Section 00-0100
Cover Page

PROJECT MANUAL

FOR

Sonoma Clean Power
421 E Street Tenant Improvement
421 E Street
Santa Rosa, California 95404

BID SET

B25-3329

Issued for Bidding
6/18/2025

06/17/2025 10:40:07 AM

June 18th, 2025

AXIA ARCHITECTS

540 MENDOCINO AVE, SANTA ROSA, CA 95401
707-542-4652 axiaarchitects.com

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SEALS PAGE

PROJECT MANUAL
FOR
421 E STREET TENANT IMPROVEMENT
SANTA ROSA, CALIFORNIA
BID SET
B25-3329
JUNE 18TH, 2025

OWNER
SONOMA CLEAN POWER
741 4TH STREET
SANTA ROSA , CALIFORNIA 95404

ARCHITECT:
AXIA Architects
540 Mendocino Ave
Santa Rosa, CA 95401

BY:_____
Douglas Hilberman, AIA
License No: C 29543

STRUCTURAL ENGINEER:
ZFA Structural Engineers
250 D Street, Suite 250
Santa Rosa, CA 95404

BY:_____
Kevin Zucco
License No: SE 4861

MECHANICAL ENGINEER:
TEP Engineering
575 W College Ave, Suite 101
Santa Rosa, CA 95401

BY:_____
Andy Souza
License No: M 37587

ELECTRICAL ENGINEER:
Engineering Enterprises
613 Fourth Street, Suite 206b
Santa Rosa, CA 95404

BY:_____
Mike Johnston
License No: E 15586

CIVIL ENGINEER:
Huffman Engineering & Surveying
537 College Aveenue, Suite A
Santa Rosa, CA 95404

BY:_____
Rob Huffman
License No: C042293

FIRE PROTECTION
Alpha Fire Suppression Systems
2391 Circadian Way
Santa Rosa, CA 95407

BY:_____
Jack Gale
License No: 670313 - C-16

END OF SECTION

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00 11 16 – NOTICE INVITING BIDS

NOTICE IS HEREBY GIVEN that the Board of Directors of the Sonoma Clean Power Authority ("Agency") invites and will receive sealed Bids up to but not later than **10:00 am on Thursday, July 17, 2025** at the office of the Agency, located at 431 E Street, Santa Rosa, California, for the furnishing to Agency of all labor, equipment, materials, tools, services, transportation, permits, utilities, and all other items necessary for 421 E Street Tenant Improvement (the "Project"). At said time, Bids will be publicly opened and read aloud at the Agency Office. Bids received after said time shall be returned unopened. Bids shall be valid for a period of 90 calendar days after the Bid opening date.

The project generally consists of the interior and exterior remodel of an office building. The work includes re-roofing, paving repair, exterior finishes, replacement and updates to the existing HVAC equipment, electrical panel replacement, installation of a new fire sprinkler system, the addition of new exterior windows and skylights, removal of some existing interior walls and ceilings, and new light fixtures and finishes throughout.

Bids must be submitted on the Agency's Bid Forms. Bidders may obtain a copy of the Contract Documents from https://sonomacleanpower.org/solicitations-business-opportunities. To the extent required by section 20103.7 of the Public Contract Code, upon request from a contractor plan room service, the Agency shall provide an electronic copy of the Contract Documents at no charge to the contractor plan room.

It is the responsibility of each prospective bidder to download and print all Bid Documents for review and to verify the completeness of Bid Documents before submitting a bid. Any Addenda will be posted on https://sonomacleanpower.org/solicitations-business-opportunities. It is the responsibility of each prospective bidder to check https://sonomacleanpower.org/solicitations-business-opportunities on a daily basis through the close of bids for any applicable addenda or updates. The Agency does not assume any liability or responsibility based on any defective or incomplete copying, excerpting, scanning, faxing, downloading or printing of the Bid Documents. Information on https://sonomacleanpower.org/solicitations-business-opportunities may change without notice to prospective bidders. The Contract Documents shall supersede any information posted or transmitted by https://sonomacleanpower.org/solicitations-business-opportunities.

Each Bid shall be accompanied by cash, a certified or cashier's check, or Bid Bond secured from a surety company satisfactory to the Agency, the amount of which shall not be less than ten percent (10%) of the submitted Total Bid Price, made payable to Sonoma Clean Power Authority as bid security. The bid security shall be provided as a guarantee that within ten (10) working days after the Agency provides the successful bidder the Notice of Award, the successful Bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful Bidder fails to comply within said time. No interest will be paid on funds deposited with Agency.

A non-mandatory Pre-Bid Conference is scheduled for **10:00 am on Tuesday, July 1, 2025** to review the Project's existing conditions at 421 E Street, Santa Rosa, CA 95404. Representatives of the Agency and consulting architects and engineers, if any, will be present. Questions asked by Bidders at the Pre-Bid Conference not specifically addressed within the Contract Documents shall be answered in writing, and shall be published on the Agency's website https://sonomacleanpower.org/solicitations-business-opportunities.

The successful Bidder will be required to furnish a Faithful Performance Bond and a Labor and Material Payment Bond each in an amount equal to one hundred percent (100%) of the Contract Price. Each bond shall be in the forms set forth herein, shall be secured from a surety company that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120, and that is a California admitted surety insurer.

Pursuant to Section 22300 of the Public Contract Code of the State of California, the successful Bidder may substitute certain securities for funds withheld by Agency to ensure its performance under the contract.

Pursuant to Labor Code Section 1773, Agency has obtained the prevailing rate of per diem wages and the prevailing wage rate for holiday and overtime work applicable in Sonoma County from the Director of the Department of Industrial Relations for each craft, classification, or type of worker needed to execute this contract. A copy of these prevailing wage rates may be obtained via the internet at: www.dir.ca.gov/dlsr/

In addition, a copy of the prevailing rate of per diem wages is available at the Agency's website https://sonomacleanpower.org/solicitations-business-opportunities and shall be made available to interested parties upon request. The successful bidder shall post a copy of the prevailing wage rates at each job site. It shall be mandatory upon the Bidder to whom the Contract is awarded, and upon any subcontractors, to comply with all Labor Code provisions, which include but are not limited to the payment of not less than the said specified prevailing wage rates to all workers employed by them in the execution of the Contract, employment of apprentices, hours of labor and debarment of contractors and subcontractors.

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No Bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the Bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. In bidding on this Project, it shall be the Bidder's sole responsibility to evaluate and include the cost of complying with all labor compliance requirements under this contract and applicable law in its Bid.

The California Air Resources Board ("CARB") implemented amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulations ("Regulation") which are effective on January 1, 2024 and apply broadly to all self-propelled off road diesel vehicles 25 horsepower or greater and other forms of equipment used in California. A copy of the Regulation is available at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/off-roaddiesel/appa-1.pdf. Bidders are required to comply with all CARB and Regulation requirements, including, without limitation, all applicable sections of the Regulation, as codified in Title 13 of the California Code of Regulations section 2449 *et seq.* throughout the term of the Project. Bidders must provide, with their Bid, copies of Bidder's and all listed subcontractors the most recent, valid Certificate of

Reported Compliance ("CRC") issued by CARB. Failure to provide valid CRCs as required herein may render the Bid non-responsive.

Unless otherwise provided in the Instructions for Bidders, each Bidder shall be a licensed contractor pursuant to sections 7000 et seq. of the Business and Professions Code in the following classification(s) throughout the time it submits its Bid and for the duration of the contract: California "B" Contractor's License.

Substitution requests shall be made within 35 calendar days after the award of the contract. Pursuant to Public Contract Code Section 3400(b), the Agency may make findings designating that certain additional materials, methods or services by specific brand or trade name other than those listed in the Standard Specifications be used for the Project. Such findings, if any, as well as the materials, methods or services and their specific brand or trade names that must be used for the Project may be found in 00 73 13 Special Conditions.

Pursuant to Public Contract Code section 3400(b), if the Agency has made any findings designating certain materials, products, things, or services by specific brand or trade name, such findings and the materials, products, things, or services and their specific brand or trade names will be set forth in the Special Conditions.

Agency shall award the contract for the Project to the lowest responsive, responsible Bidder as determined by the Agency from the Base Bid alone. Agency reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

For further information, contact the Director of Capital Projects and Engineering, at projects@sonomacleanpower.org or 707-890-8487.

END OF NOTICE INVITING BIDS

00 21 13 – INSTRUCTIONS TO BIDDERS

ARTICLE 1. SECURING DOCUMENTS

Bids must be submitted to the Agency on the Bid Forms which are a part of the Bid Package for the Project. Bid and Contract Documents may be obtained from **https://sonomacleanpower.org/solicitations-business-opportunities** in the Notice Inviting Bids.

Any Addenda will be posted on https://sonomacleanpower.org/solicitations-business-opportunities. Failure to acknowledge addenda may make a bid nonresponsive and not eligible for award of the contract.

ARTICLE 2. EXAMINATION OF SITE AND CONTRACT DOCUMENTS

At its own expense and prior to submitting its Bid, each Bidder shall visit the site of the proposed work and fully acquaint itself with the conditions relating to the construction and labor required so that the Bidder may fully understand the work, including but not limited to difficulties and restrictions attending the execution of the work under the contract. Each Bidder shall carefully examine the Drawings, and shall read the Specifications, Contract, and all other documents referenced herein. Each Bidder shall also determine the local conditions which may in any way affect the performance of the work, including local tax structure, contractors' licensing requirements, availability of required insurance, the prevailing wages and other relevant cost factors, shall familiarize itself with all federal, state and local laws, ordinances, rules, regulations and codes affecting the performance of the work, including the cost of permits and licenses required for the work, and shall make such surveys and investigations, including investigations of subsurface or latent physical conditions at the site or where work is to be performed as may be required. Bidders are responsible for consulting the standards referenced in the Contract. The failure or omission of any Bidder to receive or examine any contract documents, forms, instruments, addenda, or other documents, or to visit the site and acquaint itself with conditions there existing shall in no way relieve any Bidder from any obligation with respect to its Bid or to the contract and no relief for error or omission will be given except as required under State law. The submission of a Bid shall be taken as conclusive evidence of compliance with this Article.

ARTICLE 3. INTERPRETATION OF DRAWINGS AND DOCUMENTS

Prospective Bidders unclear as to the true meaning of any part of the Drawings, Specifications or other proposed contract documents may submit to the Director of Capital Projects and Engineering of the Agency a written request for interpretation. The prospective Bidder submitting the request is responsible for prompt delivery. Interpretation of the Drawings, Specifications or other proposed contract documents will be made only by a written addendum duly issued and a copy of such addenda will be provided at https://sonomacleanpower.org/solicitations-business-opportunities. The Agency will not be responsible for any other explanation or interpretations of the proposed documents. If a Prospective Bidders becomes aware of any errors or omissions in any part of the Contract Documents, it is the obligation of the Prospective Bidder to promptly bring it to the attention of the Agency.

ARTICLE 4. PRE-BID CONFERENCE

A non-mandatory Pre-Bid Conference is scheduled for **10:00 a.m. on Tuesday, July 1, 2025** to review the Project's existing conditions at 421 E Street, Santa Rosa, CA 95404. Representatives

of the Agency and consulting architects and engineers, if any, will be present. Questions asked by Bidders at the Pre-Bid Conference not specifically addressed within the Contract Documents shall be answered in writing, and shall be sent to all Bidders present at the Pre-Bid Conference**.**

ARTICLE 5. ADDENDA

The Agency reserves the right to revise the Contract Documents prior to the Bid opening date. Revisions, if any, shall be made by written Addenda. All Addenda issued by the Agency shall be included in the Bid and made part of the Contract Documents. Pursuant to Public Contract Code Section 4104.5, if the Agency issues an Addendum which includes material changes to the Project less than 72 hours prior to the deadline for submission of Bids, the Agency will extend the deadline for submission of Bids. The Agency may determine, in its sole discretion, whether an Addendum warrants postponement of the Bid submission date. Please Note: Bidders are responsible for ensuring that they have received any and all Addenda. To this end, each Bidder should contact the Director of Capital Projects and Engineering at projects@sonomacleanpower.org to verify that it has received all Addenda issued, if any, prior to the Bid opening. The Bidder shall indicate the Addenda received prior to bidding in the space provided in the Bid Form. Failure to indicate all Addenda may be sufficient cause for rejecting the Bid.

ARTICLE 6. ALTERNATE BIDS

If alternate bid items are called for in the Contract Documents, the time required for completion of the alternate bid items has already been factored into the Contract duration and no additional Contract time will be awarded for any of the alternate bid items. The Agency may elect to include one or more of the alternate bid items, or to otherwise remove certain work from the Project scope of work. Accordingly, each bidder must ensure that each bid item contains a proportionate share of profit, overhead, and other costs or expenses which will be incurred by the bidder.

ARTICLE 7. COMPLETION OF BID FORMS

Bids shall only be prepared using copies of the Bid Forms which are included in the Contract Documents. The use of substitute Bid Forms other than clear and correct photocopies of those provided by the Agency will not be permitted. Bids shall be executed by an authorized signatory as described in these Instructions to Bidders. In addition, Bidders shall fill in all blank spaces (including inserting “N/A” where applicable), and initial all interlineations, alterations, or erasures to the Bid Forms. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms nor make substitutions thereon. USE OF BLACK OR BLUE INK, INDELIBLE PENCIL, OR A TYPEWRITER IS REQUIRED. Deviations in the Bid Forms may result in the Bid being deemed non-responsive.

ARTICLE 8. MODIFICATIONS OF BIDS

Each Bidder shall submit its Bid in strict conformity with the requirements of the Contract Documents. Unauthorized additions, modifications, revisions, conditions, limitations, exclusions or provisions attached to a Bid may render it non-responsive and may cause its rejection. Bidders shall not delete, modify, or supplement the printed matter on the Bid Forms, or make substitutions thereon. Oral, telephonic and electronic modifications will not be considered.

ARTICLE 9. SUBCONTRACTORS

Bidder shall set forth the name, address of the place of business, and contractor license number

of each subcontractor who will perform work, labor, furnish materials or render services to the bidder on said contract and each subcontractor licensed by the State of California who, under subcontract to bidder, specially fabricates and installs a portion of the Work described in the Drawings and Specifications in an amount in excess of one half of one percent (0.5%) of the total bid price, and shall indicate the portion of the work to be done by such subcontractor in accordance with Public Contract Code Section 4104.

ARTICLE 10. LICENSING REQUIREMENTS

Pursuant to Business and Professions Code Section 7028.15 and Public Contract Code Section 3300, all bidders must possess proper licenses for performance of this Contract. Subcontractors must possess the appropriate licenses for each specialty subcontracted. Pursuant to Business and Professions Code Section 7028.5, the Agency shall consider any bid submitted by a contractor not currently licensed in accordance with state law and pursuant to the requirements found in the Contract Documents to be nonresponsive, and the Agency shall reject the Bid. The Agency shall have the right to request, and Bidders shall provide within ten (10) calendar days, evidence satisfactory to the Agency of all valid license(s) currently held by that Bidder and each of the Bidder's subcontractors, before awarding the Contract.

Notwithstanding anything contained herein, if the Work involves federal funds, the Contractor shall be properly licensed by the time the Contract is awarded, pursuant to the provisions of Public Contract Code section 20103.5.

ARTICLE 11. BID GUARANTEE (BOND)

Each bid shall be accompanied by: (a) cash; (b) a certified or cashier's check made payable to Sonoma Clean Power Authority; or (c) a Bid Bond secured from a surety company satisfactory to the Agency, the amount of which shall not be less than ten percent (10%) of the Total Bid Price, made payable to Sonoma Clean Power Authority as bid security. Personal sureties and unregistered surety companies are unacceptable. The surety insurer shall be California admitted surety insurer, as defined in Code of Civil Procedure Section 995.120. The bid security shall be provided as a guarantee that within ten (10) working days after the Agency provides the successful bidder the Notice of Award, the successful bidder will enter into a contract and provide the necessary bonds and certificates of insurance. The bid security will be declared forfeited if the successful bidder fails to comply within said time, and Agency may enter into a contract with the next lowest responsive responsible bidder, or may call for new bids. No interest shall be paid on funds deposited with the Agency. Agency will return the security accompanying the bids of all unsuccessful bidders no later than 60 calendar days after award of the contract.

ARTICLE 12. IRAN CONTRACTING ACT OF 2010

In accordance with Public Contract Code Section 2200 *et seq*., the Agency requires that any person that submits a bid or proposal or otherwise proposes to enter into or renew a contract with the Agency with respect to goods or services of one million dollars ($1,000,000) or more, certify at the time the bid is submitted or the contract is renewed, that the person is not identified on a list created pursuant to subdivision (b) of Public Contract Code Section 2203 as a person engaging in investment activities in Iran described in subdivision (a) of Public Contract Code Section 2202.5, or as a person described in subdivision (b) of Public Contract Code Section 2202.5, as applicable.

The form of such Iran Contracting Certificate is included with the bid package and must be signed

and dated under penalty of perjury.

ARTICLE 13. NONCOLLUSION DECLARATION

Bidders on all public works contracts are required to submit a declaration of noncollusion with their bid. This form is included with the bid package and must be signed and dated under penalty of perjury.

ARTICLE 14. PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. If awarded a contract, the bidder and its subcontractors, of any tier, shall maintain active registration with the Department of Industrial Relations for the duration of the Project. To this end, Bidder shall sign and submit with its Bid the Public Works Contractor Registration Certification on the form provided, attesting to the facts contained therein. Failure to submit this form may render the bid non-responsive. In addition, each Bidder shall provide the registration number for each listed subcontractor in the space provided in the Designation of Subcontractors form.

ARTICLE 15. BIDDER INFORMATION AND EXPERIENCE FORM

Each Bidder shall complete the questionnaire provided herein and shall submit the questionnaire along with its Bid. Failure to provide all information requested within the questionnaire along with the Bid may cause the bid to be rejected as non-responsive. The Agency reserves the right to reject any Bid if an investigation of the information submitted does not satisfy the Director of Capital Projects and Engineering that the Bidder is qualified to properly carry out the terms of the contract.

ARTICLE 16. WORKERS' COMPENSATION CERTIFICATION

In accordance with the provisions of Labor Code Section 3700, Contractor shall secure the payment of compensation to its employees. Contractor shall sign and file with the Agency the following certificate prior to performing the work under this Contract:

> I am aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

The form of such Workers' Compensation Certificate is included as part of this document.

ARTICLE 17. COMPLIANCE WITH CARB REGULATIONS

The Agency is a Public Works Awarding Body, as defined under Title 13 California Code of Regulations section 2449(c)(46). Accordingly, Bidders must submit, with their Bids, a valid Certificate of Reported Compliance ("CRC") for the Bidder's and its listed subcontractors' fleet (including any applicable leased equipment or vehicles). Bidder must complete and submit the Fleet Compliance Certification, on the form included in the bid package. Failure to provide a valid

CRC for the Bidder's fleet, and for the fleets of all listed subcontractors, or failure to complete the Fleet Compliance Certification, may render the Bid non-responsive.

ARTICLE 18. SIGNING OF BIDS

All Bids submitted shall be executed by the Bidder or its authorized representative. Bidders may be asked to provide evidence in the form of an authenticated resolution of its Board of Directors or a Power of Attorney evidencing the capacity of the person signing the Bid to bind the Bidder to each Bid and to any Contract arising therefrom.

If a Bidder is a joint venture or partnership, it may be asked to submit an authenticated Power of Attorney executed by each joint venturer or partner appointing and designating one of the joint venturers or partners as a management sponsor to execute the Bid on behalf of Bidder. Only that joint venturer or partner shall execute the Bid. The Power of Attorney shall also: (1) authorize that particular joint venturer or partner to act for and bind Bidder in all matters relating to the Bid; and (2) provide that each venturer or partner shall be jointly and severally liable for any and all of the duties and obligations of Bidder assumed under the Bid and under any Contract arising therefrom. The Bid shall be executed by the designated joint venturer or partner on behalf of the joint venture or partnership in its legal name.

ARTICLE 19. SUBMISSION OF SEALED BIDS

Once the Bid and supporting documents have been completed and signed as set forth herein, they shall be placed, along with the Bid Guarantee and other required materials, in a sealed envelope, addressed and delivered or mailed, postage prepaid, to the Capital Projects and Engineering Department of the Agency before the time and day set for the receipt of bids. The envelope shall bear the title of the work and the name of the bidder. No oral or telephonic bids will be considered. No forms transmitted via the internet, e-mail, facsimile, or any other electronic means will be considered unless specifically authorized by the Agency as provided herein. Bids received after the time and day set for the receipt of bids shall be returned to the bidder unopened. The envelope shall also contain the following in the lower left-hand corner thereof:

Bid of _____(Bidder's Name)
for the 421 E Street Tenant Improvement

Only where expressly permitted in the Notice Inviting Bids may bidders submit their bids via electronic transmission pursuant to Public Contract Code sections 1600 and 1601. Any acceptable method(s) of electronic transmission shall be stated in the Notice Inviting Bids. Agency may reject any bid not strictly complying with Agency's designated methods for delivery.

ARTICLE 20. OPENING OF BIDS

At the time and place set for the opening and reading of bids, or any time thereafter, each and every bid received prior to the time and day set for the receipt of bids will be publicly opened and read. The Agency will leave unopened any Bid received after the specified date and time, and any such unopened Bid will be returned to the bidder. It is the bidder's sole responsibility to ensure that its Bid is received as specified. Bids may be submitted earlier than the date(s) and time(s) indicated.

The public reading of each bid will include the following information:

A. **The business name of the bidder**.

B. **The bid amount**.

Bidders or their representatives and other interested persons may be present at the opening of the bids. The Agency may, in its sole discretion, elect to postpone the opening of the submitted Bids. The Agency reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid.

ARTICLE 21. WITHDRAWAL OF BID

Any bid may be withdrawn either personally or by written request, incurring no penalty, at any time prior to the scheduled closing time for receipt of bids. Requests to withdraw bids shall be worded so as not to reveal the amount of the original bid. Withdrawn bids may be resubmitted until the time and day set for the receipt of bids, provided that resubmitted bids are in conformance with the instructions herein.

Bids may be withdrawn after bid opening only by providing written notice to Agency within five (5) working days of the bid opening and in compliance with Public Contract Code Section 5100 *et seq*., or as otherwise may be allowed with the consent of the Agency.

ARTICLE 22. BIDDERS INTERESTED IN MORE THAN ONE BID

No Bidder shall be allowed to make, file or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm or corporation that has submitted a sub-proposal to a Bidder, or that has quoted prices of materials to a Bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders. No person, firm, corporation, or other entity may submit a sub-proposal to a Bidder, or quote prices of materials to a Bidder, when also submitting a prime Bid on the same Project.

ARTICLE 23. SUBSTITUTION OF SECURITY

The Contract Documents call for monthly progress payments based upon the percentage of the Work completed. The Agency will retain a percentage of each progress payment as provided by the Contract Documents. At the request and expense of the successful Bidder, the Agency will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300.

ARTICLE 24. PREVAILING WAGES

The Agency has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the Contract. These rates are available at https://sonomacleanpower.org/solicitations-business-opportunities or may be obtained online at http://www.dir.ca.gov. Bidders are advised that a copy of these rates must be posted by the successful Bidder at the job site(s).

ARTICLE 25. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

In accordance with the provisions of the Labor Code, contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code Sections 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid to a debarred subcontractor by the Contractor for the Project shall be returned to the Agency. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

ARTICLE 26. INSURANCE REQUIREMENTS

Prior to commencing work, the successful bidder shall purchase and maintain insurance as set forth in the General Conditions.

ARTICLE 27. PERFORMANCE BOND AND PAYMENT BOND REQUIREMENTS

The successful bidder will be required to furnish a Labor and Material Payment Bond and a Faithful Performance Bond each in an amount equal to one hundred percent (100%) of the contract price. Each bond shall be secured from a surety company that meets all State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and is admitted by the State of California. Each bond shall be accompanied, upon the request of Agency, with all documents required by California Code of Civil Procedure Section 995.660 to the extent required by law. All bonding and insurance requirements shall be completed and submitted to Agency within ten (10) working days from the date the Agency provides the successful bidder with the Notice of Award.

ARTICLE 28. SALES AND OTHER APPLICABLE TAXES, PERMITS, LICENSES AND FEES

Contractor and its subcontractors performing work under this Contract will be required to pay California sales tax and other applicable taxes, and to pay for permits, licenses and fees required by the agencies with authority in the jurisdiction in which the Work will be located, unless otherwise expressly provided by the Contract Documents.

ARTICLE 29. PERMIT AND INSPECTION FEE ALLOWANCE

[Reserved]

ARTICLE 30. FILING OF BID PROTESTS

Bidders may file a "protest" of a Bid with the Agency's Director of Capital Projects and Engineering. In order for a Bidder's protest to be considered valid, the protest must:

A. **Be filed in writing within five (5) calendar days after the bid opening date;**

B. **Clearly identify the specific irregularity or accusation;**

C. Clearly identify the specific Agency staff determination or recommendation being protested;

D. Specify in detail the grounds for protest and the facts supporting the protest; and

E. Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, the Agency may reject the protest without further review.

