRAP INSULATION, U=0.27 AT 50°F (ASTM C 177), WITH FSK VAPOR BARRIER AND 2" STAPLING FLANGE; ALL PRODUCTS TO HAVE A 25 FLAME / 50 SMOKE DEVELOPED RATING WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, UL723.
   - B. DUCT LINER: 1" FOR INTERIOR INSTALLATION OR 2" FOR EXTERIOR INSTALLATIONS; 0.25 (FOR 1"), 0.125 (FOR 2") @ 75°F (ASTM C518), MAXIMUM VELOCITY 6000 FPM. INSTALL WITH 100% ADHESIVE COVERAGE, AND PINS PER SMACNA. ALL PRODUCTS TO HAVE A 25 FLAME / 50 SMOKE DEVELOPED RATING WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, UL723.
15. PIPING MATERIALS SHALL BE AS FOLLOWS:
   - A. ACR (REFRIGERANT SUCTION, LIQUID SERVICE):
     1. REFRIGERANT PIPING: SEAMLESS COPPER ACR TUBING, HARD DRAWN; SOLDERED OR BRACED JOINTS WITH 95/5 (TIN/ANTIMONY) SOLDER; WROUGHT COPPER SOLDER JOINT PRESSURE FITTINGS OR WROUGHT COPPER BRAZING FITTING.

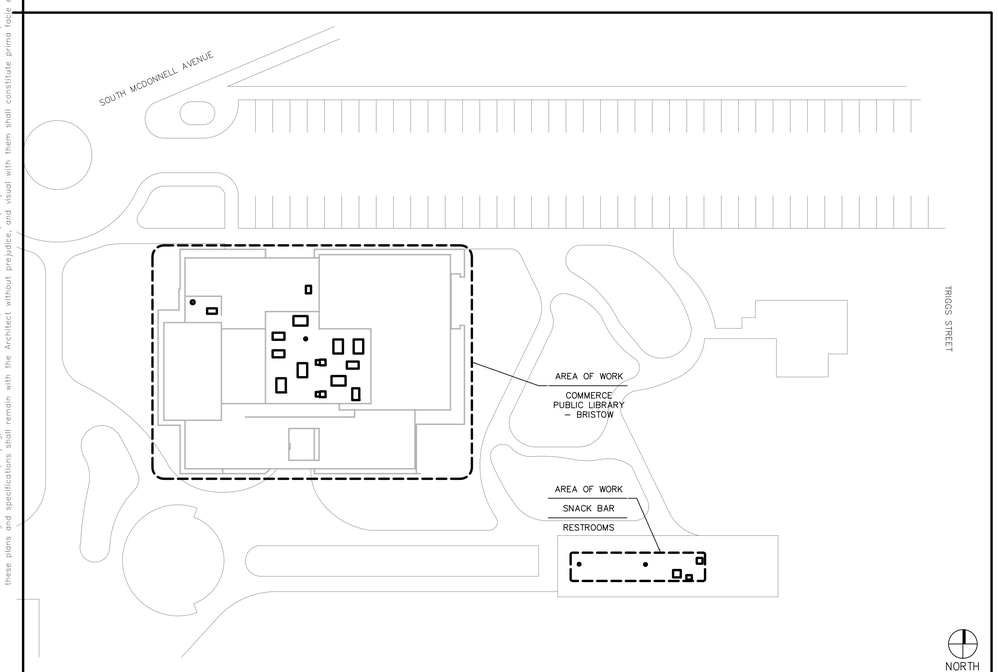
        OR

        TYPE–O SOFT ANNEALED COPPER PIPE FOR SIZES UP TO 3/4". TYPE 1/2H FOR SIZES 3/4" AND LARGER. PROVIDE FLARE PER MANUFACTURER'S RECOMMENDATIONS.
   - B. DRAIN:
     1. SEAMLESS DRAWN COPPER TYPE "M", ASTM B88; WROT COPPER SOLDER JOINT FITTINGS, ANSI/ASME B16.22; 95/5 TIN/ANTIMONY SOLDER.
   - C. ALL EQUIPMENT AND APPLIANCES FOR FIXED INSTALLATION SHALL BE SECURELY FASTENED IN PLACE PER BUILDING CODE REQUIREMENTS.
16. SHEET METAL DUCTS FOR HVAC SYSTEMS SHALL BE GALVANIZED STEEL AND CONSTRUCTION, SUPPORT AND INSULATION SHALL COMPLY WITH 2001 CALIFORNIA MECHANICAL CODE TABLES 6A, 6B, 6D AND 6E, UNLESS OTHERWISE INDICATED. ROUND DUCT SHALL BE OF SPIRAL SEAM CONSTRUCTION. GAGE THICKNESS SHALL BE AS FOLLOWS:

RECTANGULAR DUCT MAXIMUM WIDTH/LENGTH	GAGE	DUCT DIAMETER
≤ 12"	26	14"
12" < D ≤ 30"	24	23"
30" < D ≤ 54"	22	–
54" < D < 60"	20	–

   ALL GIRTH JOINTS PERMISSIBLE PER THE UMC. DUCT DIMENSIONS ARE NET INSIDE DIMENSIONS. LINED DUCTS SHALL BE INCREASED IN SIZE ACCORDINGLY.
   FLEX DUCT CONNECTIONS SHALL BE DUCTMATE INDUSTRIES PROFLEX FLEXIBLE DUCT CONNECTOR, NFPA 90A, 90B, 701 LISTED
17. FURNISH EQUIPMENT AS SCHEDULED HEREIN.
18. PROVIDE FOR CONTROLS AS FURNISHED AND INSTALLED BY CAMPUS VENDOR (SIEMENS). COORDINATE MEASURES FOR COMPLETION OF INSTALLATION BY CAMPUS VENDOR. INSTALLATION SHALL ENTAIL OPERATION OF PACKAGE UNIT SERVICES (HAVC, HV, AND LOCAL EXHAUST AND KITCHEN GREASE EXHAUST). SERVICES AND OPERATION SHALL BE COMMENSURATE WITH EXISTING OPERATIONS (TO INCLUDE MAINTENANCE AND RE–FIT OF ALL INTERLOCKS OF ANCILLARY EQUIPMENT AND HARDWARE) AND NETWORK INTERFACE VIA BACNET MODULES ON AC UNITS (AND HARDWAR AS AVAILABLE FOR HV UNITS, OR STANDALONE MODULES AS PORVIDED BY VENDOR), AND PROGRAMMING AND ANNUNCIATION COMMENSURATE WITH CITY STANDARDS AS PROVIDED BY CAMPUS VENDOR. CONTRACTUAL ARRANGEMENTS PER CITY OF COMMERCE AND CAMPUS VENDOR.
19. PROVIDE START–UP AND COMMISSIONING OF HVAC INSTALLATION (COMPLETE, FOR ANY AND ALL EQUIPMENT PROVIDED UNDER THIS SCOPE OF WORK) TO INCLUDE THE FOLLOWING:
   - A. DEMONSTRATION OF POINT–BY–POINT OPERATION OF EQUIPMENT (TO INCLUDE FAN, HEATING, COOLING, CYCLING, ECONOMIZER, INTERLOCKS, SCHEDULING, OPERATION OF (E) SMOKE DETECTORS TO SHUT DOWN ASSOCIATED AC UNITS AS IDENTIFIED HEREIN, ET AL.) TO OWNER (OR TO OWNER'S REPRESENTATIVE).
   - B. PROVIDE WRITTEN REPORT, TO INCLUDE DOCUMENTATION OF START–UP, COMMISSIONING PROCEDURES, RESULTS OF DEMONSTRATION, AND ACCEPTANCE BY OWNER (OR OWNER'S REPRESENTATIVE).
   - C. INSTALLATION SHALL ENTAIL OPERATION OF PACKAGE UNIT SERVICES (HAVC, HV, AND LOCAL EXHAUST AND KITCHEN GREASE EXHAUST). SERVICES AND OPERATION
20. THE CONTRACTOR SHALL GUARANTEE HIS WORK (MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT) FOR A PERIOD OF ONE YEAR AND SHALL CORRECT DEFECTS TO THE SATISFACTION OF THE ARCHITECT AND THE OWNER, WITHOUT ANY ADDITIONAL COST.
21. CONTRACTOR TO VERIFY LOCATION OF EQUIPMENT BASED ON FIELD CONDITIONS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT AND HARDWARE (TO INCLUDE SERVICE CLEARANCE REQUIREMENTS, DUCT LAYOUTS, AND POINTS OF CONNECTIONS FOR ALL SERVICES) PROVIDED UNDER THIS SCOPE OF WORK FOR APPROVAL BY OWNER'S REPRESENTATIVE

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO IDENTIFY MEASURES FOR DEMOLITION AND RENOVATION AS NECESSARY TO ACCOMPLISH INSTALLATION OF NEW EQUIPMENT AS IDENTIFIED HEREIN FOR REVIEW BY OWNER'S REPRESENTATIVES PRIOR TO DEMOLITION AND FABRIATION



SITE PLAN

SCALE: 1/32"=1'–0"

Architecture
Interiors
Planning

BOA

1511 Cota Ave. Long Beach, CA 90813 Tel. 562–912–7300

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY

Designer: –
CAD Draft: –
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Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
MR CHEDI ALWEIZE, CITY MANAGER, CITY HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

- GENERAL NOTES, LEGEND, SCOPE OF WORK, SITE PLAN

M1.0

G:\Project Files\2860 Commerce Bristow Library HVAC&Roof Replacement\01-Drawings\01-Rev\2860 Bristow Park Library & Snack Bar.rvt
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ROOFTOP PACKAGED UNIT GAS HEAT/ ELECTRIC COOLING

MARK	MFGR & MODEL	SERVICE	LOCATION	CAPACITY TONS	SA FAN			COOLING CAPACITY					HEATING CAPACITY			REFRIGERANT	ELECTRICAL		FILTERS IN...QTY	OSA CFM	UNIT OPER WT LBS	REMARKS
					AIRFLOW CFM	ESP "WC	HP	EDB / EWB °F	TOTAL MBH	SENSIBLE MBH	AMBIENT AIR	EER (SEER)	MBH (INPUT)	MBH (OUTPUT)	AFUE %	TYPE	V/PH	FLA MCA MOCP				
AC-1	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	227	1145	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY OSA ECONOMIZER WITH REMOTE BAROMETRIC RELIEF, FOR INSTALLATION ON ROOF PLATFORM
AC-2	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	330	1113	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR DOWN DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY ECONOMIZER WITH INTEGRAL BAROMETRIC RELIEF, CUSTOM THIRD PARTY 24" HIGH PLENUM CURB
AC-3	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	274	1113	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR DOWN DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY ECONOMIZER WITH INTEGRAL BAROMETRIC RELIEF, CUSTOM THIRD PARTY 24" HIGH PLENUM CURB
AC-4	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	150	1145	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY OSA ECONOMIZER WITH REMOTE BAROMETRIC RELIEF, FOR INSTALLATION ON ROOF PLATFORM
AC-5	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	224	1145	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY OSA ECONOMIZER WITH REMOTE BAROMETRIC RELIEF, FOR INSTALLATION ON ROOF PLATFORM
AC-6	CARRIER 48FCLA06A2A5	MEETING ROOM	LIBRARY ROOF	5	2000	0.5	0.84	80 / 67	59.3	44.73	95	14.0	60	49	81.0	410A	208 / 3	25.08 31 45	16x25x2...2 MERV 13	300	785	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR DOWN DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY ECONOMIZER WITH INTEGRAL BAROMETRIC RELIEF, CUSTOM THIRD PARTY 24" HIGH PLENUM CURB
AC-7	CARRIER 48FCLA06A2A5	MEETING ROOM	LIBRARY ROOF	5	2000	0.5	0.84	80 / 67	59.3	44.73	95	14.0	60	49	81.0	410A	208 / 3	25.08 31 45	16x25x2...2 MERV 13	300	785	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR DOWN DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY ECONOMIZER WITH INTEGRAL BAROMETRIC RELIEF, CUSTOM THIRD PARTY 24" HIGH PLENUM CURB
AC-8	CARRIER 48FCLA06A2A5	MEETING ROOM	LIBRARY ROOF	5	2000	0.5	0.84	80 / 67	59.3	44.73	95	14.0	60	49	81.0	410A	208 / 3	25.08 31 45	16x25x2...2 MERV 13	109	755	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY OSA ECONOMIZER WITH REMOTE BAROMETRIC RELIEF, FOR INSTALLATION ON ROOF PLATFORM
AC-9	CARRIER 48FCLA06A2A5	MEETING ROOM	LIBRARY ROOF	5	2000	0.5	0.84	80 / 67	59.3	44.73	95	14.0	60	49	81.0	410A	208 / 3	25.08 31 45	16x25x2...2 MERV 13	152	785	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR DOWN DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY ECONOMIZER WITH INTEGRAL BAROMETRIC RELIEF, CUSTOM THIRD PARTY 24" HIGH PLENUM CURB
AC-10	CARRIER 48TCDD08A1A5	LIBRARY OFFICE	LIBRARY ROOF	7.5	3000	0.5	1.49	80 / 67	90.1	68.9	95	12.8	125	103	82	410A	208 / 3	32.88 40 50	16x20x2...4 MERV 13	225	1145	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, CABINET-MOUNTED FACTORY OSA ECONOMIZER WITH REMOTE BAROMETRIC RELIEF, FOR INSTALLATION ON ROOF PLATFORM
AC-11	CARRIER 48VLNE24040J-TP	LIBRARY OFFICE	LIBRARY ROOF	2	801	0.5	.25	80 / 67	23.0	17.1	95	14.0	40	33	81	410A	208 / 1	– 15.2 20	16x20x2...4 MERV 13	55	304	FURNISH WITH BACNET CONTROL / INTERFACE MODULE, FOR SIDE DISCHARGE CONFIGURATION, FOR INSTALLATION ON ROOF PLATFORM

ROOFTOP PACKAGED HEAT PUMP

MARK	MFGR & MODEL	LOCATION	SERVICE	CAPACITY TONS	SA FAN			COOLING CAPACITY					HEATING CAPACITY			ELECTRICAL		FILTERS	OSA CFM	OPER WT LBS	REMARKS
					AIRFLOW CFM	ESP "WC	HP	EDB / EWB	TOTAL MBH	SENSIBLE MBH	AMBIENT AIR	SEER	TOTAL MBH	AMBIENT AIR	COP (HSPF)	V/PH	FLA MCA MOCP				
HP-1	YORK PHE4B4821	ROOF	DINING	4	1600	0.4	3/4	80/67	46.4	32.0	95	14.0	49.2	47	8	230/1	29.1 34.4 50	20X30X1...1	–	496	FURNISH FOR SIDE DISCHARGE CONFIGURATION; PROVIDE INTEGRATED FILTER RACK, MODEL FLTLXL

EXHAUST FAN

MARK	MFGR & MODEL	LOCATION	SERVICE	FAN					MOTOR DATA				OPER WT LBS	REMARKS
				AIRFLOW CFM	ESP "WC	RPM	SONES	BHP (WATTS)	HP (WATTS)	TYPE	V/PH	RPM		
EF-1, 2	GREENHECK GB-141	LIBRARY ROOF	LIBRARY RESTROOM	1600	0.125	939	–	0.26	1/4	–	115/1	1750	125	FURNISH WITH BACKDRAFT DAMPER; FIT UNIT BASE TO ROOF CONSTRUCTION / ELEMENTS TO EMULATE FACTORY CURB BY BUILDING MANUFACTURE
EF-3	COOK GC-320	LIBRARY CEILING SPACE	LIBRARY STORAGE	185	0.25	1365	–	FRACT	(77)	–	115/1	–	25	FURNISH WITH BACK DRAFT DAMPER; ANODIZED GRILLE, DISCONNECT
EF-4	COOK GC-320	LIBRARY CEILING SPACE	LIBRARY RESTROOM	185	0.25	1365	–	FRACT	(77)	–	115/1	–	25	FURNISH WITH BACK DRAFT DAMPER; ANODIZED GRILLE, DISCONNECT
EF-5	COOK 165VH5B	LIBRARY ROOF	LIBRARY KITCHEN	1500	0.25	1273	11.5	40	–	–	–	–	–	FURNISH WITH BACK DRAFT DAMPER; ANODIZED GRILLE, DISCONNECT
EF-6, 7	LOREN COOK ACRUD90R17	RESTROOM	RESTROOM EXHAUST	345	0.25	1305	6.9	53	62	–	115/1	1075	28	FURNISH WITH BACK DRAFT DAMPER; ANODIZED GRILLE, DISCONNECT

GREASE EXHAUST FAN

MARK	MFGR AND MODEL	LOCATION	SERVICE	FAN				MOTOR		SONES	OPER WT LBS	REMARKS
				AIRFLOW CFM	ESP "WC	BHP	RPM	HP WATTS	V/PH			
GEF-1	COOK LPB-135	SNACK BAR ROOF	GREASE RESTROOM EXHAUST	1800	1.25	0.72	1801	3/4	230/1	24	146	FURNISH WITH VENTED ROOF CURB. GREASE TROUGH; PROVIDE INTERLOCK FOR OPERATION WITH ASSOCIATED HOOD

EVAPORATIVE COOLER

MARK	MFGR AND MODEL	LOCATION	SERVICE	AIRFLOW CFM	ESP "WC	MOTOR		OPER WT LBS	REMARKS
						HP	V/PH		
EC-1	ARCTIC CIRCLE ES330	SNACK BAR ROOF	MAKE-UP AIR	1620	0.4	1/3	120/1	175	FURNISH FOR SIDE DISCHARGE CONFIGURATION; PROVIDE INTERLOCK FOR OPERATION WITH ASSOCIATED HOOD, H-A / GEF-1; DISCONNECT / RECONNECT CW AND D SERVICES AS NECESSARY

HEATING VENTILATION UNIT

MARK	MFGR AND MODEL	SERVICE	NATURAL GAS				SUPPLY FAN		ELECTRICAL			OPER WT LBS	REMARKS
			GAS CONNECTION (IN)	CA/FV VENT SIZE (IN)	INPUT MBH	OUTPUT MBH	CFM	MOTOR HP	HP WATTS	VOLTS PHASE	FLA MCA MOCP		
HV-1	REZNOR RDH125	MAKE-UP AIR	–	–	125	101	1000	1/2	–	208 / 3		454	FURNISH WITH BACNET CONTROL / INTERFACE MODULE (AS AVAILABLE, OR FITTED WITH UNIT CONTROLLER PER CAMPUS VENDOR), FOR SIDE DISCHARGE CONFIGURATION, FOR INSTALLATION ON ROOF PLATFORM
HV-2	REZNOR RDH125	MAKE-UP AIR	–	–	125	101	1000	1/2	–	208 / 3		454	FURNISH WITH BACNET CONTROL / INTERFACE MODULE (AS AVAILABLE, OR FITTED WITH UNIT CONTROLLER PER CAMPUS VENDOR), FOR SIDE DISCHARGE CONFIGURATION, FOR INSTALLATION ON ROOF PLATFORM
MA-1	REZNOR RDH175	KITCHEN MAKE-UP AIR	–	–	175	142	1500	1/2	–	208 / 1		600	FURNISH WITH BACNET CONTROL / INTERFACE MODULE (AS AVAILABLE, OR FITTED WITH UNIT CONTROLLER PER CAMPUS VENDOR), FOR SIDE DISCHARGE CONFIGURATION, FOR INSTALLATION ON ROOF PLATFORM

DIFFUSERS, REGISTERS & GRILLES

MARK	MFGR AND MODEL	SERVICE	LOCATION	MOUNTING TYPE	MATERIAL	FRONT BLADES	DAMPER	REMARKS
CD-A	–	CEILING DIFFUSER	VARIOUS	FLANGED	STEEL	–	YES	EXISTING; IDENTIFIED HEREIN FOR REFERENCE ONLY
CD-1	TITUS MCD	CEILING DIFFUSER	SNACK BAR	FRAME	STEEL	MODULAR CORE	YES	FURNISH IN WHITE
SR-A	–	SUPPLY REGISTER	VARIOUS	FLANGED	STEEL	–	YES	EXISTING; IDENTIFIED HEREIN FOR REFERENCE ONLY
RG-A	–	RETURN GRILLE	VARIOUS	FLANGED	STEEL	–	NO	EXISTING; IDENTIFIED HEREIN FOR REFERENCE ONLY
RG-1	TITUS 300L	RETURN GRILLE	SNACK BAR	FRAME	STEEL	LENGTH	YES	FURNISH IN WHITE
RR-A	–	RETURN REGISTER	VARIOUS	FLANGED	STEEL	–	NO	EXISTING; IDENTIFIED HEREIN FOR REFERENCE ONLY
EG-A	–	EXHAUST GRILLE	VARIOUS	FLANGED	STEEL	–	NO	EXISTING; IDENTIFIED HEREIN FOR REFERENCE ONLY
ER-1	TITUS 350S	EXHAUST REGISTER	SNACK BAR RESTROOM	EXPOSED	STEEL	HORIZONTAL	YES	FURNISH IN WHITE

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ECONOMIZERS MEET CALIFORNIA ENERGY COMMISSION TITLE 24-2016 MANDATORY SECTION 120.2.I FOR FAULT DETECTION AND DIAGNOSTIC CONTROLS (JADE HJW10)

Architecture
Interiors
Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO DATE REV: BY: ORG:

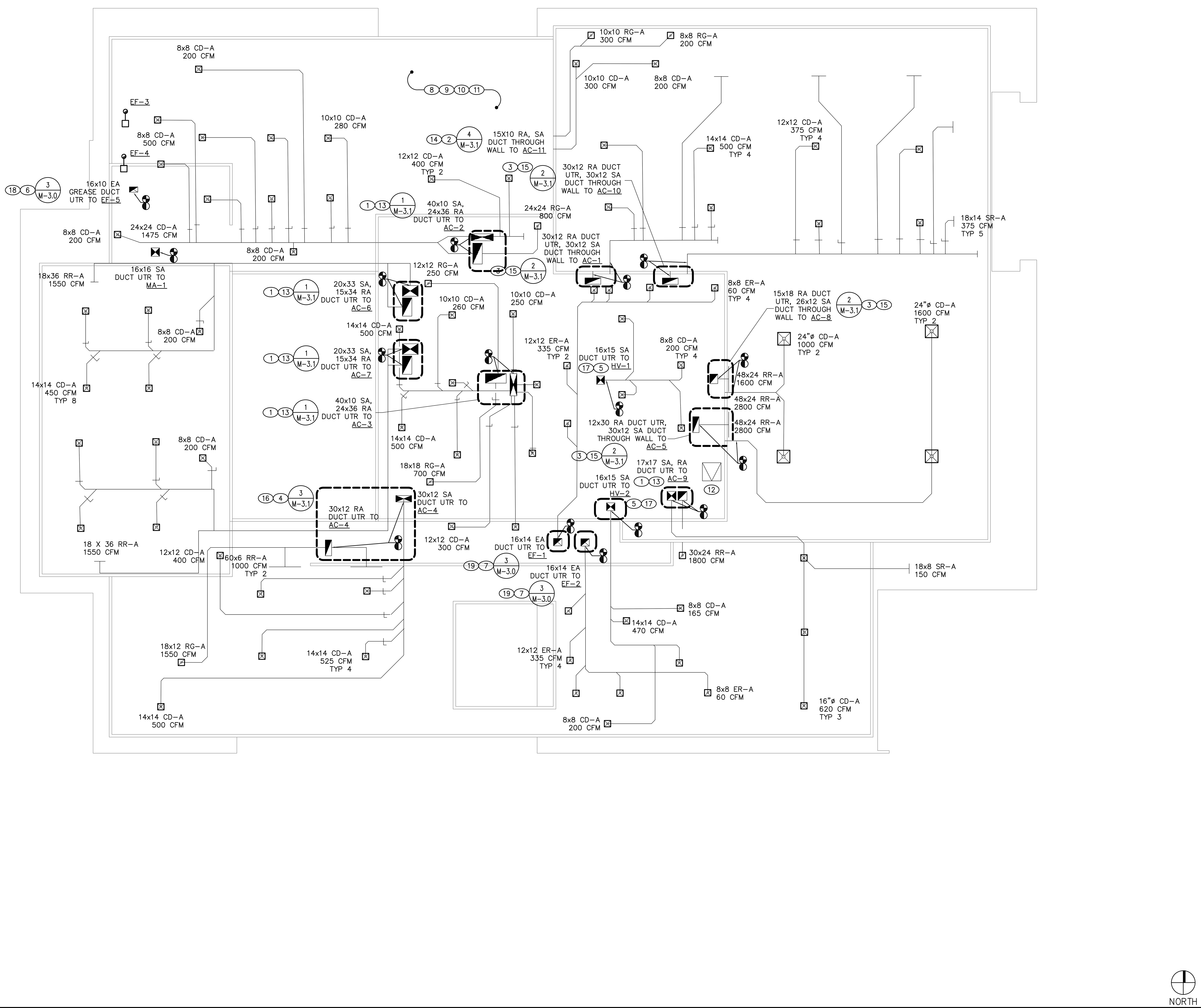
Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client: MR. CHOI AUWUEE, CITY OF COMMERCE CITY HALL 2535 COMMERCE WAY, COMMERCE, CA 90040