If the protest is timely and complies with the above requirements, the Agency's Director of Capital Projects and Engineering, or other designated Agency staff member, shall review the protest, any response from the challenged Bidder(s), and all other relevant information. The Director of Capital Projects and Engineering will provide a written decision to the protestor.

The procedure and time limits set forth in this Article are mandatory and are the sole and exclusive remedy in the event of a Bid protest. Failure to comply with these procedures shall constitute a failure to exhaust administrative remedies and a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.

ARTICLE 31. BASIS OF AWARD; BALANCED BID

The Agency shall award the Contract to the lowest responsible Bidder submitting a responsive Bid. The lowest Bid will be determined on the basis of the Total Bid Price.

The Agency may reject any Bid which, in its opinion when compared to other Bids received or to the Agency's internal estimates, does not accurately reflect the cost to perform the Work. The Agency may reject as non-responsive any Bid which unevenly weights or allocates costs, including but not limited to overhead and profit to one or more particular bid items.

ARTICLE 32. AWARD PROCESS

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the Board of Directors may award the contract. The apparent successful Bidder should begin to prepare the following documents: (1) the Performance Bond; (2) the Payment Bond; and (3) the required insurance certificates and endorsements. Once the Agency notifies the Bidder of the award, the Bidder will have ten (10) working days from the date of this notification to execute the Contract and supply the Agency with all of the required documents and certifications. Regardless of whether the Bidder supplies the required documents and certifications in a timely manner, the Contract time will begin to run twenty (20) working days from the date of the notification. Once the Agency receives all of the properly drafted and executed documents and certifications from the Bidder, the Agency shall issue a Notice to Proceed to that Bidder.

ARTICLE 33. EXECUTION OF CONTRACT

As required herein the Bidder to whom an award is made shall execute the Contract in the amount determined by the Contract Documents. The Agency may require appropriate evidence that the persons executing the Contract are duly empowered to do so. The Contract and bond forms to be executed by the successful Bidder are included within these Specifications and shall not be detached.

ARTICLE 34. QUESTIONS

Questions regarding this Notice Inviting Bids may be directed to Director of Capital Projects and

Engineering, at projects@sonomacleanpower.org. No other members of the Agency's staff or Board of Directors should be contacted about this procurement during the bidding process. Any and all inquiries and comments regarding this Bid must be communicated in writing, unless otherwise instructed by the Agency. The Agency may, in its sole discretion, disqualify any Bidder who engages in any prohibited communications.

00 41 43 – BID FORMS

1.1 Bid.

Bids will be received at the Sonoma Clean Power Authority office at 431 E Street, Santa Rosa CA, 95404, until **10:00 a.m. on Thursday, July 17, 2025.**

NAME OF BIDDER: _____

To the Board of Directors
of the Sonoma Clean Power Authority
431 E Street, Santa Rosa, CA 95404

The undersigned hereby declare that we have carefully examined the location of the proposed Work, and have read and examined the Contract Documents, including all plans, specifications, and all addenda, if any for the following Project:

421 E Street Tenant Improvement

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project, as described and in strict conformity with the Drawings, and these Specifications for TOTAL BID PRICE indicated herein.

The undersigned acknowledges receipt, understanding, and full consideration of the following addenda to the Contract Documents:

Addenda No. _____

1. Attached is the required Bid Guarantee in the amount of not less than 10% of the Total Bid Price.

2. Attached is the completed Designation of Subcontractors form.

3. Attached is the fully executed Noncollusion Declaration form.

4. Attached is the completed Iran Contracting Act Certification form.

5. Attached is the completed Public Works Contractor Registration Certification form.

6. Attached is the completed Contractor's Certificate Regarding Workers' Compensation form.

7. Attached is the completed Bidder Information and Experience form.

8. Attached is the completed Fleet Compliance Certification form.

A. TOTAL BID PRICE:

TOTAL BID PRICE BASED ON BID SCHEDULE TOTAL OF UNIT PRICES
FOR 421 E Street Tenant Improvement Project

$_____
Total Bid Price in Numbers

$_____
Total Bid Price in Written Form

In case of discrepancy between the written price and the numerical price, the written price shall prevail.

The undersigned agrees that this Bid Form constitutes a firm offer to the Agency which cannot be withdrawn for the number of calendar days indicated in the Notice Inviting Bids from and after the Bid opening, or until a Contract for the Work is fully executed by the Agency and a third party, whichever is earlier.

The successful bidder hereby agrees to sign the contract and furnish the necessary bonds and certificates of insurance within ten (10) working days after the Agency provides the successful bidder with the Notice of Award.

Upon receipt of the signed contract and other required documents, the contract will be executed by the Agency, after which the Agency will prepare a letter giving Contractor Notice to Proceed. The official starting date shall be the date of the Notice to Proceed, unless otherwise specified. The undersigned agrees to begin the Work within ten (10) working days of the date of the Notice to Proceed, unless otherwise specified.

The undersigned has examined the location of the proposed work and is familiar with the Drawings and Specifications and the local conditions at the place where work is to be done.

If awarded the contract, the undersigned agrees that there shall be paid by the undersigned and by all subcontractors to all laborers, workers and mechanics employed in the execution of such contract no less than the prevailing wage rate within Sonoma County for each craft, classification, or type of worker needed to complete the Work contemplated by this contract as established by the Director of the Department of Industrial Relations. A copy of the prevailing rate of per diem wages are on file at the Agency's Administration Office and shall be made available to interested parties upon request.

Enclosed find cash, bidder's bond, or cashier's or certified check No. _____ from the _____ Bank in the amount of _____, which is not less than ten percent (10%) of this bid, payable to Sonoma Clean Power Authority as bid security and which is given as a guarantee that the undersigned will enter into a contract and provide the necessary bonds and certificates of insurance if awarded the Work.

The bidder furthermore agrees that in case of bidder's default in executing said contract and furnishing required bonds and certificates of insurance, the cash, bidder's bond, or cashier's or certified check accompanying this proposal and the money payable thereon shall become and shall remain the property of the Sonoma Clean Power Authority.

Bidder is an individual _____, or corporation _____, or partnership _____, organized under the laws of the State of _____.

Bidder confirms license(s) required by California State Contractor's License Law for the performance of the subject project are in full effect and proper order. The following are the Bidder's applicable license number(s), with their expiration date(s) and class of license(s):

_____

_____

_____

If the Bidder is a joint venture, each member of the joint venture must include the required licensing information.

Sureties that will furnish the Faithful Performance Bond and the Labor and Material Payment Bond, in the form specified herein, in an amount equal to one hundred percent (100%) of the contract price within ten (10) working days from the date the Agency provides the successful bidder the Notice of Award. Sureties must meet all of the State of California bonding requirements, as defined in California Code of Civil Procedure Section 995.120 and must be authorized by the State of California.

The insurance company or companies to provide the insurance required in the contract documents must have a Financial Strength Rating of not less than "A-" and a Financial Size Category of not less than "Class VII" according to the latest Best Key Rating Guide. At the sole discretion of the Agency, the Agency may waive the Financial Strength Rating and the Financial Size Category classifications for Workers' Compensation insurance.

(signatures continued on next page)

I hereby certify under penalty of perjury under the laws of the State of California that all of the information submitted in connection with this Bid and all of the representations made herein are true and correct.

Executed at _____, on this ____ day of _____, _____.

(Bidders Name – Print or Type)

_____
(Name and Title)

(Corporate Seal)

_____
(Signature)

Names of individual members of firm or names and titles of all officers of corporation and their addresses are listed below:

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

Name_____ Title_____

Complete Address_____

Phone_____ FAX_____

1.2 Bid Bond

[Note: Not required when other form of Bidder's Security, e.g. cash, certified check or cashier's check, accompanies bid.]

The makers of this bond are, _____, as Principal, and _____, as Surety and are held and firmly bound unto the Sonoma Clean Power Authority, hereinafter called the Agency, in the penal sum of TEN PERCENT (10%) OF THE TOTAL BID PRICE of the Principal submitted to AGENCY for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid dated _____, 20 ____, for 421 E Street Tenant Improvement Project.

If the Principal does not withdraw its Bid within the time specified in the Contract Documents; and if the Principal is awarded the Contract and provides all documents to the Agency as required by the Contract Documents; then this obligation shall be null and void. Otherwise, this bond will remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents shall in affect its obligation under this bond, and Surety does hereby waive notice of any such changes.

In the event a lawsuit is brought upon this bond by the Agency and judgment is recovered, the Surety shall pay all litigation expenses incurred by the Agency in such suit, including reasonable attorneys' fees, court costs, expert witness fees and expenses.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporation.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

_____
Surety

(Corporate Seal)

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

Notary Acknowledgment

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 _____, 20___, before me, _____, Notary Public, personally

appeared _____, who proved to me on the basis of satisfactory
Name(s) of Signer(s)

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 of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

Notary Acknowledgment

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 _____, 20___, before me, _____, Notary Public, 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 of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF BID BOND

1.3 List of Subcontractors

In compliance with the Subletting and Subcontracting Fair Practices Act Chapter 4 (commencing at Section 4100), Part 1, Division 2 of the Public Contract Code of the State of California and any amendments thereof, Bidder shall set forth below: (a) the name and the location of the place of business, (b) the California contractor license number, (c) the DIR public works contractor registration number unless exempt pursuant to Labor Code Sections 1725.5 and 1771.1, and (d) the portion of the work which will be done by each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under this Contract in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price. Notwithstanding the foregoing, if the work involves the construction of streets and highways, then the Bidder shall list each subcontractor who will perform work or labor or render service to the Bidder in or about the work in an amount in excess of one-half of one percent (0.5%) of the Bidder's Total Bid Price or $10,000, whichever is greater. No additional time shall be granted to provide the below requested information.

If a Bidder fails to specify a subcontractor or if a contractor specifies more than one subcontractor for the same portion of work, then the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of work and that it shall perform that portion itself.

Work to be done by Subcontractor	**Name of Subcontractor**	**Location of Business**	**CSLB Contractor License No.**	**DIR Registration Number**	**% of Work**

Work to be done by Subcontractor	Name of Subcontractor	Location of Business	CSLB Contractor License No.	DIR Registration Number	% of Work

(Attach additional sheets if necessary)

Name of Bidder_____

Signature_____

Name and Title_____

Dated_____

1.4 Bidder Information and Experience Form

ARTICLE 2. INFORMATION ABOUT BIDDER

(Indicate not applicable ("N/A") where appropriate.)

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

i. Name of Bidder: _____

ii. Type, if Entity: _____

iii. Bidder Address: _____

_____

_____
Facsimile Number Telephone Number

_____
Email Address

iv. How many years has Bidder's organization been in business as a Contractor? _____

v. How many years has Bidder's organization been in business under its present name? _____

a. Under what other or former names has Bidder's organization operated?_____

i. If Bidder's organization is a corporation, answer the following:

a. Date of Incorporation: _____

b. State of Incorporation: _____

1.2 President's Name: _____

1.3 Vice-President's Name(s): _____

_____

1.4 Secretary's Name: _____

1.5 Treasurer's Name: _____

2. If an individual or a partnership, answer the following:

   a. Date of Organization: _____

   b. Name and address of all partners (state whether general or limited partnership):

_____

_____

_____

3. If other than a corporation or partnership, describe organization and name principals:

_____

_____

4. List other states in which Bidder's organization is legally qualified to do business.

_____

_____

_____

5. What type of work does the Bidder normally perform with its own forces?

_____

_____

6. Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

_____

_____

7. Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

_____

_____

8. List Trade References:

_____

_____

_____

_____

9. List Bank References (Bank and Branch Address):

_____

_____

_____

_____

10. Name of Bonding Company and Name and Address of Agent:

_____

_____

_____

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ARTICLE 3. LIST OF CURRENT PROJECTS (BACKLOG)

[**Duplicate Page if needed for listing additional current projects.**]

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work

ARTICLE 4. LIST OF COMPLETED PROJECTS – LAST THREE YEARS

[**Duplicate Page if needed for listing additional completed projects.**]

Please include only those projects which are similar enough to demonstrate Bidder's ability to perform the required Work.

Project	Description of Bidder's Work	Completion Date	Cost of Bidder's Work

ARTICLE 5. EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

A. List each person's job title, name and percent of time to be allocated to this project:

B. **Summarize each person's specialized education**:

C. **List each person's years of construction experience relevant to the project**:

D. **Summarize such experience**:

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the Agency.

Changes Occuring Since Prequalification

If any substantive changes have occurred since Bidder submitted its prequalification package for this Project, Bidder shall list them below. If none are listed, Bidder certifies that no substantive changes have occurred.

Additional Bidder's Statements:

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

ARTICLE 6. VERIFICATION AND EXECUTION

These Bid Forms shall be executed only by a duly authorized official of the Bidder:

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

Name of Bidder_____

Signature_____

Name_____

Title_____

Date_____

1.1 Non-Collusion Declaration

The undersigned declares:

I am the _____ of _____, the party making the foregoing Bid.

The Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The Bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or to refrain from bidding. 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. All statements contained in the Bid are true. 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, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

Name of Bidder_____

Signature_____

Name_____

Title_____

1.2 Iran Contracting Act Certification.

(Public Contract Code section 2200 et seq.)

As required by California Public Contract Code Section 2204, the Contractor certifies subject to penalty for perjury that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq*.) is true and correct:

☐ The Contractor is not:

1. identified on the current list of person and entities engaged in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

2. a financial instruction that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ The Agency has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the Agency will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

☐ The amount of the Contract payable to the Contractor for the Project does not exceed $1,000,000.

Signature:_____

Printed Name:_____

Title:_____

Firm Name:_____

Date:_____

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of $250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

1.1 Public Works Contractor Registration Certification

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See http://www.dir.ca.gov/Public-Works/PublicWorks.html for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Bidder hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.[1]

Name of Bidder:_____

DIR Registration Number:_____

DIR Registration Expiration:_____

Small Project Exemption: _____ Yes or _____ No

Unless Bidder is exempt pursuant to the small project exemption, Bidder further acknowledges:

3. Bidder shall maintain a current DIR registration for the duration of the project.
4. Bidder shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.
5. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Name of Bidder_____

Signature_____

Name and Title_____

Dated_____

[1] If the Project is exempt from the contractor registration requirements pursuant to the small project exemption under Labor Code Sections 1725.5 and 1771.1, please mark "Yes" in response to "Small Project Exemption."

1.1 Contractor's Certificate Regarding Workers' Compensation.

I am aware of the provisions of section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract.

Name of Bidder _____

Signature _____

Name _____

Title _____

Dated _____

1.2 Fleet Compliance Certification

Bidder hereby acknowledges that they have reviewed the California Air Resources Board's policies, rules and regulations and are familiar with the requirements of Title 13, California Code of Regulations, Division 3, Chapter 9, effective on January 1, 2024 (the "Regulation"). Bidder hereby certifies, subject to penalty for perjury, that the option checked below relating to the Bidder's fleet, and/or that of their subcontractor(s) ("Fleet") is true and correct:

- ☐ The Fleet is subject to the requirements of the Regulation, and the appropriate Certificate(s) of Reported Compliance have been attached hereto.

- ☐ The Fleet is exempt from the Regulation under section 2449.1(f)(2), and a signed description of the subject vehicles, and reasoning for exemption has been attached hereto.

- ☐ Bidder and/or their subcontractor is unable to procure R99 or R100 renewable diesel fuel as defined in the Regulation pursuant to section 2449.1(f)(3). Bidder shall keep detailed records describing the normal refueling methods, their attempts to procure renewable diesel fuel and proof that shows they were not able to procure renewable diesel (i.e. third party correspondence or vendor bids).

- ☐ The Fleet is exempt from the requirements of the Regulation pursuant to section 2449(i)(4) because this Project has been deemed an Emergency, as defined under section 2449(c)(18). Bidder shall only operate the exempted vehicles in the emergency situation and records of the exempted vehicles must be maintained, pursuant to section 2449(i)(4).

- ☐ The Fleet does not fall under the Regulation or are otherwise exempted and a detailed reasoning is attached hereto.

Name of Bidder:_____

Signature: _____

Name: _____

Title: _____

Date: _____

00 52 13 – CONTRACT

This CONTRACT, No. _____ is made and entered into this ____ day of _____, _____, by and between Sonoma Clean Power Authority, sometimes hereinafter called "Agency," and _____, sometimes hereinafter called "Contractor."

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other as follows:

a. **SCOPE OF WORK.** The Contractor shall perform all Work within the time stipulated in the Contract, and shall provide all labor, materials, equipment, tools, utility services, and transportation to complete all of the Work required in strict compliance with the Contract Documents as specified in Article 5, below, for the following Project:

421 E Street Tenant Improvement Project

The Contractor and its surety shall be liable to the Agency for any damages arising as a result of the Contractor's failure to comply with this obligation.

b. **TIME FOR COMPLETION.** Time is of the essence in the performance of the Work. The Work shall be commenced on the date stated in the Agency's Notice to Proceed. The Contractor shall complete all Work required by the Contract Documents within 122 (one hundred twenty-two) calendar days from the commencement date stated in the Notice to Proceed. By its signature hereunder, Contractor agrees the time for completion set forth above is adequate and reasonable to complete the Work.

c. **CONTRACT PRICE.** The Agency shall pay to the Contractor as full compensation for the performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs, the sum of _____ Dollars ($_____). Payment shall be made as set forth in the General Conditions.

d. **LIQUIDATED DAMAGES.** In accordance with Government Code section 53069.85, it is agreed that the Contractor will pay the Agency the sum set forth in Section 00 73 13, Article 1.11 for each and every calendar day of delay beyond the time prescribed in the Contract Documents for finishing the Work, as Liquidated Damages and not as a penalty or forfeiture. In the event this is not paid, the Contractor agrees the Agency may deduct that amount from any money due or that may become due the Contractor under the Contract. This Article does not exclude recovery of other damages specified in the Contract Documents.

e. **COMPONENT PARTS OF THE CONTRACT.** The "Contract Documents" include the following:

Notice Inviting Bids
Instructions to Bidders
Bid Form
Bid Bond
Designation of Subcontractors
Information Required of Bidders

Non-Collusion Declaration Form
Iran Contracting Act Certification
Public Works Contractor Registration Certification
Fleet Compliance Certification Form
Performance Bond
Payment (Labor and Materials) Bond
General Conditions
Special Conditions
Technical Specifications
Addenda
Plans and Drawings
Standard Specifications for Public Works Construction "Greenbook", latest edition, Except Sections 1-9
Applicable Local Agency Standards and Specifications, as last revised
Approved and fully executed change orders
Any other documents contained in or incorporated into the Contract

The Contractor shall complete the Work in strict accordance with all of the Contract Documents.

All of the Contract Documents are intended to be complementary. Work required by one of the Contract Documents and not by others shall be done as if required by all. This Contract shall supersede any prior agreement of the parties.

f. **PROVISIONS REQUIRED BY LAW AND CONTRACTOR COMPLIANCE.** Each and every provision of law required to be included in these Contract Documents shall be deemed to be included in these Contract Documents. The Contractor shall comply with all requirements of applicable federal, state and local laws, rules and regulations, including, but not limited to, the provisions of the California Labor Code and California Public Contract Code which are applicable to this Work.

g. **INDEMNIFICATION.** Contractor shall provide indemnification and defense as set forth in the General Conditions.

h. **PREVAILING WAGES.** Contractor shall be required to pay the prevailing rate of wages in accordance with the Labor Code which such rates shall be made available at the Agency's Administrative Office or may be obtained online at http://www.dir.ca.gov and which must be posted at the job site.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, this Contract has been duly executed by the above-named parties, on the day and year above written.

_____ Name of Contractor	**SONOMA CLEAN POWER AUTHORITY**
By _____	By_____ Michael Koszalka, COO
Name and Title: _____	Date: _____
License No. _____	
Date: _____	

(CONTRACTOR'S SIGNATURE MUST BE NOTARIZED AND CORPORATE SEAL AFFIXED, IF APPLICABLE)

Approved as to form this _____day of _____ 20___.

_____
Attorney for Sonoma Clean Power Authority

END OF CONTRACT

Notary Acknowledgment

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 _____, 20___, before me, _____, Notary Public, 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 of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____
_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

00 61 13 – BOND FORMS

1.1 Performance Bond.

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the Sonoma Clean Power Authority, (hereinafter referred to as "Agency") has awarded to _____, (hereinafter referred to as the "Contractor") an agreement for **Contract No.**_____, (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract Documents for the Project dated _____, (hereinafter referred to as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by said Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____ as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held and firmly bound unto the Agency in the sum of _____ DOLLARS, ($_____), said sum being not less than one hundred percent (100%) of the total amount of the Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the Contractor, 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 agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations including the one (1) year guarantee of all materials and workmanship; and shall indemnify and save harmless the Agency, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, 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 therefore, there shall be included costs and reasonable expenses and fees including reasonable attorney's fees, incurred by Agency in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by Agency, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the Agency from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the Agency's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the Agency to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the Agency's option:

i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or

ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a Contract between such bidder, the Surety and the Agency, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the Agency under the Contract and any modification thereto, less any amount previously paid by the Agency to the Contractor and any other set offs pursuant to the Contract Documents.

iii. Permit the Agency to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the Agency under the Contract and any modification thereto, less any amount previously paid by the Agency to the Contractor and any other set offs pursuant to the Contract Documents.

Surety expressly agrees that the Agency may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the Agency, when declaring the Contractor in default, notifies Surety of the Agency's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder 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 Contract Documents or to the Project.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20___.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is $_____.
(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____
_____
_____

(Name and Address of Agent or Representative for service of process in California, if different from above) _____
_____
_____

(Telephone number of Surety and Agent or Representative for service of process in California) _____

Notary Acknowledgment

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 _____, 20___, before me, _____, Notary Public, 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 of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

Notary Acknowledgment

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COUNTY OF _____

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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.

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WITNESS my hand and official seal.

_____
Signature of Notary Public

OPTIONAL

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CAPACITY CLAIMED BY SIGNER

☐ Individual
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Title(s)

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Signer is representing:
Name Of Person(s) Or Entity(ies)

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_____

DESCRIPTION OF ATTACHED DOCUMENT

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Title or Type of Document

_____
Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of Attorney to local representatives of the bonding company must also be attached.

END OF PERFORMANCE BOND

1.2 Payment Bond (Labor and Materials).

KNOW ALL MEN BY THESE PRESENTS That

WHEREAS, the Sonoma Clean Power Authority (hereinafter designated as the "Agency"), by action taken or a resolution passed _____ , 20_____, has awarded to _____ hereinafter designated as the "Principal," a contract for the work described as follows: **Contract No.**_____ (the "Project"); and

WHEREAS, said Principal is required to furnish a bond in connection with said contract; providing that if said Principal or any of its Subcontractors shall fail to pay for any materials, provisions, provender, equipment, or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of said Principal and its Subcontractors with respect to such work or labor the Surety on this bond will pay for the same to the extent hereinafter set forth.

NOW THEREFORE, we, the Principal and _____ as Surety, are held and firmly bound unto the Agency in the penal sum of _____ Dollars ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay any of the persons named in Civil Code Section 9100, fail to pay for any materials, provisions or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department or Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Revenue and Taxation Code Section 18663, with respect to such work and labor the Surety or Sureties will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the Agency in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 9100 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, 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 or work of improvement herein above described, nor by any rescission or attempted 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 by any fraud practiced by any person other than the claimant seeking to recover on the bond and that

this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or Agency and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Civil Code Section 9100, and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of sections 2819 and 2845 of the California Civil Code.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20__.

(Corporate Seal)

_____
Contractor/ Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By _____
Attorney-in-Fact

(Attach Attorney-in-Fact Certificate)

Title_____

Notary Acknowledgment

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STATE OF CALIFORNIA
COUNTY OF _____

On _____, 20___, before me, _____, Notary Public, 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 of Notary Public

OPTIONAL

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CAPACITY CLAIMED BY SIGNER

☐ Individual
☐ Corporate Officer

_____
Title(s)

☐ Partner(s) ☐ Limited ☐ General
☐ Attorney-In-Fact
☐ Trustee(s)
☐ Guardian/Conservator
☐ Other:

Signer is representing:
Name Of Person(s) Or Entity(ies)

_____

_____

DESCRIPTION OF ATTACHED DOCUMENT

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Title or Type of Document

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Number of Pages

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Date of Document

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Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for Contractor/Principal.

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COUNTY OF _____

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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.

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Signer is representing:
Name Of Person(s) Or Entity(ies)

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DESCRIPTION OF ATTACHED DOCUMENT

_____
Title or Type of Document

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Number of Pages

_____
Date of Document

_____
Signer(s) Other Than Named Above

NOTE: This acknowledgment is to be completed for the Attorney-in-Fact. The Power-of-Attorney to local representatives of the bonding company must also be attached.

END OF PAYMENT BOND

00 72 13 – GENERAL CONDITIONS

ARTICLE 1. DEFINED TERMS

Whenever used in the Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined below, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

A. **Act of God** – An earthquake of magnitude of 3.5 or higher on the Richter scale or a tidal wave.

B. **Addenda** -- Written or graphic instruments issued prior to the submission of Bids which clarify, correct, or change the Contract Documents.

C. **Additional Work** -- New or unforeseen work will be classified as "Additional Work" when the Agency's Representative determines that it is not covered by the Contract.

D. **Agency** -- The Sonoma Clean Power Authority.

E. **Agency's Representative** -- The individual or entity as identified in the Special Conditions to act as the Agency's Representative.

F. **Applicable Laws** -- The laws, statutes, ordinances, rules, codes, regulations, permits, and licenses of any kind, issued by local, state or federal governmental authorities or private authorities with jurisdiction (including utilities), to the extent they apply to the Work.

G. **Architect of Record** -- The individual, partnership, corporation, joint venture, or other legal entity named as such in Section 00 73 13, Article 1.1. or any succeeding entity designated by the Agency. Referenced in this document as "Architect".

H. **Bid** -- The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices and other terms for the Work to be performed.

I. **Bidder** -- The individual or entity who submits a Bid directly to the Agency.

J. **Board of Directors, Board** -- The Board of Directors of the Agency.

K. **Change Order ("CO")** -- A document that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract, in accordance with the Contract Documents and in the form contained in the Contract Documents.

L. **Change Order Request ("COR")** -- A request made by the Contractor for an adjustment in the Contract Price and/or Contract Times as the result of a Contractor-claimed change to the Work. This term may also be referred to as a Change Order Proposal ("COP"), or Request for Change ("RFC").

M. **Claim** -- A demand or assertion by the Agency or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

N. **Contract** -- The entire integrated written agreement between the Agency and Contractor concerning the Work. "Contract" may be used interchangeably with "Agreement" in the Contract Documents. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral, and includes all Contract Documents.

O. **Contract Documents** -- The documents listed in Section 00 52 13, Article 5. Some documents provided by the Agency to the Bidders and Contractor, including but not limited to reports and drawings of subsurface and physical conditions are not Contract Documents.

P. **Contract Price** -- Amount to be paid by the Agency to the Contractor as full compensation for the performance of the Contract and completion of the Work, subject to any additions or deductions as provided in the Contract Documents, and including all applicable taxes and costs.

Q. **Contract Times** -- The number of days or the dates stated in the Contract Documents to: achieve defined Milestones, if any; and to complete the Work so that it is ready for final payment.

R. **Contractor** -- The individual or entity with which the Agency has contracted for performance of the Work.

S. **Contractor's Designated On-Site Representative** -- The Contractor's Designated On-Site Representative will be as identified in Section 00 72 13, Article 3 and shall not be changed without prior written consent of the Agency.

T. **Daily Rate** -- The Daily Rate stipulated in the Contract Documents as full compensation to the Contractor due to the Agency's unreasonable delay to the Project that was not contemplated by the parties.

U. **Day -- A calendar day of 24 hours measured from midnight to the next midnight**.

V. **Defective Work** -- Work that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referenced in the Contract Documents.

W. **Demobilization** -- The complete dismantling and removal by the Contractor of all of the Contractor's temporary facilities, equipment, and personnel at the Site.

X. **Drawings** -- That part of the Contract Documents prepared by the Architect of Record which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

Y. **Effective Date of the Contract** -- The date indicated in the Contract on which it becomes effective, but if no such date is indicated, it means the date on which the Contract is signed and delivered by the last of the two parties to sign and deliver.

Z. **Engineer**, whenever not qualified, shall mean the Director of Capital Projects and Engineering of the Agency, acting either directly or through properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them. On all questions concerning the acceptance of materials, machinery, the classifications of material, the execution of work, conflicting interest of the contractors performing related work and the determination of costs, the decision of the Engineer, duly authorized by the Board of Directors, shall be binding and final upon both parties.

AA. **Green Book** -- The current edition of the Standard Specifications for Public Works Construction promulgated by the Joint Cooperative Committee of the Southern California Chapter American Public Works Association and the Southern California Districts of the Associated General Contractors of California.

BB. **Hazardous Waste** -- The term "Hazardous Waste" shall have the meaning provided in Section 104 of the Solid Waste Disposal Act (42 U.S.C. § 6903) as amended from time to time or, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a class I, class II, or class III disposal site in accordance with provisions of existing law, whichever is more restrictive.

CC. **Holiday** – The Holidays occur on:

New Year's Day - January 1
Marting Luther King Jr. Day- Third Monday in January
President's Day – Third Monday in February
Memorial Day - Last Monday in May
Juneteenth- June 19
Independence Day - July 4
Labor Day - First Monday in September
Veteran's Day - November 11
Thanksgiving Day - Fourth Thursday in November
Friday after Thanksgiving
Christmas Day through New Year's Eve- December 25-December 31

If any Holiday listed above falls on a Saturday, Saturday and the preceding Friday are both Holidays. If the Holiday should fall on a Sunday, Sunday and the following Monday are both Holidays.

DD. **Notice of Award** -- The written notice by the Agency to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, the Agency will sign and deliver the Contract.

EE. **Notice of Completion** -- The form which may be executed by the Agency and recorded by the county where the Project is located constituting final acceptance of the Project.

FF. **Notice to Proceed** -- A written notice given by the Agency to Contractor fixing the date on which the Contractor may proceed with the Work and when Contract Times will commence to run.

GG. **Project** -- The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

HH. **Recyclable Waste Materials** -- Materials removed from the Site which are required to be diverted to a recycling center rather than an area landfill. Recyclable Waste Materials include asphalt, concrete, brick, concrete block, and rock.

II. **Schedule of Submittals** -- A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to facilitate scheduled performance of related construction activities.

JJ. **Shop Drawings** -- All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

KK. **Specifications** -- That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

LL. **Stop Payment Notice** -- A written notice as defined in Civil Code section 8044.

MM. **Subcontractor** -- An individual or entity other than a Contractor having a contract with any other entity than the Agency for performance of any portion of the Work at the Site.

NN. **Submittal** -- Written and graphic information and physical samples prepared and supplied by the Contractor demonstrating various portions of the Work.

OO. **Successful Bidder** -- The Bidder submitting a responsive Bid to whom the Agency makes an award.

PP. **Supplier** -- A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment used in the performance of the Work or to be incorporated in the Work.

QQ. **Underground Facilities** -- All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

RR. **Unit Price Work** -- Work to be paid for on the basis of unit prices as provided by the Contractor in its bid or as adjusted in accordance with the Contract Documents.

SS. **Warranty** -- A written guarantee provided to the Agency by the Contractor that the Work will remain free of defects and suitable for its intended use for the period required by the Contract Documents or the longest period permitted by the law of this State, whichever is longer.

TT. **Work** -- The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 2. CONTRACT DOCUMENTS

A. **Contract Documents.** The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all.

B. **Interpretations.** The Contract Documents are intended to be fully cooperative and complementary. If the Contractor observes that any documents are in conflict, the Contractor shall promptly notify the Architect in writing. In case of conflicts between the Contract Documents, the order of precedence shall be as follows:

1. Change Orders
2. Addenda
3. Special Conditions
4. Technical Specifications
5. Plans (Contract Drawings)
6. Contract
7. General Conditions
8. Instructions to Bidders
9. Notice Inviting Bids
10. Contractor's Bid Forms
11. Standard Specifications for Public Works Construction (Sections 1-9 Excluded)
12. Applicable Local Agency Standards and Specifications
13. Standard Drawings
14. Reference Documents

With reference to the Drawings, the order of precedence shall be as follows:

1. Figures govern over scaled dimensions
2. Detail drawings govern over general drawings
3. Addenda or Change Order drawings govern over Contract Drawings
4. Contract Drawings govern over Standard Drawings
5. Contract Drawings govern over Shop Drawings

C. **Conflicts in Contract Documents.** Notwithstanding the orders of precedence established above, in the event of conflicts, the higher standard, higher quality, and most expensive shall always apply.

D. **Organization of Contract Documents.** Organization of the Contract Documents into divisions, sections, and articles, and arrangement of drawings shall not control the

Contractor in dividing Project Work among subcontractors or in establishing the extent of Work to be performed by any trade.

ARTICLE 3. PRECONSTRUCTION AND CONSTRUCTION COMMUNICATION

Before any Work at the site is started, a conference attended by the Agency, Contractor, Agency's Representative, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to herein, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

At this conference the Agency and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

ARTICLE 4. CONTRACT DOCUMENTS: COPIES & MAINTENANCE

Contractor will be furnished, free of charge, **five (5)** copies of the Contract Documents. Additional copies may be obtained at cost of reproduction.

Contractor shall maintain a clean, undamaged set of Contract Documents, including submittals, at the Project site.

ARTICLE 5. EXAMINATION OF DRAWINGS, SPECIFICATIONS AND SITE OF WORK

A. **Examination of Contract Documents.** Before commencing any portion of the Work, Contractor shall again carefully examine all applicable Contract Documents, the Project site, and other information given to Contractor as to materials and methods of construction and other Project requirements. Contractor shall immediately notify the Architect of any potential error, inconsistency, ambiguity, conflict, or lack of detail or explanation. If Contractor performs, permits, or causes the performance of any Work which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction. In no case shall the Contractor or any subcontractor proceed with Work if uncertain as to the applicable requirements.

B. **Additional Instructions.** After notification of any error, inconsistency, ambiguity, conflict, or lack of detail or explanation, the Architect will provide any required additional instructions, by means of drawings or other written direction, necessary for proper execution of Work.

C. **Quality of Parts, Construction and Finish.** All parts of the Work shall be of the best quality of their respective kinds and the Contractor must use all diligence to inform itself fully as to the required construction and finish.

D. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the requirements of the Contract Documents including the requirement to comply with all applicable laws, ordinances, rules and regulations, the Architect may at any time, before or after completion of the Work, order the

improper Work removed, remade or replaced by the Contractor at the Contractor's expense.

ARTICLE 6. MOBILIZATION

A. When a bid item is included in the Bid Form for mobilization, the costs of Work in advance of construction operations and not directly attributable to any specific bid item will be included in the progress estimate ("Initial Mobilization"). When no bid item is provided for "Initial Mobilization," payment for such costs will be deemed to be included in the other items of the Work.

B. Payment for Initial Mobilization based on the lump sum provided in the Bid Form, which shall constitute full compensation for all such Work. No payment for Initial Mobilization will be made until all of the listed items have been completed to the satisfaction of the Architect. The scope of the Work included under Initial Mobilization shall include, but shall not be limited to, the following principal items:

1. Obtaining and paying for all bonds, insurance, and permits.

2. Moving on to the Project site of all Contractor's plant and equipment required for the first month's operations.

3. Installing temporary construction power, wiring, and lighting facilities, as applicable.

4. Establishing fire protection system, as applicable.

5. Developing and installing a construction water supply, if applicable.

6. Providing and maintaining the field office trailers for the Contractor, if necessary, and the Architect (if specified), complete, with all specified furnishings and utility services.

7. Providing on-site sanitary facilities and potable water facilities as specified per Cal-OSHA and these Contract Documents.

8. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer's specified storage requirements, and the specific provisions of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security.

9. Arranging for and erection of Contractor's work and storage yard.

10. Posting all OSHA required notices and establishment of safety programs per Cal-OSHA.

11. Full-time presence of Contractor's superintendent at the job site as required herein.

12. Submittal of Construction Schedule as required by the Contract Documents.

ARTICLE 7. EXISTENCE OF UTILITIES AT THE WORK SITE

A. The Agency has endeavored to determine the existence of utilities at the Project site from the records of the owners of known utilities in the vicinity of the Project. The positions of these utilities as derived from such records are shown on the Plans.

B. Unless indicated otherwise on the Plans and Specifications, no excavations were made to verify the locations shown for underground utilities. The service connections to these utilities are not shown on the Plans. Water service connections may be shown on the Plans showing general locations of such connections. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing Work which could result in damage to such utilities. The Contractor shall immediately notify the Agency in writing of any utility discovered in a different position than shown on the Plans or which is not shown on the Plans.

C. If applicable, all water meters, water valves, fire hydrants, electrical utility vaults, telephone vaults, gas utility valves, and other subsurface structures shall be relocated or adjusted to final grade by the Contractor. Locations of existing utilities shown on the Plans are approximate and may not be complete. The Contractor shall be responsible for coordinating its Work with all utility companies during the construction of the Work.

D. Notwithstanding the above, pursuant to section 4215 of the Government Code, the Agency has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the plans and specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the plans and specifications made a part of the invitation for Bids, the Agency shall assume the responsibility for their timely removal, relocation, or protection.

E. Contractor, except in an emergency, shall contact the appropriate regional notification center, at 811 or 1-800-642-2444 or on-line at www.digalert.org at least two working days prior to commencing any excavation if the excavation will be performed in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the Agency, and obtain an inquiry identification number from that notification center. No excavation shall be commenced or carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any subcontractor of the Contractor and the Agency has been given the identification number by the Contractor.

ARTICLE 8. SOILS INVESTIGATIONS

A. **Reports and Drawings**. The Special Conditions identify:

1. those reports known to the Agency of explorations and tests of subsurface conditions at or contiguous to the site; and

2. those drawings known to the Agency of physical conditions relating to existing surface or subsurface structures at the site (except Underground Facilities).

B. **Limited Reliance by Contractor on Technical Data Authorized**. Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, which were expressly not created or obtained to evaluate or assist in the evaluation of constructability, and are not Contract Documents. Contractor shall make its own interpretation of the "technical data" and shall be solely responsible for any such interpretations. Except for reliance on the accuracy of such "technical data," Contractor may not rely upon or make any claim against the Agency, Agency's Representative, or Architect of Record, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including without limitation any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, conclusions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

ARTICLE 9. CONTRACTOR'S SUPERVISION

Contractor shall continuously keep at the Project site, a competent and experienced full-time Project superintendent acceptable to the Agency. Superintendent must be able to proficiently speak, read and write in English and shall have the authority to make decisions on behalf of the Contractor. Contractor shall continuously provide efficient supervision of the Project.

ARTICLE 10. WORKERS

A. Contractor shall at all times enforce strict discipline and good order among its employees. Contractor shall not employ on the Project any unfit person or any one not skilled in the Work assigned to him or her.

B. Any person in the employ of the Contractor whom the Agency may deem incompetent or unfit shall be dismissed from the Work and shall not be employed on this Project.

ARTICLE 11. INDEPENDENT CONTRACTORS

Contractor shall be an independent contractor for the Agency and not an employee. Contractor understands and agrees that it and all of its employees shall not be considered officers, employees, or agents of Agency and are not entitled to benefits of any kind normally provided employees of Agency, including but not limited to, state unemployment compensation or workers' compensation. Contractor assumes full responsibility for the acts and omissions of its employees or agents related to the Work.

ARTICLE 12. SUBCONTRACTS

A. Contractor agrees to bind every subcontractor to the terms of the Contract Documents as far as such terms are applicable to subcontractor's portion of the Work. Contractor shall be as fully responsible to the Agency for the acts and omissions of its

subcontractors and of persons either directly or indirectly employed by its subcontractors, as Contractor is for acts and omissions of persons directly employed by Contractor. Nothing contained in these Contract Documents shall create any contractual relationship between any subcontractor and the Agency.

B. **The Agency reserves the right to accept all subcontractors**. The Agency's acceptance of any subcontractor under this Contract shall not in any way relieve Contractor of its obligations in the Contract Documents.

C. Prior to substituting any subcontractor listed in the Bid Forms, Contractor must comply with the requirements of the Subletting and Subcontracting Fair Practices Act pursuant to California Public Contract Code section 4100 et seq.

ARTICLE 13. VERIFICATION OF EMPLOYMENT ELIGIBILITY

By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time, and shall require all subcontractors, sub-subcontractors and consultants to comply with the same. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor and that any of the following shall be grounds for the Agency to terminate the Contract for cause: (1) failure of the Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for in this Article; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any person found not to be in compliance with such requirements.

ARTICLE 14. REQUESTS FOR SUBSTITUTION

A. For the purposes of this provision, the term "substitution" shall mean the substitution of any material, method or service substantially equal to or better in every respect to that indicated in the Standard Specifications or otherwise referenced herein.

B. Pursuant to Public Contract Code section 3400(b), the Agency may make a finding that is described in the Notice Inviting Bids that designates certain products, things, or services by specific brand or trade name.

C. Unless specifically designated in the Special Conditions, whenever any material, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer for substitution any material, process, or article which may be substantially equal to or better in every respect to that so indicated or specified in the Contract Documents. However, the Agency has adopted uniform standards for certain materials, processes, and articles.

D. The Contractor shall submit substitution requests, together with substantiating data, for substitution of any "or equal" material, process, or article no later than thirty-five (35) calendar days after award of Contract. Provisions regarding submission of substitution requests shall not in any way authorize an extension of time for the

performance of this Contract. If a substitution request is rejected by the Agency, the Contractor shall provide the material, method or service specified herein. The Agency shall not be responsible for any costs incurred by the Contractor associated with substitution requests. The burden of proof as to the equality of any material, process, or article shall rest with the Contractor. The Architect has the complete and sole discretion to determine if a material, process, or article is substantially equal to or better than that specified and to approve or reject all substitution requests.

E. Substantiating data as described above shall include, at a minimum, the following information:

1. A signed affidavit from the Contractor stating that the material, process, or article proposed as a substitution is substantially equal to or better than that specified in every way except as may be listed on the affidavit.

2. Illustrations, specifications, catalog cut sheets, and any other relevant data required to prove that the material, process, or article is substantially equal to or better than that specified.

3. A statement of the cost implications of the substitution being requested, indicating whether and why the proposed substitution will reduce or increase the amount of the contract.

4. Information detailing the durability and lifecycle costs of the proposed substitution.

F. Failure to submit all the required substantiating data detailed above in a timely manner so that the substitution request can be adequately reviewed may result in rejection of the substitution request. The Architect is not obligated to review multiple submittals related the same substitution request resulting from the Contractor's failure to initially submit a complete package.

G. Time limitations within this Article shall be strictly complied with and in no case will an extension of time for completion of the contract be granted because of Contractor's failure to provide substitution requests at the time and in the manner described herein.

H. The Contractor shall bear the costs of all Agency work associated with the review of substitution requests.

I. If substitution requests approved by the Architect require that Contractor furnish materials, methods or services more expensive than that specified, the increased costs shall be borne by Contractor.

ARTICLE 15. SHOP DRAWINGS

A. Contractor shall check and verify all field measurements and shall submit with such promptness as to provide adequate time for review and cause no delay in its own Work or in that of any other contractor, subcontractor, or worker on the Project, copies of all shop drawings, calculations, schedules, and materials list, and all other provisions required by the Contract Documents. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to submission to Architect. Each signed submittal shall affirm that the submittal meets all the

requirements of the Contract Documents except as specifically and clearly noted and listed on the transmittal letter of the submittal.

B. Contractor shall make any corrections required by the Architect. Architect's acceptance of shop drawings shall not relieve Contractor from responsibility for deviations from the Contract Documents unless Contractor has, in writing, called Architect's attention to such deviations at time of submission and has secured the Architect's written acceptance. Architect's acceptance of shop drawings shall not relieve Contractor from responsibility for errors in shop drawings.

ARTICLE 16. SUBMITTALS

A. Contractor shall furnish to the Architect for approval, prior to purchasing or commencing any Work, a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in the Contract Documents. The log shall indicate whether samples will be provided in accordance with other provisions of this Contract.

B. Contractor will provide samples and submittals, together with catalogs and supporting data required by the Architect, to the Architect within a reasonable time period to provide for adequate review and avoid delays in the Work.

C. These requirements shall not authorize any extension of time for performance of this Contract. Architect will check and approve such samples, but only for conformance with design concept of work and for compliance with information given in the Contract Documents. Work shall be in accordance with approved samples and submittals.

ARTICLE 17. MATERIALS

A. Except as otherwise specifically stated in the Contract Documents, Contractor shall provide and pay for all materials, labor, tools, equipment, lights, power, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within specified time.

B. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted and/or specified, and workmanship shall be of good quality.

C. Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of the Work and shall be stored properly and protected as required by the Contract Documents. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or Work.

D. No materials, supplies, or equipment for Work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in the Work and agrees upon completion of all work to deliver the Project, to the Agency free from any claims, liens, or charges.

E. Materials shall be stored on the Project site in such manner so as not to interfere with any operations of the Agency or any independent contractor.

F. Contractor shall verify all measurements, dimensions, elevations, and quantities before ordering any materials or performing any Work, and the Agency shall not be liable for Contractor's failure to so. No additional compensation, over and above payment for the actual quantities at the prices set out in the Bid Form, will be allowed because of differences between actual measurements, dimension, elevations and quantities and those indicated on the Plans and in the Specifications. Any difference therein shall be submitted to the Architect for consideration before proceeding with the Work.

ARTICLE 18. PERMITS AND LICENSES

A. Agency will apply and pay for the review of necessary encroachment permits for Work within the public rights-of-way. Contractor shall obtain all other necessary permits and licenses for the construction of the Project, including encroachment permits, and shall pay all fees required by law and shall comply with all laws, ordinances, rules and regulations relating to the Work and to the preservation of public health and safety. Before acceptance of the Project, the Contractor shall submit all licenses, permits, certificates of inspection and required approvals to the Agency.

B. [Reserved].

ARTICLE 19. TRENCHES

A. **Trenches Five Feet or More in Depth.** Contractor shall submit to the Architect at the preconstruction meeting, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from hazards of caving ground during the excavation of any trench or trenches five feet or more in depth. If such plan varies from shoring system standards established by the Construction Safety Orders of the California Code of Regulations, Department of Industrial Relations, the plan shall be prepared by a California registered civil or structural engineer. The plan shall not be less effective than the shoring, bracing, sloping, or other provisions of the Construction Safety Orders, as defined in the California Code of Regulations. The Contractor shall designate in writing the "competent person" as defined in Title 8, California Code of Regulations, who shall be present at the Work Site each day that trenching/excavation is in progress. The "competent person" shall prepare and provide daily trenching/excavation inspection reports to the Architect. Contractor shall also submit a copy of its annual California Occupational Safety and Health Administration (Cal/OSHA) trench/excavation permit.

B. **Excavations Deeper than Four Feet.** If the Work involves excavating trenches or other excavations that extend deeper than four feet below the surface, Contractor shall promptly, and before the excavation is further disturbed, notify the Agency in writing of any of the following conditions:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

2. Subsurface or latent physical conditions at the site differing from those indicated.

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 the Contract

The Agency shall promptly investigate the conditions, and if it finds that the conditions do so materially differ, or do involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, shall issue a change order under the procedures described in the Contract Documents.

In the event that a dispute arises between the Agency and the 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, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the parties.

ARTICLE 20. TRAFFIC CONTROL

A. Traffic control plan(s) for the Work may be required by the Agency(s) of Jurisdiction. Traffic control plans, if required, shall be prepared at Contractor's expense, and traffic control shall be performed at Contractor's expense in accordance with the requirements of the Agency(s) of Jurisdiction.

B. All warning signs and safety devices used by the Contractor to perform the Work shall conform to the requirements contained in the State of California, Department of Transportation's current edition of "Manual of Traffic Controls for Construction and Maintenance Work Zones" or to the requirements of the local agency. The Contractor shall also be responsible for all traffic control required by the agency having jurisdiction over the project on the intersecting streets. Contractor must submit a traffic control plan to the agency having jurisdiction over the project for approval prior to starting work.

C. The Contractor's representative on the site responsible for traffic control shall produce evidence that he/she has completed training acceptable to the California Department of Transportation for safety through construction zones. All of the streets in which the Work will occur shall remain open to traffic and one lane of traffic maintained at all times unless otherwise directed by the agency of jurisdiction. Businesses and residences adjacent to the Work shall be notified forty-eight (48) hours in advance of closing of driveways. The Contractor shall make every effort to minimize the amount of public parking temporarily eliminated due to construction in areas fronting businesses. No stockpiles of pipe or other material will be allowed in traveled right-of-ways after working hours unless otherwise approved by the Architect.

ARTICLE 21. DIVERSION OF RECYCLABLE WASTE MATERIALS

In compliance with the applicable Agency's waste reduction and recycling efforts, Contractor shall divert all Recyclable Waste Materials to appropriate recycling centers as required for compliance

with the local jurisdiction's waste diversion ordinances. Contractor will be required to submit weight tickets and written proof of diversion with its monthly progress payment requests. Contractor shall complete and execute any certification forms required by Agency or other applicable agencies to document Contractor's compliance with these diversion requirements. All costs incurred for these waste diversion efforts shall be the responsibility of the Contractor.

ARTICLE 22. REMOVAL OF HAZARDOUS MATERIALS

Should Contractor encounter material reasonably believed to be polychlorinated biphenyl (PCB) or other toxic wastes and hazardous materials which have not been rendered harmless at the Project site, the Contractor shall immediately stop work at the affected Project site and shall report the condition to the Agency in writing. The Agency shall contract for any services required to directly remove and/or abate PCBs and other toxic wastes and hazardous materials, if required by the Project site(s), and shall not require the Contractor to subcontract for such services. The Work in the affected area shall not thereafter be resumed except by written agreement of the Agency and Contractor.