Consultant:

SCHEDULES

M1.1



8x8 CD–A 200 CFM
EF–3
EF–4
8x8 CD–A 500 CFM
10x10 CD–A 280 CFM
8 9 10 11
14 2 4 M–3.1 15X10 RA, SA DUCT THROUGH WALL TO AC–11
12x12 CD–A 400 CFM TYP 2
3 15 2 M–3.1
30x12 RA DUCT UTR, 30x12 SA DUCT THROUGH WALL TO AC–10
10x10 RG–A 300 CFM
8x8 RG–A 200 CFM
10x10 CD–A 300 CFM
8x8 CD–A 200 CFM
14x14 CD–A 500 CFM TYP 4
12x12 CD–A 375 CFM TYP 4
18x14 SR–A 375 CFM TYP 5
18 6 3 M–3.0 16x10 EA GREASE DUCT UTR TO EF–5
1 13 1 M–3.1 40x10 SA, 24x36 RA DUCT UTR TO AC–2
24x24 RG–A 800 CFM
8x8 CD–A 200 CFM
24x24 CD–A 1475 CFM
8x8 CD–A 200 CFM
30x12 RA DUCT UTR, 30x12 SA DUCT THROUGH WALL TO AC–1
18x36 RR–A 1550 CFM
16x16 SA DUCT UTR TO MA–1
12x12 RG–A 250 CFM
3 15 2 M–3.1
1 13 1 M–3.1 20x33 SA, 15x34 RA DUCT UTR TO AC–6
10x10 CD–A 260 CFM
10x10 CD–A 250 CFM
8x8 ER–A 60 CFM TYP 4
15x18 RA DUCT UTR, 26x12 SA DUCT THROUGH WALL TO AC–8 2 M–3.1 3 15
24"ø CD–A 1600 CFM TYP 2
8x8 CD–A 200 CFM
14x14 CD–A 500 CFM
12x12 ER–A 335 CFM TYP 2
16x15 SA DUCT UTR TO HV–1 17 5
8x8 CD–A 200 CFM TYP 4
24"ø CD–A 1000 CFM TYP 2
1 13 1 M–3.1 20x33 SA, 15x34 RA DUCT UTR TO AC–7
48x24 RR–A 1600 CFM
48x24 RR–A 2800 CFM
48x24 RR–A 2800 CFM
14x14 CD–A 450 CFM TYP 8
1 13 1 M–3.1 40x10 SA, 24x36 RA DUCT UTR TO AC–3
14x14 CD–A 500 CFM
12x30 RA DUCT UTR, 30x12 SA DUCT THROUGH WALL TO AC–5
3 15 2 M–3.1
8x8 CD–A 200 CFM
18x18 RG–A 700 CFM
17x17 SA, RA DUCT UTR TO AC–9 1 13
12
16x15 SA DUCT UTR TO HV–2 5 17
16 4 3 M–3.1 30x12 RA DUCT UTR TO AC–4
30x12 SA DUCT UTR TO AC–4
18 X 36 RR–A 1550 CFM
12x12 CD–A 400 CFM
60x6 RR–A 1000 CFM TYP 2
12x12 CD–A 300 CFM
16x14 EA DUCT UTR TO EF–1
19 7 3 M–3.0
16x14 EA DUCT UTR TO EF–2
19 7 3 M–3.0
30x24 RR–A 1800 CFM
18x8 SR–A 150 CFM
8x8 CD–A 165 CFM
14x14 CD–A 470 CFM
18x12 RG–A 1550 CFM
14x14 CD–A 525 CFM TYP 4
12x12 ER–A 335 CFM TYP 4
8x8 ER–A 60 CFM
16"ø CD–A 620 CFM TYP 3
14x14 CD–A 500 CFM
8x8 CD–A 200 CFM
NORTH

DEMO / RENO FLOOR PLAN

SCALE: 1/8"=1'–0"

NOTES

DEMO:

1. DEMO SA, RA SERVICES TO POINTS OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCOJNECTION FOR FIT TO INTERIM HARDWARE / INTEGRATION TO SA, RA SERVICES AT ROOF LINE, UP INTO CUSTOM / ADAPTER CURB, UP TO AC EQUIPMENT; TYP AC–B, C, F, G, J
2. DEMO SA, RA SERVICES TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; DEMO SA, RA SERVICES TO 3'–0" (+/–) BEYOND WALL; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–L
3. DEMO SA SERVICE TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; DEMO SA SERVICES TO 3'–0" (+/–) BEYOND WALL; DEMO RA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–A, E, H K
4. DEMO SA, RA SERVICES TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–D
5. DEMO SA SERVICES TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP HV–A, B AND MA–A
6. DEMO EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT
7. DEMO EA SERVICE TO POINT OF DISCONECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO AC EQUIPMENT; PREPARE FOR SPECIALTY HARDWARE FOR GREASE EXHAUST SERVICE; TYP EF–A, B
8. MAINTAIN CD'S, SR'S, RG'S, RR'S, EG'S IN SPACE; NO MODIFICATIONS UNLESS OTHERWISE IDENTIFIED HEREIN
9. MAINTAIN SA, RA, EA SERVICE MAINS / LATERALS / PLENUMS IN SPACE; NO MODIFICATIONS UNLESS OTHERWISE IDENTIFIED HEREIN
10. DEMO CONTROL CIRCUITING; PREPARE FOR REFIT OF NEW CONTROL CIRCUITING
11. DEMO / MAINTAIN / MODIFY THERMOSTATS ASSOCIATED WITH AC EQUIPMENT
12. (E) ROOF ACCESS

RENO:

13. REDEVELOP SA, RA SERVICES TO POINTS OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCOJNECTION FOR FIT TO INTERIM HARDWARE / INTEGRATION TO SA, RA SERVICES AT ROOF LINE, UP INTO CUSTOM / ADAPTER CURB, UP TO AC EQUIPMENT; TYP AC–2, 3, 6, 7, 9
14. REDEVELOP SA, RA SERVICES TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; DEMO SA, RA SERVICES TO 3'–0" (+/–) BEYOND WALL; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–11
15. REDEVELOP SA SERVICE TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; DEMO SA SERVICES TO 3'–0" (+/–) BEYOND WALL; DEMO RA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–1, 5, 8 10
16. REDEVELOP SA, RA SERVICES TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC–4
17. REDEVELOP SA SERVICES TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP HV–1, 2 AND MA–1
18. REDEVELOP EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT
19. REDEVELOP EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO AC EQUIPMENT; PREPARE FOR SPECIALTY HARDWARE FOR GREASE EXHAUST SERVICE; TYP EF–1, 2

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ROOFING AND HVAC REPLACEMENT
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Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
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Consultant:

REGISTERED PROFESSIONAL ENGINEER
KEVIN M. FRIEDMAN
No. M–27267
exp. 6/30/21
MECHANICAL
STATE OF CALIFORNIA

- FLOOR PLAN
-
-

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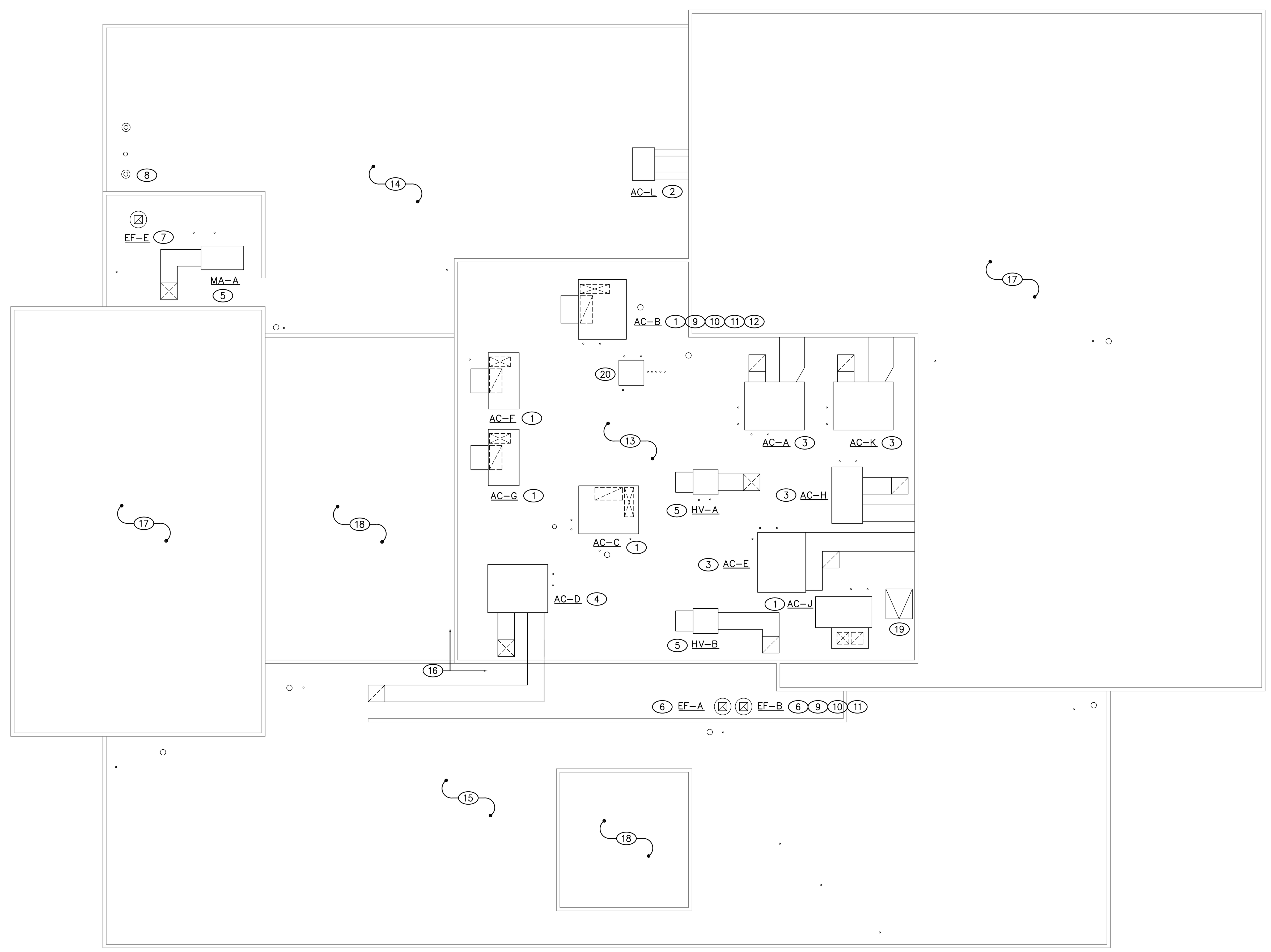

NORTH

DEMO ROOF PLAN

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

NOTES

1. DEMO AC UNIT, ASSOCIATED ROOF CURB; DEMO SA, RA SERVICES TO POINTS OF DISCONECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO SA, RA SERVICES AT ROOF LINE, UP INTO CUSTOM / ADAPTER CURB, UP TO AC EQUIPMENT; TYP AC-B, C, F, G, J
2. DEMO AC UNIT, ASSOCIATED PLATFORM; DEMO SA, RA SERVICES TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-L
3. DEMO AC UNIT, ASSOCIATED PLATFORM; DEMO SA SERVICE TO POINT OF DISCONNECT ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; DEMO RA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-A, E, H, K
4. DEMO AC UNIT, ASSOCIATED PLATFORM; DEMO SA, RA SERVICES TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-D
5. DEMO HV / MA UNIT, ASSOCIATED PLATFORM; DEMO SA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP HV-A, B AND MA-A
6. DEMO EF, ASSOCIATED ROOF CURB; DEMO EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT; TYP EF-A, B
7. DEMO EF, ASSOCIATED ROOF CURB; DEMO EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT; PREPARE FOR SPECIALTY HARDWARE FOR GREASE EXHAUST SERVICE; TYP EF-E
8. DEMO EA SERVICE TERMINATION (ROOF JACK), EA SERVICE TO POINT OF DISCONNECT AT OR ABOVE ROOF LINE; PREPARE POINTS OF DISCONNECT FOR FIT TO INTERIM HARDWARE / INTEGRATION TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EA CURB-MOUNTED EA SERVICE ROOF JACK; TYP FOR SERVICES ASSOCIATED WITH EF-C, D
9. DEMO CONTROL CIRCUITING; PREPARE FOR REFIT OF NEW CONTROL CIRCUITING; TYP ALL AC, EF, HV, MA EQUIPMENT
10. ENLARGED OPENINGS THEREABOUTS SA, RA, EA SERVICES THROUGH WALL BY GENERAL CONTRACTOR; TYP ALL AC, EF, HV, MA EQUIPMENT
11. DEMO OF LOW-VOLTAGE AND LINE VOLTAGE CONDUIT, AND LINE VOLTAGE CIRCUITING BY ELECTRICAL CONTRACTOR AS NECESSARY; TYP ALL AC, EF, HV, MA EQUIPMENT
12. DEMO OF GAS AND CONDENSATE AND WATER SERVICES AS NECESSARY BY PLUMBING CONTRACTOR; TYP ALL AC, WH EQUIPMENT
13. LOW ROOF - "EQUIPMENT WELL"
14. LOW ROOF - OUTBOARD OF SEPARATION WALL
15. LOW ROOF - OUTBOARD OF SEPARATION WALL
16. SEPARATION WALL
17. HIGH ROOF
18. OPEN TO COURTYARD BELOW
19. ROOF ACCESS
20. DEMO OF WH EQUIPMENT BY PLUMBING CONTRACTOR

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BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

1' 4' 8'

Designer: -
CAD Draft: -
Architect: -
Engineer: -
Client: CITY OF COMMERCE
Date Issue: -
Job Number: 2860

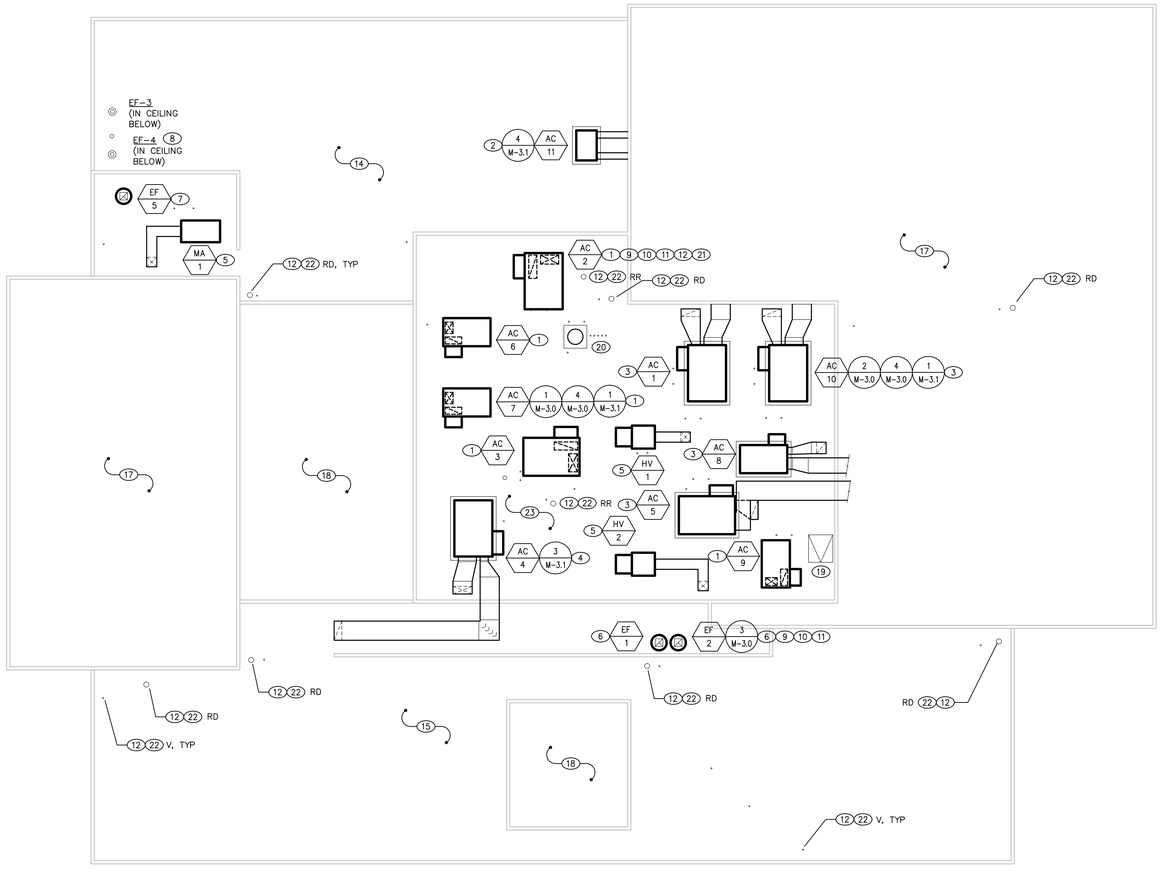
Client:
MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

ROOF PLAN

M2.1



PROPOSED ROOF PLAN

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

NORTH

NOTES

1. PROVIDE AC UNIT, ASSOCIATED ROOF CURB; PROVIDE SA, RA SERVICES AT POINT OF CONNECTION AT OR ABOVE ROOF LINE; FIT TO INTERIM HARDWARE / INTEGRATE TO SA, RA SERVICES AT ROOF LINE, UP INTO CUSTOM / ADAPTER CURB, UP TO AC EQUIPMENT; TYP AC-2, 3, 5, 7, 9
2. PROVIDE AC UNIT, ASSOCIATED PLATFORM; PROVIDE SA, RA SERVICES TO POINT OF CONNECTION ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; PROVIDE CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-11
3. PROVIDE AC UNIT, ASSOCIATED PLATFORM; PROVIDE SA SERVICE TO POINT OF CONNECTION ACROSS WALL AT UNDERSIDE OF ROOF DECK IN ADJACENT SPACE; PROVIDE RA SERVICE TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; PROVIDE CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-1, 5, 8, 10
4. PROVIDE AC UNIT, ASSOCIATED PLATFORM; PROVIDE SA, RA SERVICES TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; PROVIDE CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP AC-4
5. PROVIDE HV / MA UNIT, ASSOCIATED PLATFORM; PROVIDE SA SERVICE TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; PROVIDE CONNECTION OF SA / RA SERVICES TO AC EQUIPMENT; TYP HV-1, 2 AND MA-1
6. PROVIDE EF, ASSOCIATED ROOF CURB; PROVIDE EA SERVICE TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; FIT TO INTERIM HARDWARE / INTEGRATE TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT; TYP EF-1, 2
7. PROVIDE EF, ASSOCIATED ROOF CURB; PROVIDE EA SERVICE TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; FIT TO INTERIM HARDWARE / INTEGRATE TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EF EQUIPMENT; PROVIDE SPECIALTY HARDWARE FOR GREASE EXHAUST SERVICE; TYP EF-5
8. PROVIDE EA SERVICE TERMINATION (ROOF JACK), EA SERVICE TO POINT OF CONNECTION AT OR ABOVE ROOF LINE; FIT TO INTERIM HARDWARE / INTEGRATE TO EA SERVICE AT ROOF LINE, UP INTO ROOF CURB, UP TO EA CURB-MOUNTED EA SERVICE ROOF JACK; TYP FOR SERVICES ASSOCIATED WITH EF-3, 4
9. PROVIDE CONTROL CIRCUITING; REFIT NEW CONTROL CIRCUITING; TYP ALL AC, EF, HV, MA EQUIPMENT
10. ENLARGED OPENINGS THEREABOUTS SA, RA, EA SERVICES THROUGH WALL BY GENERAL CONTRACTOR; TYP ALL AC, EF, HV, MA EQUIPMENT
11. LOW-VOLTAGE AND LINE VOLTAGE CONDUIT, AND LINE VOLTAGE CIRCUITING BY ELECTRICAL CONTRACTOR AS NECESSARY; TYP ALL AC, EF, HV, MA EQUIPMENT
12. MODIFICATIONS TO PLUMBING SERVICES (GAS, CONDENSATE, COLD WATER, DOMESTIC HOT WATER, DOMESTIC HOT WATER RETURN, ROOF DRAINS, ROOF RECEPTACLES) BY PLUMBING CONTRACTOR; TYP ALL AC, WH EQUIPMENT, ROOF DRAIN SERVICES
13. LOW ROOF - "EQUIPMENT WELL"
14. LOW ROOF - OUTBOARD OF SEPARATION WALL
15. LOW ROOF - OUTBOARD OF SEPARATION WALL
16. SEPARATION WALL
17. HIGH ROOF
18. OPEN TO COURTYARD BELOW
19. ROOF ACCESS
20. WH EQUIPMENT BY PLUMBING CONTRACTOR
21. PROVIDE DUCT SMOKE DETECTOR TO SHUT DOWN AIRFLOW UPON DETECTION OF SMOKE; TYP ALL AC EQUIPMENT
22. SEE SHEET P-3 FOR MODIFICATIONS TO ROOF DRAINS, ROOF RECEPTORS, AND VENTS; TYP UNLESS OTHERWISE NOTED
23. INDEPENDENT ELECTRICAL DISCONNECT PROVIDED FOR ALL EQUIPMENT GREATER THAN 50V; ROOF RECEPTACLE LOCATED WITHIN 24 FEET OF ALL EQUIPMENT; SEE ELECTRICAL PLANS

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NO. DATE REMARKS BY CHK

Designer: --
CAD Draft: --
Architect: --
Engineer: --
Client: CITY OF COMMERCE
Date Issue: --
Job Number: 2860

Client:
MR. CHIDI AUWUETE, CITY
OF COMMERCE CITY HALL
2535 COMMERCE WAY
COMMERCE, CA 90040

Consultant:

CERTIFIED PROFESSIONAL ENGINEER
REGISTERED PROFESSIONAL ENGINEER
MECHANICAL
STATE OF CALIFORNIA
No. M-24067
EXP. 06/30/21

ROOF PLAN

M2.2

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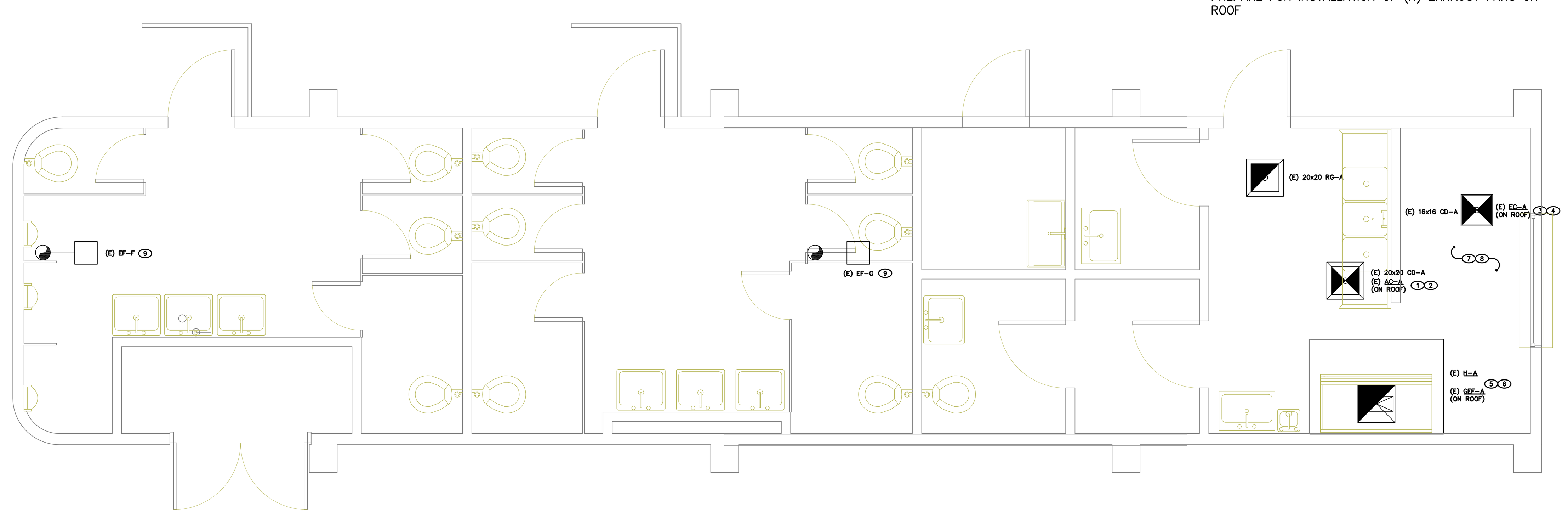
NOTES:

1. DEMO (E) ROOFTOP PACKAGE AC, AC–A; SEE DEMO ROOF PLAN
2. DEMO (E) SA, RA SERVICE RISERS ASSOCIATED WITH AC–A; DEMO CD, RG
3. DEMO (E) ROOFTOP EVAPORATIVE COOLER, EC–A; SEE DEMO ROOF PLAN
4. DEMO (E) SA SERVICE RISER ASSOCIATED WITH EC–A; DEMO CD
5. DEMO (E) ROOFTOP GREASE EXHAUST FAN GEF–A; SEE DEMO ROOF PLAN; DEMO (E) EA SERVICE RISER AS NECESSARY
6. MAINTAIN (E) TYPE 1 GREASE EXHAUST HOOD, H–A
7. REPAIR TO ROOF OPENINGS BY GENERAL CONTRACTOR
8. ELECTRICAL SERVICES TO INCLUDE DISCONNECT, RECONNECT WHERE POSSIBLE, BY ELECTRICAL CONTRACTOR
9. DEMO (E) CABINET EXHAUST FANS SERVING RESTROOMS; PREPARE FOR INSTALLATION OF (N) EXHAUST FANS ON ROOF

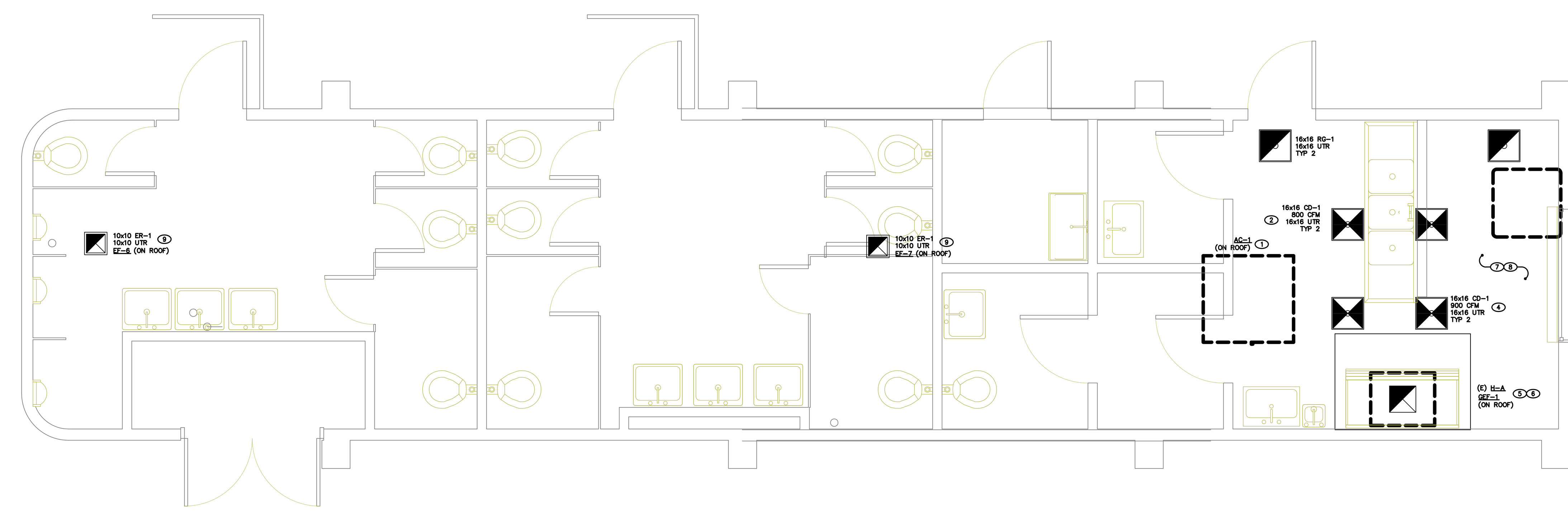


FLOOR PLAN – DEMO

SCALE: 1/4"=1'–0"

NOTES:

1. PROVIDE ROOFTOP PACKAGE AC, AC–A; SEE RENO ROOF PLAN
2. PROVIDE SA SERVICE RISERS ASSOCIATED WITH AC–1; PROVIDE CD'S, RG'S
3. PROVIDE ROOFTOP EVAPORATIVE COOLER, EC–1 FOR MAKE–UP AIR SERVICE TO H–A; SEE RENO ROOF PLAN
4. PROVIDE SA SERVICE RISERS ASSOCIATED WITH EC–1; PROVIDE CD'S
5. PROVIDE ROOFTOP GREASE EXHAUST FAN GEF–1; SEE RENO ROOF PLAN; PROVIDE EA SERVICE RISER AS NECESSARY
6. MAINTAIN (E) TYPE 1 GREASE EXHAUST HOOD, H–A
7. REPAIR TO ROOF OPENINGS BY GENERAL CONTRACTOR
8. ELECTRICAL SERVICES TO INCLUDE DISCONNECT, RECONNECT WHERE POSSIBLE, BY ELECTRICAL CONTRACTOR
9. PROVIDE (N) ROOFTOP EXHAUST FANS, EF–6, 7; PROVIDE EA SERVICE RISERS UP DOWN THROUGH ROOF TO ER'S; PROVIDE ER'S



FLOOR PLAN – RENO

SCALE: 1/4"=1'–0"

NOTES:

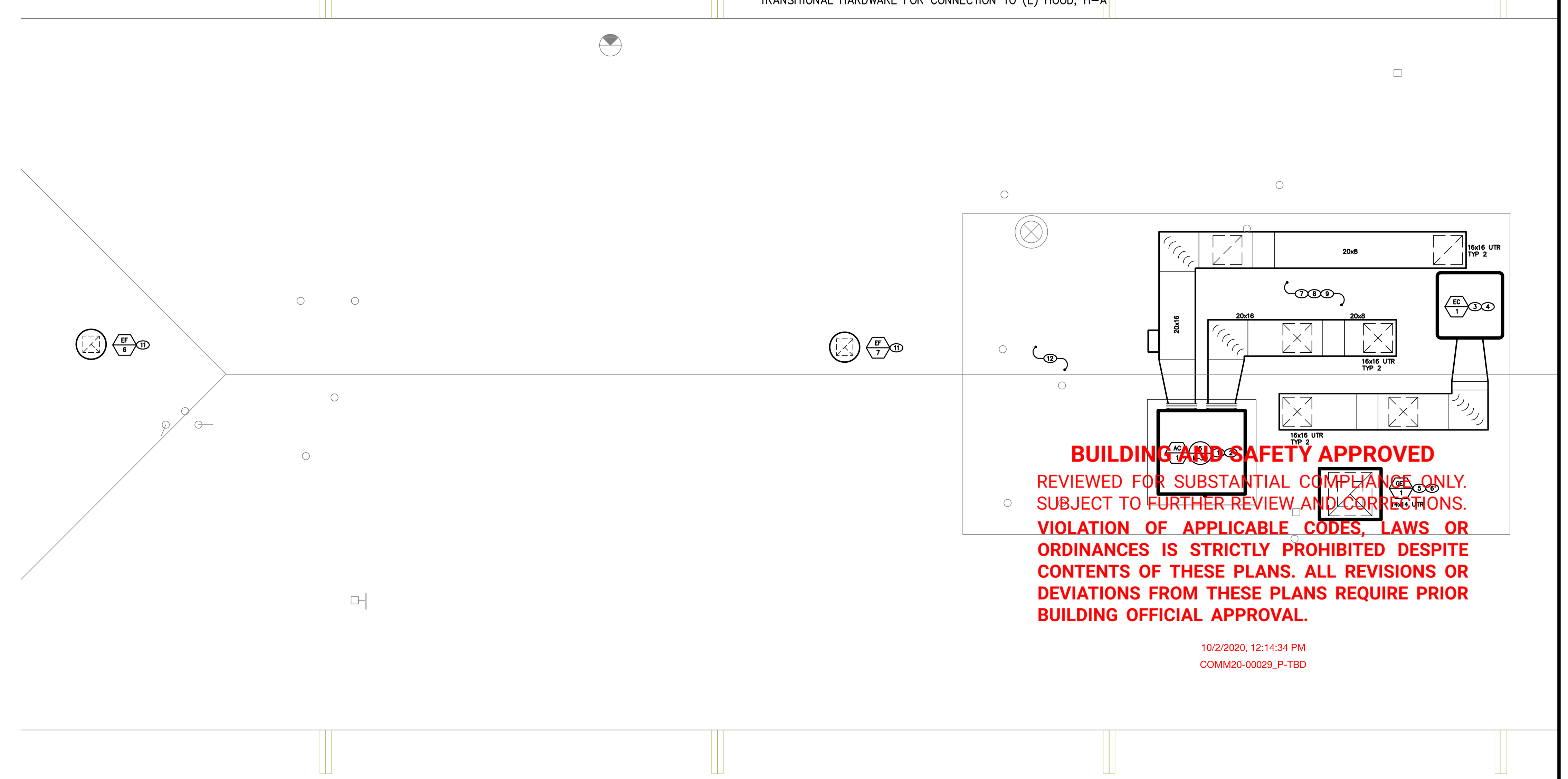
1. DEMO (E) ROOFTOP PACKAGE AC, AC–A AND ASSOCIATED PALTFORM, HARDWARE
2. DEMO (E) SA, RA SERVICE RISERS UP THROUGH ROOF
3. DEMO (E) ROOFTOP EVAPORATIVE COOLER, EC–A AND ASSOCIATED HARDWARE
4. DEMO (E) SA SERVICE RISER UP THROUGH ROOF
5. DEMO (E) ROOFTOP GREASE EXHAUST FAN GEF–A AND ASSOCIATED HARDWARE
6. DEMO (E) EA SERVICE RISER UP THROUGH ROOF
7. REPAIR TO ROOF OPENINGS BY GENERAL CONTRACTOR
8. ELECTRICAL SERVICES TO INCLUDE DISCONNECT, RECONNECT WHERE POSSIBLE, BY ELECTRICAL CONTRACTOR
9. MODIFICATION OF (E) PLUMBING SERVICES (CONDENSATE, DRAIN) FOR DISCONNECT, RECONNECT BY PLUMBING CONTRACTOR
10. DEMO (E) CABINET EXHAUST FANS IN CEILING BELOW; DEMO UNPROTECTED EXHAUST DISCHARGE UP THROUGH ROOF; TYP 2

ROOF PLAN – DEMO

SCALE: 1/4"=1'–0"

NOTES:

1. PROVIDE ROOFTOP PACKAGE AC, AC–1; SECURE TO ROOF PLATFORM
2. PROVIDE INSULATED SA, RA SERVICE DUCT EXPOSED ON ROOF; PROVIDE SA, RA SERVICES RISERS DOWN THROUGH ROOF TO POINTS OF TERMINATION IN SPACE BELOW
3. PROVIDE ROOFTOP EVAPORATIVE COOLER (IN NEW LOCATION IN ORDER TO MAINTAIN 10' SEPARATION FROM EF–1) EC–1, FOR MAKE–UP AIR SERVICE TO H–A; DISCONNECT RECONNECT SWITCHING FOR OPERATION WITH H–1 / GEF–1
4. PROVIDE SA SERVICE DUCT EXPOSED ON ROOF; PROVIDE SA SERVICE RISER DOWN THROUGH ROOF TO POINTS OF TERMINATION IN SPACE BELOW
5. PROVIDE ROOFTOP GREASE EXHAUST FAN GEF–1
6. PROVIDE EA SERVICE RISER DOWN THROUGH ROOF; PROVIDE TRANSITIONAL HARDWARE FOR CONNECTION TO (E) HOOD, H–A
7. REPAIR TO ROOF OPENINGS BY GENERAL CONTRACTOR
8. ELECTRICAL SERVICES TO INCLUDE DISCONNECT, RECONNECT WHERE POSSIBLE, BY ELECTRICAL CONTRACTOR
9. MODIFICATION OF (E) PLUMBING SERVICES (CONDENSATE, DRAIN) FOR DISCONNECT, RECONNECT BY PLUMBING CONTRACTOR
10. MAINTAIN 10' SEPARATION FROM TYPE 1 GREASE EXHAUST FAN EF–1 TO OSA INTAKE, EC–1
11. PROVIDE ROOFTOP EXHAUST FAN; SECURE EXHAUST FAN TO ROOF CURB VIA RIGID CONNECTION; SECURE ROOF CURB TO ROOF STRUCTURE VIA RIGID CONNECTION; SECURE EXHAUST AIR SERVICE RISER TO ROOF CURB VIA RIGID CONNECTION; TYP EF–6, 7
12. INDEPENDENT ELECTRICAL DISCONNECT PROVIDED FOR ALL EQUIPMENT GREATER THAN 50V; ROOF RECEPTACLE LOCATED WITHIN 24 FEET OF ALL EQUIPMENT; SEE ELECTRICAL PLANS



BUILDING AND SAFETY APPROVED

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ROOF PLAN – RENO

SCALE: 1/4"=1'–0"

CITY OF COMMERCE
INCORPORATED JANUARY 28, 1960
CALIFORNIA

Architecture
Interiors
Planning

BOA

1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER
KEVIN M. FRIEDMAN
No. M-27267
exp. 6/30/21
MECHANICAL
STATE OF CALIFORNIA

- DEMO, RENO FLOOR PLAN

M2.3

G:\Project Files\2860 Commerce Bristow Library HVAC&Roof Replacement\01-Drawings\01-Rev#2\860 Bristow Park Library & Snack Bar.rvt
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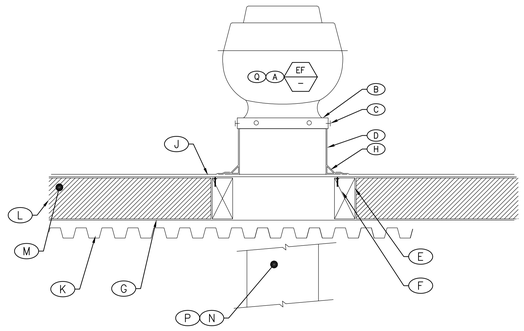
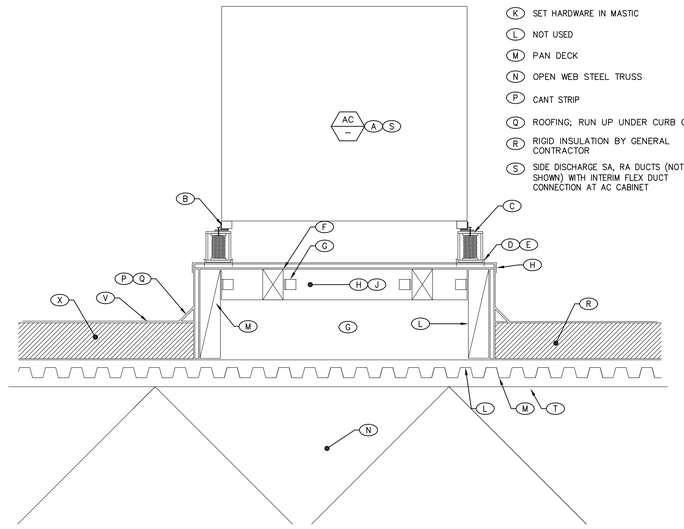
- (A) EXHAUST FAN; SECURE EXHAUST FAN TO ROOF CURB; TYP
- (B) ROOF CURB
- (C) ATTACHMENT TO ROOF CURB
- (D) ATTACHMENT TO SHAPED NAILER
- (E) SHAPED NAILER; SEE ARCHITECTURAL DETAIL 2, SHEET A-5
- (F) ATTACHMENT TO ROOF STRUCTURE; SEE ARCHITECTURAL DETAIL 2, SHEET A-5
- (G) 4X4 BLOCKING
- (H) CANT STRIP
- (J) RUN ROOFING UP UNDER CURB CAP
- (K) 2X4 @ 24" ON CENTER
- (L) ROOF DECK
- (M) RIGID INSTALLATIONS BY GENERAL CONTRACTOR
- (N) EA SERVICE FROM CONNECTION AT CURB DOWN THROUGH ROOF
- (P) PREPARED OPENING BY GENERAL CONTRACTOR
- (Q) DETAIL SIMILAR FOR CURB MOUNTED ROOF JACK



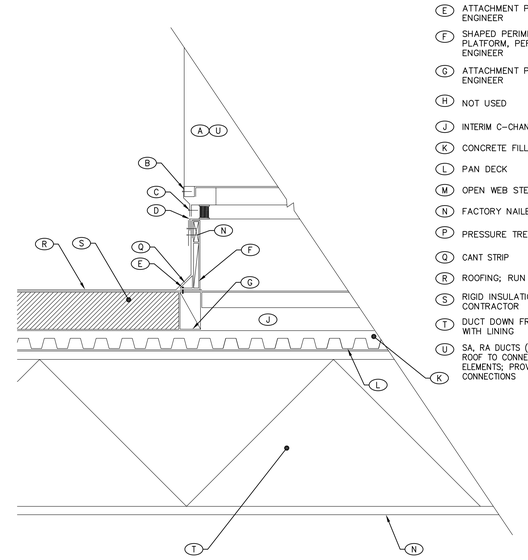
EXHAUST FAN — NO SCALE — 3

- (A) ROOFTOP PACKAGE UNIT AC; SECURE UNIT TO INDIVIDUAL SPRING ISOLATORS VIA INTERUM HARDWARE AS NECESSARY
- (B) EQUIPMENT BASE RAIL
- (C) INTERIM HARDWARE WELDED, TABBED; MANUFACTURED SEISMICALLY RATED FULLY HOUSED AND SNUBBED SPRING VIBRATION ISOLATION; TOTAL 6
- (D) NOT USED
- (E) MEANS OF ATTACHMENT; SEE ARCHITECTURAL DETAIL 2, SHEET A-5
- (F) INTERIM BLOCKING; SEE ARCHITECTURAL DETAIL 2, SHEET A-5
- (G) PLATFORM CONSTRUCTION; SEE ARCHITECTURAL DETAIL 2, SHEET A-5
- (H) 22GAGE CAP
- (J) NOT USED
- (K) SET HARDWARE IN MASTIC
- (L) NOT USED
- (M) PAN DECK
- (N) OPEN WEB STEEL TRUSS
- (P) CANT STRIP
- (Q) ROOFING; RUN UP UNDER CURB CAP
- (R) RIGID INSULATION BY GENERAL CONTRACTOR
- (S) SIDE DISCHARGE SA, RA DUCTS (NOT SHOWN) WITH INTERIM FLEX DUCT CONNECTION AT AC CABINET



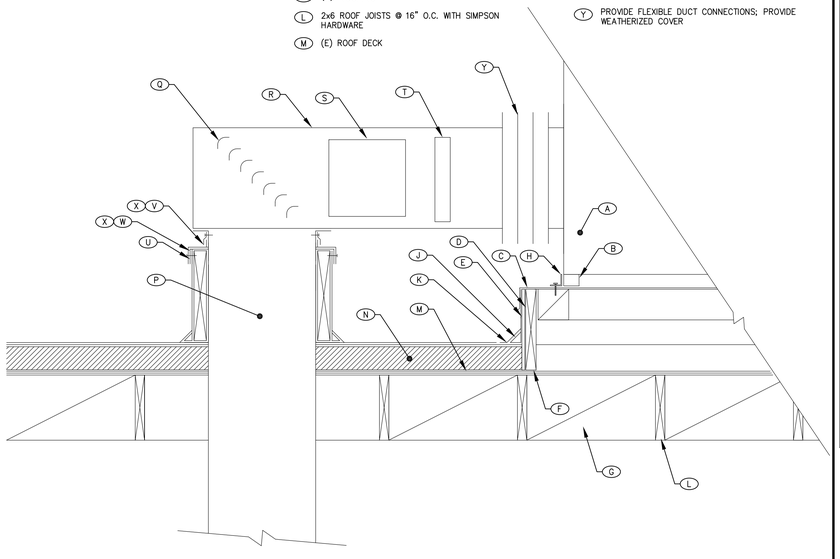
AC PLATFORM — NO SCALE — 2

- (A) ROOFTOP PACKAGE UNIT AC; SECURE UNIT TO SPRING VIBRATION ISOLATION CURB, ISOLATION CURB TO ROOF CURB; TO ROOF CURB VIA EARTHQUAKE BRACKETS
- (B) EQUIPMENT BASE RAIL
- (C) VIBRATION ISOLATION CURB
- (D) ROOF CURB
- (E) ATTACHMENT PER STRUCTURAL ENGINEER
- (F) SHAPED PERIMETER NAILER SHIM PLATFORM, PER STRUCTURAL ENGINEER
- (G) ATTACHMENT PER STRUCTURAL ENGINEER
- (H) NOT USED
- (J) INTERIM C-CHANNEL HARDWARE
- (K) CONCRETE FILL
- (L) PAN DECK
- (M) OPEN WEB STEEL TRUSS
- (N) FACTORY NAILER
- (P) PRESSURE TREATED WOOD INSERT
- (Q) CANT STRIP
- (R) ROOFING; RUN UP UNDER CURB CAP
- (S) RIGID INSULATION BY GENERAL CONTRACTOR
- (T) DUCT DOWN FROM HP THROUGH ROOF WITH LINING
- (U) SA, RA DUCTS (NOT SHOWN) UP THROUGH ROOF TO CONNECTION AT CURB ELEMENTS; PROVIDE INTERIM FLEX DUCT CONNECTIONS

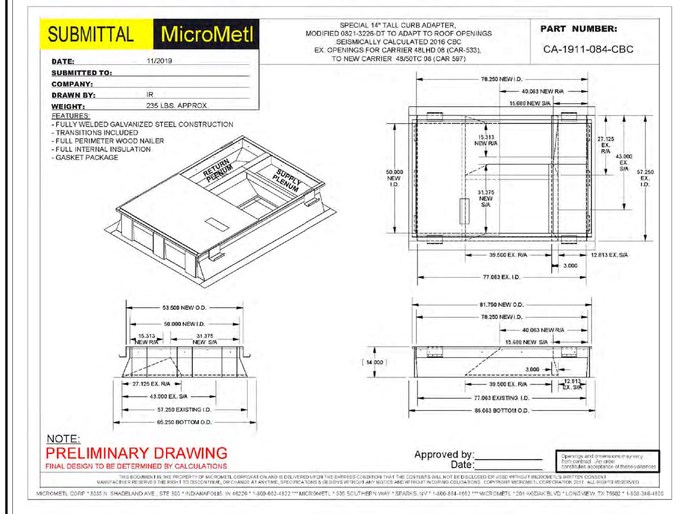


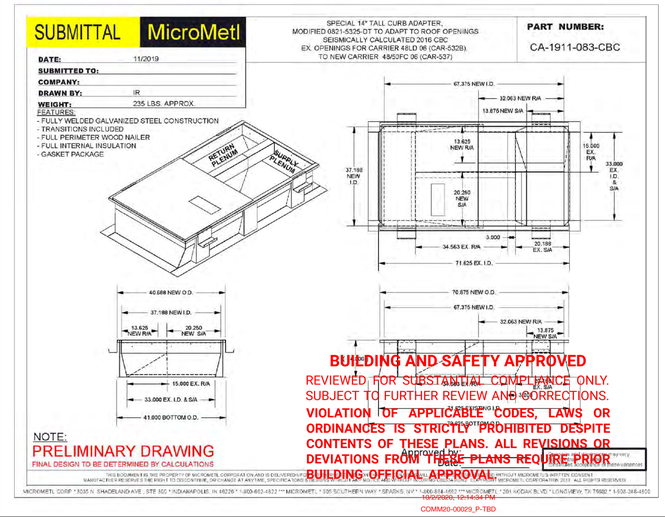
AC CURB — NO SCALE — 1

- (A) ROOFTOP PACKAGE HEAT PUMP; SECURE TO PLATFORM VIA ANGLE CLIPS; TYP HP-1
- (B) EQUIPMENT BASE RAIL
- (C) ROOF PLATFORM
- (D) SHAPED NAILER
- (E) 3/4" PLYWOOD SHEATHING
- (F) NAILER ATTACHMENT OF NAILER TO ROOF FRAME
- (G) INTERIM BLOCKING; SECURE TO JOIST VIA A-35 SIMPSON HARDWARE
- (H) ANGLE CLIP ATTACHMENT VIA MACHINE BOLTS TO BASE, LAG SCREWS TO PLATFORM / SLEEPERS
- (J) CANT STRIP
- (K) (E) ROOFING
- (L) 2x6 ROOF JOISTS @ 16" O.C. WITH SIMPSON HARDWARE
- (M) (E) ROOF DECK
- (N) RIDID INSULATION BY GENERAL CONTRACTOR
- (P) DUCT DOWN THROUGH ROOF WITH LINING
- (Q) TRANSITION HARDWARE AS NECESSARY FOR DUCT ROUTING INSTALLATION (TURING VANES)
- (R) RETURN AIR SERVICE; SUPPLY AIR SERVICES (BEYOND) SIMILAR TO RETURN AIR
- (S) OUTSIDE AIR HOOD
- (T) FILTER BANK
- (U) ROOF CURB FOR DUCT THROUGH ROOF
- (V) 26 GAGE STORM COLLAR (COUNTER FLASHING)
- (W) 26 GAGE CURB CAP (FLASHING)
- (X) SET HARDWARE IN SEALANT AT MATED SURFACES
- (Y) PROVIDE FLEXIBLE DUCT CONNECTIONS; PROVIDE WEATHERIZED COVER