ARTICLE 23. SANITARY FACILITIES

Contractor shall provide sanitary temporary toilet buildings and hand washing facilities for the use of all workers. All toilets and hand washing facilities shall comply with local codes and ordinances. Toilets shall be kept supplied with toilet paper and shall have workable door fasteners. Toilets and hand washing facilities shall be serviced no less than once weekly and shall be present in a quantity of not less than 1 per 20 workers as required by Cal/OSHA regulations. The toilets and hand washing facilities shall be maintained in a sanitary condition at all times. Use of toilet and hand washing facilities in the Work under construction shall not be permitted. Any other Sanitary Facilities required by Cal/OSHA shall be the responsibility of the Contractor.

ARTICLE 24. AIR POLLUTION CONTROL

Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes, including, but not limited to, those required by the Bay Area Air Quality Management District. All containers of paint, thinner, curing compound, solvent or liquid asphalt shall be labeled to indicate that the contents fully comply with the applicable material requirements.

ARTICLE 25. LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out the Work and establishing grades for earthwork operations shall be furnished by the Contractor at its expense.

ARTICLE 26. TESTS AND INSPECTIONS

A. If the Contract Documents, the Architect, or any instructions, laws, ordinances, or public authority requires any part of the Work to be tested or Approved, Contractor shall provide the Architect at least two (2) working days' notice of its readiness for observation or inspection. If inspection is by a public authority other than the Agency, Contractor shall promptly inform the Agency of the date fixed for such inspection. Required certificates of inspection (or similar) shall be secured by Contractor. Costs for Agency testing and Agency inspection shall be paid by the Agency. Costs of tests for Work found not to be in compliance shall be paid by the Contractor.

B. If any Work is done or covered up without the required testing or approval, the Contractor shall uncover or deconstruct the Work, and the Work shall be redone after completion of the testing at the Contractor's cost in compliance with the Contract Documents.

C. Where inspection and testing are to be conducted by an independent laboratory or agency, materials or samples of materials to be inspected or tested shall be selected by such laboratory or agency, or by the Agency, and not by Contractor. All tests or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.

D. In advance of manufacture of materials to be supplied by Contractor which must be tested or inspected, Contractor shall notify the Agency so that the Agency may arrange for testing at the source of supply. Any materials which have not satisfactorily passed such testing and inspection shall not be incorporated into the Work.

E. If the manufacture of materials to be inspected or tested will occur in a plant or location greater than sixty (60) miles from the Agency, the Contractor shall pay for any excessive or unusual costs associated with such testing or inspection, including but not limited to excessive travel time, standby time and required lodging.

F. **Reexamination of Work may be ordered by the Agency**. If so ordered, Work must be uncovered or deconstructed by Contractor. If Work is found to be in accordance with the Contract Documents, the Agency shall pay the costs of reexamination and reconstruction. If such work is found not to be in accordance with the Contract Documents, Contractor shall pay all costs.

ARTICLE 27. PROTECTION OF WORK AND PROPERTY

A. The Contractor shall be responsible for all damages to persons or property that occurs as a result of the Work. Contractor shall be responsible for the proper care and protection of all materials delivered and Work performed until completion and final Acceptance by the Agency. All Work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as necessary. Contractor shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to the Project site where Work is being performed. Contractor shall erect and properly maintain at all times, as required by field conditions and progress of work, all necessary safeguards, signs, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created in the course of construction.

B. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from the Architect, is hereby permitted to act to prevent such threatened loss or injury; and Contractor shall so act, without appeal, if so authorized or instructed by the Architect or the Agency. Any compensation claimed by Contractor on account of emergency work shall be determined by and agreed upon by the Agency and the Contractor.

ARTICLE 28. CONTRACTOR'S MEANS AND METHODS

Contractor is solely responsible for the means and methods utilized to perform the Work. In no

case shall the Contractor's means and methods deviate from commonly used industry standards.

ARTICLE 29. COMPLIANCE WITH CALIFORNIA AIR RESOURCES BOARD REGULATIONS

A. Contractor shall comply, and shall ensure all subcontractors comply, with all applicable requirements of the most current version of the regulations imposed by California Air Resources Board ("CARB") including, without limitation, all applicable terms of Title 13, California Code of Regulations Division 3, Chapter 9 and all pending amendments ("Regulation").

B. Throughout the Project, and for three (3) years thereafter, Contractor shall make available for inspection and copying any and all documents or information associated with Contractor's and its subcontractors' fleets including, without limitation, the Certificates of Reported Compliance ("CRCs"), fuel/refueling records, maintenance records, emissions records, and any other information the Contractor is required to produce, keep or maintain pursuant to the Regulation upon two (2) calendar days' notice from the Agency.

C. Contractor shall be solely liable for any and all costs associated with compliance with the Regulation as well as for any and all penalties, fines, damages, or costs associated with any and all violations, or failures to comply with the Regulation. Contractor shall defend, indemnify and hold harmless the Agency, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Regulation.

ARTICLE 30. AUTHORIZED REPRESENTATIVES

The Agency shall designate representatives, who shall have the right to be present at the Project site at all times. The Agency may designate an inspector who shall have the right to observe all of the Contractor's Work. The inspector shall not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. Contractor shall provide safe and proper facilities for such access.

ARTICLE 31. HOURS OF WORK

A. As provided in Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, Contractor stipulates that eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed at any time by the Contractor or by any subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract is limited and restricted to eight (8) hours during any one calendar day and 40 hours during any one calendar week, except as hereinafter provided. Notwithstanding the provisions herein above set forth, work performed by employees of Contractor in excess of eight (8) hours per day, and 40 hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

B. The Contractor and every subcontractor shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the

inspection of the Agency and to the Division of Labor Law Enforcement, Department of Industrial Relations of the State of California.

C. The Contractor shall pay to the Agency a penalty of twenty-five dollars ($25.00) for each worker employed in the execution of this Contract by the Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.

D. Any work necessary to be performed after regular working hours, or on Saturdays and Sundays or other holidays, shall be performed without additional expense to the Agency.

E. **Agency will provide inspection during normal working hours from 8**:00 a.m. to 4:30 p.m. Monday through Friday. Inspection before or after this time will be charged to the Contractor as reimbursable inspection time. Inspections on weekends requires two days' notice for review and approval. Upon written request and approval the 8.5 hour working day may be changed to other limits subject to city/county ordinance.

F. It shall be unlawful for any person to operate, permit, use, or cause to operate any of the following at the Project site, other than between the hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, with no Work allowed on the Agency-observed holidays, unless otherwise approved by the Agency:

1. Powered Vehicles

2. Construction Equipment

3. Loading and Unloading Vehicles

4. Domestic Power Tools

ARTICLE 32. PAYROLL RECORDS

A. Pursuant to Labor Code section 1776, Contractor and all subcontractors shall maintain weekly certified payroll records, showing the names, addresses, Social Security numbers, work classifications, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by them in connection with the Work under this Contract. Contractor shall certify under penalty of perjury that records maintained and submitted by Contractor are true and accurate. Contractor shall also require subcontractor(s) to certify weekly payroll records under penalty of perjury.

B. In accordance with Labor Code section 1771.4, the Contractor and each subcontractor shall furnish the certified payroll records directly to the Department of Industrial Relations ("DIR") on the specified interval and format prescribed by the DIR, which may include electronic submission. Contractor shall comply with all requirements and regulations from the DIR relating to labor compliance monitoring and enforcement. The requirement to submit certified payroll records directly to the Labor Commissioner under Labor Code section 1771.4 shall not apply to work performed on a public works

project that is exempt pursuant to the small project exemption specified in Labor Code Section 1771.4.

C. Any stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor that affect Contractor's performance of Work, including any delay, shall be Contractor's sole responsibility. Any delay arising out of or resulting from such stop orders shall be considered Contractor caused delay subject to any applicable liquidated damages and shall not be compensable by the Agency. Contractor shall defend, indemnify and hold the Agency, its officials, officers, employees and agents free and harmless from any claim or liability arising out of stop orders issued by the Department of Industrial Relations against Contractor or any subcontractor.

D. The payroll records described herein shall be certified and submitted by the Contractor at a time designated by the Agency. The Contractor shall also provide the following:

1. A certified copy of the employee's payroll records shall be made available for inspection or furnished to such employee or his or her authorized representative on request.

2. A certified copy of all payroll records described herein shall be made available for inspection or furnished upon request of the DIR.

E. Unless submitted electronically, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement ("DLSE") of the DIR or shall contain the same information as the forms provided by the DLSE.

F. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency, the Agency, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or performing the contract shall not be marked or obliterated.

G. In the event of noncompliance with the requirements of this Article, the Contractor shall have ten (10) calendar days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this Article. Should noncompliance still be evident after such 10-day period, the Contractor shall pay a penalty of one hundred dollars ($100.00) to the Agency for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payment then due.

H. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 33. PREVAILING RATES OF WAGES

A. The Contractor is aware of the requirements of Labor Code sections 1720 *et seq.* and 1770 *et seq.*, as well as California Code of Regulations, Title 8, Section 16000 *et seq.* ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance"

projects. Since this Project involves an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is $1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Contract from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov. In the alternative, the Contractor may view a copy of the prevailing rate of per diem wages which are on file at the Agency's Administration Office and shall be made available to interested parties upon request. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the Project site. Contractor shall defend, indemnify and hold the Agency, its officials, officers, employees and authorized volunteers free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or allege failure to comply with the Prevailing Wage Laws.

B. The Contractor shall forfeit as a penalty to the Agency not more than Two Hundred Dollars ($200.00), pursuant to Labor Code section 1775, for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate as determined by the Director of the Department of Industrial Relations for such work or craft in which such worker is employed for any public work done under the Contract by it or by any subcontractor under it. The difference between such prevailing wage rate and the amount paid to each worker for each calendar day or portion thereof, for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by the Contractor.

C. Contractor shall post, at appropriate conspicuous points on the Project site, a schedule showing all determined general prevailing wage rates and all authorized deductions, if any, from unpaid wages actually earned.

ARTICLE 34. PUBLIC WORKS CONTRACTOR REGISTRATION

Pursuant to Labor Code sections 1725.5 and 1771.1, the Contractor and its subcontractors must be registered with the Department of Industrial Relations prior to the execution of a contract to perform public works. By entering into this Contract, Contractor represents that it is aware of the registration requirement and is currently registered with the DIR. Contractor shall maintain a current registration for the duration of the Project. Contractor shall further include the requirements of Labor Code sections 1725.5 and 1771.1 in any subcontract and ensure that all subcontractors are registered at the time this Contract is entered into and maintain registration for the duration of the Project. Notwithstanding the foregoing, the contractor registration requirements mandated by Labor Code Sections 1725.5 and 1771.1 shall not apply to work performed on a public works project that is exempt pursuant to the small project exemption specified in Labor Code Sections 1725.5 and 1771.1.

ARTICLE 35. EMPLOYMENT OF APPRENTICES

A. Contractor and all subcontractors shall comply with the requirements of Labor Code sections 1777.5 and 1777.6 in the employment of apprentices.

B. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

C. Knowing violations of Labor Code section 1777.5 will result in forfeiture not to exceed one hundred dollars ($100.00) for each calendar day of non-compliance pursuant to Labor Code section 1777.7.

D. The responsibility for compliance with this Article shall rest upon the Contractor.

ARTICLE 36. NONDISCRIMINATION/EQUAL EMPLOYMENT OPPORTUNITY

Pursuant to Labor Code section 1735 and other applicable provisions of law, the Contractor and its subcontractors shall not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law on this Project. The Contractor will take affirmative action to insure that employees are treated during employment or training without regard to their race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, or any other classifications protected by law.

Employment Eligibility; Contractor. By executing this Contract, Contractor verifies that it fully complies with all requirements and restrictions of state and federal law respecting the employment of undocumented aliens, including, but not limited to, the Immigration Reform and Control Act of 1986, as may be amended from time to time. Such requirements and restrictions include, but are not limited to, examination and retention of documentation confirming the identity and immigration status of each employee of the Contractor. Contractor also verifies that it has not committed a violation of any such law within the five (5) years immediately preceding the date of execution of this Contract, and shall not violate any such law at any time during the term of the Contract. Contractor shall avoid any violation of any such law during the term of this Contract by participating in an electronic verification of work authorization program operated by the United States Department of Homeland Security, by participating in an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, or by some other legally acceptable method. Contractor shall maintain records of each such verification, and shall make them available to the Agency or its representatives for inspection and copy at any time during normal business hours. The Agency shall not be responsible for any costs or expenses related to Contractor's compliance with the requirements provided for or referred to herein.

Employment Eligibility; Subcontractors, Sub-subcontractors and Consultants. To the same extent and under the same conditions as Contractor, Contractor shall require all of its subcontractors, sub-subcontractors and consultants performing any part of the Work or of this Contract to make the same verifications and comply with all requirements and restrictions provided for herein.

Employment Eligibility; Failure to Comply. Each person executing this Contract on behalf of Contractor verifies that he or she is a duly authorized officer of Contractor, and understands that any of the following shall be grounds for the Agency to terminate the Contract for cause: (1) failure of Contractor or its subcontractors, sub-subcontractors or consultants to meet any of the requirements provided for herein; (2) any misrepresentation or material omission concerning compliance with such requirements; or (3) failure to immediately remove from the Work any

person found not to be in compliance with such requirements.

ARTICLE 37. DEBARMENT OF CONTRACTORS AND SUBCONTRACTORS

Contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Labor Code section 1777.1 or 1777.7. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by a contractor on the project shall be returned to the Agency. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

ARTICLE 38. LABOR/EMPLOYMENT SAFETY

The Contractor shall comply with all applicable laws and regulations of the federal, state, and local government, including Cal/OSHA requirements and requirements for verification of employees' legal right to work in the United States.

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 *et seq*.), and California Code of Regulations, Title 8, Industrial Relations Division 1, Department of Industrial Relations, Chapter 4. The Contractor shall ensure the availability of emergency medical services for its employees in accordance with California Code of Regulations, Title 8, Section 1512.

The Contractor shall submit the Illness and Injury Prevention Program and a Project site specific safety program to the Agency prior to beginning Work at the Project site. Contractor shall maintain a confined space program that meets or exceeds the Agency Standards. Contractor shall adhere to the Agency's lock out tag out program.

ARTICLE 39. INSURANCE

The Contractor shall obtain, and at all times during performance of the Work of Contract, maintain all of the insurance described in this Article. Contractor shall not commence Work under this Contract until it has provided evidence satisfactory to the Agency that it has secured all insurance required hereunder. Contractor shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to the Agency that the subcontractor has secured all insurance required under this Article. If Contractor fails to maintain Insurance which is required pursuant to the Contract Documents, it shall be deemed a material breach. The Agency, at its sole option, may terminate the Contract for default and obtain damages from Contractor resulting from said breach. Alternatively, the Agency may purchase the required Insurance, and without further notice to Contractor, the Agency may deduct from sums due to Contractor any premium costs advanced by the Agency for such insurance. Contractor shall furnish Agency with original certificates of insurance and endorsements effective coverage required by this Contract on forms satisfactory to the Agency. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms acceptable to the Agency. All certificates and endorsements must be received and approved by the Agency before Work commences.

A. **Additional Insureds; Waiver of Subrogation**. The Agency, its officials, officers, employees, agents and authorized volunteers shall be named as Additional Insureds

on Contractor's All Risk policy and on Contractor's and its subcontractors' policies of Commercial General Liability and Automobile Liability insurance using, for Contractor's policy/ies of Commercial General Liability insurance, ISO CG forms 20 10 and 20 37 (or endorsements providing the exact same coverage, including completed operations), and, for subcontractors' policies of Commercial General Liability insurance, ISO CG form 20 38 (or endorsements providing the exact same coverage). Notwithstanding the minimum limits set forth in this Contract for any type of insurance coverage, all available insurance proceeds in excess of the specified minimum limits of coverage shall be available to the parties required to be named as Additional Insureds hereunder. The policy shall be endorsed to include a written waiver of the insurer's right to subrogate against the Agency.

B. **Workers' Compensation Insurance with Statutory Limits as Required by the Labor Code of the State of California**. The Contractor shall provide workers' compensation insurance for all of the employees engaged in Work under this Contract, on or at the Site, and, in case of any sublet Work, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees as prescribed by State law. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this Contract, on or at the Site, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor is required to secure payment of compensation to his employees in accordance with the provisions of section 3700 of the Labor Code. The Contractor shall file with the Agency certificates of his insurance protecting workers. Company or companies providing insurance coverage shall be acceptable to the Agency, if in the form and coverage as set forth in the Contract Documents.

C. **Employer's Liability Insurance**. Contractor shall provide Employer's Liability Insurance, including Occupational Disease, in the amount of at least one million dollars ($1,000,000.00) per person per accident, one million dollars ($1,000,000) Disease per employee, and one million dollars ($1,000,000) Disease per policy. Contractor shall provide Agency with a certificate of Employer's Liability Insurance. Such insurance shall comply with the provisions of the Contract Documents. The policy shall be endorsed, if applicable, to provide a Borrowed Servant/Alternate Employer Endorsement and contain a Waiver of Subrogation in favor of the Agency.

D. **Commercial General Liability Insurance**. Contractor shall provide "occurrence" form Commercial General Liability insurance coverage at least as broad as the most current ISO CGL Form 00 01, including but not limited to, premises liability, contractual liability, products/completed operations, personal and advertising injury which may arise from or out of Contractor's operations, use, and management of the Site, or the performance of its obligations hereunder. The policy shall not contain any exclusion contrary to this Contract including but not limited to endorsements or provisions limiting coverage for (1) contractual liability (including but not limited to ISO CG 24 26 or 21 39); or (2) cross-liability for claims or suits against one insured against another. Policy limits shall not be less than $2,000,000 per occurrence for bodily injury, personal injury and property damage, $4,000,000 general aggregate, and $4,000,000 products/completed operations aggregate. The general aggregate shall apply separately to this Project.

1. Such policy shall comply with all the requirements of this Article. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor's indemnification obligations to the Agency, and shall not preclude the Agency from taking such other actions available to the Agency under other provisions of the Contract Documents or law.

2. All general liability policies provided pursuant to the provisions of this Article shall comply with the provisions of the Contract Documents.

3. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, under-ground excavation, removal of lateral support, and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in these General Conditions relating to liability for injury to or death of persons and damage to property.

4. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, the Agency may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement described in the Contract Documents.

5. All policies of general liability insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.

6. Any deductible or self-insured retention shall be shown on the Certificate of Insurance. If the deductible or self-insured retention exceeds $25,000 it must be approved in advance by the Agency. Contractor is responsible for any deductible or self-insured retention and shall fund it upon the Agency's written request, regardless of whether Contractor has a claim against the insurance or is named as a party in any action involving the Agency.

E. **Automobile Liability Insurance**. Contractor shall provide "occurrence" form Automobile Liability Insurance at least as broad as ISO CA 00 01 (Any Auto) in the amount of, at least, two million dollars ($2,000,000) per accident for bodily injury and property damage. The required limits may be provided by a combination of Automobile Liability Insurance and Commercial Excess or Umbrella Liability Insurance. Such insurance shall provide coverage with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by Contractor or for which Contractor is responsible, in a form and with insurance companies acceptable to the Agency. All policies of automobile insurance shall permit and Contractor does hereby waive any right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss.

F. **Builder's Risk ["All Risk"]**

1. It is the Contractor's responsibility to maintain or cause to be maintained Builder's Risk ["All Risk"] extended coverage insurance on all work, material, equipment, appliances, tools, and structures that are or will become part of the Work and subject to loss or damage by fire, and vandalism and malicious mischief, in an amount to cover 100% of the replacement cost. The Agency accepts no responsibility for the Work until the Work is formally accepted by the Agency. The Contractor shall provide a certificate evidencing this coverage before commencing performance of the Work.

2. The named insureds shall be Contractor, all Subcontractors of any tier (excluding those solely responsible for design work), suppliers, and Agency, its elected officials, officers, employees, agents and authorized volunteers, as their interests may appear. Contractor shall not be required to maintain property insurance for any portion of the Work following acceptance by Agency.

3. Policy shall be provided for replacement value on an "all risk" basis. There shall be no coinsurance penalty 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) transit coverage, including ocean marine coverage (unless insured by the supplier), with sub-limits sufficient to insure the full replacement value of any key equipment item; and (5) coverage with sub-limits sufficient to insure the full replacement value of any property or equipment stored either on or off the Site. Such insurance shall be on a form acceptable to Agency to ensure adequacy and sublimit.

4. In addition, the policy shall meet the following requirements:

    a. Insurance policies shall be so conditioned as to cover the performance of any extra work performed under the Contract.

    b. Coverage shall include all materials stored on site and in transit.

    c. Coverage shall include Contractor's tools and equipment.

    d. Insurance shall include boiler, machinery and material hoist coverage.

G. **Contractor's Pollution Liability Coverage**. Contractor shall provide pollution liability insurance in an amount not less than $1,000,000 per occurrence and $2,000,000 aggregate.

1. This insurance shall cover:

    a. bodily injury, sickness, disease, sustained by any person, including death;

    b. property damage, including physical injury to or destruction of tangible property including the resulting loss of use thereof;

c. cleanup costs, and the loss of use of tangible property that has not been physically injured or destroyed including diminution of value and natural resources damages;

d. loss arising from pollutants including but not limited to fungus, bacteria, asbestos, lead, silica, and contaminated drywall;

e. contractual liability coverage for liability assumed by Contractor under a written contract or agreement;

f. claims arising from owned and non-owned disposal sites utilized in the performance of this Agreement; and

g. defense costs, including costs, charges, and expenses incurred in the investigation, adjustment, or defense of claims.

2. If the insurance is on a Claims-Made basis, the retroactive date shall be no later than the commencement of work.

3. Contractor shall maintain the insurance for the entire period of the Work including any warranty period, plus an additional two (2) years after the end of the warranty period.

H. Contractor shall require all tiers of sub-contractors working under this Contract to provide the insurance required under this Article unless otherwise agreed to in writing by Agency. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this Contract. If any subcontractor's coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold the Agency harmless from any damage, loss, cost, or expense, including attorneys' fees, incurred by the Agency as a result thereof.

ARTICLE 40. FORM AND PROOF OF CARRIAGE OF INSURANCE

A. Any insurance carrier providing insurance coverage required by the Contract Documents shall be admitted to and authorized to do business in the State of California unless waived, in writing, by the Agency's Risk Manager. Carrier(s) shall have an A.M. Best rating of not less than an A:VII. Insurance deductibles or self-insured retentions must be declared by the Contractor. At the election of the Agency the Contractor shall either 1) reduce or eliminate such deductibles or self-insured retentions, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses. If umbrella or excess liability coverage is used to meet any required limit(s) specified herein, the Contractor shall provide a "follow form" endorsement satisfactory to the Agency indicating that such coverage is subject to the same terms and conditions as the underlying liability policy.

B. **Each insurance policy required by this Contract shall be endorsed to state that**: (1) coverage shall not be suspended, voided, reduced or cancelled except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the Agency; and (2) any failure to comply with reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to the Agency, its officials, officers, agents, employees, and volunteers. Contractor shall

provide immediate written notice if: (1) any of the required insurance policies are terminated; (2) the limits of any of the required policies are reduced; or (3) the deductible or self-insured retention is increased

C. The Certificates(s) and policies of insurance shall contain or shall be endorsed to contain the covenant of the insurance carrier(s) that it shall provide no less than thirty (30) days written notice be given to the Agency prior to any material modification or cancellation of such insurance. In the event of a material modification or cancellation of coverage, the Agency may terminate the Contract or stop the Work in accordance with the Contract Documents, unless the Agency receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverage's set forth herein and the insurance required herein is in full force and effect. Contractor shall not take possession, or use the Site, or commence operations under this Contract until the Agency has been furnished original Certificate(s) of Insurance and certified original copies of endorsements or policies of insurance including all endorsements and any and all other attachments as required in this Article. The original endorsements for each policy and the Certificate of Insurance shall be signed by an individual authorized by the insurance carrier to do so on its behalf.

D. The Certificate(s) of Insurance, policies and endorsements shall so covenant and shall be construed as primary, and the Agency's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.

E. Agency reserves the right to increase the minimum amounts of insurance should conditions of work warrant such increase. Contractor shall increase required insurance amounts upon direction by the Agency.

F. Contractor shall report to the Agency, in addition to the Contractor's insurer, any and all insurance claims submitted by the Contractor in connection with the Work under this Contract.

ARTICLE 41. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

A. **Time for Completion/Liquidated Damages.** Time is of the essence in the completion of the Work. Work shall be commenced within ten (10) Days of the date stated in the Agency's Notice to Proceed and shall be completed by Contractor in the time specified in the Contract Documents. The Agency is under no obligation to consider early completion of the Project; and the Contract completion date shall not be amended by the Agency's receipt or acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances, receive additional compensation from the Agency (including but not limited to indirect, general, administrative or other forms of overhead costs) for the period between the time of earlier completion proposed by the Contractor and the Contract completion date. If the Work is not completed as stated in the Contract Documents, it is understood that the Agency will suffer damage. In accordance with Government Code section 53069.85, being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to the Agency as fixed and liquidated damages, and not as a penalty, the sum stipulated in the Contract for each calendar day of delay until the Work is fully completed. Contractor and its surety shall be liable for any liquidated

damages. Any money due or to become due the Contractor may be retained to cover liquidated damages.