HP-1 PLATFORM AND DUCT THROUGH ROOF — NO SCALE — 5





PLENUM CURB, AC-2, 3, 6, 7, 9 — NO SCALE — 4

CITY OF COMMERCE
INCORPORATED JANUARY 23, 1960

Architecture
Interiors
Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO	DATE	BY	DESCRIPTION

Designer: --
CAD Draft: --
Architect: --
Engineer: --
Client: CITY OF COMMERCE
Date Issue: --
Job Number: 2860

Client:
MR. CHIDI AUWUEZE, CITY MANAGER/DIRECTOR OF PUBLIC WORKS
2535 COMMERCE WAY
COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
MECHANICAL
6/15/2021

DETAILS

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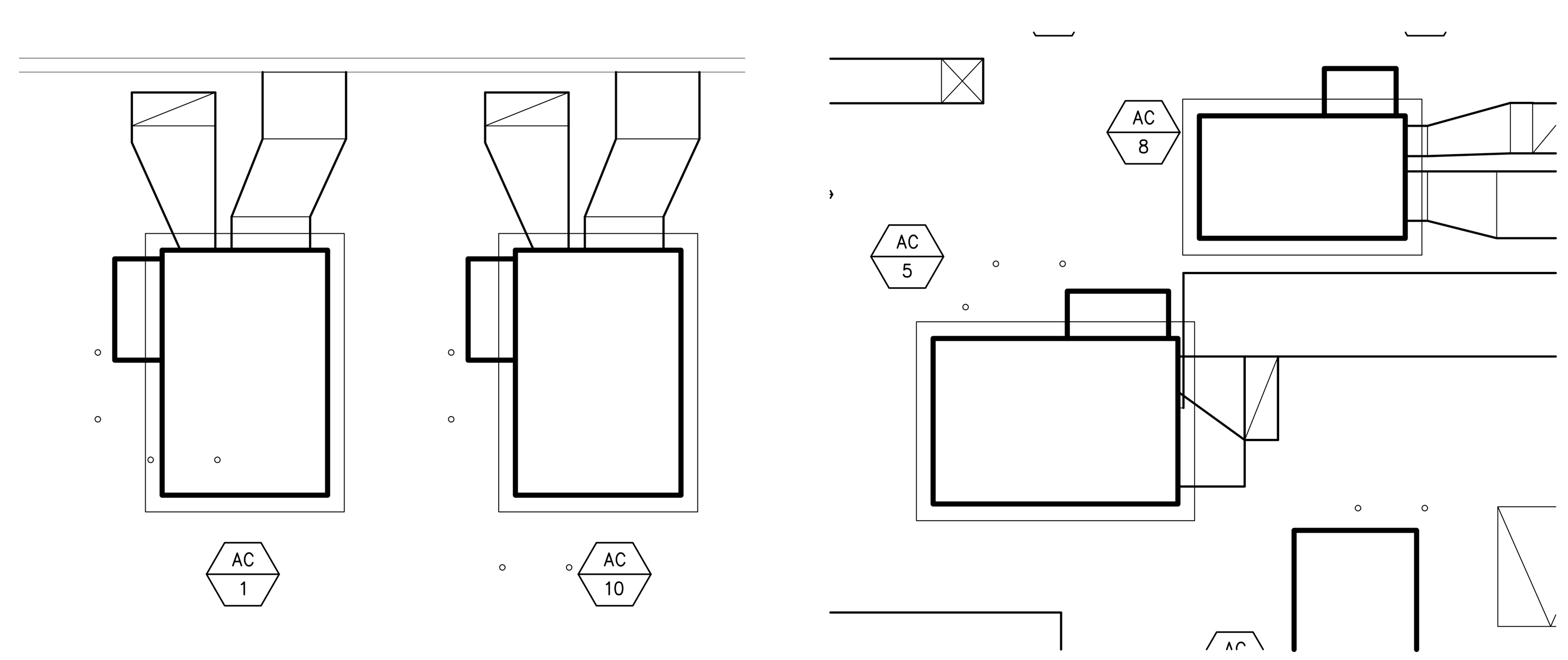
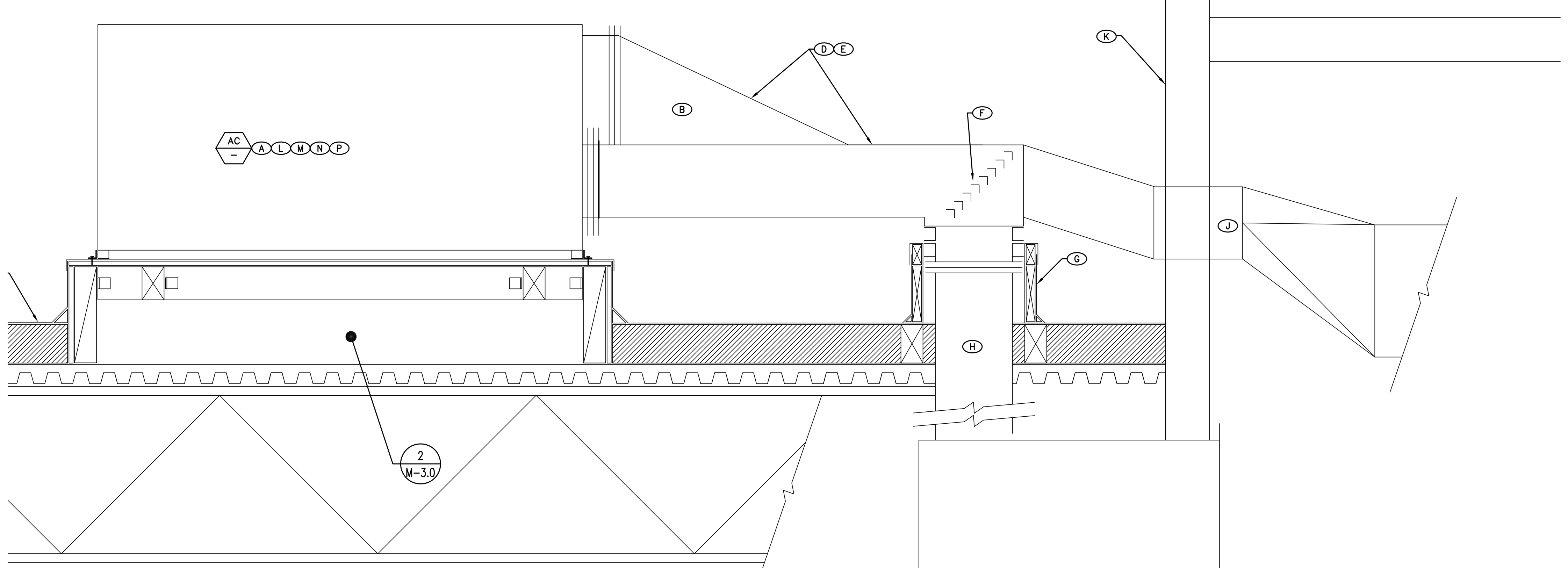


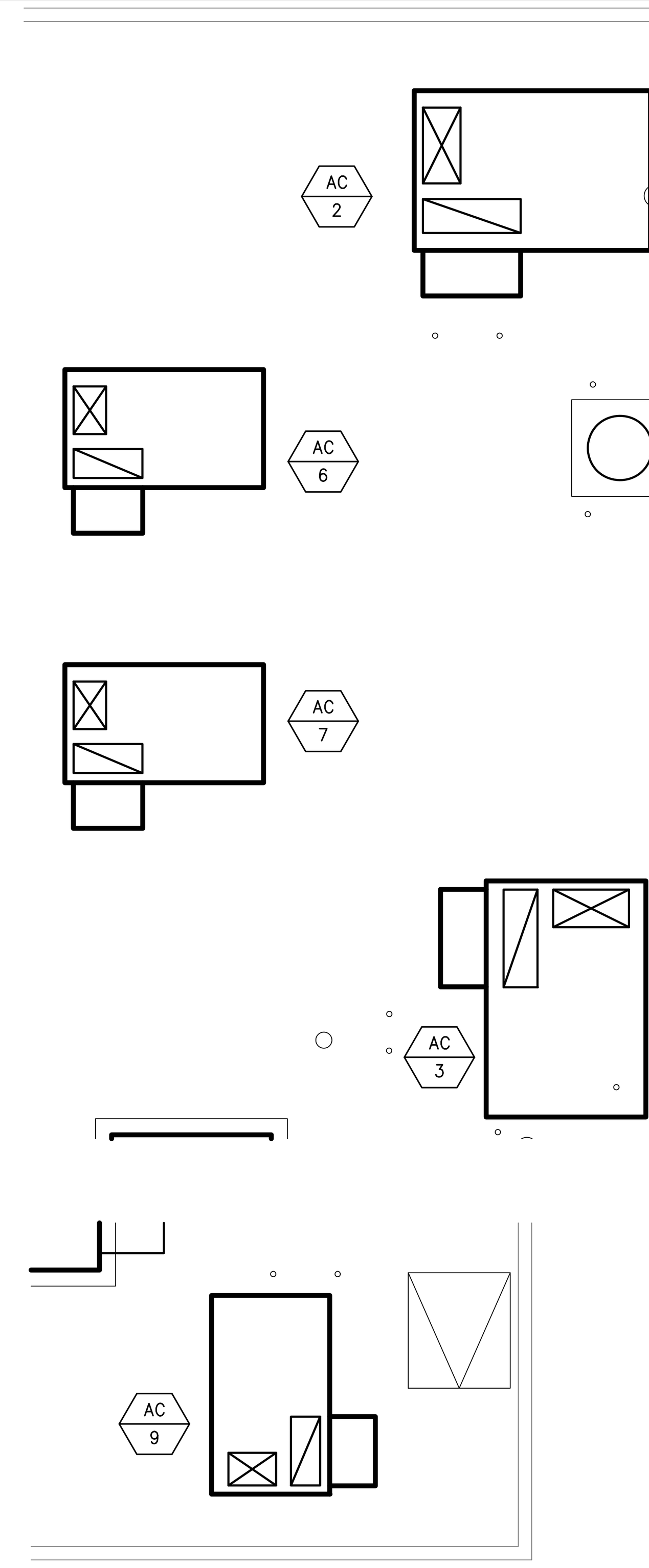
PLAN VIEW

Ⓐ ROOFTOP PACKAGE AC UNIT CONFIGURED FOR SIDE DISCHARGE; SECURE TO PLATFORM VIA RIGID CONNECTRION
Ⓑ SMOKE DETECTOR FOR SHUTDOWN OF AIRFLOW UPON DETECTION OF SMOKE
Ⓒ ROOFING TO INTEGRATE (N) ROOF PLATFORM / INSTALLATION TO (E) ROOF DECK
Ⓓ TRANSITION HARDWARE AS NECESSARY FOR DUCT ROUTING INSTALLATION
Ⓔ SUPPLY AIR, RETURN AIR SERVICES EXPOSED ON ROOF FROM AC UNIT TO DUCT DOWN THROUGH ROOF
Ⓕ TURNING VANES, SPLITTER VANES OR ALTERNATE MEASURES AT ALL ELBOWS
Ⓖ ROOF CURB FOR DUCT THROUGH ROOF
Ⓗ (E) SUPPLY AIR SERVICE DOWN THROUGH ROOF TO (E) DISTRIBUTION
Ⓙ (E) DUCT THROUGH WALL; DEMO AS NECESSARY TO ESTABLISH (N) CONNECTION
Ⓚ (E) WALL
Ⓛ RECONNECT (E) CONDENSATE DRAIN; EXTEND SERVICES AS NECESSARY
Ⓜ RECONNECT (E) GAS SERVICE; EXTEND SERVICES AS NECESSARY
Ⓝ RECONNECT (E) ELECTRICAL SERVICE; EXTEND SERVICES AS NECESSARY
Ⓟ RECONNECT (E) CONTROL CIRCUITING; EXTEND SERVICES AS NECESSARY



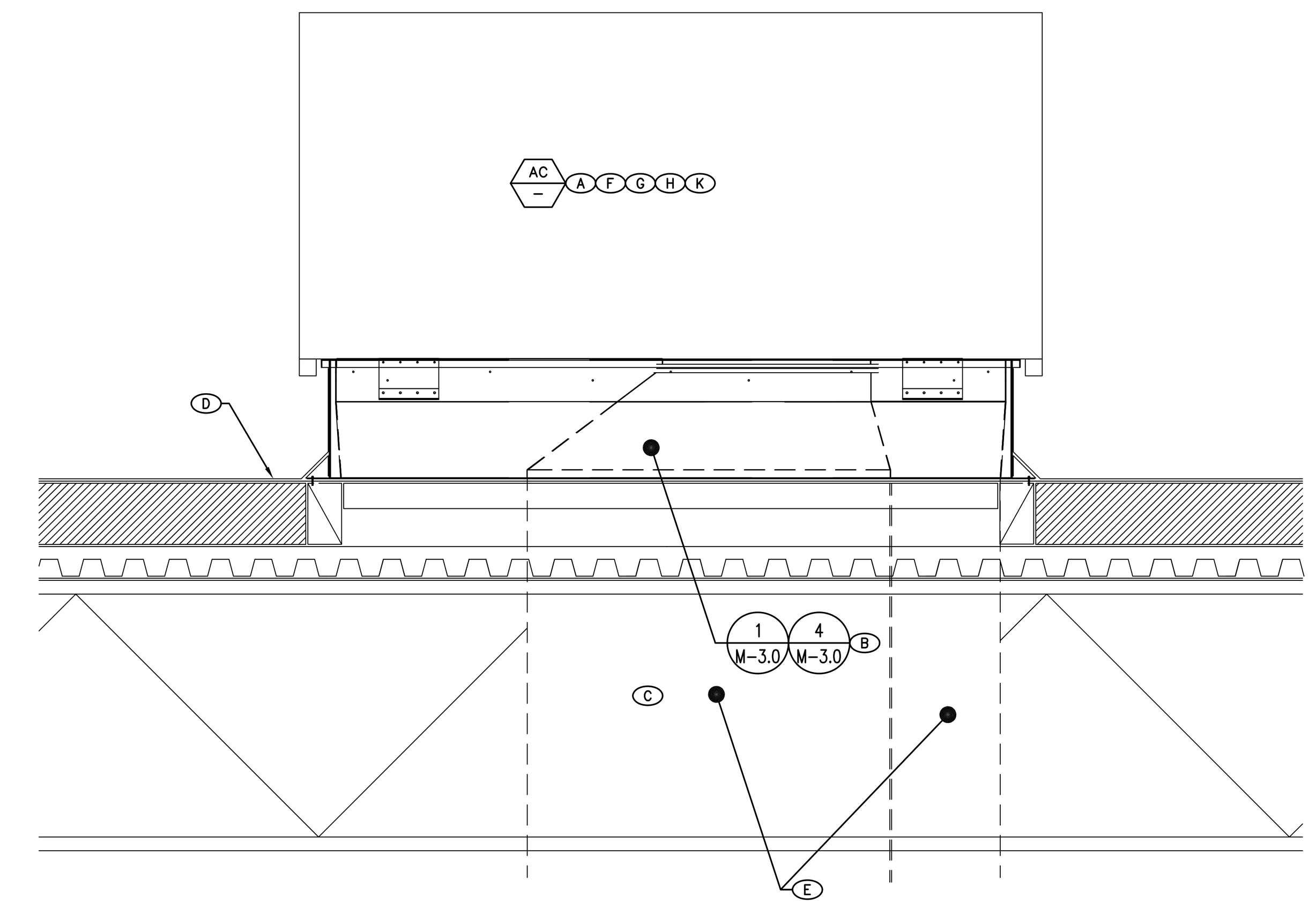
SECTION

SA DUCT THROUGH WALL, RA DUCT DOWN THROUGH ROOF, AC–1, 5, 8, 10 NO SCALE (2)



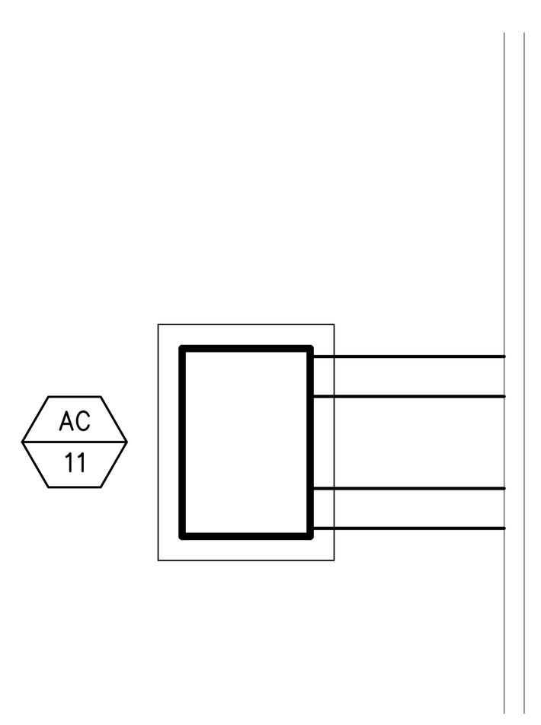
PLAN VIEW

Ⓐ ROOFTOP PACKAGE AC UNIT CONFIGURED FOR DOWN DISCHARGE; SECURE TO ROOF CURB VIA RIGID CONNECTRION
Ⓑ MANUFACTURED OVERSIZED PLENUM CURB FOR ADAPTATION OF NEW UNIT TO EXISTING DUCTS UTR
Ⓒ SMOKE DETECTOR FOR SHUTDOWN OF AIRFLOW UPON DETECTION OF SMOKE
Ⓓ ROOFING TO INTEGRATE (N) ROOF CURB / INSTALLATION TO (E) ROOF DECK
Ⓔ (E) SUPPLY AIR AND RETURN AIR SERVICE DOWN THROUGH ROOF TO (E) DISTRIBUTION
Ⓕ RECONNECT (E) CONDENSATE DRAIN; EXTEND SERVICES AS NECESSARY
Ⓖ RECONNECT (E) GAS SERVICE; EXTEND SERVICES AS NECESSARY
Ⓗ RECONNECT (E) ELECTRICAL SERVICE; EXTEND SERVICES AS NECESSARY
Ⓙ RECONNECT (E) CONTROL CIRCUITING; EXTEND SERVICES AS NECESSARY



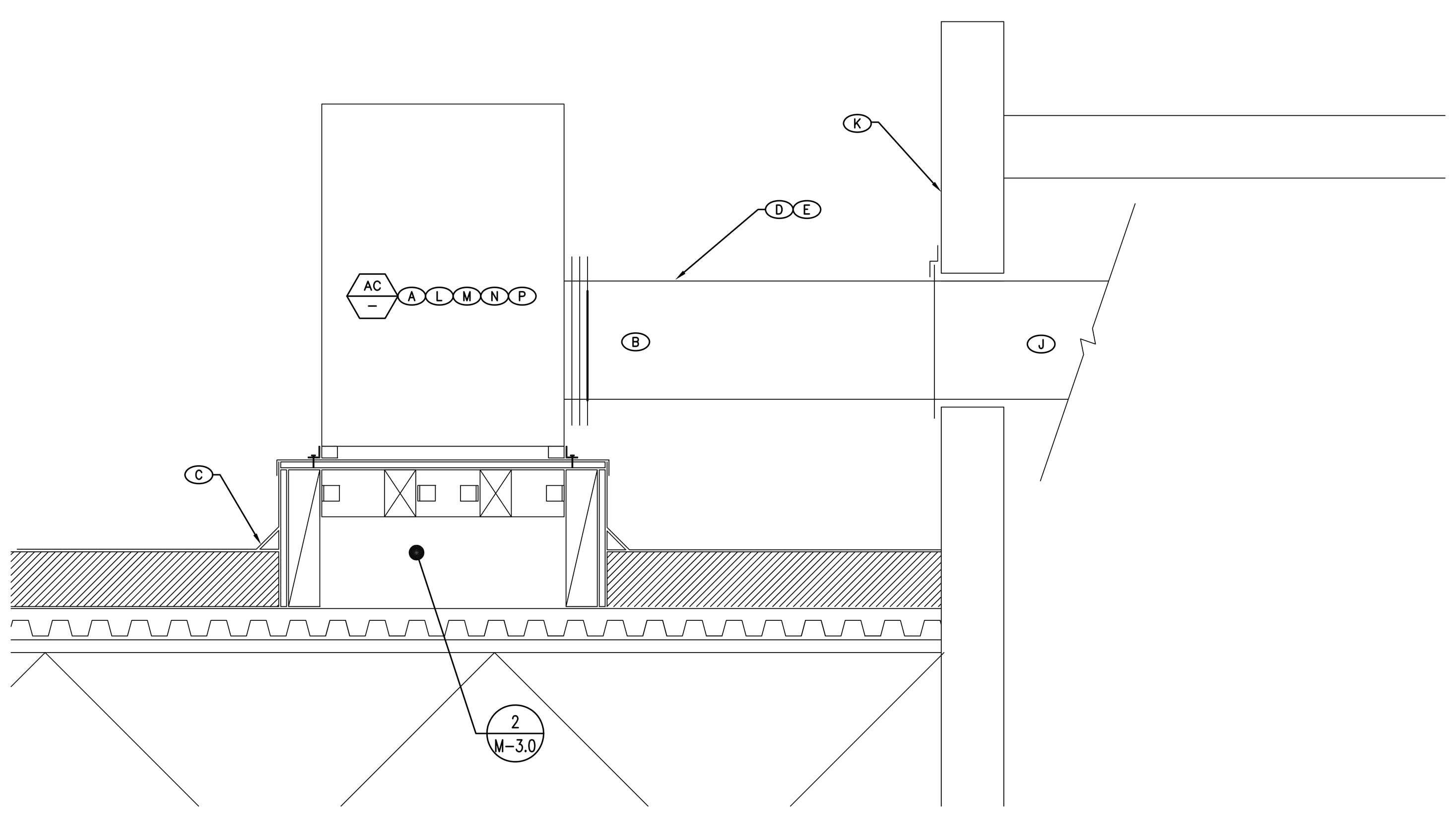
SECTION

SA / RA DUCT DOWN THROUGH ROOF, AC–2, 3, 6, 7, 9 NO SCALE (1)

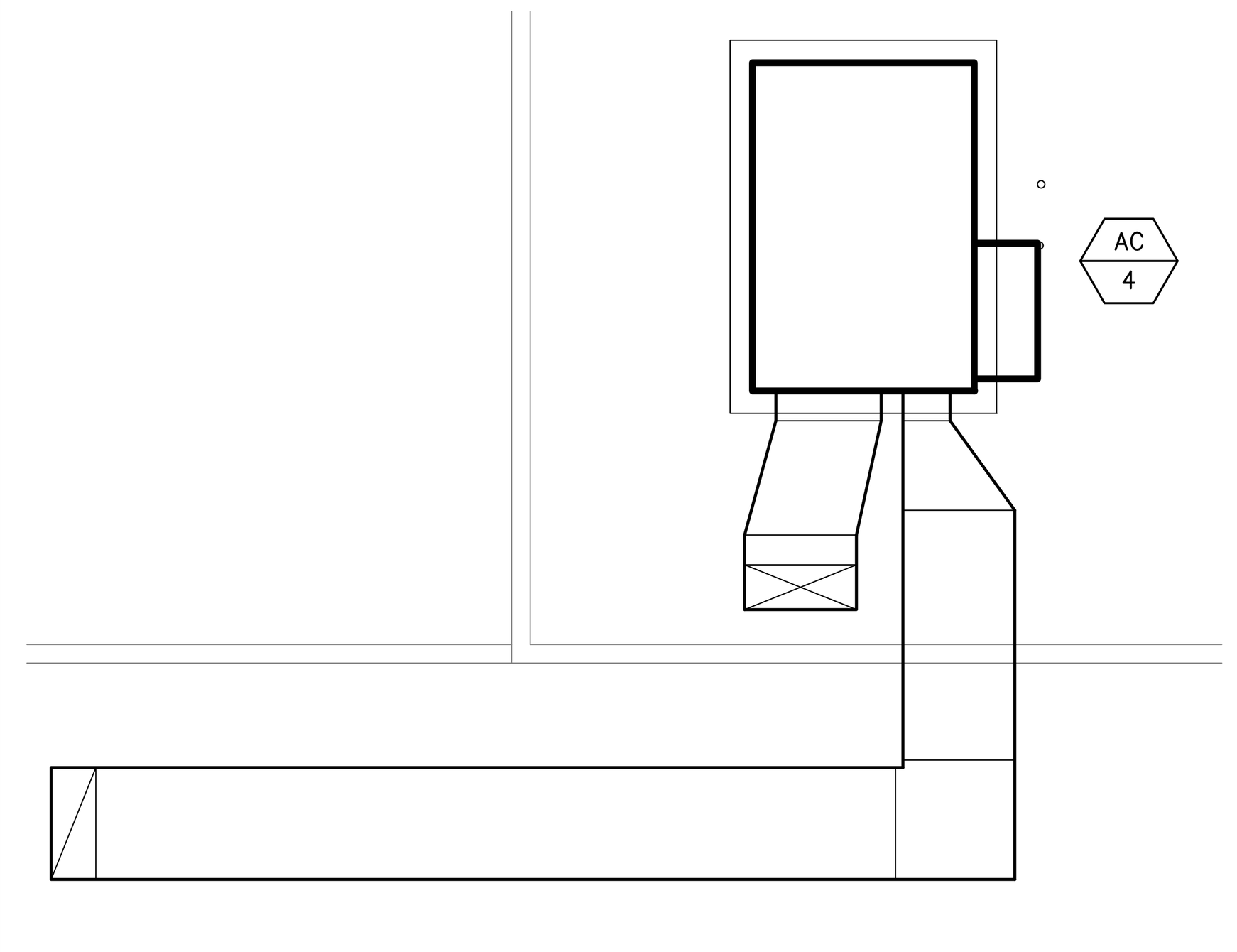


PLAN VIEW

Ⓐ ROOFTOP PACKAGE AC UNIT CONFIGURED FOR SIDE DISCHARGE; SECURE TO PLATFORM VIA RIGID CONNECTRION
Ⓑ SMOKE DETECTOR FOR SHUTDOWN OF AIRFLOW UPON DETECTION OF SMOKE
Ⓒ ROOFING TO INTEGRATE (N) ROOF PLATFORM / INSTALLATION TO (E) ROOF DECK
Ⓓ TRANSITION HARDWARE AS NECESSARY FOR DUCT ROUTING INSTALLATION
Ⓔ SUPPLY AIR, RETURN AIR SERVICES EXPOSED ON ROOF FROM AC UNIT TO DUCT THROUGH WALL
Ⓕ NOT USED
Ⓖ NOT USED
Ⓗ NOT USED
Ⓙ (E) DUCT THROUGH WALL; DEMO AS NECESSARY TO ESTABLISH (N) CONNECTION
Ⓚ (E) WALL
Ⓛ RECONNECT (E) CONDENSATE DRAIN; EXTEND SERVICES AS NECESSARY
Ⓜ RECONNECT (E) GAS SERVICE; EXTEND SERVICES AS NECESSARY
Ⓝ RECONNECT (E) ELECTRICAL SERVICE; EXTEND SERVICES AS NECESSARY
Ⓟ RECONNECT (E) CONTROL CIRCUITING; EXTEND SERVICES AS NECESSARY

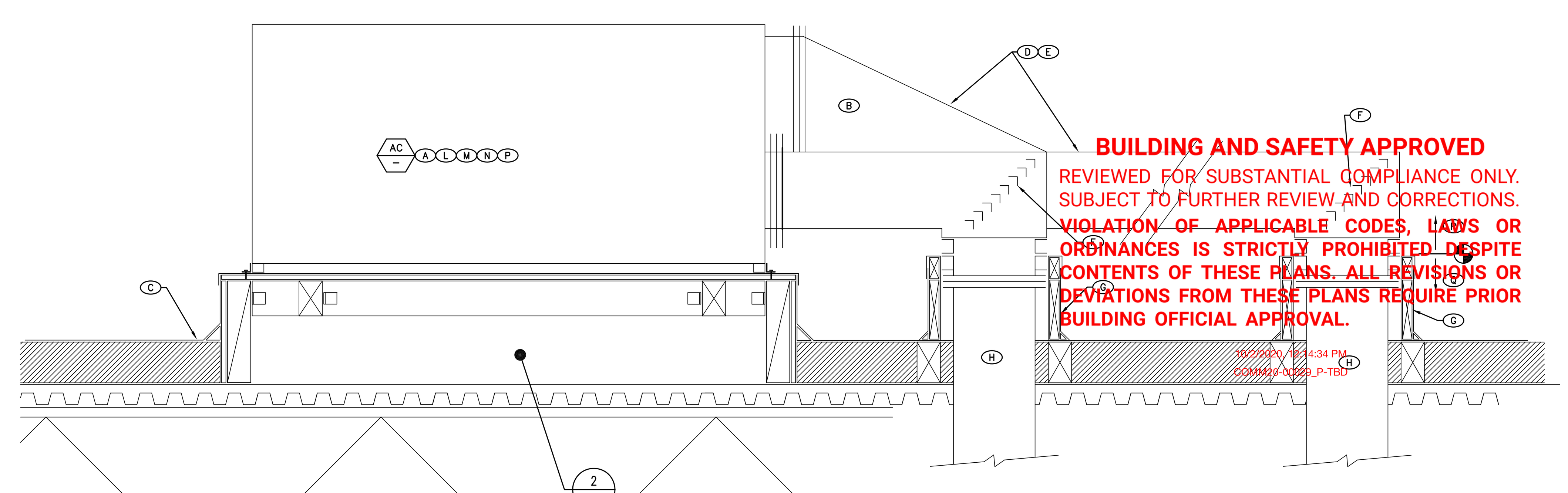


SA / RA SIDE DISCHARGE DUCT THROUGH WALL, AC–11 NO SCALE (4)



PLAN VIEW

Ⓐ ROOFTOP PACKAGE AC UNIT CONFIGURED FOR SIDE DISCHARGE; SECURE TO PLATFORM VIA RIGID CONNECTRION
Ⓑ SMOKE DETECTOR FOR SHUTDOWN OF AIRFLOW UPON DETECTION OF SMOKE
Ⓒ ROOFING TO INTEGRATE (N) ROOF PLATFORM / INSTALLATION TO (E) ROOF DECK
Ⓓ TRANSITION HARDWARE AS NECESSARY FOR DUCT ROUTING INSTALLATION
Ⓔ SUPPLY AIR, RETURN AIR SERVICES EXPOSED ON ROOF FROM AC UNIT TO DUCT DOWN THROUGH ROOF
Ⓕ TURNING VANES, SPLITTER VANES OR ALTERNATE MEASURES AT ALL ELBOWS
Ⓖ ROOF CURB FOR DUCT THROUGH ROOF
Ⓗ (E) SUPPLY AIR AND RETURN AIR SERVICE DOWN THROUGH ROOF TO (E) DISTRIBUTION
Ⓙ NOT USED
Ⓚ NOT USED
Ⓛ RECONNECT (E) CONDENSATE DRAIN; EXTEND SERVICES AS NECESSARY
Ⓜ RECONNECT (E) GAS SERVICE; EXTEND SERVICES AS NECESSARY
Ⓝ RECONNECT (E) ELECTRICAL SERVICE; EXTEND SERVICES AS NECESSARY
Ⓟ RECONNECT (E) CONTROL CIRCUITING; EXTEND SERVICES AS NECESSARY
Ⓠ MAINTAIN (E) DUCTS FOR RE CONNECTION; CONNECT (E) DUCTS TO (N) DUCTS WITH HARDWARE AS NEEDED TO ACCOMODATE FIELD CONDITIONS
Ⓡ PROVIDE STORM COLLAR / CURB CAP HARDWARE AND MATERIALS FOR WEATHER–TIGHT INSTALLATION



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SECTION

SA / RA SIDE DISCHARGE, DUCT DOWN THROUGH ROOF, AC–4 NO SCALE (3)

Architecture
Interiors
Planning

BOA

1511 Cota Ave. Long Beach, CA 90813 Tel. 562–912–7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

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Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client:
MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL 2535 COMMERCE WAY, COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

• DETAILS
•
•

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STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

This document is used to demonstrate compliance with mandatory requirements in §110.8(g) and §120.7(b) for newly constructed buildings, and §141.0(b)1 for alterations, related to roof, wall and floor assemblies. It is also used to demonstrate compliance with prescriptive requirements in §140.3 for newly constructed buildings, and §141.0 for additions and alterations, related to roof, wall, floor, door, fenestration and daylighting requirements.

Project Name: HVAC an Roof Replacement — Report Page: Page 1 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-02-19

A. GENERAL INFORMATION

01	Project Location (city)	City of Commerce	05	# of Stories (Habitable Above Grade)	1
02	Zipcode	90040	06	Total Conditioned Floor Area (ft²)	14,400
03	Climate Zone	9	07	Total Unconditioned Floor Area (ft²)	0
04	Occupancy Types Within Project (select all that apply): If one occupancy constitutes ≥ 80% of the conditioned floor area, the entire building envelope may be designed to comply with the provisions of that occupancy per §100.0(f).		08	Project Includes unconditioned enclosed space(s) > 5,000ft² under a roof with a ceiling height of at least 15ft.[1]	

- [✓] All Nonresidential, including Relocatable Public School Building certified for use in one climate zone — Occupancy: A / B / E / F / H / M / S / U
- [ ] Relocatable Public School Building for use in all climate zones — Occupancy: E
- [ ] High-Rise Residential — Occupancy: R-2 / R-3
- [ ] Hotel/Motel Guest Rooms — Occupancy: R-1

[1] *FOOTNOTE: Enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft in climate zones 2 through 15 are required to meet the minimum daylighting requirements defined in §140.3(c). Compliance with §140.3(c) is documented in Table L. This is the only prescriptive requirement which applies to unconditioned spaces.*

B. PROJECT SCOPE

Table Instructions: Include any building envelopes that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in §140.3 and §141.0(b)1 and §141.0(b)3 and 2 for additions and alterations.

My project consists of (check all that apply)	01	Component Types 02		
[ ] New Construction or Newly Conditioned Space		[ ] Roof	[ ] Walls	[ ] Exterior Doors
[ ] One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft			[ ] Floors	[ ] Fenestration/Glazed Door[1]
[ ] Addition of conditioned space		[ ] Roof	[ ] Walls	[ ] Exterior Doors
[ ] One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft			[ ] Floors	[ ] Fenestration/Glazed Door[1]
[✓] Alteration of conditioned space		[✓] Roof Assembly	[ ] Walls	Exterior Doors NA for Alts.
[ ] One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft and lighting system installed for the first time		[ ] Roofing Material	[ ] Floors	[ ] Fenestration

[1] *FOOTNOTE: Doors that are more than one-half glass in area are considered Glazed Doors and should be documented on Table K with fenestration.*

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement — Report Page: Page 2 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-02-19

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Opaque Envelope Components					Fenestration	Daylighting Spaces > 5,000 ft²	Compliance Results
Roof Assembly	Roofing Materials	Walls	Floors	Doors			
01	02	03	04	05	06	07	08
(See Table F)	(See Table G)	(See Table H)	(See Table I)	(See Table J)	(See Table K)	(See Table L)	
Yes							COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unedittable comments because of selections made or data entered in tables throughout the form.

No exceptional conditions apply to this project.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. ROOF ASSEMBLY SCHEDULE

Table Instructions: Complete this table to demonstrate compliance with prescriptive roof assembly requirements in §140.3(a)1B for new construction or additions, or §141.0(b)2Bii for alterations.

01 Indicate roof types included in the project: [ ] Framed [ ] SIPs [✓] Span Deck & Concrete [ ] Metal Panels [ ] Metal Building

Span Deck & Concrete Roof Assemblies

01		Include Span Deck & Concrete Roof assemblies in Area-Weighted Average U-factor Calculation[1]		
02	03	04	05	06
Tag / Plan Detail ID	Name / Description	Status	Exception to Roof Insulation Requirements in §141.0(b)2Bii (Alts. Only)	Occupancy Type
R-1	Pan Dck/Conc Fill/Rigid In	Altered	None of these exceptions apply	Nonresidential/ Relocatable 1 CZ

Reset | Add Row | Remove Last

Table Continued

STATE OF CALIFORNIA
Envelope Component Approach
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Project Name: HVAC an Roof Replacement — Report Page: Page 3 of 5
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07	08	09	10	11	12	13	14	15
Tag / Plan Detail ID	How Design U-factor was determined	Fireproofing	Concrete Topping Thickness (in)	Continuous Insulation per Design	Thermal Performance Unit	Required Thermal Performance[2]	U-factor per Design	Net Area[3] (ft²)
R-1		No	2 In	R-8 c.i.	R-value	8	per iA4 Software/ Other	

[1] *FOOTNOTE: If any individual assembly is non-compliant, assemblies may show compliance using an area-weighted calculation. Metal building roofs may not be combined with other roof types. The area-weighted compliance option is not available for alterations demonstrating compliance with R-values in Table 141.0-C.*
[2] *If "R-value" is shown in cell 12 as the Thermal Performance Unit, the R-value shown here is for continuous insulation per Table 141.0-C.*
[3] *Roof area minus any fenestration/skylight area.*

G. RATED ROOFING MATERIAL (COOL ROOF)
This Section Does Not Apply

H. WALL ASSEMBLY SCHEDULE
This Section Does Not Apply

I. FLOOR ASSEMBLY SCHEDULE
This Section Does Not Apply

J. EXTERIOR DOOR SCHEDULE
This Section Does Not Apply

K. FENESTRATION AND GLAZED DOOR SCHEDULE
This Section Does Not Apply

L. DAYLIGHT IN LARGE ENCLOSED SPACES
This Section Does Not Apply

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Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

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M. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, form user must provide an explanation to be added to Table D Exceptional Conditions. These documents must be provided to the building inspector during construction and can be found online at http://www.energy.ca.gov/2019publications/CEC-400-2019-003/appendices/forms/NRCI

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
◉	○	NRCI-ENV-01-E - Must be submitted for all buildings.	☐	☐

N. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, form user must provide an explanation to be added to Table D Exceptional Conditions. These documents must be provided to the building inspector during construction and can be found online at http://www.energy.ca.gov/2019publications/CEC-400-2019-003/appendices/forms/NRCA. Individuals who perform the field testing and verification work, and provide the information required for completion of the fenestration Certificate of Acceptance documentation are not required to be licensed professionals. However, the person who signs the Certificate of Acceptance document to certify compliance with the acceptance requirements shall be licensed as specified in Standards Section 10-103(a)4 and NA7.1.1.

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
○	◉	NRCA-ENV-02-F - Must be submitted for all new, added or altered fenestration.	☐	☐
		NRCA-ENV-03-F - Daylighting design indoor lighting power adjustment factors (PAF). Note: The requirement for this NRCA is indicated on the NRCC-LTI (prescriptive) or NRCC-PRF (performance) because it is only relevant if a PAF is used for clerestories, daylight redirection devices or horizontal slats.		

STATE OF CALIFORNIA
Envelope Component Approach
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CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement — Report Page: Page 5 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-02-19

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I, I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Kevin M. Friedman	Documentation Author Signature:	
Company:	Engineering - Design - Analysis, Incorporated	Signature Date:	2020-01-10
Address:	10231 Slater Avenue Suite 207	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	Kevin M. Friedman	Responsible Designer Signature:	
Company:	Engineering - Design - Analysis, Incorporated	Date Signed:	2020-01-10
Address:	10231 Slater Avenue Suite 207	License:	M27267
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.

10/2/2020, 12:14:34 PM
COMM20-00029_P-TBD

BOA Architecture Interiors Planning
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

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Designer: --
CAD Draft: --
Architect: --
Engineer: --
Client: CITY OF COMMERCE
Date Issue: --
Job Number: 2860

Client:
MR CHIDI AUMUEZE, CITY OF COMMERCE CITY HALL
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

TITLE 24 – LIBRARY ENVELOPE

M4.0

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-MCH-E

This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

Project Name:	HVAC and Roof Replacement	Report Page:	Page 1 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

A. GENERAL INFORMATION

01	Project Location (city)	City of Commerce	04	Total Conditioned Floor Area	14,400
02	Climate Zone	9	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
☑ Office (B)		☐ Retail (M)		☐ Non-refrigerated Warehouse (S)	
☐ Hotel/ Motel Guest Rooms (R-1)		☐ School (F)		☐ Healthcare Facility (H)	
☐ High-Rise Residential (R-2/R-3)		☐ Relocatable Class Bldg (E)		☑ Other (Write In):	Community Center

[1] *FOOTNOTES: Climate zone can be determined on the California Energy Commission's website at http://www.energy.ca.gov/maps/renewable/building_climate_zones.html*

B. PROJECT SCOPE

Table Instructions: Include any mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

My project consists of (check all that apply)

01	02	03
Air System(s)	Wet System Components	Dry System Components
☑ Heating Air System	☐ Water Economizer	☑ Air Economizer
☑ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ Hydronic System Piping	☑ Fan Systems
☑ Mechanical Controls	☐ Cooling Towers	☑ Ductwork
	☐ Chillers	☑ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

01		02		03		04		05		06		07		08	09
System Summary §110.1, §110.2, §140.4	AND	Pumps §140.4(k)	AND	Fans/ Economizers §140.4(c), §140.4(e)	AND	System Controls §110.2, §120.2, §140.4(f)	AND	Ventilation §120.1	AND	Terminal Box Controls §140.4(d)	AND	Distribution §120.3, §140.4(l)	AND	Cooling Towers §110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND	Yes	AND	Yes	AND	Yes	AND		AND	Yes	AND		COMPLIES
														Mandatory Measures Compliance (See Table Q for Details)	COMPLIES

STATE OF CALIFORNIA
Mechanical Systems
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 2 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

No exceptional conditions apply to this project.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Table Instructions: Complete the following equipment schedules to show compliance with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(k) or §141.0(b)2 for alterations.

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
				Equipment Sizing per Mechanical Schedule (Btu/h) §140.4 (a&b)						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 & Title 20	Smallest Size Available[1] §140.4(a)	Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AC-1	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63
AC-2	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63
AC-3	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63
AC-4	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63

Table Continued

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 3 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
				Equipment Sizing per Mechanical Schedule (Btu/h) §140.4 (a&b)						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 & Title 20	Smallest Size Available[1] §140.4(a)	Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AC-5	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63
AC-6	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	42	60	0	42	60	42	42
AC-7	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	42	60	0	42	60	42	42
AC-8	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	42	60	0	42	60	42	42
AC-9	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	42	60	0	42	60	42	42
AC-10	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	63	125	0	63	90	63	63
AC-11	Unitary AC/ Condensers	AC, air cooled, split (3 phase)	Yes	17	40	0	17	24	17	24

Reset | Add Row | Remove Last

[1] *FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are excepted.*
[2] *It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.*
[3] *If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.*
[4] *Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).*

Table Continued

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 4 of 24
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Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

01	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency
AC-1	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-2	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-3	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-4	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-5	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-6	<65,000		HSPF	7.7	7.7	SEER	13	13
AC-7	<65,000		HSPF	7.7	7.7	SEER	13	13
AC-8	<65,000		HSPF	7.7	7.7	SEER	13	13
AC-9	<65,000		HSPF	7.7	7.7	SEER	13	13
AC-10	≥65,000 and <135,000					EER	11.2	11.2
						IEER	12.9	12.9
AC-11	<65,000		HSPF	7.7	7.7	SEER	13	13

Reset

G. PUMPS

This Section Does Not Apply

STATE OF CALIFORNIA
Mechanical Systems
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 5 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

H. FAN SYSTEMS & AIR ECONOMIZERS

Table Instructions: Complete the following Table for fan systems to demonstrate compliance with prescriptive requirements found in §140.4(c), §140.4(e) and §140.4(m). First document the system details, then add fans within that system to document compliance with fan power requirements. Fan systems serving healthcare facilities, or those serving only process loads, are exempt from these requirements and do not need to be included in Table H.

System Name:	AC-1	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-1	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-2	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-2	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-3	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume

Table Continued

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 6 of 24
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01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-3	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-4	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-4	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-5	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-5	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device	Remove Last Pressure Drop Adj. Device

Table Continued

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 7 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

Table Continued

Add Fan to System | Remove Last Fan

Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			
System Name:	AC-6	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-6	Supply	1	2,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	2,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-7	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-7	Supply	1	2,000	Nameplate HP	1	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	2,000	Total System Design (B)HP:	1	Maximum System Fan Power (B)HP:			

System Name:	AC-8	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)

Table Continued

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 8 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

AC-8	Supply	1	2,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	2,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-9	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-9	Supply	1	2,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	2,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-10	Economizer:[1]	Differential Temperature	Economizer Controls:	Designed per §140.4(e) and (m)	System Fan Type:	Constant Volume
01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-10	Supply	1	3,000	Nameplate HP	2	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	3,000	Total System Design (B)HP:	2	Maximum System Fan Power (B)HP:			

System Name:	AC-11	Economizer:[1]	NA: ≤ 54 kBtu/h cooling	Economizer Controls:		System Fan Type:	Constant Volume

Table Continued

STATE OF CALIFORNIA
Mechanical Systems
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

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01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B: Device	Design Airflow through Device (CFM)
AC-11	Supply	1	800	Nameplate HP	0.5	Calculated Adjustment (in H_2O)	
						Add Pressure Drop Adj. Device / Add Fan to System	Remove Last Pressure Drop Adj. Device / Remove Last Fan
Total System Design Supply Airflow (CFM):	800	Total System Design (B)HP:	0.5	Maximum System Fan Power (B)HP:			

Reset | Add System | Remove Last

[1] *FOOTNOTE: Computer room economizers must meet requirements of §140.9(a) and will be documented on the NRCC-PRC-E document.*
[2] *The unit used for HP must be consistent for all fans within a system.*

I. SYSTEM CONTROLS

Table Instructions: Complete the following Table to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)[1], §120.2(a) or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(g)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
AC-1	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-2	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-3	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-4	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows

Table Continued

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

Project Name:	HVAC and Roof Replacement	Report Page:	Page 10 of 24
Project Address:	1466 MCDonnell Avenue City of Commerce	Date Prepared:	2020-02-19

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)[1], §120.2(a) or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(g)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
AC-5	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-6	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Serves < 25k ft²	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-7	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-8	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-9	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-10	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows
AC-11	single zone	≤ 25,000 ft²	NA: Eq. type per §110.2(c) exception[1]	Auto Timeswitch	NA: Single Zone	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows

[1] *FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.*
* *NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: System 1: SA Temp Reset: Exempt because zones compliant with §140.4(d); EXCEPTION 1 to §140.4(f)

Reset | Add Row | Remove Last

STATE OF CALIFORNIA
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J. VENTILATION AND INDOOR AIR QUALITY

Table Instructions: Complete the following Table to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐ Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☐ Check this box if the project includes new or altered high-rise residential dwelling units.
03	☐ Check the box if the project is using natural ventilation in any spaces to meet required ventilation rates per §120.1(c)2.

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-1	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: NA: Not system type specified in Table J footnote 2

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4		DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM		
AC-1	Office space	1,000			150			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Table Continued

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE NRCC-MCH-E

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Table Continued

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-2	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4		DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM		
AC-2	Daycare (through age 4)	2,270			476.7			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-3	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4		DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM		
AC-3	Library- reading room/stacks	1,004			150.6			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Table Continued

EXISTING CONDITIONED SPACE; NO INCREASE IN SQUARE FOOTAGE; NO CHANGE IN USE

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.
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MANDATORY MEASURES

A. THE LESSER OF THE MINIMUMRATE OF OUTDOOR AIR REQURIED BY SECTION 120.1 OR THREE COMPLETE AIR CHANGES SHALL BE SUPPLIED TO THE ENTIRE BUILDING DURING THE ONE-HOUR PERIOD IMMEDIATELY BEFORE THE BUILDING IS NORMALLY OCCUPIED.

B. ALL AIR DISTRIBUTION SYSTEM DUCTS AND PLENUMS, INCLUDING, BUT NOT LIMITED TO, BUILDING CAVITIES, MECHANICAL CAVITIES, MECHANICAL CLOSETS, AIR-HANDLER BOXES, AND SUPPORT PLATFORMS USED AS DUCTS OR PLENUMS, SHALL BE INSTALLED, SEALED AND INSULATED TO MEET THE REQUIRMENTS OF CHAPTER 6 OF THE CALIFORNIA MECHANICAL CODE. SUPPLY AIR AND RETURN AIR DUCTS CONVEYING HEATED OR COOLED AIR SHALL BE INSULATED TO A MINIUM LEVEL OF R-4.2, UNLESS DUCTS ARE IN CONDITIONED SPACE

C. THE THERMOSTATIC CONTROLS FOR HVAC SYSTEMS SHALL MEET THE FOLLOWING REQUIRMENTS AS APPLICABLE:

1. EACH SPACE CONDITIONING ZONE SHALL BE CONTROLLED BY AN INDVIDUAL THERMOSTATIC CONTROL THAT RESPONDS TO TEMPERATURE WITHIN THE ZONE AND MEETS THE APPLICABLE REQUIRMENTS OF SUBSETION (b)
2. EACH THERMOSTATIC CONTROL REQUIRED BY SUBSECTION (a) SHALL BE CAPABLE OF BEING SET LOCALLY OR REMOTELY BY ADJUSTMENT OR SELECTION OF SENSORS TO CONTROL:
   a. COMFORT HEATING DOWN TO 55°F OR LOWER.
   b. COMFORT COOLING UP TO 85°F OR HIGHER
   c. BOTH HEATING AND COOLING, THE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOILNG ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM

TITLE 24 – LIBRARY MECHANICAL

G:\Project Files\2860 Commerce Bristow Library HVAC&Roof Replacement\01-Drawings\01-Revit\2860 Bristow Park Library & Snack Bar.rvt
6/15/2020 8:58:04 AM

Architecture
Interiors
Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.	BY	CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client: MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL 2535 COMMERCE WAY, COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

- TITLE 24 – LIBRARY MECHANICAL

M4.1

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STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
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Table Continued

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-4	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-4	Health club/ aerobics	1,650			247.5			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

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Mechanical Systems
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Table Continued

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-5	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-5	Auditorium seating	600			642			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-6	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-6	Health club/ aerobics	1,150			172.5		575	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

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Table Continued

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-7	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-7	Library- reading room/stacks	725			108.75			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

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Table Continued

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-8	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-8	Office space	725			108.75			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-9	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-9	Locker room (all others)	1,433			214.95	358.25	360	DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 17 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

Table Continued

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-10	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-10	Lobbies	1,040			520			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Table Continued

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 18 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

Table Continued

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	AC-11	System Design OA CFM Air Flow[1]:	2,900	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2[2]: Provided per §141.0(b)2c (alteration)

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3[3]					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type[4]	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people[5]	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3[6]	
AC-11	Office space	600			90			DCV	NA: Not required per §120.1(d)3
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	2,881.75	18	Ventilation for this System Complies?	Yes

Reset | Add System | Remove Last

[1] *FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system.*
[2] *Air filtration requirements apply to the following three system types per §120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.*
[3] *Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.*
[4] *See Standards Tables 120.1-A and 120.1-B*
[5] *For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.*
[6] *§120.2(e)3 requires systems serving rooms that are required by §130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by §130.1(c).*

K. TERMINAL BOX CONTROLS
This Section Does Not Apply

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 19 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

L. DISTRIBUTION (DUCTWORK AND PIPING)
Table Instructions: Complete the following tables to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(l) for duct leakage testing.