B. **Inclement Weather.** Contractor shall abide by the Architect's determination of what constitutes inclement weather. Time extensions for inclement weather shall only be granted when the Work stopped during inclement weather is on the critical path of the Project schedule.

C. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor (or its subcontractors or suppliers). Contractor shall within five (5) Days of identifying any such delay notify the Agency in writing of causes of delay. The Agency shall ascertain the facts and extent of delay and grant extension of time for completing the Work when, in its judgment, the facts justify such an extension. Time extensions to the Project shall be requested by the Contractor as they occur and without delay. No delay claims shall be permitted unless the event or occurrence delays the completion of the Project beyond the Contract completion date.

D. **No Damages for Reasonable Delay.** The Agency's liability to Contractor for delays for which the Agency is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall the Agency be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs. Damages caused by unreasonable Agency delay, including delays caused by items that are the responsibility of the Agency pursuant to Government Code section 4215, shall be based on actual costs only, no proportions or formulas shall be used to calculate any delay damages.

ARTICLE 42. COST BREAKDOWN AND PERIODIC ESTIMATES

Contractor shall furnish on forms Approved by the Agency:

A. Within ten (10) Days of Notice to Proceed with the Contract, a detailed estimate giving a complete breakdown of the Contract price, if the Contract amount is a lump sum.

B. A monthly itemized estimate of Work done for the purpose of making progress payments. In order for the Agency to consider and evaluate each progress payment application, the Contractor shall submit a detailed measurement of Work performed and a progress estimate of the value thereof before the tenth (10th) Day of the following month.

C. Contractor shall submit, with each of its payment requests, an adjusted list of actual quantities, verified by the Architect, for unit price items listed, if any, in the Bid Form.

D. Following the Agency's Acceptance of the Work, the Contractor shall submit to the Agency a written statement of the final quantities of unit price items for inclusion in the final payment request.

E. The Agency shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any estimate for payment.

Contractor shall certify under penalty of perjury, that all cost breakdowns and periodic estimates accurately reflect the Work on the Project.

ARTICLE 43. PROGRESS ESTIMATES AND PAYMENT

A. By the tenth (10th) Day of the following calendar month, Contractor shall submit to Architect a payment request which shall set forth in detail the value of the Work done for the period beginning with the date work was first commenced and ending on the end of the calendar month for which the payment request is prepared. Contractor shall include any amount earned for authorized extra work. From the total thus computed, a deduction shall be made in the amount of five percent (5%) for retention, except where the Agency has adopted a finding that the Work done under the Contract is substantially complex, and then the amount withheld as retention shall be the percentage specified in the Notice Inviting Bids. From the remainder a further deduction may be made in accordance with Section B below. The amount computed, less the amount withheld for retention and any amounts withheld as set forth below, shall be the amount of the Contractor's payment request.

B. The Agency may withhold a sufficient amount or amounts of any payment or payments otherwise due to Contractor, as in his judgment may be necessary to cover:

1. Payments which may be past due and payable for just claims against Contractor or any subcontractors for labor or materials furnished in and about the performance of work on the Project under this Contract.

2. Defective work not remedied.

3. Failure of Contractor to make proper payments to his subcontractor or for material or labor.

4. Completion of the Contract if there is a reasonable doubt that the Work can be completed for balance then unpaid.

5. Damage to another contractor or a third party.

6. Amounts which may be due the Agency for claims against Contractor.

7. Failure of Contractor to keep the record ("as-built") drawings up to date.

8. Failure to provide update on construction schedule as required herein.

9. Site cleanup.

10. Failure to comply with Contract Documents.

11. Liquidated damages.

12. Legally permitted penalties.

C. The Agency may apply such withheld amount or amounts to payment of such claims or obligations at its discretion with the exception of subsections (B)(1), (3), and (5) of

this Article, which must be retained or applied in accordance with applicable law. In so doing, the Agency shall be deemed the agent of Contractor and any payment so made by the Agency shall be considered as a payment made under contract by the Agency to Contractor and the Agency shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. The Agency will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

D. Upon receipt, the Architect shall review the payment request to determine whether it is undisputed and suitable for payment. If the payment request is determined to be unsuitable for payment, it shall be returned to Contractor as soon as practicable but not later than seven (7) Days after receipt, accompanied by a document setting forth in writing the reasons why the payment request is not proper. The Agency shall make the progress payment within 30 calendar days after the receipt of an undisputed and properly submitted payment request from Contractor, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8132. The number of days available to the Agency to make a payment without incurring interest pursuant to this paragraph shall be reduced by the number of days by which the Architect exceeds the seven (7) Day requirement.

E. A payment request shall be considered properly executed if funds are available for payment of the payment request and payment is not delayed due to an audit inquiry by the financial officer of the Agency.

ARTICLE 44. SECURITIES FOR MONEY WITHHELD

Pursuant to section 22300 of the Public Contract Code of the State of California, Contractor may request the Agency to make retention payments directly to an escrow agent or may substitute securities for any money withheld by the Agency to ensure performance under the contract. At the request and expense of Contractor, securities equivalent to the amount withheld shall be deposited with the Agency or with a state or federally chartered bank as the escrow agent who shall return such securities to Contractor upon satisfactory completion of the contract. Deposit of securities with an escrow agent shall be subject to a written agreement substantially in the form provided in section 22300 of the Public Contract Code.

ARTICLE 45. CHANGES AND EXTRA WORK.

A. **Contract Change Orders**.

1. The Agency, without invalidating the Contract, may order changes in the Work consisting of additions, deletions or other revisions, and the Contract Price and Contract Time shall be adjusted accordingly. Except as otherwise provided herein, all such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contract Price or the Contract Time, and the full and final settlement of all costs (direct, indirect and overhead) related to the Work authorized by the Change Order.

2. Contractor shall promptly execute changes in the Work as directed in writing by the Agency even when the parties have not reached agreement on whether the

change increases the scope of Work or affects the Contract Price or Contract Time. All claims for additional compensation to the Contractor shall be presented in writing. No claim will be considered after the Work in question has been done unless a written Change Order has been issued or a timely written notice of claim has been made by Contractor.

3. Whenever any change is made as provided for herein, such change shall be considered and treated as though originally included in the Contract, and shall be subject to all terms, conditions, and provisions of the original Contract.

4. Contractor shall not be entitled to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any item or portion of Work to be done.

5. No dispute, disagreement, or failure of the parties to reach agreement on the terms of the Change Order shall relieve the Contractor from the obligation to proceed with performance of the work, including Additional Work, promptly and expeditiously.

6. Contractor shall make available to the Agency any of the Contractor's documents related to the Project immediately upon request of the Agency, as set forth in Article 52.

7. Any alterations, extensions of time, Additional Work, or any other changes may be made without securing consent of the Contractor's surety or sureties.

B. **Contract Price Change**.

1. Process for Determining Adjustments in Contract Price.

a. **Owner Initiated Change**. The Contractor must submit a complete cost proposal, including any change in the Contract Price or Contract Time, within seven (7) Days after receipt of a scope of a proposed change order initiated by the Agency, unless the Agency requests that proposals be submitted in less than seven (7) Days.

b. **Contractor Initiated Change**. The Contractor must give written notice of a proposed change order required for compliance with the Contract Documents within seven (7) Days of discovery of the facts giving rise to the proposed change order.

c. Whenever possible, any changes to the Contract amount shall be in a lump sum mutually agreed to by the Contractor and the Agency.

d. Price quotations from the Contractor shall be accompanied by sufficiently detailed supporting documentation to permit verification by the Agency, including but not limited to estimates and quotations from subcontractors or material suppliers, as the Agency may reasonably request. Contractor shall certify the accuracy of all Change Order Requests under penalty of perjury.

e. If the Contractor fails to submit a complete cost proposal within the seven (7) Day period (or as requested), the Agency has the right to order the Contractor in writing to commence the Work immediately on a time and materials basis and/or issue a lump sum change to the Contract Price and/or Contract Time in accordance with the Agency's estimate. If the change is issued based on the Agency's estimate, the Contractor will waive its right to dispute the action unless within fifteen (15) Days following completion of the added/deleted work, the Contractor presents written proof that the Agency's estimate was in error.

2. Unit Price Change Orders.

a. When the actual quantity of a Unit Price item varies from the Bid Form, compensation for the change in quantity will be calculated by multiplying the actual quantity by the Unit Price. This calculation may result in either an additive or deductive Final Change Order pursuant to the Contract Documents.

b. No Mark up for Overhead and Profit. Because the Contract Unit Prices provided in the Bid Form include Overhead and Profit as determined by Contractor at the time of Bid submission, no mark up or deduction for Overhead and Profit will be included in Unit Price Change Orders.

c. Bid items included on the Bid Form may be deducted from the Work in their entirety without any negotiated extra costs.

d. Contractor acknowledges that unit quantities are estimates and agrees that the estimated unit quantities listed on the Bid Form will be adjusted to reflect the actual unit quantities which may result in an adjustment to the Contract Unit Prices. Such an adjustment will be made by execution of a final additive or deductive Change Order following Contractor's completion of the Work. Upon notification, Contractor's failure to respond within seven (7) Days will result in Agency's issuance of a unit quantity adjustment to the Contract Unit Prices and/or Contract Time in accordance with the Contract Documents.

e. The Agency or Contractor may make a Claim for an adjustment in the Unit Price in accordance with the Contract Documents if:

i. the quantity of any item of Unit Price Work performed by Contractor differs by twenty-five percent (25%) or more from the estimated quantity of such item indicated in the Contract; and

ii. there is no corresponding adjustment with respect to any other item of Work; and

iii. Contractor believes that Contractor is entitled to an increase in Unit Price as a result of having incurred additional expense or the Agency believes that the Agency is entitled to a decrease in Unit Price and the parties are unable to agree as to the amount of any such increase or decrease.

3. Lump Sum Change Orders. Compensation for Lump Sum Change Orders shall be limited to expenditures necessitated specifically by the Additional Work, and shall be segregated as follows:

    a. Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the Additional Work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the Additional Work cost will not be permitted unless the Contractor establishes the necessity for such new classifications. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

    b. Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available in the quantities involved, plus sales tax, freight, and delivery. Materials costs shall be based upon supplier or manufacturer's invoice. If invoices or other satisfactory evidence of cost are not furnished within fifteen (15) Days of delivery, then the Agency shall determine the materials cost, at its sole discretion.

    c. Tool and Equipment Use. Costs for the use of small tools, which are tools that have a replacement value of $1,000 or less, shall be considered included in the Overhead and Profit mark-ups established below. Regardless of ownership, the rates to be used in determining equipment use costs shall not exceed listed rates prevailing locally at equipment rental agencies, or distributors, at the time the Work is performed.

4. Time and Materials Change Orders.

    a. General. The term Time and Materials means the sum of all costs reasonably and necessarily incurred and paid by Contractor for labor, materials, and equipment in the proper performance of Additional Work. Except as otherwise may be agreed to in writing by the Agency, such costs shall be in amounts no higher than those prevailing in the locality of the Project, and shall include only the following items.

    b. Timely and Final Documentation.

        i. T&M Daily Sheets. Contractor must submit timesheets, materials invoices, records of equipment hours, and records of rental equipment hours to the Agency's Representative for an approval signature **each day** Additional Work is performed. Failure to get the Agency's Representative's approval signature each Day shall result in a waiver of Contractor's right to claim these costs. The Agency's Representative's signature on time sheets only serves as verification that the Work was performed and is not indicative of Agency's agreement to Contractor's entitlement to the cost.

        ii. T&M Daily Summary Sheets. All documentation of incurred costs ("T&M Daily Summary Sheets") shall be submitted by Contractor within **three (3)**

Days of incurring the cost for labor, material, equipment, and special services as Additional Work is performed. Contractor's actual costs shall be presented in a summary table in an electronic spreadsheet file by labor, material, equipment, and special services. Each T&M Daily Summary Sheet shall include Contractor's actual costs incurred for the Additional Work performed that day and a cumulative total of Contractor's actual costs incurred for the Additional Work. Contractor's failure to provide a T&M Daily Summary Sheet showing a total cost summary within three (3) Days but within five (5) Days of performance of the Work will result in the Contractor's otherwise allowable overhead and profit being reduced by 50% for that portion of Additional Work which was not documented in a timely manner. Contractor's failure to submit the T&M Daily Summary Sheet within five (5) Days of performance of the Work will result in a total waiver of Contractor's right to claim these costs.

iii. T&M Total Cost Summary Sheet. Contractor shall submit a T&M Total Cost Summary Sheet, which shall include total actual costs, within **seven (7) Days** following completion of Agency approved Additional Work. Contractor's total actual cost shall be presented in a summary table in an electronic spreadsheet file by labor, material, equipment, and special services. Contractor's failure to submit the T&M Total Cost Summary Sheet within seven (7) Days of completion of the Additional Work will result in Contractor's waiver for any reimbursement of any costs associated with the T&M Summary Sheets or the performance of the Additional Work.

c. Labor. The Contractor will be paid the cost of labor for the workers used in the actual and direct performance of the Work. The cost of labor will be the sum of the actual wages paid (which shall include any employer payments to or on behalf of the workers for health and welfare, pension, vacation, and similar purposes) substantiated by timesheets and certified payroll for wages prevailing for each craft or type of workers performing the Additional Work at the time the Additional Work is done, and the labor surcharge set forth in the Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Work is accomplished and which is a part of the Contract. The labor surcharge shall constitute full compensation for all payments imposed by Federal, State, or local laws and for all other payments made to, or on behalf of, the workers, other than actual wages.

i. Equipment Operator Exception. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental.

ii. Foreman Exception. The labor costs for foremen shall be proportioned to all of their assigned work and only that applicable to the Additional Work shall be paid. Indirect labor costs, including, without limitation, the superintendent, project manager, and other labor identified in the Contract Documents will be considered Overhead.

d. Materials. The cost of materials reported shall be itemized at invoice or lowest current price at which materials are locally available and delivered to the

Project site in the quantities involved, plus the cost of sales tax, freight, delivery, and storage.

i. Trade discounts available to the purchaser shall be credited to the Agency notwithstanding the fact that such discounts may not have been taken by Contractor.

ii. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the Agency's Representative.

iii. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on Additional Work items or the current wholesale price for such materials delivered to the Project site, whichever price is lower.

iv. If, in the opinion of the Agency's Representative, the cost of materials is excessive, or Contractor does not furnish satisfactory evidence of the cost of such materials, then the cost shall be deemed to be the lowest current wholesale price for the total quantity concerned delivered to the Project site less trade discounts.

v. The Agency reserves the right to furnish materials for the Additional Work and no Claim shall be allowed by Contractor for costs of such materials or Indirect Costs or profit on Agency furnished materials.

e. Equipment.

i. Rental Time. The rental time to be paid for equipment on the Project site shall be the time the equipment is in productive operation on the Additional Work being performed and, in addition, shall include the time required to move the equipment to the location of the Additional Work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except that moving time will not be paid if the equipment is used on other than the Additional Work, even though located at the site of the Additional Work.

(a) Rental Time Not Allowed. Rental time will not be allowed while equipment is inoperative due to breakdowns.

(b) Computation Method. The following shall be used in computing the rental time of equipment on the Project site.

(c) When hourly rates are paid, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.

(d) When daily rates are paid, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation, and any part of an hour in excess of 4 hours will be considered one day of operation.

ii. Rental Rates. Contractor will be paid for the use of equipment at the lesser of (i) the actual rental rate, or (ii) the rental rate listed for that equipment in the California Department of Transportation publication entitled *Labor Surcharge and Equipment Rental Rates*, which is in effect on the date upon which the Contract was executed. Such rental rates will be used to compute payments for equipment whether the equipment is under Contractor's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate (i.e., daily, monthly) resulting in the least total cost to the Agency for the total period of use. If it is deemed necessary by Contractor to use equipment not listed in the publication, an equitable rental rate for the equipment will be established by the Agency's Representative. Contractor may furnish cost data which might assist the Agency's Representative in the establishment of the rental rate.

iii. Contractor-Owned Equipment.

(a) For Contractor-owned equipment, the allowed equipment rental rate will be limited to the monthly equipment rental rate using a utilization rate of 173 hours per month.

(b) For Contractor-owned equipment, the rental time to be paid for equipment on the Site shall be the time the equipment is in productive operation, unless, in the instance of standby time, the equipment could be actively used by Contractor on another project, then Agency shall pay for the entirety of the time the equipment is on Site. It shall be Contractor's burden to demonstrate to the Agency that the equipment could be actively used on another project.

iv. All equipment shall, in the opinion of the Agency's Representative, be in good working condition and suitable for the purpose for which the equipment is to be used.

v. Before construction equipment is used on the Additional Work, Contractor shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the Agency's Representative, in duplicate, a description of the equipment and its identifying number and the scheduled Additional Work activities planned.

vi. Unless otherwise specified, manufacturer's rating and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

f. Special Services. Special work or services are defined as that Additional Work characterized by extraordinary complexity, sophistication, or innovation or a

combination of the foregoing attributes which are unique to the construction industry.

i. Invoices for Special Services. When the Agency's Representative and Contractor determine that a special service is required which cannot be performed by the forces of Contractor or those of any of its Subcontractors, the special service may be performed by an entity especially skilled in the Additional Work. Invoices for special services based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs, after validation of market values by the Agency's Representative.

ii. Discount and Allowance. All invoices for special services will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of Overhead and Profit specified herein, a total allowance not to exceed fifteen percent (15%) for Overhead and Profit will be added to invoices for Special Services.

iii. When the Agency determines, in its sole discretion, that competitive bidding is necessary for certain special services, Contractor shall solicit competitive bids for those special services.

g. Excluded Costs. The term Time and Material shall not include any of the following costs or any other home or field office overhead costs, all of which are to be considered administrative costs covered by Contractor's allowance for Overhead and Profit.

i. Overhead Cost. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, timekeepers, clerks, and other personnel employed by Contractor whether at the Site or in Contractor's principal office or any branch office, material yard, or shop for general administration of the Additional Work;

ii. Office Expenses. Expenses of Contractor's principal and branch offices;

iii. Capital Expenses. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Additional Work and charges against Contractor for delinquent payments;

iv. Negligence. Costs due to the negligence of Contractor or any Subcontractor or Supplier, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including without limitation the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property;

v. Other. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in the Contract Documents;

vi. Small Tools. Cost of small tools valued at less than $1,000 and that remain the property of Contractor;

vii. Administrative Costs. Costs associated with the preparation of Change Orders (whether or not ultimately authorized), cost estimates, or the preparation or filing of Claims;

viii. Anticipated Lost Profits. Expenses of Contractor associated with anticipated lost profits or lost revenues, lost income or earnings, lost interest on earnings, or unpaid retention;

ix. Home Office Overhead. Costs derived from the computation of a "home office overhead" rate by application of the *Eichleay, Allegheny*, burden fluctuation, or other similar methods;

x. Special Consultants and Attorneys. Costs of special consultants or attorneys, whether or not in the direct employ of Contractor, employed for services specifically related to the resolution of a Claim, dispute, or other matter arising out of or relating to the performance of the Additional Work.

h. Overhead, Profit and Other Charges. The mark-up for overhead (including supervision) and profit on work added to the Contract shall be according to the following:

i. "Net Cost" is defined as consisting of costs of labor, materials, and tools and equipment only excluding overhead and profit. The costs of applicable insurance and bond premium will be reimbursed to the Contractor and subcontractors at cost only, without mark-up. Contractor shall provide Agency with documentation of the costs, including, but not limited to, payroll records, invoices, and such other information as Agency may reasonably request.

ii. For Work performed by the Contractor's forces, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the Net Cost of the Work.

iii. For Work performed by a subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the subcontractor's Net Cost of the Work to which the Contractor may add five percent (5%) of the subcontractor's Net Cost.

iv. For Work performed by a sub-subcontractor, the added cost for overhead and profit shall not exceed fifteen percent (15%) of the sub-subcontractor's Net Cost for Work to which the subcontractor and general contractor may each add an additional five percent (5%) of the Net Cost of the lower tier subcontractor.

v. No additional mark-up will be allowed for lower tier subcontractors, and in no case shall the added cost for overhead and profit payable by Agency exceed twenty-five percent (25%) of the Net Cost as defined herein, of the party that performs the Work.

5. All of the following costs are included in the markups for overhead and profit described above, and Contractor shall not receive any additional compensation for: Submittals, drawings, field drawings, Shop Drawings, including submissions of drawings; field inspection; General Superintendence; General administration and preparation of cost proposals, schedule analysis, Change Orders, and other supporting documentation; computer services; reproduction services; Salaries of project engineer, superintendent, timekeeper, storekeeper, and secretaries; Janitorial services; Small tools, incidentals and consumables; Temporary On-Site facilities (Offices, Telephones, High Speed Internet Access, Plumbing, Electrical Power, Lighting; Platforms, Fencing, Water), Jobsite and Home office overhead or other expenses; vehicles and fuel used for work otherwise included in the Contract Documents; Surveying; Estimating; Protection of Work; Handling and disposal fees; Final Cleanup; Other Incidental Work; Related Warranties; insurance and bond premiums.

6. For added or deducted Work by subcontractors, the Contractor shall furnish to the Agency the subcontractor's signed detailed record of the cost of labor, material and equipment, including the subcontractor markup for overhead and profit. The same requirement shall apply to sub-subcontractors

7. For added or deducted work furnished by a vendor or supplier, the Contractor shall furnish to the Agency a detailed record of the cost to the Contractor, signed by such vendor or supplier.

8. Any change in the Work involving both additions and deletions shall indicate a net total cost, including subcontracts and materials. Allowance for overhead and profit, as specified herein, shall be applied if the net total cost is an increase in the Contract Price; overhead and profit allowances shall not be applied if the net total cost is a deduction to the Contract Price. The estimated cost of deductions shall be based on labor and material prices on the date the Contract was executed.

9. Contractor shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the Change Order for Work. No claims shall be allowed for impact, extended overhead costs, constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The Contractor may not change or modify the Agency's change order form in an attempt to reserve additional rights.

10. If the Agency disagrees with the proposal submitted by Contractor, it will notify the Contractor and the Agency will provide its opinion of the appropriate price and/or time extension. If the Contractor agrees with the Agency, a Change Order will be issued by the Agency. If no agreement can be reached, the Agency shall have the right to issue a unilateral Change Order setting forth its determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. Such determination shall become final and binding if the Contractor fails to submit a claim in writing to the Agency within fifteen (15) Days of the issuance of the unilateral Change Order, disputing the terms of the unilateral Change Order, and providing such supporting documentation for its position as the Agency may require.

C. **Change of Contract Times**.

1. The Contract Times may only be changed by a Change Order.

2. All changes in the Contract Price and/or adjustments to the Contract Times related to each change shall be included in Contractor's COR pursuant to this Article. No cost or time will be allowed for cumulative effects of multiple changes. All Change Orders must state that the Contract Time is not changed or is either increased or decreased by a specific number of days. Failure to include a change to time shall waive any change to the time unless the parties mutually agree in writing to postpone a determination of the change to time resulting from the Change Order.

3. Notice of the amount of the request for adjustment in the Contract Times with supporting data shall be delivered within seven (7) Days after such start of occurrence, unless Agency's Representative allows an additional period of time to ascertain more accurate data in support of the request. No extension of time or additional compensation shall be given for a delay if the Contractor failed to give notice in the manner and within the time prescribed.

4. Agency may elect, at Agency's sole discretion, to grant an extension in Contract Times, without Contractor's request, because of delays or other factors.

5. Use of Float and Critical Path.

    a. Float is for the benefit of the Project. Float shall not be considered for the exclusive use or benefit of either the Agency or the Contractor.

    b. Contractor shall not be entitled to compensation, and Agency will not compensate Contractor, for delays which impact early completion. Any difference in time between the Contractor's early completion and the Contract Time shall be considered a part of the Project float.

6. Contractor's entitlement to an extension of the Contract Times is limited to an Agency-caused extension of the critical path, reduced by the Contractor's concurrent delays, and established by a proper time impact analysis. No time extension shall be allowed unless, and then only to the extent that, the Agency-caused delay extends the critical path beyond the previously approved Contract Time. If approved, the increase in time required to complete the Work shall be added to the Contract Time.

    a. Contractor shall not be entitled to an adjustment in the Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

    b. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions (as determined by the Agency), Acts of God, acts or failures to act of utility owners not under the control of Agency, or other causes not the fault of and beyond control of Agency and Contractor, then Contractor shall be entitled to an time extension when the Work stopped is on the critical path. Such a non-compensable adjustment shall be Contractor's sole and exclusive remedy for such delays. Contractor must submit a timely request in accordance with the requirements of this Article.

c. Utility-Related Delays.

i. Contractor shall immediately notify in writing the utility owner and Agency's Representative of its construction schedule and any subsequent changes in the construction schedule which will affect the time available for protection, removal, or relocation of utilities. Requests for extensions of time arising out of utility relocation or repair delays shall be filed in accordance with this Article.

ii. Contractor shall not be entitled to damages or additional payment for delays attributable to utility relocations or alterations if correctly located, as noted in the Contract Documents or by the Underground Service Alert survey.