Duct Leakage Sealing

The answers to the questions below apply to the following duct system(s):			Duct leakage testing triggered for these systems?	No
11	No	The scope of the project includes only duct systems serving healthcare facilites.		
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.		
13	No	The space conditioning system serves less than 5,000 ft² of conditioned floor area.		
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:		
	☐	Outdoors		
	☐	In a space directly under a roof that has a U-factor greater than the U-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces		
	☐	In an unconditioned crawlspace		
	☑	In other unconditioned spaces		
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.		
16	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.		
17		Duct system shall be sealed in accordance with the California Mechanical Code.		

Add Duct System(s) | Remove Last

M. COOLING TOWERS
This Section Does Not Apply

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
(●)		NRCI-MCH-01-E - Must be submitted for all buildings.	☐	☐

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 20 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Table instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 21 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

YES	NO	Form/Title	Pass	Fail
(●)	(○)	NRCA-MCH-02-A Outdoor Air must be submitted for all newly installed HVAC units. *Note: MCH02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.*	☐	☐
(○)	(●)	NRCA-MCH-03-A Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes". If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".	☐	☐
(○)	(●)	NRCA-MCH-04-A Air Distribution Duct Leakage	☐	☐
(●)	(○)	NRCA-MCH-05-A Air Economizer Controls	☐	☐
(○)	(●)	NRCA-MCH-06-A Demand Control Ventilation Systems Acceptance must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.	☐	☐
(○)	(●)	NRCA-MCH-07-A Supply Fan Variable Flow Controls	☐	☐
(○)	(●)	NRCA-MCH-08-A Valve Leakage Test	☐	☐
(○)	(●)	NRCA-MCH-09-A Supply Water Temperature Reset Controls	☐	☐
(○)	(●)	NRCA-MCH-10-A Hydronic System Variable Flow Controls	☐	☐
(○)	(●)	NRCA-MCH-11-A Automatic Demand Shed Controls	☐	☐
(●)	(○)	NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	☐	☐
(○)	(●)	NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	☐	☐
(○)	(●)	NRCA-MCH-14-A Distributed Energy Storage DX AC Systems Acceptance *NOTE: This form does not automatically move to "Yes". If Distributed Energy Storage DX AC Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
(○)	(●)	NRCA-MCH-15-A Thermal Energy Storage (TES) System Acceptance *NOTE: This form does not automatically move to "Yes". If Chilled Water Storage, Ice-on-Coil Internal Melt, Ice-on-Coil External Melt, Ice Harvester, Brine, Ice-Slurry, Eutectic Salt, Clathrate Hydrate Slurry (CHS), Cryogenic or Encapsulated (Ice Ball) Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
(○)	(●)	NRCA-MCH-16-A Supply Air Temperature Reset Controls	☐	☐
(○)	(●)	NRCA-MCH-17-A Condenser Water Temperature Reset Controls	☐	☐
(○)	(●)	NRCA-MCH-18 Energy Management Control Systems	☐	☐
(○)	(●)	NRCA-MCH-19 Occupancy Sensor Controls	☐	☐
(●)	(○)	NRCA-MCH-20 Multi-Family Ventilation	☐	☐
(○)	(●)	NRCA-MCH-21 Multi-Family Envelope Leakage	☐	☐

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 22 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be completed by a HERS Rater and provided to the building inspector during construction. The final documents must be created by a HERS Providers registry, but drafts can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCV/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
(○)	(●)	NRCV-MCH-04-H Duct Leakage Test *NOTE: Must be completed by a HERS Rater*	☐	☐
(○)	(●)	NRCV-MCH-24 Enclosure Air Leakage Worksheet *NOTE: Must be completed by a HERS Rater*	☐	☐
(○)	(●)	NRCV-MCH-27 High-rise Residential *NOTE: Must be completed by a HERS Rater*	☐	☐
(○)	(●)	NRCV-MCH-32 Local Mechanical Exhaust *NOTE: Must be completed by a HERS Rater*	☐	☐

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 23 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

Q. MANDATORY MEASURES DOCUMENTATION LOCATION
Table Instructions: Indicate where mandatory measures are documented in the plan set or construction documentation. For any mandatory measures that do not apply, mark the plan sheet or construction document location as "N/A", any active cells that are left blank will result in non-compliance in Table C.

01		02
		Plan sheet or construction document location
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block:	Yes	M-1.0

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-MCH-E
Project Name: HVAC and Roof Replacement		Report Page:	Page 24 of 24
Project Address: 1466 MCDonnell Avenue City of Commerce		Date Prepared:	2020-02-19

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Kevin M. Friedman	Documentation Author Signature:	KMF
Company:	Engineering-Design-Analysis, Incorporated	Signature Date:	2020-02-19
Address:	10231 Slater Avenue Suite 207	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. **The information provided on this Certificate of Compliance is true and correct.**
2. **I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)**
3. **The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.**
4. **The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.**
5. **I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.**

Responsible Designer Name:	Kevin M. Friedman	Responsible Designer Signature:	KMF
Company :	Engineering-Design-Analysis, Incorporated	Date Signed:	2020-02-19
Address:	10231 Slater Avenue Suite 207	License:	M27267
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance: http://www.energy.ca.gov/title24/2019standards November 2019

EXISTING CONDITIONED SPACE; NO INCREASE IN SQUARE FOOTAGE; NO CHANGE IN USE

MANDATORY MEASURES

A. THE LESSER OF THE MINIMUMRATE OF OUTDOOR AIR REQURIED BY SEC. 121(b) 2, OR THREE COMPLETE AIR CHANGES SHALL BE SUPPLIED TO THE ENTIRE BUILDING DURING THE ONE-HOUR PERIOD IMMEDIATELY BEFORE THE BUILDING IS NORMALLY OCCUPIED

B. ALL AIR DISTRIBUTION SYSTEM DUCTS AND PLENUMS, INCLUDING, BUT NOT LIMITED TO, BUILDING CAVITIES, MECHANICAL CAVITIES, MECHANICAL CLOSETS, AIR-HANDLER BOXES, AND SUPPORT PLATFORMS USED AS DUCTS OR PLENUMS, SHALL BE INSTALLED, SEALED AND INSULATED TO MEET THE REQUIREMENTS OF CHAPTER 6 OF THE CALIFORNIA MECHANICAL CODE. SUPPLY-AIR AND RETURN-AIR DUCTS CONVEYING HEATED OR COOLED AIR SHALL BE INSULATED TO A MINIUM LEVEL OF R-4.2, UNLESS DUCTS ARE IN CONDITIONED SPACE

C. THE THERMOSTATIC CONTROLS FOR HVAC SYSTEMS SHALL MEET THE FOLLOWING REQUIRMENTS AS APPLICABLE:
1. EACH SPACE CONDITIONING ZONE SHALL BE CONTROLLED BY AN INDVIDUAL THERMOSTATIC CONTROL THAT RESPONDS TO TEMPERATURE WITHIN THE ZONE AND MEETS THE APPLICABLE REQUIRMENTS OF SUBSETION (b)
2. EACH THERMOSTATIC CONTROL REQUIRED BY SUBSECTION (a) SHALL BE CAPABLE OF BEING SET LOCALLY OR REMOTELY BY ADJUSTMENT OR SELECTION OF SENSORS TO CONTROL:
   a. COMFORT HEATING DOWN TO 55°F OR LOWER.
   b. COMFORT COOLING UP TO 85°F OR HIGHER
   c. BOTH HEATING AND COOLING, THE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOILNG ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.
10/2/2020, 12:14:34 PM
COMM20-00026_P-TBD

TITLE 24 — LIBRARY MECHANICAL

CITY OF COMMERCE INCORPORATED JANUARY 28, 1960 CALIFORNIA

BOA
Architecture Interiors Planning
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO. DATE REV. BY CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client: MR. CHIDI AUWUEZE, CITY OF COMMERCE, CITY HALL 2535 COMMERCE WAY, COMMERCE, CA 90040

Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

- TITLE 24 – LIBRARY MECHANICAL

M4.2

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

This document is used to demonstrate compliance with mandatory requirements in §110.8(g) and §120.7(b) for newly constructed buildings, and §141.0(b)1 for alterations, related to roof, wall and floor assemblies. It is also used to demonstrate compliance with prescriptive requirements in §140.3 for newly constructed buildings, and §141.0 for additions and alterations, related to roof, wall, floor, door, fenestration and daylighting requirements.

Project Name: HVAC an Roof Replacement - Snack Bar — Report Page: Page 1 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-06-11

A. GENERAL INFORMATION

01	Project Location (city)	City of Commerce	05	# of Stories (Habitable Above Grade)	1
02	Zipcode	90022	06	Total Conditioned Floor Area (ft²)	230
03	Climate Zone	9	07	Total Unconditioned Floor Area (ft²)	0
04	Occupancy Types Within Project (select all that apply): If one occupancy constitutes ≥ 80% of the conditioned floor area, the entire building envelope may be designed to comply with the provisions of that occupancy per §100.0(f).		08	☐ Project includes unconditioned enclosed space(s) > 5,000ft² under a roof with a ceiling height of at least 15ft.[1]	
	☑ All Nonresidential, including Relocatable Public School building certified for use in one climate zone. Occupancy: A / B / E / F / H / M / S / U	☐ Relocatable Public School Building for use in all climate zones. Occupancy: E		☐ High-Rise Residential Occupancy: R-2 / R-3	☐ Hotel/Motel Guest Rooms Occupancy: R-1

[1] *FOOTNOTE: Enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft in climate zones 2 through 15 are required to meet the minimum daylighting requirements defined in §140.3(c). Compliance with §140.3(c) is documented in Table L. This is the only prescriptive requirement which applies to unconditioned spaces.*

B. PROJECT SCOPE

Table Instructions: Include any building envelopes that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in §140.3 and §141.0(b)1 and §141.0(b)1 and 2 for additions and alterations.

My project consists of (check all that apply)		Component Types			
01		02			
☐ New Construction or Newly Conditioned Space		☐ Roof	☐ Walls	☐ Exterior Doors	
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft			☐ Floors	☐ Fenestration/Glazed Door[1]	
☐ Addition of conditioned space		☐ Roof	☐ Walls	☐ Exterior Doors	
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft			☐ Floors	☐ Fenestration/Glazed Door[1]	
☑ Alteration of conditioned space		☐ Roof Assembly	☐ Walls	☐ Exterior Doors NA for Alts.	
☐ One or more enclosed spaces > 5,000 ft² directly under roof with ceiling height > 15ft and lighting system installed for the first time		☑ Roofing Material	☐ Floors	☐ Fenestration	

[1] *FOOTNOTE: Doors that are more than one-half glass in area are considered Glazed Doors and should be documented on Table K with fenestration.*

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement - Snack Bar — Report Page: Page 2 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-06-11

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.

Opaque Envelope Components					Fenestration	Daylighting Spaces > 5,000 ft²	Compliance Results
Roof Assembly	Roofing Materials	Walls	Floors	Doors			
01	02	03	04	05	06	07	08
[See Table F]	[See Table G]	[See Table H]	[See Table I]	[See Table J]	[See Table K]	[See Table L]	
	Yes						COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with unedittable comments because of selections made or data entered in tables throughout the form.

Selections made in Table M have been changed by the permit applicant. See Table E. Additional Remarks for permit applicant's explanation.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. ROOF ASSEMBLY SCHEDULE

This Section Does Not Apply

G. RATED ROOFING MATERIAL (COOL ROOF)

Table Instructions: Complete this table to demonstrate compliance with prescriptive roof material requirements in §140.3(a)1A for new construction or additions, or §141.0(b)2B for alterations.

01	02	03	04	05	06	07
Tag / Plan Detail (1)	Name / Description / Location	Status	Occupancy Type	Roof Slope	Roof Material	Compliance Method
R-1	Roof	New	Nonresidential/ Relocatable 1 CZ	≤ 2:12 (Low)	Single-Ply	Solar Reflectance (Aged)/ Emittance

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement - Snack Bar — Report Page: Page 3 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-06-11

08 Required Minimum Material Performance		09 Designed Material Performance		10 U-factor of Assembly
Reflectance	0.63	Reflectance[1]	0.63	
Emittance	0.75	Emittance	0.75	
SRI		SRI		

Reset | Add Row | Remove Last

[1]FOOTNOTE: If Solar Reflectance (Initial) is indicated in column 07, enter the Initial Reflectance here and the form will convert it to a "Calculated Aged Solar Reflectance" when determining compliance.

H. WALL ASSEMBLY SCHEDULE

This Section Does Not Apply

I. FLOOR ASSEMBLY SCHEDULE

This Section Does Not Apply

J. EXTERIOR DOOR SCHEDULE

This Section Does Not Apply

K. FENESTRATION AND GLAZED DOOR SCHEDULE

This Section Does Not Apply

L. DAYLIGHT IN LARGE ENCLOSED SPACES

This Section Does Not Apply

M. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, form user must provide an explanation to be added to Table D Exceptional Conditions. These documents must be provided to the building inspector during construction and can be found online at http://www.energy.ca.gov/2019publications/CEC-400-2019-033/appendices/forms/NRCI.

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
☐	◉	NRCI-ENV-01-E - Must be submitted for all buildings.	☐	☐

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement - Snack Bar — Report Page: Page 4 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-06-11

N. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, form user must provide an explanation to be added to Table D Exceptional Conditions. These documents must be provided to the building inspector during construction and can be found online at http://www.energy.ca.gov/2019publications/CEC-400-2019-033/appendices/forms/NRCA/. Individuals who perform the field testing and verification work, and provide the information required for completion of the fenestration Certificate of Acceptance documentation are not required to be licensed professionals. However, the person who signs the Certificate of Acceptance document to certify compliance with the acceptance requirements shall be licensed as specified in Standards Section 10-103(a)4 and NA7.1.1.

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
☐	◉	NRCA-ENV-02-F - Must be submitted for all new, added or altered fenestration.	☐	☐
		NRCA-ENV-03-F - Daylighting design indoor lighting power adjustment factors (PAF). None: The requirement for this NRCA is indicated on the NRCC-LTI (prescriptive) or NRCC-PRF (performance) because it is only relevant if a PAF is used for clerestories, daylight redirection devices or horizontal slats.		

STATE OF CALIFORNIA
Envelope Component Approach
NRCC-ENV-E (Created 11/19) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-ENV-E

Project Name: HVAC an Roof Replacement - Snack Bar — Report Page: Page 5 of 5
Project Address: 1466 South McDonnell — Date Prepared: 2020-06-11

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Kevin M. Friedman	Documentation Author Signature:	
Company:	Engineering - Design - Analysis, Incorporated	Signature Date:	2020-01-10
Address:	10231 Slater Avenue Suite 207	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. **The information provided on this Certificate of Compliance is true and correct.**
2. **I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)**
3. **The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.**
4. **The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.**
5. **I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.**

Responsible Designer Name:	Kevin M. Friedman	Responsible Designer Signature:	
Company:	Engineering - Design - Analysis, Incorporated	Date Signed:	2020-01-10
Address:	10231 Slater Avenue Suite 207	License:	M27267
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY.
SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.

10/2/2020, 12:14:34 PM
COMM20-00029_P-TBD

BOA Architecture Interiors Planning
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO. DATE | REV. | BY CHK

Designer: –
CAD Draft: –
Architect: –
Engineer: –
Client: CITY OF COMMERCE
Date Issue: –
Job Number: 2860

Client: MR CHIDI AUWEZE, CITY OF COMMERCE CITY HALL 2535 COMMERCE WAY, COMMERCE, CA 90040

Consultant:

DETAILS, TITLE 24 – SNACK BAR ENVELOPE

M4.3

TITLE 24 – SNACK BAR ENVELOPE

G:\Project Files\2860 Commerce Bristow Library HVAC&Roof Replacement\01-Drawings\01-Revit\2860 Bristow Park Snack Bar.rvt

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.		
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 1 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

A. GENERAL INFORMATION

01	Project Location (city)	City of Commerce	04	Total Conditioned Floor Area	230
02	Climate Zone	9	05	Total Unconditioned Floor Area	
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1
☐ Office (B)		☐ Retail (M)	☐ Non-refrigerated Warehouse (S)		
☐ Hotel/ Motel Guest Rooms (R-1)		☐ School (F)	☐ Healthcare Facility (H)		
☐ High-Rise Residential (R-2/R-3)		☐ Relocatable Class Bldg (E)	☑ Other (Write In):		Commercial Kitchen

¹ *FOOTNOTES: Climate zone can be determined on the California Energy Commission's website at http://www.energy.ca.gov/maps/renewable/building_climate_zones.html*

B. PROJECT SCOPE

Table Instructions: Include any mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

My project consists of (check all that apply)		
01	02	03
Air System(s)	Wet System Components	Dry System Components
☑ Heating Air System	☐ Water Economizer	☐ Air Economizer
☑ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ Hydronic System Piping	☐ Fan Systems
☑ Mechanical Controls	☐ Cooling Towers	☑ Ductwork
	☐ Chillers	☑ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

01		02		03		04		05		06		07		08	09
System Summary §110.1, §110.2, §140.4	AND	Pumps §140.4(k)	AND	Fans/ Economizers §140.4(c), §140.4(e)	AND	System Controls §110.2, §120.2, §140.4(f)	AND	Ventilation §120.1	AND	Terminal Box Controls §140.4(d)	AND	Distribution §120.3, §140.4(l)	AND	Cooling Towers §110.2(e)2	**Compliance Results**
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND		AND	Yes	AND	Yes	AND		AND	Yes	AND		**COMPLIES**
												Mandatory Measures Compliance (See Table Q for Details)			**COMPLIES**

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 2 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

No exceptional conditions apply to this project.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Table Instructions: Complete the following equipment schedules to show compliance with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(k) or §141.0(b)2 for alterations.

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
				Equipment Sizing per Mechanical Schedule (Btu/h) §140.4 (a&b)						
				Heating Output²,³			Cooling Output²,³		Load Calculations³,⁴	
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 & Title 20	Smallest Size Available¹ §140.4(a)	Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
HP-1	Unitary heat pumps	Air cooled, split (1 phase)	Yes	33.6	48	48	33.6	48	48	33.6

Reset | Add Row | Remove Last

¹ *FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are excepted.*
² *It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.*
³ *If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.*
⁴ *Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).*
Table Continued

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 3 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

01	02	03	04	05	06	07	08	09
		Heating Mode				Cooling Mode		
Name or Item Tag	Size Category (Btu/h)	Rating Condition (°F)	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency
HP-1	<65,000		HSPF	8.2	8.2	SEER	14	14

Reset

G. PUMPS

This Section Does Not Apply

H. FAN SYSTEMS & AIR ECONOMIZERS

This Section Does Not Apply

I. SYSTEM CONTROLS

Table Instructions: Complete the following Table to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)¹, §120.2(a) or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(g)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
HP-1	single zone	≤ 25,000 ft²	Setback Thermostat	Auto Timeswitch	Auto Timeswitch	NA: PTAC, PTHP, Rm AC, HP	NA: Single Zone	NA: No operable windows

¹ *FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.*
* *NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: System 1: SA Temp Reset: Exempt because zones compliant with §140.4(d); EXCEPTION 1 to §140.4(f)

Reset | Add Row | Remove Last

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 4 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

J. VENTILATION AND INDOOR AIR QUALITY

Table Instructions: Complete the following Table to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☐	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☐	Check this box if the project includes new or altered high-rise residential dwelling units.
03	☐	Check the box if the project is using natural ventilation in any spaces to meet required ventilation rates per §120.1(c)2.

Nonresidential and Hotel/ Motel Ventilation Systems

04		05		06		07
System Name:	HP-1	System Design OA CFM Air Flow¹:	320	System Design Transfer Air CFM:	0	Air Filtration per §120.1(c) and §141.0(b)2²: NA: Not system type specified in Table J footnote 2

08	09	10	11	12	13	14	15	16	
	Mechanical Ventilation Required per §120.1(c)3³					Exh. Vent. per §120.1(c)4			
Space Name or Item Tag	Occupancy Type⁴	Conditioned Floor Area (ft²)	# of showerheads/ toilets	# of people⁵	Required Min OA CFM	Required Minimum CFM	Provided per Design CFM	DCV or Occupant Sensor Controls per §120.1(d)3, §120.1(d)5 & §120.2(e)3⁶	
HP-1	Kitchen (cooking)	230			34.5	161	320	DCV	NA: Space exhaust is > design ventilation rate exception
								Occ Sensor	NA: Continously operated per §120.2(e)3 exception

Reset | Add Occupancy Type | Remove Last

17	Total System Required Min OA CFM	34.5	18	Ventilation for this System Complies?	Yes

Reset | Add System | Remove Last

¹ *FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system.*
² *Air filtration requirements apply to the following three system types per §120.1(c)1A: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.*
³ *Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.*
⁴ *See Standards Tables 120.1-A and 120.1-B*
⁵ *For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.*
⁶ *§120.2(e)3 requires systems serving rooms that are required by §130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by*

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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§130.1(c).

K. TERMINAL BOX CONTROLS

This Section Does Not Apply

L. DISTRIBUTION (DUCTWORK AND PIPING)

Table Instructions: Complete the following tables to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(l) for duct leakage testing.

Duct Leakage Sealing

The answers to the questions below apply to the following duct system(s):		HP-1	Duct leakage testing triggered for these systems?	No
11	No	The scope of the project includes only duct systems serving healthcare facilites.		
12	Yes	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.		
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.		
14	No	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:		
	☐	Outdoors		
	☐	In a space directly under a roof that has a U-factor greater than the U-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces		
	☐	In an unconditioned crawlspace		
	☐	In other unconditioned spaces		
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.		
16	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.		
17		Duct system shall be sealed in accordance with the California Mechanical Code.		

Add Duct System(s) | Remove Last

M. COOLING TOWERS

This Section Does Not Apply

STATE OF CALIFORNIA
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NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 6 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
●		NRCI-MCH-01-E - Must be submitted for all buildings.	☐	☐

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 7 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

●	○	NRCA-MCH-02-A Outdoor Air must be submitted for all newly installed HVAC units. *Note: MCH02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.*	☐	☐
○	●	NRCA-MCH-03-A Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes". If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".	☐	☐
○	●	NRCA-MCH-04-A Air Distribution Duct Leakage	☐	☐
○	●	NRCA-MCH-05-A Air Economizer Controls	☐	☐
○	●	NRCA-MCH-06-A Demand Control Ventilation Systems Acceptance must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.	☐	☐
○	●	NRCA-MCH-07-A Supply Fan Variable Flow Controls	☐	☐
○	●	NRCA-MCH-08-A Valve Leakage Test	☐	☐
○	●	NRCA-MCH-09-A Supply Water Temperature Reset Controls	☐	☐
○	●	NRCA-MCH-10-A Hydronic System Variable Flow Controls	☐	☐
○	●	NRCA-MCH-11-A Automatic Demand Shed Controls	☐	☐
○	●	NRCA-MCH-12-A FDD for Packaged Direct Expansion Units	☐	☐
○	●	NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance	☐	☐
○	●	NRCA-MCH-14-A Distributed Energy Storage DX AC Systems Acceptance *NOTE: This form does not automatically move to "Yes". If Distributed Energy Storage DX AC Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
○	●	NRCA-MCH-15-A Thermal Energy Storage (TES) System Acceptance *NOTE: This form does not automatically move to "Yes". If Chilled Water Storage, Ice-on-Coil Internal Melt, Ice-on-Coil External Melt, Ice Harvester, Brine, Ice-Slurry, Eutectic Salt, Clathrate Hydrate Slurry (CHS), Cryogenic or Encapsulated (Ice Ball) Systems are included in the scope, permit applicant should move this form to "Yes".*	☐	☐
○	●	NRCA-MCH-16-A Supply Air Temperature Reset Controls	☐	☐
○	●	NRCA-MCH-17-A Condenser Water Temperature Reset Controls	☐	☐
○	●	NRCA-MCH-18 Energy Management Control Systems	☐	☐
○	●	NRCA-MCH-19 Occupancy Sensor Controls	☐	☐
●	○	NRCA-MCH-20 Multi-Family Ventilation	☐	☐
○	●	NRCA-MCH-21 Multi-Family Envelope Leakage	☐	☐

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 8 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be completed by a HERS Rater and provided to the building inspector during construction. The final documents must be created by a HERS Providers registry, but drafts can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCV/

YES	NO	Form/Title	Field Inspector Pass	Field Inspector Fail
○	●	NRCV-MCH-04-H Duct Leakage Test *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-24 Enclosure Air Leakage Worksheet *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-27 High-rise Residential *NOTE: Must be completed by a HERS Rater*	☐	☐
○	●	NRCV-MCH-32 Local Mechanical Exhaust *NOTE: Must be completed by a HERS Rater*	☐	☐

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

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Q. MANDATORY MEASURES DOCUMENTATION LOCATION

Table Instructions: Indicate where mandatory measures are documented in the plan set or construction documentation. For any mandatory measures that do not apply, mark the plan sheet or construction document location as "N/A", any active cells that are left blank will result in non-compliance in Table C.