7. Content for Requests for Contract Extension. Contractor's justification for entitlement shall be clear and complete citing specific Contract Document references and reasons on which Contractor's entitlement is based. At a minimum, each request for a time extension must include:

a. Each request for an extension of Contract Time must identify the impacting event, in narrative form, providing a description of the delay event and sufficient justification as to why the Contractor is entitled to a time extension. Contractor must demonstrate that the delay arises from unforeseeable causes beyond the control and without the fault or negligence of both Contractor and any Subcontractors or Suppliers, or any other persons or organizations employed by any of them or for whose acts any of them may be liable, and that such causes in fact lead to performance or completion of the Work, or specified part in question, beyond the corresponding Contract Times, despite Contractor's reasonable and diligent actions to guard against those effects.

b. Each request for an extension of Contract Time must include a time impact analysis in CPM format, using the Contemporaneous Impacted As-Planned Schedule Analysis to calculate the impact of the delay event.

8. No Damages for Reasonable Delay.

a. Agency's liability to Contractor for delays for which Agency is responsible shall be limited to only an extension of time unless such delays were unreasonable under the circumstances. In no case shall Agency be liable for any costs which are borne by the Contractor in the regular course of business, including, but not limited to, home office overhead and other ongoing costs.

b. Damages caused by unreasonable Agency delay that impact the critical path, including delays caused by items that are the responsibility of the Agency pursuant to Government Code section 4215, shall be compensated at the Daily Rate established in the Special Conditions. No other calculations, proportions or formulas shall be used to calculate any delay damages.

c. Agency and Agency's Representative, and the officers, members, partners, employees, agents, consultants, or subcontractors of each of them, shall not be liable to Contractor for any claims, costs, losses, or damages (including but

not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

9. Contractor's failure, neglect, or refusal to comply with the requirements of the Contract Documents, or any portion thereof, shall bar Contractor's request for extensions of the Contract Times. Such failure, neglect, or refusal prejudices Agency's and Agency's Representative's ability to recognize and mitigate delay, and such failure, neglect, or refusal prevent the timely analysis of requests for extensions of Contract Times, and whether such extensions may be warranted. Contractor hereby waives all rights to extensions of Contract Times due to delays or accelerations that result from or occur during periods of time for which Contractor fails, neglects, or refuses to fully comply with the requirements of this Article.

ARTICLE 46. FINAL ACCEPTANCE AND PAYMENT

A. **The acceptance of the Work on behalf of the Agency will be made by the Architect**. Such acceptance by the Agency shall not constitute a waiver of defects. When the Work has been accepted there shall be paid to Contractor a sum equal to the contract price less any amounts previously paid Contractor and less any amounts withheld by the Agency from Contractor under the terms of the contract. The final five percent (5%), or the percentage specified in the notice inviting bids where the Agency has adopted a finding of substantially complete, shall not become due and payable until five (5) calendar days shall have elapsed after the expiration of the period within which all claims may be filed under the provisions of Civil Code section 9356. If the Contractor has placed securities with the Agency as described herein, the Contractor shall be paid a sum equal to one hundred percent (100%) of the contract price less any amounts due the Agency under the terms of the Contract.

B. Unless Contractor advises the Agency in writing prior to acceptance of the final five percent (5%) or the percentage specified in the notice inviting bids where the Agency has adopted a finding of substantially complete, or the return of securities held as described herein, said acceptance shall operate as a release to the Agency of all claims and all liability to Contractor for all things done or furnished in connection with this work and for every act of negligence of the Agency and for all other claims relating to or arising out of this work. If Contractor advises the Agency in writing prior to acceptance of final payment or return of the securities that there is a dispute regarding the amount due the Contractor, the Agency may pay the undisputed amount contingent upon the Contractor furnishing a release of all undisputed claims against the Agency with the disputed claims in stated amounts being specifically excluded by Contractor from the operation of the release. No payments, however, final or otherwise, shall operate to release Contractor or its sureties from the Faithful Performance Bond, Labor and Material Payment Bond, or from any other obligation under this contract.

C. In case of suspension of the contract any unpaid balance shall be and become the sole and absolute property of the Agency to the extent necessary to repay the Agency any excess in the cost of the Work above the contract price.

D. Final payment shall be made no later than 60 days after the date of acceptance of the Work by the Agency or the date of occupation, beneficial use and enjoyment of the Work by the Agency including any operation only for testing, start-up or commissioning accompanied by cessation of labor on the Work, provided that a release of liens and claims has been received from the Contractor pursuant to Civil Code section 8136. In the event of a dispute between the Agency and the Contractor, the Agency may withhold from the final payment an amount not to exceed 150% of the disputed amount.

E. Within ten (10) calendar days from the time that all or any portion of the retention proceeds are received by Contractor, Contractor shall pay each of its subcontractors from whom retention has been withheld each subcontractor's share of the retention received. However, if a retention payment received by Contractor is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor if the payment is consistent with the terms of the subcontract.

ARTICLE 47. OCCUPANCY

The Agency reserves the right to occupy or utilize any portion of the Work at any time before completion, and such occupancy or use shall not constitute acceptance of any part of Work covered by this Contract. This use shall not relieve the Contractor of its responsibilities under the Contract.

ARTICLE 48. INDEMNIFICATION

To the fullest extent permitted by law, Contractor shall immediately defend (with counsel of the Agency's choosing), indemnify and hold harmless the Agency, officials, officers, agents, employees, and representatives, and each of them from and against:

A. Any and all claims, demands, causes of action, costs, expenses, injuries, losses or liabilities, in law or in equity, of every kind or nature whatsoever, but not limited to, injury to or death, including wrongful death, of any person, and damages to or destruction of property of any person, arising out of, related to, or in any manner directly or indirectly connected with the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses, however caused, regardless of whether the allegations are false, fraudulent, or groundless, and regardless of any negligence of the Agency or its officers, employees, or authorized volunteers (including passive negligence), except the sole negligence or willful misconduct or active negligence of the Agency or its officials, officers, employees, or authorized volunteers.

B. Contractor's defense and indemnity obligation herein includes, but is not limited to damages, fines, penalties, attorney's fees and costs arising from claims under the Americans with Disabilities Act (ADA) or other federal or state disability access or discrimination laws arising from Contractor's Work during the course of construction of the improvements or after the Work is complete, as the result of defects or negligence in Contractor's construction of the improvements.

C. Any and all actions, proceedings, damages, costs, expenses, fines, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor;

D. Any and all losses, expenses, damages (including damages to the Work itself), attorney's fees, and other costs, including all costs of defense which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the Work and all of Contractor's obligations under the agreement. Such costs, expenses, and damages shall include all costs, including attorney's fees, incurred by the indemnified parties in any lawsuit to which they are a party.

Contractor shall immediately defend, at Contractor's own cost, expense and risk, with the Board of Directors' choosing, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against the Agency, its officials, officers, agents, employees and representatives. Contractor shall pay and satisfy any judgment, award or decree that may be rendered against the Agency, its officials, officers, employees, agents, employees and representatives, in any such suit, action or other legal proceeding. Contractor shall reimburse the Agency, its officials, officers, agents, employees and representatives for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code section 2782.

ARTICLE 49. PROCEDURE FOR RESOLVING DISPUTES

Contractor shall timely comply with all notices and requests for changes to the Contract Time or Contract Price, including but not limited to all requirements of Article 44, Changes and Extra Work, as a prerequisite to filing any claim governed by this Article. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the Contract Price or Contract Time, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the Contract or at law.

A. **Intent.** Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of $375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Article is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Article shall be construed to be consistent with said statutes.

B. **Claims.** For purposes of this Article, "Claim" means a separate demand by the Contractor, after a change order duly requested in accordance with Article 44 "Changes and Extra Work" has been denied by the Agency, for (A) a time extension, (B) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract, or (C) an amount the payment of which is disputed by the Agency. Claims governed by this Article may not be filed unless and until the Contractor completes all procedures for giving notice of delay or change and for the requesting of a time extension or change order, including but not necessarily limited to the procedures contained in Article 44, Changes and Extra Work, and Contractor's request for a change has been denied in whole or in part. Claims governed by this

Article must be filed no later than the date of final payment. The claim shall be submitted in writing to the Agency and shall include on its first page the following in 16 point capital font: "THIS IS A CLAIM." Furthermore, the claim shall include the documents necessary to substantiate the claim. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims, including all requirements pertaining to compensation or payment for extra Work, disputed Work, and/or changed conditions. Failure to follow such contractual requirements shall bar any claims or subsequent lawsuits for compensation or payment thereon.

C. **Supporting Documentation.** The Contractor shall submit all claims in the following format:

1. Summary of claim merit and price, reference Contract Document provisions pursuant to which the claim is made

2. List of documents relating to claim:

   a. Specifications

   b. Drawings

   c. Clarifications (Requests for Information)

   d. Schedules

   e. Other

3. Chronology of events and correspondence

4. Analysis of claim merit

5. Analysis of claim cost

6. Time impact analysis in CPM format

7. If Contractor's claim is based in whole or in part on an allegation of errors or omissions in the Drawings or Specifications for the Project, Contractor shall provide a summary of the percentage of the claim subject to design errors or omissions and shall obtain a certificate of merit in support of the claim of design errors and omissions.

D. **Agency's Response.** Upon receipt of a claim pursuant to this Article, Agency shall conduct a reasonable review of the claim and, within a period not to exceed 45 Days, shall provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the claim will be processed and made within 60 Days after the Agency issues its written statement.

1. If the Agency needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the

claim, and the Agency's governing body does not meet within the 45 Days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the Agency shall have up to three Days following the next duly publicly noticed meeting of the Agency's governing body after the 45-Day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

2. Within 30 Days of receipt of a claim, the Agency may request in writing additional documentation supporting the claim or relating to defenses or claims the Agency may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of Agency and the Contractor. The Agency's written response to the claim, as further documented, shall be submitted to the Contractor within 30 Days (if the claim is less than $15,000, within 15 Days) after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

E. **Meet and Confer.** If the Contractor disputes the Agency's written response, or the Agency fails to respond within the time prescribed, the Contractor may so notify the Agency, in writing, either within 15 Days of receipt of the Agency's response or within 15 Days of the Agency's failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, the Agency shall schedule a meet and confer conference within 30 Days for settlement of the dispute.

F. **Mediation.** Within 10 business Days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the Agency shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 Days after the Agency issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the Agency and the Contractor sharing the associated costs equally. The Agency and Contractor shall mutually agree to a mediator within 10 business Days after the disputed portion of the claim has been identified in writing, unless the parties agree to select a mediator at a later time.

1. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.

2. For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

3. Unless otherwise agreed to by the Agency and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Public Contract Code Section 20104.4 to mediate after litigation has been commenced.

4. The mediation shall be held no earlier than the date the Contractor completes the Work or the date that the Contractor last performs Work, whichever is earlier. All unresolved claims shall be considered jointly in a single mediation, unless a new unrelated claim arises after mediation is completed.

G. **Procedures After Mediation.** If following the mediation, the claim or any portion remains in dispute, the Contractor must file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating litigation. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

H. **Civil Actions.** The following procedures are established for all civil actions filed to resolve claims of $375,000 or less:

1. Within 60 Days, but no earlier than 30 Days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this Contract. The mediation process shall provide for the selection within 15 Days by both parties of a disinterested third person as mediator, shall be commenced within 30 Days of the submittal, and shall be concluded within 15 Days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

2. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

I. **Government Code Claims.** In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra Work, disputed Work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code Sections 900, et seq. prior to filing any lawsuit against the Agency. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that

remain unresolved after all procedures pertaining to extra Work, disputed Work, construction claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if the prerequisite contractual requirements are not satisfied, no action against the Agency may be filed. **A Government Code claim must be filed no earlier than the date the Work is completed or the date the Contractor last performs Work on the Project, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims unless a new unrelated claim arises after the Government Code claim is submitted.**

J. **Non-Waiver.** The Agency's failure to respond to a claim from the Contractor within the time periods described in this Article or to otherwise meet the time requirements of this Article shall result in the claim being deemed rejected in its entirety.

ARTICLE 50. AGENCY'S RIGHT TO TERMINATE CONTRACT

A. **Termination for Cause by the Agency:**

1. In the sole estimation of the Agency, if the Contractor refuses or fails to prosecute the Work or any separable part thereof with such diligence as will insure its completion within the time specified by the Contract Documents, or any extension thereof, or fails to complete such Work within such time, or if the Contractor should be adjudged a bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, or the Contractor or any of its subcontractors should violate any of the provisions of this Contract, the Agency may serve written notice upon the Contractor and its Surety of the Agency's intention to terminate this Contract. This notice of intent to terminate shall contain the reasons for such intention to terminate this Contract, and a statement to the effect that the Contractor's right to perform this Contract shall cease and terminate upon the expiration of ten (10) calendar days unless such violations have ceased and arrangements satisfactory to the Agency have been made for correction of said violations.

2. In the event that the Agency serves such written notice of termination upon the Contractor and the Surety, the Surety shall have the right to take over and perform the Contract. If the Surety does not: (1) give the Agency written notice of Surety's intention to take over and commence performance of the Contract within 15 calendar days of the Agency's service of said notice of intent to terminate upon Surety; and (2) actually commence performance of the Contract within 30 calendar days of the Agency's service of said notice upon Surety; then the Agency may take over the Work and prosecute the same to completion by separate contract or by any other method it may deem advisable for the account and at the expense of the Contractor.

3. In the event that the Agency elects to obtain an alternative performance of the Contract as specified above: (1) the Agency may, without liability for so doing, take possession of and utilize in completion of the Work such materials, appliances, plants and other property belonging to the Contractor that are on the site and reasonably necessary for such completion (A special lien to secure the claims of the Agency in the event of such suspension is hereby created against any property of Contractor taken into the possession of the Agency under the terms hereof and

such lien may be enforced by sale of such property under the direction of the Board of Directors without notice to Contractor. The proceeds of the sale after deducting all expenses thereof and connected therewith shall be credited to Contractor. If the net credits shall be in excess of the claims of the Agency against Contractor, the balance will be paid to Contractor or Contractor's legal representatives.); and (2) Surety shall be liable to the Agency for any cost or other damage to the Agency necessitated by the Agency securing an alternate performance pursuant to this Article.

B. **Termination for Convenience by the Agency:**

1. The Agency may terminate performance of the Work called for by the Contract Documents in whole or, from time to time, in part, if the Agency determines that a termination is in the Agency's interest.

2. The Contractor shall terminate all or any part of the Work upon delivery to the Contractor of a Notice of Termination specifying that the termination is for the convenience of the Agency, the extent of termination, and the Effective Date of such termination.

3. After receipt of Notice of Termination, and except as directed by the Agency's Representative, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this Termination for Convenience clause, immediately proceed with the following obligations:

   a. Stop Work as specified in the Notice.

   b. Complete any Work specified in the Notice of Termination in a least cost/shortest time manner while still maintaining the quality called for under the Contract Documents.

   c. Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the Contract Document is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.

   d. Terminate all subcontracts to the extent that they relate to the portions of the Work terminated.

   e. Place no further subcontracts or orders, except as necessary to complete the continued portion of the Contract.

   f. Submit to the Agency's Representative, within ten (10) calendar days from the Effective Date of the Notice of Termination, all of the usual documentation called for by the Contract Documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the Effective Date of the Notice of Termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the Agency's exercise of its right to terminate this Contract pursuant to this clause, which costs the contractor is authorized under the Contract documents to incur, shall: (1) be submitted to and received by the Architect no later than 30 calendar days after the Effective Date of the

Notice of Termination; (2) describe the costs incurred with particularity; and (3) be conspicuously identified as “Termination Costs occasioned by the Agency's Termination for Convenience.”

4. Termination of the Contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the Work performed.

5. In the event that the Agency exercises its right to terminate this Contract pursuant to this clause, the Agency shall pay the Contractor, upon the Contractor's submission of the documentation required by this clause and other applicable provisions of the Contract Documents, the following amounts:

    a. All actual reimbursable costs incurred according to the provisions of this Contract.

    b. A reasonable allowance for profit on the cost of the Work performed, provided Contractor establishes to the satisfaction of the Agency's Representative that it is reasonably probable that Contractor would have made a profit had the Contract been completed and provided further, that the profit allowed shall in no event exceed fifteen (15%) percent of the costs.

    c. A reasonable allowance for Contractor's administrative costs in determining the amount payable due to termination of the Contract under this Article.

C. Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the Agency may immediately order Contractor to cease Work on the Project until such safety or liability issues are addressed to the satisfaction of the Agency or the Contract is terminated.

ARTICLE 51. WARRANTY AND GUARANTEE OF WORK

A. Contractor hereby warrants that materials and Work shall be completed in conformance with the Contract Documents and that the materials and Work provided will fulfill the requirements of this Warranty. Contractor hereby agrees to repair or replace, at the discretion of the Agency, any or all Work that may prove to be defective in its workmanship, materials furnished, methods of installation or fail to conform to the Contract Document requirements together with any other Work which may be damaged or displaced by such defect(s) **within a period of one (1) year** from the date of the Notice of Completion of the Project without any expense whatever to the Agency, ordinary wear and tear and unusual abuse and neglect excepted. Contractor shall be required to promptly repair or replace defective equipment or materials, at Contractor’s option. All costs associated with such corrective actions and testing, including the removal, replacement, and reinstitution of equipment and materials necessary to gain access, shall be the sole responsibility of the Contractor.

B. For any Work so corrected, Contractor’s obligation hereunder to correct defective Work shall be reinstated for an additional one (1) year period, commencing with the date of acceptance of such corrected Work. The reinstatement of the one (1) year warranty shall apply only to that portion of work that was corrected. Contractor shall perform such tests as Agency may require to verify that any corrective actions,

including, without limitation, redesign, repairs, and replacements comply with the requirements of the Contract. In the event of Contractor's failure to comply with the above-mentioned conditions within ten (10) calendar days after being notified in writing of required repairs, to the reasonable satisfaction of the Agency, the Agency shall have the right to correct and replace any defective or non-conforming Work and any work damaged by such work or the replacement or correction thereof at Contractor's sole expense. Contractor shall be obligated to fully reimburse the Agency for any expenses incurred hereunder immediately upon demand.

C. In addition to the warranty set forth in this Article, Contractor shall obtain for Agency all warranties that would be given in normal commercial practice and assign to Agency any and all manufacturer's or installer's warranties for equipment or materials not manufactured by Contractor and provided as part of the Work, to the extent that such third-party warranties are assignable and extend beyond the warranty period set forth in this Article. Contractor shall furnish the Agency with all warranty and guarantee documents prior to final Acceptance of the Project by the Agency as required.

D. When specifically indicated in the Contract Documents or when directed by the Architect, the Agency may furnish materials or products to the Contractor for installation. In the event any act or failure to act by Contractor shall cause a warranty applicable to any materials or products purchased by the Agency for installation by the Contractor to be voided or reduced, Contractor shall indemnify Agency from and against any cost, expense, or other liability arising therefrom, and shall be responsible to the Agency for the cost of any repairs, replacement or other costs that would have been covered by the warranty but for such act or failure to act by Contractor.

E. The Contractor shall remedy at its expense any damage to Agency-owned or controlled real or personal property.

F. The Agency shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. The Contractor shall within ten (10) calendar days after being notified commence and perform with due diligence all necessary Work. If the Contractor fails to promptly remedy any defect, or damage; the Agency shall have the right to replace, repair or otherwise remedy the defect, or damage at the Contractor's expense.

G. In the event of any emergency constituting an immediate hazard to health, safety, property, or licensees, when caused by Work of the Contractor not in accordance with the Contract requirements, the Agency may undertake at Contractor's expense, and without prior notice, all Work necessary to correct such condition.

H. **Acceptance of Defective Work**.

1. If, instead of requiring correction or removal and replacement of Defective Work, the Agency prefers to accept it, Agency may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Agency's evaluation of and determination to accept such Defective Work and for the diminished value of the Work.

2. If any acceptance of defective work occurs prior to release of the Project Retention, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Agency shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work and all costs incurred by Agency.

3. If the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to Agency.

4. If the acceptance of Defective Work occurs after release of the Project Retention, an appropriate amount will be paid by Contractor to Agency.

I. **Agency May Correct Defective Work**.

1. If Contractor fails within a reasonable time after written notice from Agency's Representative to correct Defective Work, or to remove and replace rejected Work as required by Agency, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Agency may, after seven (7) Days' written notice to Contractor, correct, or remedy any such deficiency.

2. In connection with such corrective or remedial action, Agency may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Agency has paid Contractor but which are stored elsewhere. Contractor shall allow Agency and Agency's Representative, and the agents, employees, other contractors, and consultants of each of them, access to the Site to enable Agency to exercise the rights and remedies to correct the Defective Work.

3. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Agency correcting the Defective Work will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and Agency shall be entitled to an appropriate decrease in the Contract Price.

4. Such claims, costs, losses and damages will include, but not be limited to, all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Defective Work.

5. If the Change Order is executed after all payments under the Contract have been paid by Agency and the Project Retention is held in an escrow account as permitted by the Contract Documents, Contractor will promptly alert the escrow holder, in writing, of the amount of Retention to be paid to Agency.

6. If the Change Order is executed after release of the Project Retention, an appropriate amount will be paid by Contractor to Agency.

7. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to Agency correcting Defective work.

J. Nothing in the Warranty or in the Contract Documents shall be construed to limit the rights and remedies available to Agency at law or in equity, including, but not limited to, Code of Civil Procedure section 337.15.

ARTICLE 52. DOCUMENT RETENTION & EXAMINATION

A. In accordance with Government Code section 8546.7, records of both the Agency and the Contractor shall be subject to examination and audit by the State Auditor General for a period of three (3) years after final payment.

B. Contractor shall make available to the Agency any of the Contractor's other documents related to the Project immediately upon request of the Agency.

C. In addition to the State Auditor rights above, the Agency shall have the right to examine and audit all books, estimates, records, contracts, documents, bid documents, subcontracts, and other data of the Contractor (including computations and projections) related to negotiating, pricing, or performing the modification in order to evaluate the accuracy and completeness of the cost or pricing data at no additional cost to the Agency, for a period of four (4) years after final payment.

ARTICLE 53. SEPARATE CONTRACTS

A. The Agency reserves the right to let other contracts in connection with this Work or on the Project site. Contractor shall permit other contractors reasonable access and storage of their materials and execution of their work and shall properly connect and coordinate its Work with theirs.

B. To ensure proper execution of its subsequent Work, Contractor shall immediately inspect work already in place and shall at once report to the Architect any problems with the Work in place or discrepancies with the Contract Documents.

C. Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by the Agency in prosecution of the Project to the end that Contractor may perform this Contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of the Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, the Architect shall decide which Contractor shall cease Work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. The Agency shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on the Project site.

ARTICLE 54. NOTICE AND SERVICE THEREOF

All notices shall be in writing and either served by personal delivery or mailed to the other party as designated in the Bid Forms. Written notice to the Contractor shall be addressed to Contractor's principal place of business unless Contractor designates another address in writing for service of notice. Notice to Agency shall be addressed to the Agency as designated in the Notice Inviting Bids unless Agency designates another address in writing for service of notice. Notice shall be effective upon receipt or five (5) calendar days after being sent by first class mail, whichever is earlier. Notice given by facsimile shall not be effective unless acknowledged in writing by the receiving party.

ARTICLE 55. NOTICE OF THIRD PARTY CLAIMS

Pursuant to Public Contract Code section 9201, the Agency shall provide the Contractor with timely notification of the receipt of any third-party claims relating to the Contract. The Agency is entitled to recover reasonable costs incurred in providing such notification.

ARTICLE 56. STATE LICENSE BOARD NOTICE

Contractors are required by law to be licensed and regulated by the Contractors' State License Board which has jurisdiction to investigate complaints against contractors if a complaint regarding a patent act or omission is filed within four (4) years of the date of the alleged violation. A complaint regarding a latent act or omission pertaining to structural defects must be filed within ten (10) years of the date of the alleged violation. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, P.O. Box 26000, Sacramento, California 95826.

ARTICLE 57. INTEGRATION

A. **Oral Modifications Ineffective.** No oral order, objection, direction, claim or notice by any party or person shall affect or modify any of the terms or obligations contained in the Contract Documents.

B. **Contract Documents Represent Entire Contract.** The Contract Documents represent the entire agreement of the Agency and Contractor.

ARTICLE 58. ASSIGNMENT OF CONTRACT

Contractor shall not assign, transfer, convey, sublet or otherwise dispose of the rights or title of interest of any or all of this contract without the prior written consent of the Agency. Any assignment or change of Contractor's name of legal entity without the written consent of the Agency shall be void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or Material supplied for performance of Work called for under the Contract Documents in favor of all persons, firms, or corporations rendering such services or supplying such Materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure or the Government Code.

ARTICLE 59. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Should a change be contemplated in the name or nature of the Contractor's legal entity, the Contractor shall first notify the Agency in order that proper steps may be taken to have the change

reflected on the Contract and all related documents. No change of Contractor's name or nature will affect Agency's rights under the Contract, including but not limited to the bonds.