01		02
		Plan sheet or construction document location
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block:	Yes	-

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: HVAC an Roof Replacement - Snack Bar	Report Page:	Page 10 of 10
Project Address: 1466 South McDonnell	Date Prepared:	2020-06-11

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Kevin M. Friedman	Documentation Author Signature:	
Company:	Engineering - Design - Analysis, Incorporated	Signature Date:	2020-06-11
Address:	10231 Slater Avenue Suite 207	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. **The information provided on this Certificate of Compliance is true and correct.**
2. **I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)**
3. **The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.**
4. **The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.**
5. **I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.**

Responsible Designer Name:	Kevin M. Friedman	Responsible Designer Signature:	
Company :	Engineering - Design - Analysis, Incorporated	Date Signed:	2020-06-11
Address:	10231 Slater Avenue Suite 207	License:	M27267
City/State/Zip:	Fountain Valley CA 92708	Phone:	714 913 8393

BUILDING AND SAFETY APPROVED
REVIEWED FOR SUBSTANTIAL COMPLIANCE ONLY. SUBJECT TO FURTHER REVIEW AND CORRECTIONS.
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10/2/2020, 12:14:34 PM
COMM20-00029_P-TBD

Architecture Interiors Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

Designer:
CAD Draft:
Architect:
Engineer:
Client:
Date Issue:
Job Number:

Client:

Consultant:

REGISTERED PROFESSIONAL ENGINEER KEVIN M. FRIEDMAN No. M-27267 exp. 6/30/21 MECHANICAL STATE OF CALIFORNIA

TITLE 24 – SNACK BAR MECHANICAL

M4.4

TITLE 24 – SNACK BAR MECHANICAL

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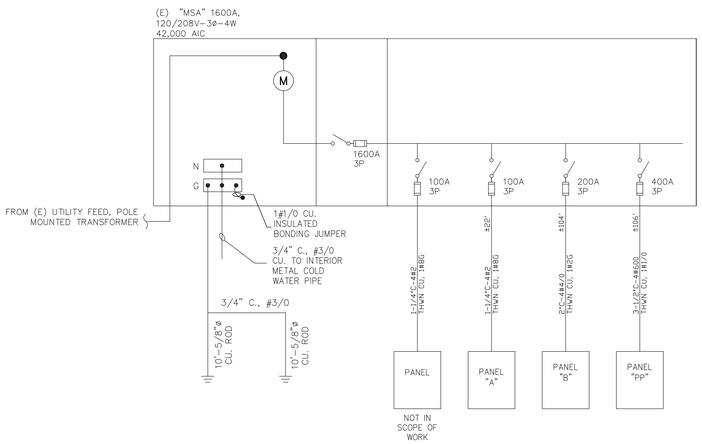
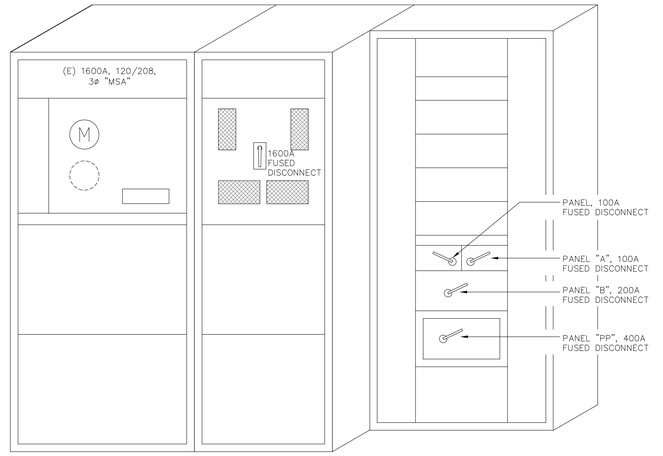
6/15/2020 8:58:04 AM



ALL EQUIPMENT ON THIS SINGLE LINE DIAGRAM IS EXISTING

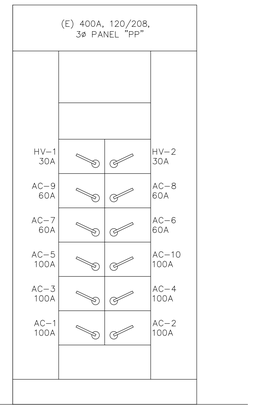
(E) "MSA" SINGLE LINE DIAGRAM



ALL EQUIPMENT ON THIS ELEVATION IS EXISTING

PROVIDE FLASH ARC WARNING LABELS FOR ELECTRICAL EQUIPMENT

(E) "MSA" SWITCHGEAR ELEVATION



PROVIDE FLASH ARC WARNING LABELS FOR ELECTRICAL EQUIPMENT

ALL EQUIPMENT ON THIS ELEVATION IS EXISTING. FUSED DISCONNECT SWITCHES SHALL BE REVISED PER PANEL "PP" SCHEDULE

(E) PANEL "PP" ELEVATION

ALL LOADS AND CIRCUIT BREAKERS ARE EXISTING UNLESS NOTED OTHERWISE

PANEL "A" — VOLTAGE/PHASE: 208/120, 3ø, 4W — FEED FROM "MSA"
LOCATION: — BUS AMPS: 100A — 22 KAIC
MOUNTING SURFACE — M.L.O.

LOADS	SEE NOTE	OUTLETS LM	MISC	REC	LTG	VOLT AMPS A	B	C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT AMPS A	B	C	OUTLETS MISC	REC	LTG	SEE NOTE	LOADS
LOBBY LTS.						750			1	20/1	●---	20/1	2	1000							MEET. RM. LTS.
CORRIDOR LTS.							1360		3	20/1	-●-	20/1	4		1000						MEET. RM. LTS.
CORRIDOR LTS.								1200	5	20/1	--●	20/1	6			1280					PRE-SCHOOL LTS.
GAME RM. LTS.						920			7	20/1	●---	20/1	8	560							KIT. TOILET SUPP LTS
OFFICE LTS.							560		9	20/1	-●-	20/1	10		720						OFF. PRE-SCH. REC.
OUTSIDE ENTRY LTS.								1000	11	20/1	--●	20/1	12			720					OFF. PRE-SCH. REC.
GAME RM. OFF. REC.						900			13	20/1	●---	20/1	14	600							DRINK. FOUNT. REC.
CORR. MEET. RM. REC.							900		15	20/1	-●-	20/1	16		360						GAME RM. REC.
DT. KIT. REC. BK CNTR.								900	17	20/1	--●	20/1	18			730					GAME RM. REC.
ATRIUM LTS.						1200			19	20/1	●---	20/1	20	500							KITCHEN
ATRIUM LTS.							600		21	20/1	-●-	20/1	22		540						KITCHEN REC.
OUTSIDE LTS.								750	23	20/1	--●	20/1	24			1500					FOOD WARMER REC.
HONEYWELL EMS CNTRL.						200			25	20/1	●---	20/1	26	100							EF-3, EF-4 *
GARB. DISPOSAL							900		27	20/1	-●-	20/1	28		300						DK LTS EXIT SIGN, TV
TEL. BKBRD. REC.								360	29	20/1	--●	15/1	30			700					CIRC. PUMP C-3
EMS SYSTEM						200			31	20/1	●---	20/1	32	600							CIRC. PUMP C-2
DISHWASHER							1200		33	20/1	-●-	20/1	34		400						CIRC. PUMP CP-1
** EF-5								600	35	15/1	--●	20/1	36			600					MA-1 ***
" "						600			37	20/1	●---	20/1	38	600							" "
SPARE							-		39	20/1	-●-	20/1	40		100						AC TIMECLOCKS
								-	41	20/1	--●	20/1	42			-					
						4770	5520	4810		SUB-TOTAL				3960	3420	5530					

PANEL TOTAL:	*	LCL	*	LM	=	VA	@208V 3ø =	AMPS
28010		-		749		28759		79.9

* DENOTES (E) BREAKER TO REMAIN FOR REPLACED EF'S
** DENOTES (E) BREAKER TO REMAIN FOR REPLACED EF
*** DENOTES (E) BREAKER TO REMAIN FOR REPLACED EF

PANEL "B" — VOLTAGE/PHASE: 208/120, 3ø, 4W — FEED FROM "MSA"
LOCATION: — BUS AMPS: 225A — 22 KAIC
MOUNTING SURFACE — M.L.O.

LOADS	SEE NOTE	OUTLETS LM	MISC	REC	LTG	VOLT AMPS A	B	C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT AMPS A	B	C	OUTLETS MISC	REC	LTG	SEE NOTE	LOADS
LIBRARY LTS.						1000			1	20/1	●---	20/1	2	920							LIBRARY LTS.
LIBRARY LTS.							1080		3	20/1	-●-	20/1	4		880						LIBRARY LTS.
LIBRARY LTS.								800	5	20/1	--●	20/1	6			1080					OFFICE LTS.
LIBRARY LTS.						720			7	20/1	●---	20/1	8	960							SHOWER TOILET LTS.
LIBRARY LTS.							720		9	20/1	-●-	20/1	10		1480						EXERCISE LTS.
SHOWER, TOILET LTS.								1200	11	20/1	--●	20/1	12			700					PROJECTION SCREEN
OFFICE LTS.						1280			13	20/1	●---	20/1	14	1580							BOXING LTS.
OFFICE REC.							1080		15	20/1	-●-	20/1	16		1500						BOXING LTS.
OFFICE, TOILET REC.								1080	17	20/1	--●	20/1	18			1200					BOXING LTS.
OFFICE, AUTO TANK REC.						1260			19	20/1	●---	20/1	20	1080							LIBRARY REC.
EXERCISE, OFF. REC.							1080		21	20/1	-●-	20/1	22		1080						LIBRARY REC.
LIBRARY REC.								900	23	20/1	--●	20/1	24			600					LIBRARY REC.
LIBRARY REC.						720			25	20/1	●---	20/1	26	1080							OFFICE REC.
COPIER REC.							1200		27	20/1	-●-	20/1	28		1080						LIB. OFF. REC.
DATA RM. REC.								540	29	20/1	--●	20/1	30			720					OUTSIDE LTS.
DATA RM. REC.						540			31	20/1	●---	20/1	32	600							OUTSIDE LTS.
** EF-1 MEN + SHOWER							900		33	15/1	-●-	20/1	34		-						VAV-1
** EF-2 WOMENS + SHOWER								900	35	15/1	--●	20/1	36			540					ROOF REC.
DRINKING FOUNT.						600			37	15/1	●---	20/1	38	1200							LIB. COPY MACH REC.
* AC-11							1581		39	20/	-●-	30/1	40		500						MEN'S DRYERS
" "								1581	41	2	--●	30/1	42			500					WOMEN'S DRYERS
						6320	7641	7001		SUB-TOTAL				7420	6520	5340					

PANEL TOTAL:	*	LCL	*	LM	=	VA	@208V 3ø =	AMPS
40042		-		749		40791		113.4

* DENOTES (N) 20A, 2P CIRCUIT BREAKER TO REPLACE (E) FOR REPLACED AC-11
** DENOTES (E) BREAKER TO REMAIN FOR REPLACED EF'S

PANEL "PP" — VOLTAGE/PHASE: 208/120, 3ø, 4W — FEED FROM "MSA"
LOCATION — BUS AMPS: 400A — 22 KAIC
MOUNTING: PEDISTAL — M.L.O.

	LOADS	SEE NOTE	OUTLETS LM	MISC	REC	LTG	VOLT AMPS A	B	C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT AMPS A	B	C	OUTLETS MISC	REC	LTG	SEE NOTE	LOADS	
	HV-1						3946			1	50	●---	50	2	3946							HV-2	
	-							3946			/	-●-	/			3946						-	
	-								3946		3	--●	3				3946					-	
**	AC-9						3007			3	50	●---	50	4	3007							AC-8	**
	-							3007			/	-●-	/			3007						-	
	-								3007		3	--●	3				3007					-	
**	AC-7						3007			5	50	●---	50	6	3007							AC-6	**
	-							3007			/	-●-	/			3007						-	
	-								3007		3	--●	3				3007					-	
*	AC-5						3946			7	50	●---	50	8	3946							AC-10	*
	-							3946			/	-●-	/			3946						-	
	-								3946		3	--●	3				3946					-	
*	AC-3						3946			9	50	●---	50	10	3946							AC-4	*
	-							3946			/	-●-	/			3946						-	
	-								3946		3	--●	3				3946					-	
*	AC-1						3946			11	50	●---	50	12	3946							AC-2	*
	-							3946			/	-●-	/			3946						-	
	-								3946		3	--●	3				3946					-	
							21798	21798	21798		SUB-TOTAL				21798	21798	21798						

PANEL TOTAL:	*	LCL	*	LM	=	VA	@208V 3ø =	AMPS
130788		-		-		130788		363.5

* DENOTES (N) 50A FUSED SWITCH TO REPLACE (E) 100A SWITCH FOR REPLACED AC'S
** DENOTES (N) 50A FUSED SWITCH TO REPLACE (E) 60A SWITCH FOR REPLACED AC'S

PANEL SCHEDULES

LEGEND

- LIGHT FIXTURE, EXIT, SINGLE FACED, UNIVERSAL MOUNTED WITH DIRECTIONAL ARROWS
- LIGHT FIXTURE, EXIT, DOUBLE FACED, UNIVERSAL MOUNTED WITH DIRECTIONAL ARROWS
- LIGHT FIXTURE, EXIT
- FLUORESCENT LIGHTING FIXTURE, 2' X 8'
- FLUORESCENT LIGHTING FIXTURE, 2' X 8' WITH EMERGENCY NITE LIGHT
- FLUORESCENT LIGHTING FIXTURE
- FLUORESCENT LIGHTING FIXTURE W/EMERGENCY N.L.
- DOWN LIGHT
- LIGHTING FIXTURE, WALL MOUNTED
- DUPLEX RECEPTACLE, 20A, 120V, +15" A.F.F. TO BOTTOM OF BOX OR AS NOTED. G= INDICATES GFI, I= INDICATES ISOLATED GROUND.
- DEDICATED EQUIPMENT RECEPTACLE, 20A 120V
- JUNCTION BOX, 4" X 1-1/2" SQUARE, TYP. U.N.O.
- JUNCTION BOX, WALL MOUNTED 4" X 1-1/2" SQUARE, TYP. U.N.O.
- PS — PHOTO SENSOR FOR AUTOMATIC DAYLIGHTING CONTROL
- OS — OCCUPANCY SENSOR
- S — SWITCH, SINGLE (+48" U.N.O. TO TOP OF BOX)
- S^{ab} — DOUBLE SWITCHING (a=switch one, b=switch two) (+48" U.N.O. TO TOP OF BOX)
- S^{3} — SWITCH, 3-WAY (+48" U.N.O. TO TOP OF BOX)
- S^{4} — SWITCH, 4-WAY (+48" U.N.O. TO TOP OF BOX)
- S^{**} — SWITCH: K=KEY OPERATED M=MANUAL MOTOR P=PILOT SWITCH T=TIMER D=DIMMING
- PANEL BOARD
- CONDUIT CONCEALED IN WALL OR CEILING SIZE AS NOTED
- CONDUIT BELOW FLOOR OR GRADE OR IN SLAB, SIZE AS NOTED
- CONDUIT EXPOSED, SIZE AS NOTED
- TELEPHONE SYSTEM CONDUIT, 3/4"C OR AS NOTED
- BRANCH CIRCUIT, HOME RUN TO PANEL BOARD A, CIRCUIT 1
- CONDUIT TURNED
- CONDUIT TURNED UP OR TOWARD OBSERVER
- CONDUIT TURNED DN OR AWAY FROM OBSERVER
- 1/2" TICK MARKS INDICATE QUANTITY OF #12 AWG CONDUCTORS U.N.O., NO MARKS INDICATES 2#12 -LARGE SLASH DENOTES NEUTRAL -SLASH WITH DOT DENOTES CODE SIZED GROUND
- #10 — MARK COUNT INDICATES QUANTITY, CONDUCTOR SIZE AS NOTED
- C.O. — CONDUIT ONLY FOR FUTURE CONNECTION 3/4" U.N.O.
- A / 96 — LIGHTING FIXTURE DESIGNATION, TYPE A, 96VA
- CIRCUIT BREAKER
- MOTOR DISCONNECT SWITCH; RATINGS AS NOTED
- MANUAL MOTOR STARTER
- FUSED SWITCH DISCONNECT SWITCH OR RATING AS NOTED
- A-1,3,5 — DENOTES HOME RUN TO PANELBOARD A CIRCUITS 1,3,5
- (A) — DENOTES PANELBOARD/SWITCHBOARD "A"
- So — OVERIDE SWITCH - TIMED, 2 HOUR MAXIMUM OVERRIDE
- T/C (TC) — PROGRAMMABLE TIME CLOCK
- POINT OF DISCONNECT
- POINT OF CONNECTION

GENERAL NOTES

1. ALL NOTES PROVIDE GENERAL REQUIREMENTS FOR SCOPE, MATERIALS, AND EXECUTION OF ELECTRICAL WORK. THE NOTES THAT ARE APPLICABLE TO THIS PROJECT SHALL BE COMPLIED WITH.
2. ALL WIRING DESIGN IS BASED ON 75 DEGREES C CONDITION FOR COPPER CONDUCTORS OF TYPE THWN, UNLESS OTHERWISE STATED ALL WIRE TO BE TYPE THWN RATED FOR 75 DEGREES C OR BETTER. ALL TERMINATIONS SHALL BE RATED FOR 75 DEGREES C OR BETTER ELECTRICAL CONTRACTOR TO SIZE ALL WIRING NOT EXPLICITLY SHOWN ON DRAWINGS ACCORDING TO THE REQUIREMENTS OF NATIONAL ELECTRICAL CODE (NEC) FOR THE SPECIFIC APPLICATION AND CONDITIONS.
3. ALL CONDUCTORS SHALL BE COPPER (MINIMUM SIZE #12 AWG UNLESS SPECIFICALLY NOTED OTHERWISE). ALL INDICATIONS OF NUMBER OF CONDUCTORS EXCLUDE THE GROUND WIRE WHICH MUST BE PROVIDED.
4. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMITY TO ALL LOCAL CODES AND ORDINANCES, THE STATE OF CALIFORNIA ELECTRICAL SAFETY ORDERS, THE NATIONAL ELECTRICAL CODE AND ANY ADDITIONAL JURISDICTIONS RELATING TO THEIR WORK.
5. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL PERMITS AND PAY ALL FEES.
6. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, WIRE, SWITCHES, LIGHT FIXTURES (WITH LAMPS), RECEPTACLES, SERVICE DEVICES, SWITCHBOARDS AND PANEL BOARDS, ETC., REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
7. LOCATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER THOSE SHOWN ON THE ELECTRICAL DRAWINGS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT EQUIPMENT BEING PROVIDED AND INSTALLED BY HIM WILL FIT DIMENSIONALLY IN LOCATIONS SHOWN ON DRAWINGS.
9. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS AND/OR SPECIFICATIONS OR WITH CODE REQUIREMENTS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.
10. ALL PENETRATIONS OF FIRE-RATED SURFACES SHALL BE MADE WITH A NON-COMBUSTIBLE MATERIALS OF A FIRE RATING EQUAL TO THE MATERIAL PENETRATED AND SHALL BE COMPLETELY FIRE-STOPPED. REFER TO ARCHITECTURAL PLANS TO DETERMINE FIRE-RATED SURFACES AND INCLUDE ALL COSTS IN BASE BID.
11. PROVIDE PULL-WIRE IN ALL CONDUIT ONLY (C.O.) RUNS.
12. SEE MECHANICAL/PLUMBING PLANS AND SPECIFICATIONS FOR ADDITIONAL ELECTRICAL WORK, EQUIPMENT AND CONTROL WIRING TO BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
13. LIGHTING FIXTURES SHALL BE LOCATED TO AVOID ALL MECHANICAL, PLUMBING AND ALL OTHER TRADES, EQUIPMENT OR WORK.
14. ELECTRICAL CONTRACTOR SHALL AVOID SOUND TRANSMISSION BETWEEN ROOMS BY OFFSETTING ALL OUTLETS LOCATED ON OPPOSITE SIDES OF WALLS AS REQUIRED. PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN OUTLET BOXES.
15. ALL LIGHTING FIXTURES SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR TO COMPLY WITH THE CEILING TYPE THAT THEY ARE INSTALLED IN. THE TYPE OF CEILING INDICATED ON THE ARCHITECTURAL DRAWINGS WILL TAKE PRECEDENCE OVER THE LIGHTING FIXTURE SCHEDULE. ALL LIGHT FIXTURES SHALL BE LOCATED AS PER THE ARCHITECTURAL REFLECTED CEILING PLAN.
16. ALL ELECTRICAL EQUIPMENT EXPOSED TO THE CLIMATE SHALL BE WEATHERPROOF.
17. ALL ELECTRICAL EQUIPMENT UTILIZED AT THIS PROJECT SHALL BE U.L. LISTED.
18. ELECTRICAL CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES PRIOR TO BASE BID AND VERIFY ALL EXACT LOCATIONS, MOUNTING HEIGHTS, DEPTHS AND SPECIAL CHARACTERISTICS OR CONDITIONS.
19. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND SHALL NOTIFY ENGINEERS/ARCHITECTS OF ANY DISCREPANCIES WITH CONTRACT DOCUMENTS BEFORE COMMENCING ANY WORK.
20. PROVIDE WEATHER PROOF, GFCI PROTECTED OUTLETS WITHIN 25 FEET (7.5M) OF HEATING, AIRCONDITIONING, OR REFRIGERATION EQUIPMENT.
21. SWITCHBOARDS AND PANELBOARDS LIKELY TO BE ENERGIZED WHILE BEING MAINTAINED OR SERVICED BY QUALIFIED PERSONNEL SHALL BE LABELED WARNING OF POSSIBLE ARC FLASH HAZARDS AND IDENTIFIED WITH THE APPROPRIATE ARC FLASH PROTECTION RATING PERSONAL PROTECTIVE EQUIPEMNT (PPE) SIGNAGE." [CEC 110.16]
22. EACH SERVICE PANEL, TRANSFORMER, DISCONNECT SWITCH, MOTOR STARTER ETC. SHALL HAVE AN ENGRAVED NAMEPLATE
23. EACH CIRCUIT BREAKER PANEL SHALL HAVE A LISTING OF CIRCUIT BREAKERS TYPED AND PERMENTANTLY FIXED TO THE INSIDE OF ITS DOOR
24. NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN 6 FEET OF THE FLOOR OR TO THE STRUCUTURAL CEILING ABOVE THE SPACE OF ELECTRICAL EQUIPMENT. [CEC ART. 110.26]
25. ELECTRICAL SWITCHES. CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING, HEATING, AND VENTILATING EQUIPMENT SHALL BE LOCATED NO MORE THEN 48 INCHES MEASURED FROM THE TOP OF THE OUTLET BOX NOR LESS THEN 15 INCHES MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM. [C.B.C. 1117B.5, ITEM #5.1]
26. ELECTRICAL RECEPTACLE OUTLES. ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THEN 48 INCHES MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES MEASURED FROMTHE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF THE FINISH FLOOR OR WORKING PLATFORM. [C.B.C. 1117B.5, ITEM #5.2]
27. WHERE A BUILDING OR STRUCTURE IS SUPPLIED BY MORE THAN ONE SERVICE, OR ANY COMBINATION OF BRANCH CIRCUITS, FEEDERS, AND SERVICES, A PERMANENT PLAQUE OR DIRECTORY SHALL BE INSTALLED AT EACH SERVICE DISCONNECT LOCATION DENOTING ALL OTHER SERVICES, FEEDERS, AND BRANCH CIRCUITS SUPPLYING THAT BUILDING OR STRUCTURE AND THE AREA SERVED BY EACH. THIS SHALL BE PROVIDED FOR THE EXISTING AND NEW SERVICES. [C.E.C., 230.2(E)]
28. PROVIDE A LOCK-ON DEVICE FOR CIRCUITS SUPPLYING EMERGENCY EQUIPMENT
29. FUSES SHALL BE PROVIDED WITH REJECTION TYPE FUSE HOLDERS
30. ELECTRICAL EQUIPMENT SHALL BE LISTED BY A CITY OF COMMERCE RECOGNIZED TESTING LABORATORY OR APPROVED BY THE DEPARTMENT
31. ALL ELECTRICAL WORK SHALL BE DESIGNED PER 2020 LOS ANGELES COUNTY ELECTRICAL CODE, 2019 CALIFORNIA ELECTRICAL CODE, AND 2019 BUILDING ENERGY EFFICIENCY STANDARDS
32. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED, OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION.
33. THE MAXIMUM COMBINED VOLTAGE DROP ON BOTH INSTALLED FEEDER CONDUCTORS AND BRANCH CIRCUIT CONDUCTORS TO THE FARTHEST CONNECTED LOAD OR OUTLET SHALL NOT EXCEED 5 PERCENT

SHEET INDEX

BUILDING AND SAFETY APPROVED
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VIOLATION OF APPLICABLE CODES, LAWS OR ORDINANCES IS STRICTLY PROHIBITED DESPITE CONTENTS OF THESE PLANS. ALL REVISIONS OR DEVIATIONS FROM THESE PLANS REQUIRE PRIOR BUILDING OFFICIAL APPROVAL.
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BOA Architecture Interiors Planning
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.