ARTICLE 60. ASSIGNMENT OF ANTITRUST ACTIONS

Pursuant to Public Contract Code section 7103.5, in entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or subcontractor offers and agrees to assign to the Agency all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 USC, 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 the purchase of goods, services, or materials pursuant to this contract or any subcontract. This assignment shall be made and become effective at the time the Agency tenders final payment to the Contractor, without further acknowledgment by the parties.

ARTICLE 61. PROHIBITED INTERESTS

No Agency official or representative who is authorized in such capacity and on behalf of the Agency to negotiate, supervise, make, accept, or approve, or to take part in negotiating, supervising, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall be or become directly or indirectly interested financially in the Contract.

ARTICLE 62. CONTROLLING LAW

Notwithstanding any subcontract or other contract with any subcontractor, supplier, or other person or organization performing any part of the Work, this Contract shall be governed by the law of the State of California excluding any choice of law provisions.

ARTICLE 63. JURISDICTION; VENUE

Contractor and any subcontractor, supplier, or other person or organization performing any part of the Work agrees that any action or suits at law or in equity arising out of or related to the bidding, award, or performance of the Work shall be maintained in the Superior Court of Sonoma County, California, and expressly consent to the jurisdiction of said court, regardless of residence or domicile, and agree that said court shall be a proper venue for any such action.

ARTICLE 64. LAWS AND REGULATIONS

A. Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on conduct of work as indicated and specified. If Contractor observes that drawings and specifications are at variance therewith, it shall promptly notify the Architect in writing and any necessary changes shall be adjusted as provided for in this Contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Architect, it shall bear all costs arising therefrom.

B. Contractor shall be responsible for familiarity with the Americans with Disabilities Act ("ADA") (42 U.S.C. § 12101 et seq.). The Work will be performed in compliance with ADA regulations.

ARTICLE 65. PATENTS

Contractor shall hold and save the Agency, officials, officers, employees, and authorized volunteers harmless from liability of any nature or kind of claim therefrom including costs and expenses for or on account of any patented or unpatented invention, article or appliance manufactured, furnished or used by Contractor in the performance of this contract.

ARTICLE 66. OWNERSHIP OF CONTRACT DOCUMENTS

All Contract Documents furnished by the Agency are Agency property. They are not to be used by Contractor or any subcontractor on other work nor shall Contractor claim any right to such documents. With exception of one complete set of Contract Documents, all documents shall be returned to the Agency on request at completion of the Work.

ARTICLE 67. NOTICE OF TAXABLE POSSESSORY INTEREST

In accordance with Revenue and Taxation Code section 107.6, the Contract Documents may create a possessory interest subject to personal property taxation for which Contractor will be responsible.

ARTICLE 68. SURVIVAL OF OBLIGATIONS

All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

00 73 13 – SPECIAL CONDITIONS

1.1 Architect of Record.

A. For purposes of this Project, the Architect of Record shall be: AXIA Architects, 540 Mendocino Ave, Santa Rosa, CA 95401; Douglas Hilberman; C29543

1.2 Location of the Project.

A. The Project is located at 421 E Street, Santa Rosa CA, 95404.

B. The general location of the Project is shown on AOR Drawing No. G1, Title Sheet; Vicinity Map.

1.3 Status of the Project Area and Rights-of-Way.

A. Agency, at its expense, will provide all rights-of-way or permits, or both, covering the crossing of private property and public and private rights-of-way necessary for the permanent Work; provided, however, Contractor shall, at its expense, obtain any bonds or insurance policies or pay any fees and enter into any agreements required by a controlling authority, *e.g.*, Caltrans or Southern Pacific Railroad Company, before Contractor enters upon any property or right-of-way under the jurisdiction of any such controlling authority for the purpose of performing Work.

B. Agency has acquired or is negotiating to acquire any rights-of-way, or both, necessary for the permanent Work.

C. If such permits are required, all operations of Contractor shall conform to the restrictions, regulations, and requirements set forth in said permits, copies of which will be included in the Contract Documents.

D. Contractor may be required, as a condition for receiving final payment, to obtain, and provide Agency's Representative with copies of, executed damage releases from the owners of public and private property whose property has been damaged by the Work. The damage releases will be on a form provided by Agency.

E. Contractor shall, also, as a condition for receiving final payment, obtain, and provide Agency's Representative with copies of, executed damage releases from the owners of certain public and private property or areas which have been crossed by the Work or otherwise affected by the Work. The damage releases will be on a form provided by Agency.

1.4 Site Data.

A. The data provided herein is for the information of Contractor and is subject to all limitations and conditions set forth in the Contract Documents.

B. Subsurface Exploration Data. NOT USED:

C. Other Site Data. The following data are available for inspection at Agency's office:

1. Topographic Map; 421 E Street, Santa Rosa, CA 95404; By Cinquini & Passarino, Inc. Land Surveying; Date: 2/3/2025. Referenced in AOR Drawing A0.2, Site Plan.

Copies of these reports, drawings and other materials may be examined at Agency's office during regular business hours.

1.5 Owner's Stock Material.

A. Agency has existing building stock of interior door hardware packages and is to be incorporated into the Project. See Drawings.

1.6 Designation of Agency's Representative.

A. Unless otherwise modified by Agency, Agency's Representative shall be Rebecca Simonson, Director of Capital Projects and Engineering.

1.7 Modification of Hours of Work.

7:00 a.m. and 5:00 p.m. M – F.

1.8 Project Retention

In accordance with Public Contract Code § 7201, Agency will withhold 5% of each progress payment as retention on the Project.

1.9 Reverse Liquidated Damages Due to Unreasonable Agency Delay.

A. In compliance with the provisions of California Public Contract Code § 7102, the Contractor will be compensated for damages incurred due to delays in completing the Work due solely to the fault of the Agency, where such delay is unreasonable under the circumstances and not contemplated by the parties and such delay is not the result of Additional Work. The Contractor and Agency agree that determining actual damages is impracticable and extremely difficult. As such, the Contractor shall be entitled to the appropriate time extension and to payment of liquidated damages in the sum of $500 per Day of delay in excess of the time specified for the Completion of the Work. Such amount shall constitute the only payment allowed and shall necessarily include all overhead (direct or indirect), all profit, all administrative costs, all bond costs, all labor, materials, equipment and rental costs, and any other costs, expenses and fees incurred or sustained as a result of such delay. The Contractor expressly agrees to be limited solely to the liquidated damages for all such delays as defined in this subsection.

1.10 Liquidated Damages Due to Contractor Delay.

A. Time is of the essence. Should Contractor fail to complete all or any part of the Work within the time specified in the Contract Documents, Agency will suffer damage, the amount of which is difficult, if not impossible, to ascertain and, pursuant to the authority of Government Code section 53069.85, Agency shall therefore be entitled to $1,000

per Day as liquidated damages for each Day or part thereof that actual completion extends beyond the time specified.

B. Liquidated damages may be deducted from progress payments due Contractor, Project retention or may be collected directly from Contractor, or from Contractor's surety. These provisions for liquidated damages shall not prevent Agency, in case of Contractor's default, from terminating the Contractor.

1.11 Utility Outages – Notices to Residents.

A. Should Contractor's operations require interruption of any utility service, Contractor shall notify Agency at least ten (10) Days prior to the scheduled outage. Contractor will notify all impacted residents on a form provided by Agency at least seven (7) Days prior to the scheduled outage.

B. Contractor shall be responsible for providing, at its cost, any temporary utility or facilities necessitated by the utility outage.

1.12 Schedule Constraints.

NOT USED.

1.13 Noise Restrictions

A. Contractor shall use only such equipment on the Work and in such state of repair so that the emission of sound therefrom is within the noise tolerance level of that equipment as established by Cal/OSHA.

B. Contractor shall comply with the most restrictive of the following: (1) local sound control and noise level rules, regulations and ordinances and (2) the requirements contained in these Contract Documents, including hours of operation requirements.

C. No internal combustion engine shall be operated on the Project without a muffler of the type recommended by the manufacturer. Should any muffler or other control device sustain damage or be determined to be ineffective or defective, the Contractor shall promptly remove the equipment and shall not return said equipment to the job until the device is repaired or replaced. Said noise and vibration level requirements shall apply to all equipment on the job or related to the job, including but not limited to, trucks, transit mixers or transit equipment that may or may not be owned by the Contractor.

1.14 Safety Programs.

NOT USED.

1.15 Coordination with Other Contractors.

NOT USED.

1.16 Sole Source Findings

A. The Agency has found and determined that the following item(s) shall be used on this Project in order to match other products in use on a particular public improvement either completed or in the course of completion. (Public Contract Code section 3400(c).) A particular material, product, thing, or service is designated by specific brand or trade name for the following purpose(s):

1. 06-4100 – Architectural Wood Casework – Laminate Materials.

   a. Wilsonart, Raw Chestnut, 7975-12, soft grain finish with Aeon

   b. Formica Corporation, Color Core 2; Mission White 933C-58

2. 09-6500 – RESILIENT FLOORING

   a. Forbo Flooring Systems; Marmoleum, Cinch LOC, Linear Straito, see drawings for color.

   b. Tarkett Flooring: Wall base; rubber, thermoplastic, see drawings for color.

3. 09-6813 – TILE CARPETING

   a. Interface, Inc: Aerial Flying Colors; 10 X 40; Color may vary

4. 10-2800 – TOILET, BATH, AND LAUNDRY ACCESSORIES

   a. Bobrick: B-265; toilet paper dispenser

   b. Bobrick: B-4112 Contura Series; liquid soap dispenser; wall mount

   c. Bobrick: B-4221 Contura Series; seat cover dispenser

   d. Bobrick: B-5806 Grab bars

   e. Bobrick: B-270; Contura Series; sanitary napkin disposal

   f. Dyson: Airblade V; electric hand dryer

5. 11-3013 – RESIDENTIAL APPLIANCES

   a. LG: Model LRFXC2416S; refrigerator; side by side; bottom freezer

6. 12-2400 – WINDOW SHADES

   a. MechoShade Systems: MECHO/5; EcoVeil 1550 Series; 3% open

7. 12-3600 – COUNTERTOPS

   a. Wilsonart: Solid surface; quartz, Marble Falls, matte

   b. Formica Corporation, Color Core 2; Mission White 933C-58

8. 22-0000 – PLUMBING – SEE DRAWINGS – SEE APPENDIX D – PLUMBING FIXTURE CUT SHEETS

   a. Sloan: Optima EAF-275, hands free lavatory faucet; polished chrome

   c. Elkay: EDFPBM117WS-F; Swirlflo drinking fountain & EZH2O bottle filler

END OF SPECIAL CONDITIONS

01 00 00 – GENERAL REQUIREMENTS

PART 1 -- GENERAL

1.1 DESCRIPTION

A. The project generally consists of the interior and exterior remodel of an existing, one-story office building. The work includes re-roofing, paving repair, exterior finishes, replacement and updates to the existing HVAC equipment, electrical panel replacement, installation of a new fire sprinkler system, the addition of new exterior windows and skylights, removal of some existing interior walls and ceilings, and new light fixtures and finishes throughout.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. See Technical Specifications, Section 01-1100 – Summary of Work.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.1 LAYOUT OF WORK AND QUANTITY SURVEYS

A. General. The Contractor shall utilize a properly licensed surveyor to perform all layout surveys required for the control and completion of the Work, and all necessary surveys to compute quantities of Work performed.

Agency and/or the Architect of Record has established primary control to be used by the Contractor for establishing lines and grades required for the Work.

Primary control consists of benchmarks and horizontal control points in the vicinity of the Work. A listing and identification of the primary control is provided on the Drawings. Before beginning any layout work or construction activity, the Contractor shall check and verify primary control, and shall advise the Agency Representative of any discrepancies.

B. Quantity surveys. The Contractor shall perform such surveys and computations as are necessary to determine quantities of Work performed or placed during each progress payment period, and shall perform all surveys necessary for the Agency Representative to determine final quantities of Work in place. The Agency Representative will determine final quantities based upon the survey data provided by the Contractor, and the design lines and grades. If requested by the Agency Representative, the Contractor shall provide an electronic copy of data used for quantity computations.

All surveys performed for measurement of final quantities of Work and material shall be subject to approval of Agency's Representative. Unless waived by Agency's

Representative in each specific case, quantity surveys made by the Contractor shall be made in the presence of Agency's Representative.

C. Surveying

1. Accuracy. Degree of accuracy shall be an order high enough to satisfy tolerances specified for the Work and the following:

(a) Right-of-way and alignment of tangents and curves shall be within 0.1 foot.

(b) Structure points shall be set within 0.01 foot, except where operational function of the special features or installation of metalwork and equipment require closer tolerances. When formwork has been placed and is ready for concrete, the Contractor shall check the formwork for conformance with the drawings and to ensure that the forms are sufficiently within the tolerance limits for the completed work.

(c) Cross-section points shall be located within 0.1 foot, horizontally and vertically.

(d) Aerial Mapping shall meet National Mapping Standards for 2-foot contour intervals.

D. Records. Survey data shall be recorded in accordance with recognized professional surveying standards. Original field notes, computations, and other surveying data shall be recorded on electronic data collectors or in standard field books and must be of sufficient quality to enable the Contractor to prepare accurate record drawings as required by the Contract Documents.

E. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required for surveys for the layout of work and quantity surveys shall be included in the Schedule of Pay Items for items of work requiring the surveys. No additional compensation shall be made to the Contractor for this Work.

3.2 SCHEDULE

A. Estimated Schedule. Within 15 Days after the issuance of the Notice to Proceed, Contractor shall prepare a Project schedule and shall submit this to the Architect for Approval. The receipt or Approval of any schedules by the Architect or the Agency shall not in any way relieve the Contractor of its obligations under the Contract Documents. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the Project. Contractor's failure to incorporate all elements of Work required for the performance of the Contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all Work required for a completed Project within the specified Contract time period. If the required schedule is not received by the time the first payment under the Contract is due, Contractor shall not be paid until the schedule is received, reviewed and accepted by the Architect.

B. Schedule Contents. The schedule shall indicate the beginning and completion dates of all phases of construction; critical path for all critical, sequential time related activities; and "float time" for all "slack" or "gaps" in the non-critical activities. The schedule shall clearly identify all staffing and other resources which in the Contractor's

judgment are needed to complete the Project within the time specified for completion. The overall Project Schedule duration shall be within the Contract time.

C. Schedule Updates. Contractor shall continuously update its construction schedule. Contractor shall submit an updated and accurate construction schedule to the Architect monthly when requested to do so by Architect. Contractor shall also submit schedules showing a two week detailed look-ahead at bi-weekly meetings conducted with the Agency. The Architect may withhold progress payments or other amounts due under the Contract Documents if Contractor fails to submit an updated and accurate construction schedule.

D. See Technical Specifications, Section 01-3216 Construction Progress Schedule for additional information.

3.3 TEMPORARY FIELD OFFICE

A. See Technical Specifications, Section 01-5000 Temporary Facilities and Controls for additional information.

3.4 PROTECTION OF WORK AND PROPERTY

A. All traffic detector loops, fences, walls, culverts, property line monuments, or other obstructions (except property line monuments within five (5) feet of the centerline of the mains) which are removed, damaged, or destroyed in the course of the Work, shall be replaced or repaired to the original condition. If Contractor provides the Agency with reasonable notice of the need for such repair or replacement, it shall be performed by the Agency. If the Contractor fails to provide the Agency with reasonable notice, the repair or replacement shall be performed by and at the expense of the Contractor to the satisfaction of the Agency, whether or not those obstructions have been shown on the Plans, unless otherwise stated herein. It is then the Contractor's responsibility to employ at its expense a Licensed Land Surveyor to restore all property line monuments located more than five (5) feet from the centerline of the mains, which are destroyed or obliterated. Property line monuments located within five (5) feet of the centerline of the mains will be replaced by the Agency at no expense to the Contractor, provided the Agency is notified at least 48 hours before the property line monuments are damaged.

B. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions.

C. Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, and other adjoining property and structures, and to avoid damage thereto, and Contractor shall repair any damage thereto caused by the Work operations. Contractor shall:

1. Enclose the working area with a substantial barricade, and arrange work to cause minimum amount of inconvenience and danger to the public.

2. Provide substantial barricades around any shrubs or trees indicated to be preserved.

3. Deliver materials to the Project site over a route designated by the governing authorities and the Agency.

4. Provide any and all dust control required and follow the Applicable air quality regulations as appropriate. If the Contractor does not comply, the Agency shall have the immediate authority to provide dust control and deduct the cost from payments to the Contractor.

5. Confine Contractor's apparatus, the storage of materials, and the operations of its workers to limits required by law, ordinances, permits, or directions of the Architect. Contractor shall not unreasonably encumber the Project site with its materials.

6. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by a civil engineer or land surveyor acceptable to the Agency, at no cost to the Agency.

7. Ensure that existing facilities, fences and other structures are all adequately protected and that, upon completion of all Work, all facilities that may have been damaged are restored to a condition acceptable to the Agency.

8. Preserve and protect from injury all buildings, pole lines and all direction, warning and mileage signs that have been placed within the right-of-way.

9. At the completion of work each day, leave the Project site in a clean, safe condition.

10. Comply with any stage construction and traffic control plans. Access to residences and businesses shall be maintained at all times, unless otherwise permitted in writing by the Agency.

D. These precautionary measures will apply continuously and not be limited to normal working hours. Full compensation for the Work involved in the preservation of life, safety and property as above specified shall be considered as included in the prices paid for the various contract items of Work, and no additional allowance will be made therefore.

E. Should damage to persons or property occur as a result of the Work, Contractor shall be responsible for proper investigation, documentation, including video or photography, to adequately memorialize and make a record of what transpired. The Agency shall be entitled to inspect and copy any such documentation, video, or photographs.

3.5 SITE CONDITIONS SURVEYS

A. Work Included.

Contractor shall conduct thorough pre-construction and post-construction site condition surveys of the entire project area. Site Conditions surveys shall include written documentation of the conditions found, as well as photographs and video recordings of the area within at least 80 feet of any construction area and staging area.

The written notes, photographs, and video shall be suitable for forensic purposes to resolve any damage claims that may arise as a result of construction.

B. Submittals.

1. Written documentation of site condition survey at pre-construction and post-construction.

2. Photographs as described herein of pre-construction and post-construction conditions.

3. Video recordings as described herein of pre-construction and post-construction conditions.

4. Submittals shall be made within three days of the surveys. All post-construction data shall be submitted prior to the final project inspection.

C. Site Condition Written Documentation.

Written documentation shall include the time, date, and conditions under which the site survey was made. The documentation shall note the condition of structures, pavement, sidewalks, utilities, fences, and etc. within the work areas.

D. Photographs.

1. General – Contractor shall take enough photographs during each site survey to provide a record of conditions existing prior to construction and conditions after construction. Pre-construction photographs shall be taken prior to any construction or mobilization of equipment, but not more than one week prior to actual start of work. The pre-construction photographs may be staged at different times to match the progression of the Work.

2. The photographs shall document existing damage to public and private facilities, both prior to and after construction. Conditions to be documented include, but are not limited to: sidewalk cracks, broken curbs, separated property walls, improvements within public right-of-ways, access roads used, utility covers and markings, signs, pavement striping, pavement, unique or unusual conditions, adjacent driveways, landscaping, survey markers, and any feature directed by the Architect. Private property that is adjacent to the public right-of-way shall be documented to the extent visible from the public right-of-way.

3. Photographs shall include items to indicate scale, as needed. In particular, scales or other items shall be laid next to close ups of structural cracks and other damaged areas being recorded. Scaling shall also be used to document elevation differences, as needed.

4. One set of color prints shall be submitted. Additional sets shall be available for reviewing in settling any construction disputes. A set of photos shall also be furnished in electronic format. The resolution shall be at least equal to 7 mega-pixels. All photos shall be documented as to time and date taken, photographer,

project number, location, and orientation. Documentation shall include a brief description of objects photographed.

E. Video Recording.

1. Video recordings shall document the conditions of the entire area affected by construction, as well as nearby structures and facilities. The general documentation requirements for videos are the same as for photographs. Video recorders shall accurately and continuously record the time and date.

2. Video recordings shall include an audio portion made simultaneously during the videoing. The audio recording shall describe the location, time, orientation, and objects being recorded. Special commentary shall be provided for unusual conditions or damage noted.

3. Video equipment shall be capable of producing high resolution images and shall have zoom capabilities.

4. Video recordings shall provide an overall picture of the sites and shall provide detailed images of damaged areas. Video shall extend to the maximum height of structures.

5. The Architect shall have the right to reject any audio video recordings submitted with unintelligible audio, uncontrolled pan or zoom, or of poor quality. Video recordings shall be repeated when rejected.

6. Video recordings shall be submitted with labels indicating the project, date, recorder, and other pertinent information. Recordings shall be submitted on standard DVDs in a standard format.

F. Timing.

Contractor shall provide written notice of the time scheduled for the site conditions survey and the place it is to begin. Contractor shall obtain the Architect's concurrence prior to beginning the condition survey. The Architect reserves the right to cancel the survey due to weather conditions or other problems. Videoing shall be done during times of good visibility and no videoing or photography shall be done during periods of visible precipitation or when standing water obscures pavement. Contractor shall provide the Architect with an opportunity to have a representative present when taking the photos and provide guidance during photographing.

G. Site Surveyor.

The site condition surveyor(s) shall be experienced in construction and potential damage concerns. The site condition surveyor(s) shall be familiar with the photography and video equipment being used.

H. Field Quality Control.

Prior to submitting videos and photographs, the Contractor shall spot check the photos and videos in the field to insure they accurately reflect the actual conditions and to insure they are correctly labeled.

l. Soils Compaction Testing.

1. All soils compaction testing will be done by a licensed geotechnical engineer furnished by the Agency. Soils compaction testing will be done for all footings and foundations prior to placement of rebar or concrete.

2. For pipeline construction, soil compaction testing will be done at 100-foot intervals at the bottom of the trench prior to placement of pipe bedding; at the top of the pipe bedding above the pipe; every two vertical feet of trench backfill; at the top of the trench backfill, which should be the bottom of the pavement section; and at the top of the aggregate base prior to pavement construction.

3.6 SUBMITTAL REQUIREMENTS FOR MANUALS AND RECORD DRAWINGS

A. General. The Contractor shall furnish all materials and perform all Work required for furnishing submittals to Agency in accordance with Contract Documents.

B. Technical Manuals.

1. The Contractor shall submit technical operation and maintenance information for each item of mechanical, electrical and instrumentation equipment in an organized manner in the Technical Manual. It shall be written so that it can be used and understood by Agency's operation and maintenance staff.

2. The Technical Manual shall be subdivided first by specification section number; second, by equipment item; and last, by "Category." "Categories" shall conform to the following (as applicable):

(a) Category 1 - Equipment Summary:

(1) Summary: A summary table shall indicate the equipment name, equipment number, and process area in which the equipment is installed.

(b) Category 2 - Operational Procedures:

(1) Procedures: Manufacturer-recommended procedures on the following shall be included in Part 2:

d. Installation

e. Adjustment

f. Startup

g. Location of controls, special tools, equipment required, or related instrumentation needed for operation

h. Operation procedures

i. Load changes

j. Calibration

k. Shutdown

l. Troubleshooting

m. Disassembly

n. Reassembly

o. Realignment

p. Testing to determine performance efficiency

q. Tabulation of proper settings for all pressure relief valves, low and high pressure switches, and other protection devices

r. List of all electrical relay settings including alarm and contact settings

(c) Category 3 - Preventive Maintenance Procedures:

(1) Procedures: Preventive maintenance procedures shall include all manufacturer-recommended procedures to be performed on a periodic basis, both by removing and replacing the equipment or component, and by leaving the equipment in place.

(2) Schedules: Recommended frequency of preventive maintenance procedures shall be included. Lubrication schedules, including lubricant SAE grade, type, and temperature ranges, shall be covered.

(d) Category 4 - Parts List:

(1) Parts List: A complete parts list shall be furnished, including a generic description and manufacturer's identification number for each part. Addresses and telephone numbers of the nearest supplier and parts warehouse shall be included.

(2) Drawings: Cross-sectional or exploded view drawings shall accompany the parts list.

(e) Category 5 - Wiring Diagrams:

(1) Diagrams: Part 5 shall include complete internal and connection wiring diagrams for electrical equipment items.

(f) Category 6 - Shop Drawings:

(1) Drawings: This part shall include approved shop or fabrication drawings, complete with dimensions.

(g) Category 7 - Safety:

(1) Procedures: This part describes the safety precautions to be taken when operating and maintaining the equipment or working near it.

(h) Category 8 - Documentation:

(1) All equipment warranties, affidavits, and certifications required by the Technical Specifications shall be placed in this part.

3. The Contractor shall furnish to Agency six (6) identical Technical Manuals. Each set shall consist of one or more volumes, each of which shall be bound in a standard binder.

C. Spare Parts List - The Contractor shall furnish to Agency six (6) identical sets of spare parts information for all mechanical, electrical, and instrumentation equipment. The spare parts list shall include the current list price of each spare part. The spare parts list shall include those spare parts which each manufacturer recommends be maintained by Agency in inventory. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to assist Agency in ordering. The Contractor shall cross-reference all spare parts lists to the equipment numbers designated in the Contract Documents. The spare parts lists shall be bound in standard size, 3-ring binder.