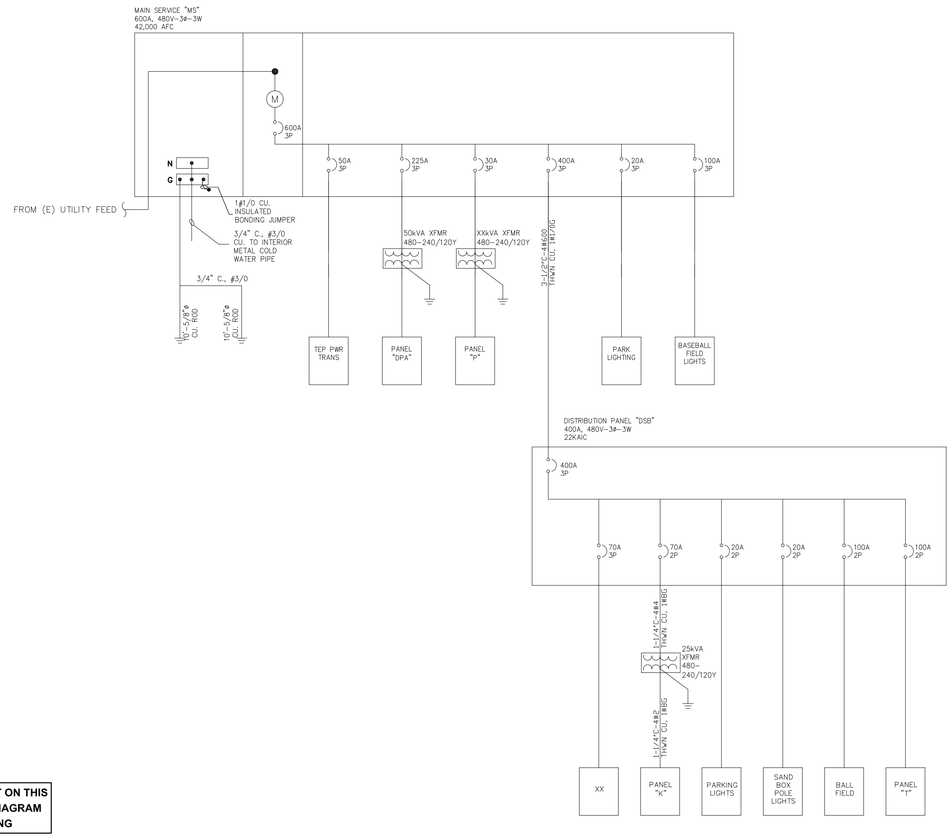
Designer: --
CAD Draft: --
Architect: --
Engineer: --
Client: CITY OF COMMERCE
Date Issue: --
Job Number: 2860

Client:
MR CHIDI AUWUEZE, CITY
OF COMMERCE, 5655
2535 COMMERCE WAY,
COMMERCE, CA 90040

Consultant:

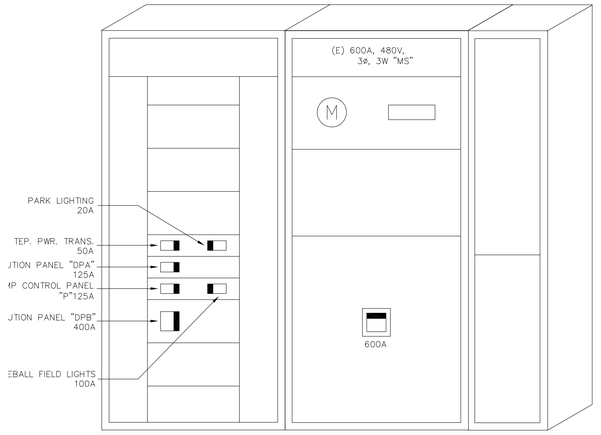
- GENERAL NOTES,
- LEGEND, SHEET INDEX, SINGLE LINE DIAGRAM

E-1.0



ALL EQUIPMENT ON THIS SINGLE LINE DIAGRAM IS EXISTING

(E) SINGLE LINE DIAGRAM



PROVIDE FLASH ARC WARNING LABELS FOR ELECTRICAL EQUIPMENT

ALL EQUIPMENT ON THIS ELEVATION IS EXISTING

(E) SWITCHGEAR ELEVATION

ALL LOADS AND CIRCUIT BREAKERS ARE EXISTING UNLESS NOTED OTHERWISE

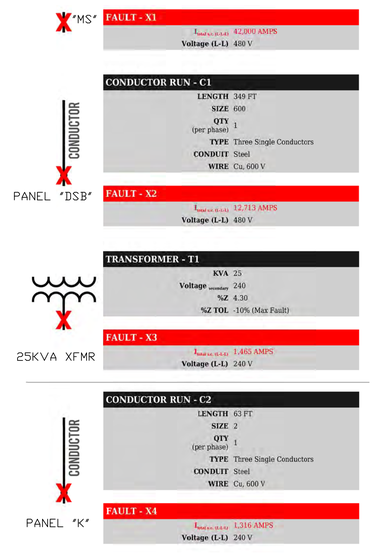
PANEL K — VOLTAGE/PHASE: 240/120, 1Ø, 3W — FEED FROM "DSB"
LOCATION: STORAGE ROOM — BUS AMPS: 200A — 22 KAIC
MOUNTING: SURFACE — MLO

	OUTLETS				VOLT AMPS					VOLT AMPS			OUTLETS				
LOADS	SEE NOTE	MISC	REC	LTG	A	-	C	CKT	BKR/ POLE	A-C	BKR/ POLE	CKT	A	-	C	MISC	REC	LTG	SEE NOTE	LOADS
PLUG OVEN SIDE						-		1	20/1	× -	20/1	2	-							PLUG OVEN SIDE
TRANS							-	3	15/1	- ×	20/1	4			-					BATHROOM
LIGHT PLUG					-			5	20/1	× -	20/1	6	-							PLUG LIGHT
PLUG							-	7	20/1	- ×	20/1	8			-					PLUG
LIGHT PLUG					-			9	20/1	× -	20/1	10	-							LIGHT
PLUG WINDOW							-	11	20/1	- ×	20/1	12			-					LIGHT
* MAKE-UP AIR					617			13	20/1	× -	20/1	14	-							CANOPY TABLE LIGHTS
FILLER							-	15	20/1	- ×	20/1	16			-					LIGHT OUTSIDE
REFRIGERATOR					-			17	20/1	× -	50 / 2	18	3492							HEATPUMP HP-1 *
STOVE OVEN							-	19	20/1	- ×	2	20			3492					-
FRYER					-			21	20/1	× -	20 / 2	22	280							GFI-1 *
-							-	23	30 / 2	- ×	2	24			280					-
-					-			25	2	× -	30 / 2	26	-							-
-							-	27	20 / 2	- ×	2	28			-					-
-					-			29	2	× -	20/1	30	62							EF-6 **
-							-	31		- ×	20/1	32			62					EF-7 **
-				-				33		× -	34	360								ROOF GFCI
-							-	35		- ×	36		-							-
-				-				37		× -	38	-			-					-
-							-	39		- ×	40		-							-
-				-				41		× -	42	-								-
				617	###		###		SUB-TOTAL				4194	#### B	3834					

PANEL TOTAL:		LCL		LM		VA			AMPS											
8645	+	- -	+		=	8645	@230V 1Ø =		37.6											

* INDICATES CIRCUIT MODIFIED
** INDICATES NEW CIRCUIT

PANEL SCHEDULE



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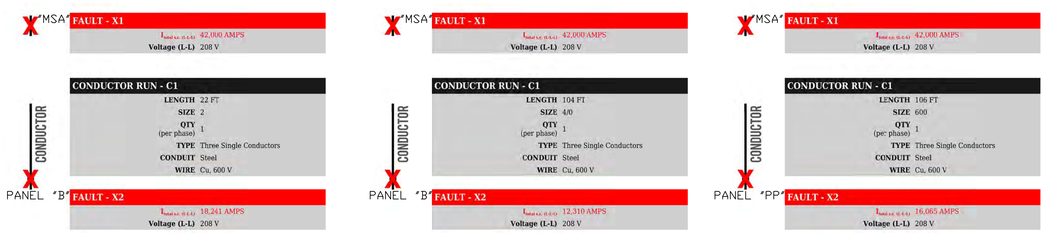
FAULT CURRENT CALCS FOR PANELS "A", "B" AND "PP"



FAULT CURRENT CALCS FOR PANEL "K"

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6/15/2020 8:58:04 AM

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INCORPORATED JANUARY 26, 1960
Architecture
Interiors
Planning
BOA
1511 Cota Ave. Long Beach, CA 90813 Tel. 562-912-7900

BRISTOW PUBLIC LIBRARY & SNACK BAR
ROOFING AND HVAC REPLACEMENT
1466 S McDonnell Ave, Commerce, CA 90040

NO.	DATE	REV.

Designer: --
CAD Draft: --
Architect: --
Engineer: --
Client: CITY OF COMMERCE
Date Issue: --
Job Number: 2860

Client:
DIR. CHIDI AUWUEZE, CITY OF COMMERCE CITY HALL
2535 COMMERCE WAY
COMMERCE, CA 90040

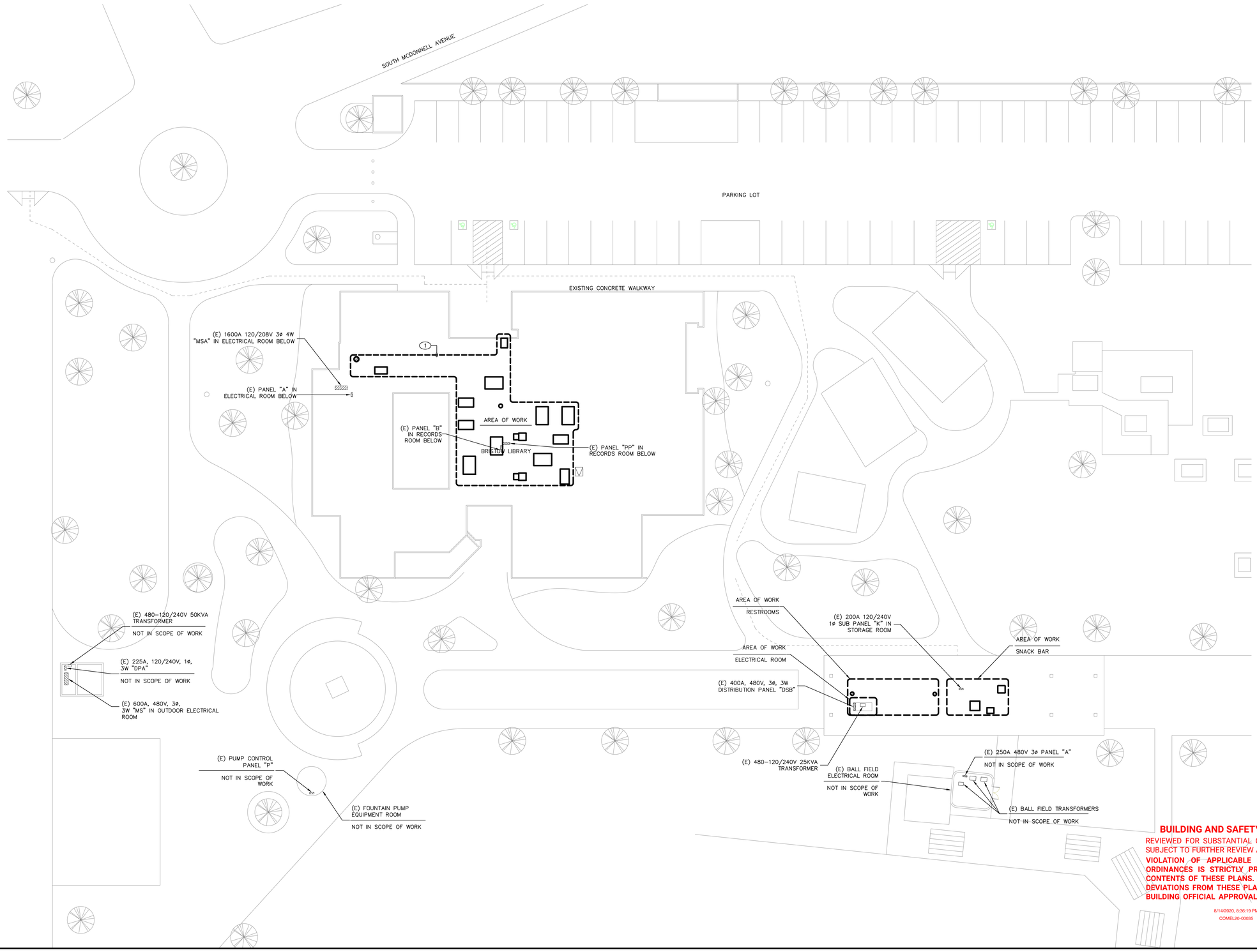
Consultant:

- GENERAL NOTES, LEGEND, SHEET INDEX, SINGLE LINE DIAGRAM, FAULT CURRENT CALCS

E-1.1

NOTES:

(1) AREA OF WORK; SCOPE INVOLVES REPLACEMENT OF ROOFTOP AC UNITS, WATER HEATER IN PLACE, AND ROOF MOUNTED RECEPTACLES, AND RE-CONNECTING ELECTRICAL SERVICE BACK TO ORIGIN; CONDUIT AND WIRE AND DISCONNECT SWITCHES SHOWN ON ROOF PLAN SHEET E-2.1; PANEL SCHEDULES WITH (N) LOADS AND CIRCUIT BREAKER SIZES SHOWN ON SHEET E-1.0; REUSE, REPAIR REPLACE EXISTING CONDUIT, WIRE AND DISCONNECT SWITCHES AS NECESSARY



BUILDING AND SAFETY APPROVED
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SITE PLAN

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

G:\Project Files\2869 Commerce Bristow Library HVAC&Roof Replacement\01-Drawings\01-Revit\2869 Bristow Park Library & Snack Bar.rvt
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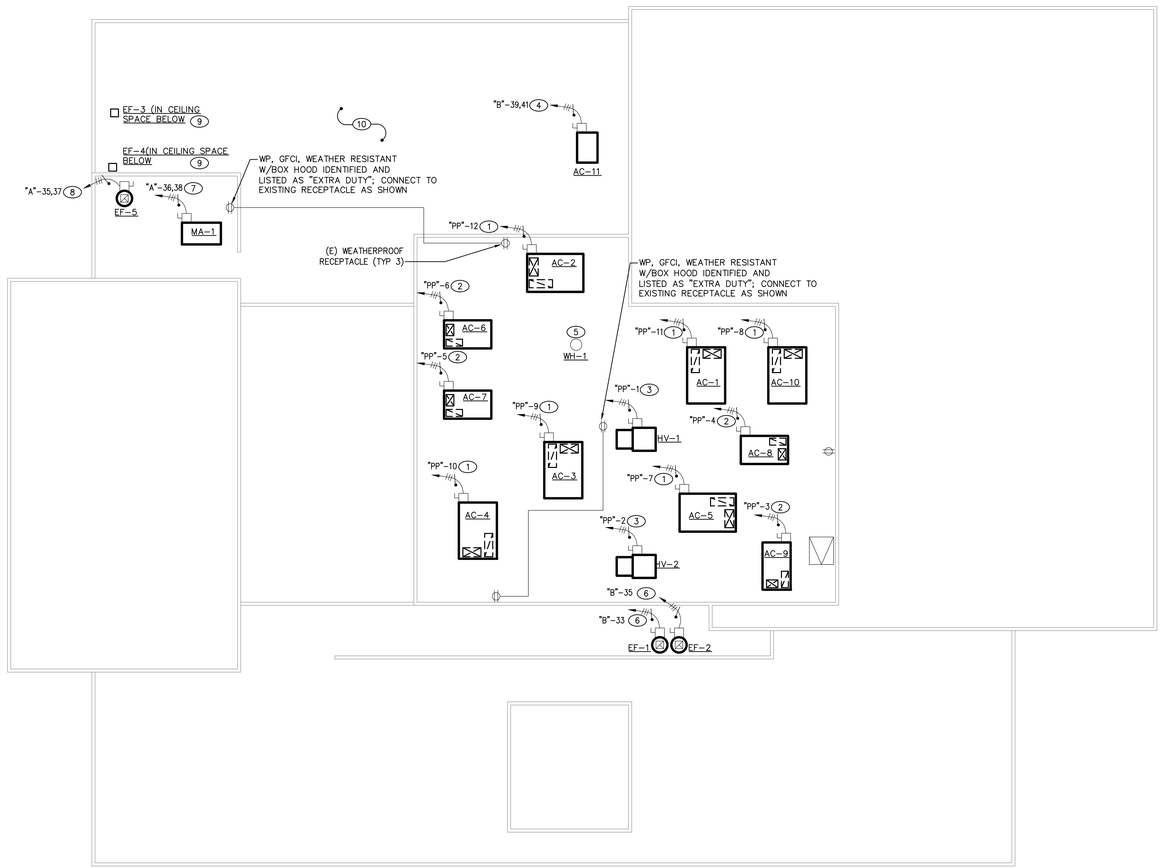
SITE PLAN

E-2.0

NOTES:

1. 1"C – 3#8 +1#10 GND BACK TO ORIGINAL POWER SOURCE (PANEL "PP") WITH 60AS, 50AF WEATHERPROOF DISCONNECT SWITCH; SEE PANEL "PP" SCHEDULE, SHEET E-1.0
2. 1"C – 3#10 +1#10 GND BACK TO ORIGINAL POWER SOURCE (PANEL "PP") WITH 60AS, 45AF WEATHERPROOF DISCONNECT SWITCH; SEE PANEL "PP" SCHEDULE, SHEET E-1.0
3. 1"C – 3#8 +1#10 GND BACK TO ORIGINAL POWER SOURCE (PANEL "PP") WITH xxAS, xxAF WEATHERPROOF DISCONNECT SWITCH; SEE PANEL "PP" SCHEDULE, SHEET E-1.0
4. 1"C – 3#10 +1#10 GND BACK TO ORIGINAL POWER SOURCE (PANEL "B"-39,41) WITH 30AS, 20AF WEATHERPROOF DISCONNECT SWITCH; SEE PANEL "B" SCHEDULE, SHEET E-1.0
5. RECONNECT POWER FROM ORIGINAL SOURCE WITH (N) DISCONNECT SWITCH, WIRE AND CONDUIT FOR (N) WATER HEATER WH-1, (N) CIRCULATION PUMPS CP-1, 21. (N) WH-1 HAS SAME POWER REQUIREMENTS THE ONE REPLACED
6. RECONNECT POWER FROM ORIGINAL SOURCE WITH (E) DISCONNECT SWITCH, WIRE AND CONDUIT. (N) EF-1 AND EF-2 HAVE SAME POWER REQUIREMENTS THE ONES REPLACED
7. RECONNECT POWER FROM ORIGINAL SOURCE WITH (E) DISCONNECT SWITCH, WIRE AND CONDUIT. (N) MA-1 HAS THE SAME POWER REQUIREMENT THE ONE REPLACED
8. RECONNECT POWER FROM ORIGINAL SOURCE WITH (E) DISCONNECT SWITCH, WIRE AND CONDUIT. (N) EF-5 HAS THE SAME POWER REQUIREMENT THE ONE REPLACED
9. RECONNECT POWER FROM ORIGINAL SOURCE. (N) EFS HAVE THE SAME POWER REQUIREMENTS THE ONES REPLACED
10. RE-CIRCUIT NEW REPLACEMENT HVAC EQUIPMENT AND WATER HEATER (AND ANCILLARIES) BACK TO ORIGINAL POWER CIRCUIT AS SHOWN; REUSE / REPAIR / REPLACE EXISTING WIRE AND CONDUIT AS NECESSARY; EXTEND WIRE AND CONDUIT (TO INCLUDE PROVISION FOR (N) HARDWARE AS NECESSARY; EFFORT TO INCLUDE POWER AND CONTROL CIRCUITING; COORDINATE REQUIREMENT WITH MECHANICAL CONTRACTOR; TYP (1) POWER CIRCUIT

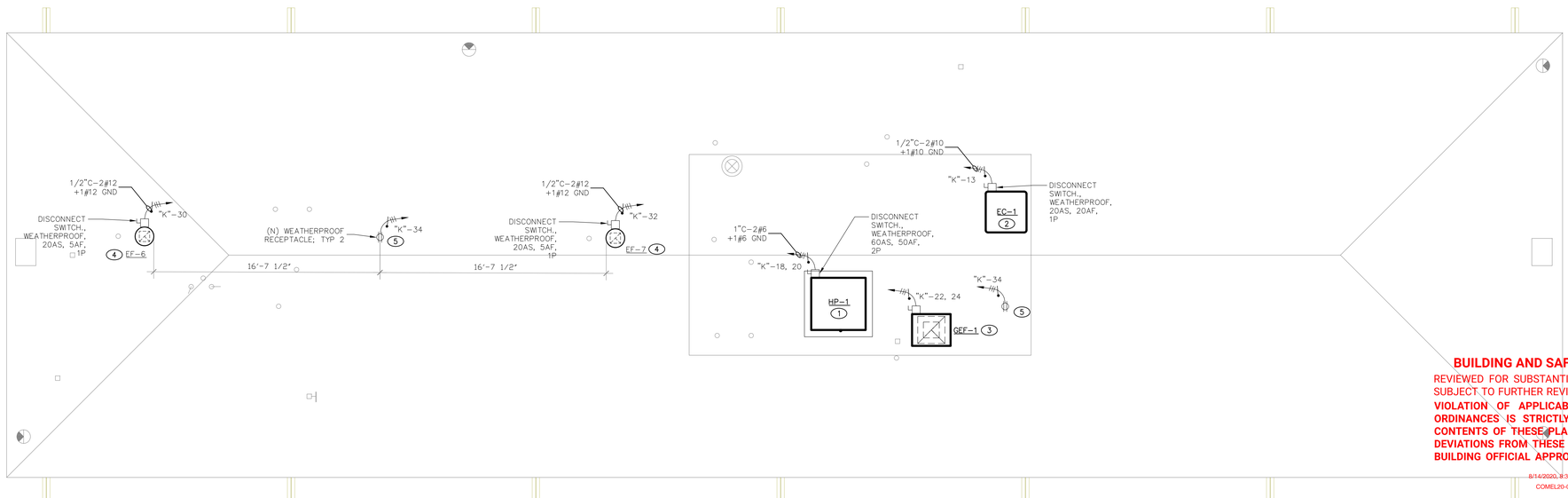


ROOF PLAN – LIBRARY

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

NOTES:

1. (N) PACKAGE HEAT PUMP, HP-1; PROVIDE (N) CONDUIT AND WIRE AS SHOWN HEREIN
2. (N) EVAPORATIVE COOLER, EC-1; PROVIDE (N) CONDUIT AND WIRE AS SHOWN HEREIN
3. (N) GREASE EXHAUST FAN, GEF-1; RECONNECT POWER FROM ORIGINAL SOURCE WITH (E) DISCONNECT SWITCH, WIRE AND CONDUIT
4. (N) ROOFTOP EXHAUST FAN, EF-6, 7; PROVIDE (N) CONDUIT AND WIRE AS SHOWN HEREIN
5. PROVIDE (N) WEATHERPROOF, GFCI PROTECTED, WEATHER RESISTANT RECEPTACLE; OUTLET BOX HOODS SHALL BE IDENTIFIED AND LISTED AS EXTRA DUTY



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- ROOF PLAN

E-2.1