D. Record Drawings

1. The Contractor shall maintain one record set of Drawings at the Site. On these, it shall mark all Project conditions, locations, configurations, and any other changes or deviations which may vary from the information represented in the original Contract Documents, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed. These master record drawings of the as-built conditions, including all revisions made necessary by Addenda and Change Orders shall be maintained up-to-date during the progress of the Project. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date.

2. For all Projects involving the installation of any pipeline, Contractor shall survey and record the top of the pipe at a minimum of every 100 linear feet, and at each bend, recording both the horizontal and vertical locations.

3. Record drawings shall be accessible to Agency's Representative at all times during the construction period. Failure on the Contractor's part to keep record drawings current could result in withholding partial payment.

4. Upon Completion of the Project and as a condition of final acceptance, the Contractor shall finalize and deliver a complete set of Record Drawings to Agency's Representative. The information submitted by the Contractor will be assumed to

be correct, and the Contractor shall be responsible for, and liable to Agency, for the accuracy of such information, and for any errors or omissions which may or may not appear on the Record Drawings.

E. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete the Manuals and Record Drawings shall be included in Contractor's bid and distributed in the Schedule of Pay. No additional compensation shall be made to the Contractor for this Work.

3.7 MATERIALS

A. Materials to be Furnished by the Contractor

1. Inspection of Materials. Materials furnished by the Contractor which will become a part of the Project shall be subject to inspection at any one or more of the following locations, as determined by Agency's Representative: at the place of production or manufacture, at the shipping point, or at the site of the Work. To allow sufficient time to provide for inspection, the Contractor shall submit to Agency's Representative, at the time of issuance, copies of purchase orders or other written instrument confirming procurement of the materials, including drawings and other pertinent information, covering materials on which inspection will be made.

2. No later than fourteen (14) Days prior to manufacture of material, Contractor shall inform Agency's Representative, in writing, the date the material is to be manufactured.

3. Contractors Obligations. The inspection of materials at any of the locations specified above or the waiving of the inspection thereof shall not impact whether the materials and equipment conform to the Contract Documents. Contractor will not be relieved from furnishing materials meeting the requirements of the Contract Documents due to Agency's inspection or lack of inspection of the equipment or materials. Acceptance of any materials will be made only after materials are installed in the Project.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to accommodate Agency's testing efforts, including any travel required by Contractor's forces, shall be included in Contractor's bid and distributed in the Schedule of Pay Items related to the materials requiring testing. No additional compensation shall be made to the Contractor for this Work.

3.8 LOCAL CONDITIONS AND REQUIREMENTS

A. Access to Work and Haul Routes

1. General. All work on the rights-of-way necessary for access to the Site shall be performed by the Contractor.

2. Access, Damage, Restoration. The Contractor shall make his own investigation of the condition of available public or private roads and of clearances, restrictions, bridge-load limits, permit or bond requirements, and other limitations that affect or

may affect transportation and ingress or egress at the Site. Claims for changes in Contract Price or Contract Times arising out of the unavailability of transportation facilities or limitations thereon shall not be considered by Agency.

3. The Contractor shall maintain and repair any damage arising out of Contractor's operations to all roads used during construction of the Project, and upon completion of all Work, but prior to final acceptance, the roads shall be restored to their original condition. Prior to using any road for access to the Site, the Contractor shall conduct a photograph and/or video survey of the roadway with a copy submitted to Agency's Representative.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

B. Power. Contractor shall provide at its own expense all necessary power required for operations under the contract. The Contractor shall provide and maintain in good order such modern equipment and installations as shall be adequate in the opinion of the Architect to perform in a safe and satisfactory manner the Work required by the contract.

C. Construction Water.

1. Construction water shall not be used for purposes other than those required to satisfactorily complete the contract.

2. All connections to the Agency's water system used for the purposes of obtaining construction water shall utilize a temporary construction meter and backflow prevention device supplied by the Agency. The Agency-furnished backflow prevention device shall be tested immediately after installation and the construction meter and backflow prevention device shall not be placed into service until the backflow prevention device passes such tests. Backflow prevention device testing shall be performed in accordance with the most recent edition of the Manual of Cross-Connection Control as published by the University of Southern California by a person selected from Sonoma Clean Power Authority "Agency-Approved Certified Backflow Assembly Testers" list, and test results shall be provided to the Architect. If the temporary construction meter and backflow prevention device are moved to alternate location(s) during construction, the backflow prevention device shall again be tested as described above immediately after re-installation.

3. For each temporary construction meter requested by the Contractor for the performance of work under this contract, an amount equivalent to the deposit requirement for temporary construction meters listed in the current approved version of the Agency's Policies and Procedures Manual shall be withheld from the final contract payment until the temporary construction meters are returned.

D. Operation of Existing Water Facilities

1. The Contractor shall not operate any of the existing water systems, including pumps, motors, and hydrants, but shall contact the Agency two (2) working days

in advance with a list and location of the water system facilities that will require operating, opening, stopping, or closure by the Agency.

2. At the option of the Engineer, the Contractor may be permitted to operate valves for the purpose of making connections to existing mains. The Agency will perform all notification to existing customers regarding temporary loss of service.

3. Contractor shall submit a request on Agency's standard form for any shut-down of existing water facilities.

4. NOT USED.

E. Construction at Existing Utilities

1. General. Where the Work to be performed crosses or otherwise interferes with water, sewer, gas, or oil pipelines; buried cable; or other public or private utilities, the Contractor shall perform construction in such a manner so that no damage will result to either public or private utilities. It shall be the responsibility of the Contractor to determine the actual locations of, and make accommodates to maintain, all utilities.

2. Permission, Notice and Liability. Before any utility is taken out of service, permission shall be obtained by the Contractor from the owner. The owner, any impacted resident or business owner and the Agency Representative will be advised of the nature and duration of the utility outage as well as the Contractor's plan for providing temporary utilities if required by the owner. The Contractor shall be liable for all damage which may result from its failure to maintain utilities during the progress of the Work, and the Contractor shall indemnify Agency as required by the Contract Documents from all claims arising out of or connected with damage to utilities encountered during construction; damages resulting from disruption of service; and injury to persons or damage to property resulting from the negligent, accidental, or intentional breaching of utilities.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Traffic Control

1. General. Contractor shall abide by traffic control plans approved by the appropriate jurisdiction.

2. Protections. Roads subject to interference by the Work shall be kept open or suitable temporary passages through the Work shall be provided and maintained by the Contractor. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient flasher lights, flag persons, danger signals, and signs, and shall take all necessary precautions for the protection of the Work and the safety of the public. No construction work along public or private roads may proceed until the Contractor has proper barricades, flasher lights, flag persons, signals, and signs in place at the construction site.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

G. Cleaning Up

1. Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment. Contractor shall not store debris under, in, or about the premises. Contractor shall also clean all asphalt and concrete areas to the degree necessary to remove oil, grease, fuel, or other stains caused by Contractor operations or equipment. The use of water, resulting in mud on streets, will not be permitted as substitute for sweeping or other methods. Dust control may require having a water truck onsite for the duration of the project, and/or use of temporary hoses and pipelines to convey water.

2. Contractor shall fully clean up the site at the completion of the Work. If the Contractor fails to immediately clean up at the completion of the Work, the Agency may do so and the cost of such clean up shall be charged back to the Contractor.

3.9 ENVIRONMENTAL QUALITY PROTECTION

A. Environmental Conditions

1. Contractor must comply with all applicable environmental laws, Project conditions, and constraints, including, but not limited to:

A. 2022 California Green Building Standards Code, Nonresidential Mandatory Measures

B. Encroachment Permit; Work in Public Right of Way; New fire service from existing water main in Beaver Street, Santa Rosa, CA

2. Agency has considered these Environmental Conditions when determining the Contract Times and no additional time or compensation will be added to the Contract due to these Conditions.

B. Landscape and Vegetation Preservation

1. General. The Contractor shall exercise care to preserve the natural landscape and vegetation, and shall conduct operations so as to prevent unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the Work.

2. Damage and Restoration. Movement of crews and equipment within the rights-of-way and over routes provided for access to the Work shall be performed in a manner to prevent damage to property. When no longer required, construction roads shall be restored to original contours.

3. Upon completion of the Work, and following removal of construction facilities and required cleanup, land used for construction purposes and not required for

the completed installation shall be scarified and regraded, as required, so that all surfaces are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to complete this Work, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

C. Protected Species

1. General. If, in the performance of the Work, evidence of the possible occurrence of any Federally listed threatened or endangered plant or animal is discovered, the Contractor shall notify the Agency Representative immediately, giving the location and nature of the findings. Written confirmation of the evidence, location and nature of the findings shall be forwarded to Agency within 2 Days.

2. Procedures. The Contractor shall immediately cease all construction activities in the immediate area of the discovery to the extent necessary to protect the endangered plant or animal.

If directed by the Agency Representative, Contractor will refrain from working in the immediate area, suspend the Work in its entirety, or alter its performance to ensure full compliance with all applicable permits, laws and regulations. Any Agency directed changes to the Work as a result of a siting will be pursuant to the Contract Documents.

3. False Siting. Any costs or delays incurred by Agency or the Contractor due to unreasonable or false notification of an endangered plant or animal will be borne by the Contractor.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

D. Preservation of Historical and Archeological Resources

1. General. If, in the performance of the Work, Contractor should unearth cultural resources (for example, human remains, animal bones, stone tools, artifacts and/or midden deposits) through excavation, grading, watering or other means, the Contractor notify the Construction/Archeological Monitor and/or the Agency Representative immediately, giving the location and nature of the findings. Written confirmation of the evidence, location and nature of the findings shall be forwarded to the Construction/Archeological Monitor and/or Agency within 2 Days.

2. Procedures. The Contractor shall immediately cease all construction activities in the immediate area of the discovery to the extent necessary to protect the cultural resource.

If directed by the Agency Representative, Contractor will refrain from working in the immediate area, suspend the Work in its entirety, or re-sequence and/or alter its performance to ensure full compliance with all applicable permits, laws and regulations. Should the presence of cultural resources be confirmed, the Contractor will assist the Agency Representative and the Construction/Archeological Monitor in the preparation and implementation of a data recovery plan. The Contractor shall provide such cooperation and assistance as may be necessary to preserve the cultural resources for removal or other disposition. Any Agency directed changes to the Work as a result of the cultural resource will be pursuant to the Contract Documents.

3. Contractor's Liability. Should Contractor, without permission, injure, destroy, excavate, appropriate, or remove any cultural resource on or adjacent to the Site, it will be subject to disciplinary action, arrest and penalty under applicable law. The Contractor shall be principally responsible for all costs of mitigation and/or restoration of cultural resources related to the unauthorized actions identified above. Contractor shall be required to pay for unauthorized damage and mitigation costs to cultural resources (historical and archeological resources) as a result of unauthorized activities that damage cultural resources and shall indemnify Agency pursuant to the Contract Documents.

4. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

E. Dust and Pollution Control

1. Contractor shall provide all necessary material, equipment and labor to prevent and control the emission of dust and any other potential pollutant on site.

2. Contractor shall not discharge into the atmosphere from any source smoke, dust or other air contaminants in violation of the law, rules, and regulations of the governing agency.

3. Cost. Unless otherwise called for by the Contract Documents, the cost of all material, equipment, and labor required to comply with this paragraph, shall be included in Contractor's bid and distributed in the Schedule of Pay Items. No additional compensation shall be made to the Contractor for this Work.

F. Fugitive Dust

NOT USED.

G. Management of Storm, Surface and Other Waters

1. Storm water, surface water, groundwater, and nuisance, or other waters may be encountered at various times during construction of the Project. Federal and State laws require the Agency and its contractors to manage such waters pursuant to the requirements of California State Water Resources Control Board Order Number 2009-0009-DWQ, the Federal Clean Water Act, and the California Porter

Cologne Water Quality Control Act. Contractor acknowledges that it has investigated the risk arising from such waters in conjunction with the Project, and assumes any and all risks and liabilities arising therefrom.

2. The Contractor shall perform all construction operations in such a manner as to comply, and ensure all subcontractors to comply, with all applicable Federal, State, and local laws, orders, and regulations concerning the control and abatement of water pollution; and all terms and conditions of any applicable permits issued for the Project. In the event there is a conflict between Federal, State, and local laws, regulations, and requirements, the most stringent shall apply.

3. Contractor violations. If noncompliance should occur, the Contractor shall report this to the Agency Representative immediately, with the specific information submitted in writing within 2 Days. Consistent violations of applicable Federal, State, or local laws, orders, regulations, or Water Quality Standards may result in Agency stopping all site activity until compliance is ensured. The Contractor shall not be entitled to any change in Contract Price or Contract Times, claim for damage, or additional compensation by reason of such a work stoppage. Corrective measures required to bring activities into compliance shall be at the Contractor's expense.

4. [RESERVED]

5. In addition to compliance with the Permit, Contractor shall comply with the lawful requirements of any applicable municipality, district, drainage district, flood control district, and other local agencies regarding discharges of storm water, surface water, groundwater or other nuisance waters off of the Project site.

6. Oil storage tanks management.

(a) Storage tank placement. All oil or other petroleum product (hereinafter referred to collectively as oil) storage tanks shall be placed at least 20 feet from streams, flowing or dry watercourses, lakes, wetlands, reservoirs, and any other water source.

(b) Storage area dikes. Storage areas shall be diked at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity of all tanks and/or containers located within each area, plus a sufficient amount of freeboard to contain the 25-year rainstorm.

(c) Diked area barriers. Diked areas shall have an impermeable barrier at least 10 mils thick. Areas used for refueling operations shall have an impermeable liner at least 10 mils thick buried under 2 to 4 inches of soil.

(d) Spill Prevention Control and Countermeasure Plan (SPCC). Where the location of a construction site is such that oil from an accidental spillage could reasonably be expected to enter into or upon the navigable waters of the United States or adjoining shorelines, and the aggregate storage of oil at the site is over 1,320 gallons or a single container has a capacity in excess of 660 gallons, the Contractor shall prepare an SPCC Plan. The Contractor shall submit the SPCC Plan to the Architect at least 30 days prior to delivery or

storage of oil at the site. The Plan must have been reviewed and certified by a registered professional engineer in accordance with 40 C.F.R., part 112

7. Underground tank prohibition. The Contractor shall not use underground storage tanks.

8. Construction safety standards. The Contractor shall comply with the sanitation and potable water requirements of Section 7 of United States Bureau of Reclamation's publication “Reclamation Safety And Health Standards.”

9. Other Permits.

(a) Other permits applicable to the Project are listed in the Special Conditions. The Contractor shall obtain all other necessary licenses and permits.

(b) Monitoring. The Contractor is required to conduct monitoring in order to meet the requirements of the permits, which may include sampling, testing and inspections.

(c) Recordkeeping. The Contractor shall retain all records and data required by the permits for the time specified in the contract.

10. Cost. Except as specified herein, the cost of complying with this section shall be included in the Schedule of Pay Items for work which necessitate the water pollution prevention measures required by this paragraph.

END OF GENERAL REQUIREMENTS

EXHIBIT "A"
CHANGE ORDER FORM

Sonoma Clean Power Authority

431 E St,
Santa Rosa, CA 95404

Contract Change Order #

Project:

Change Order No.:

Orig. Contract Amt.: $ Days

Contract No.:

Contractor:

Prev. Appvd. Changes: $ Days

Owner: Sonoma Clean Power Authority

This Change: $ Days

Revised Contract Amt.: $ Days

This Change Order covers changes to the subject contract as described herein. The Contractor shall construct, furnish equipment and materials, and perform all work as necessary or required to complete the Change Order items for a lump sum price agreed upon between the Contractor and Sonoma Clean Power Authority, otherwise referred to as Owner.

Item No.	Description of Changes	Increase/ (Decrease) in Contract Amount	Contract Time Extension, Days
1			
2			
	Totals	**$**	

This Contract Change Order consists of **2 pages** and any exhibits attached to this Contract Change Order shall not be part of the Contract Change Order unless specifically initialed by or on behalf of both the Contractor and the Sonoma Clean Power Authority.

Contract Change Order #_____ Page 1 of 2

The amount of the contract will be increased by the sum of $___and the contract time shall be extended by working days. The undersigned Contractor approves the foregoing Change Order # as to the changes, if any, in the contract price specified for each item including any and all supervision costs and other miscellaneous costs relating to the change in work, and as to the extension of time allowed, if any, for completion of the entire work on account of said Change Order #. The Contractor agrees to furnish all labor and materials and perform all other necessary work, inclusive of the directly or indirectly related to the approved time extension, required to complete the Change order items. This document will become a supplement of the contract and all provisions will apply hereto. It is understood that the Change Order shall be effective when approved by the Owner.

Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising out of or related to the subject of this Change Order and acknowledges that the compensation (time and cost) set forth herein comprises the total compensation due for the work or change defined in the Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for any acceleration or interruption of schedules, extended overhead costs, delay, and all impact or cumulative impact on all Work under this Contract. The signing of this Change Order acknowledges full mutual accord and satisfaction for the change and that the stated time and/or cost constitute the total equitable adjustment owed the Contractor as a result of the change. The Contractor hereby releases and agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of, or as a result of, this Change Order and/or its impact on the remainder of the Work under the Contract.

Accepted:

(Signature) Contractor's Authorized Representative	Date

Recommended:

(Signature) [**INSERT NAME, TITLE**]	Date

Approved:

(Signature) [**INSERT NAME, TITLE**]	Date

Item No.	Justification for Change(s)
1	
2	

This Contract Change Order consists of **2 pages** and any exhibits attached to this Contract Change Order shall not be part of the Contract Change Order unless specifically initialed by or on behalf of both the Contractor and the Sonoma Clean Power Authority.

SECTION 01-1100
SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work covered by Contract Documents.

B. Work under separate contracts.

C. Execution, correlation and intent.

D. Acceptance of site.

E. Related documents.

F. Contractor's use of premises.

G. Owner's use of site.

H. Access.

I. Existing conditions.

J. Liquidated damages and contract completion.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. Project name is: 421 E Street Tenant Improvement , as shown on the Contract Documents prepared by AXIA Architects and briefly described as:

B. An exterior and interior remodel of an existing one-story office building including exterior finishes, re-roofing, replacement and updates to the HVAC and electrical system, installation of a fire sprinkler system including a new water supply line from a public street, new windows and skylights, interior selective demolition and new interior buildout. Site improvements include accessibility upgrades at the building entries and site drainage upgrades.

C. The Work shall be constructed under single fixed-price Contract.

D. The Work of the Contract includes but is not necessarily limited to:
   1. All other work as shown in the Contract Documents.
   2. The Work includes all labor, materials and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents, including but not limited to:
      a. Home office overhead,
      b. Off-Site supervision,
      c. Project Administration including preparation, research and distribution of project correspondence and submittals,
      d. Schedule preparation and maintenance,
      e. Guarantys and warrantys,
      f. On-Site supervision,
      g. Temporary protection,
      h. Temporary utilities and facilities, including mobilization and demobilization,
      i. Material handling and storage,
      j. Safety equipment,
      k. Travel time to and from the Site to the Contractor’s home office.

E. Sequence the Work subject to the Owner’s use of the site, the requirements of the Construction Phasing, Technical Specifications and the Contract provisions for Liquidated Damages found elsewhere in these documents.

F. Provide materials and perform work indicated or required to produce finished results shown.

G. Contractor shall coordinate all work and shall be responsible for division of work among the various subcontractors.
   1. Coordinate the work of this Contract with the activities of the Owner, and with PG&E and other serving utilities.
   2. Coordinate the work of this Contract with the activities of the Owner's separate contractors, including those for security installations.

H. Laws and Regulations: Intent of the Contract Documents is to construct the Work shown therein, in accordance with applicable codes and regulations.

1.03 WORK UNDER SEPARATE CONTRACTS

A. The Owner reserves the right to issue other contracts for work on the site which may be constructed concurrently with these Contracts.
   1. Coordinate with the Owner's Security Contractor.
   2. Coordinate with the Owner's Furniture, Fixture and Equipment Contractor.

1.04 EXECUTION, CORRELATION AND INTENT

A. Correlation and Intent
   1. Documents Complementary and Inclusive:
      a. The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work.
      b. Any item of work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both.
   2. Coverage of the Drawings and Specifications:
      a. The Drawings and Specifications generally describe the work to be performed by Contractor. Generally, the Specifications describe work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work.
      b. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown.
      c. All materials or labor for Work, which is shown on either by the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor whether or not the Work is expressly covered in either the Drawings and/or the Specifications.
      d. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by them.
   3. Conflicts. In the event there is a discrepancy between the various Contract Documents, the Owner/Contractor Agreement shall control. Without limiting Contractor's obligation to identify conflicts for resolution by the Architect identified elsewhere in this Article it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.
   4. Conformance With Laws:
      a. Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party the Contract shall be amended in writing to make such insertion or correction.
      b. Before commencing any portion of the Work, Contractor shall check and review the Contract Documents for such portion for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents.
      c. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with any such restrictions or special requirements of the Contract Documents, Contractor shall immediately notify Architect in writing of same and shall cause to be corrected any such violation or inconsistency in the manner provided hereunder.
   5. Ambiguity:
      a. Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Project requirements.

b. Contractor shall immediately notify Owner and Architect of any perceived or alleged error, inconsistency, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein.
c. If the Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance.
d. If Contractor performs, permits, or causes the performance of any Work under the Contract Documents prepared by or on behalf of Contractor which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction, without increase to or adjustment in the Contract Price or the time for performance.
e. In no case shall any Subcontractor proceed with the Work if uncertain without the Contractor's written direction and/or approval.

B. Addenda and Deferred Approvals
1. Addenda. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda only to the extent specified.
2. Deferred Approvals. The requirements approved by the Authority Having Jurisdiction on any item submitted as a deferred approval in accordance with Title 24, California Code of Regulations, shall take precedence over any previously issued addenda, drawing or specification.

C. Specification Interpretation and Application:
1. Titles. The Specifications are separated into titled sections for convenience only and not to dictate or determine the trade or craft involved.
2. As Shown, Etc. Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.
3. Provide. "Provide" means "provided complete in place," that is, furnished, installed, tested, and ready for operation and use.
4. General Conditions. The General Conditions and supplementary general conditions are a part of each and every section of the Specifications.
5. Abbreviations.
a. In the interest of brevity, the Specifications are generally written in an abbreviated form in the imperative tense and may not include complete sentences.
b. Omission of words or phrases such as "Contractor shall," "shall be," etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory and directed to the Contractor.
c. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.
6. Plural. Words in the singular shall include the plural whenever applicable or the context so indicates.
7. Metric. The Documents may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1 inch (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."
8. Standard Specifications. Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization's standard specifications, which are in effect at the date of the Contractor's proposal.
a. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Architect, perform such Work in accordance with the revised specifications.
b. The standard specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.
c. Procurement of reference standards and standard specifications is the sole responsiblity of the Contractor.

d. Division 2 sections specifically reference 1992 Caltrans Standards to maintain consistency in dimensioning.

9. Absence of Modifiers. In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another shall not affect the interpretation of either statement.

D. Rules of Document Interpretation

1. In the event of conflict or ambiguity within the drawings, the following rules shall apply:
   a. General Notes, when identified as such, shall be incorporated into other portions of Drawings.
   b. Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.
   c. Larger scale drawings shall take precedence over smaller scale drawings.
   d. General or Typical Details and Symbols apply at all locations where specifically noted; at all locations conforming to the title of the Detail; at all locations of similar or identical graphic indication; at all locations where similar conditions are not fully or specifically shown or identified and complement similar details of specific conditions.
   e. Details and Notes apply at all locations of similar or identical graphic indications and at all locations where similar conditions are not fully or specifically shown or identified.
   f. Limitation of Indication does not affect Extent of Application: Indications of notes, details, and symbols may be limited to promote clarity. No limitation of application is intended nor shall be construed unless specifically noted.
   g. Figured, derived, or numerical dimensions shall govern. At no time shall the Contractor base construction on scaled drawings.
2. Specifications shall govern as to materials, workmanship, and installation procedures.
3. In the case of disagreement or conflict between or within standards, specifications, and drawings, the more stringent, higher quality, and greater quantity of Work shall apply.

1.05 ACCEPTANCE OF SITE

A. Contractor shall accept the site in the condition in which it exists at the time he is given Notice to Proceed.

B. See Procurement and Contracting Requirements, Section 01 00 00, General Requirements.

1.06 RELATED DOCUMENTS

A. The Drawings, general provisions of the Contact, including General and Supplementary Conditions and other Division 01 specifications apply to the Work of all specifications sections as if specifically reproduced therein.

B. Specification Section Numbering: The Contract Documents may indicate section numbering utilizing both MasterFormat 1995 numbering and MasterFormat 2004 numbering.

1.07 CONTRACTOR'S USE OF PREMISES

A. Confine operations on the site to areas indicated in the Contract Documents. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the Work while engaged in project construction.

B. Contractor shall limit his use of the premises for work and storage to allow for work by other contractors.

C. Maintain existing driveways and entrances serving the premises clear and available to the Owner and his employees at all times. Do not use these areas for parking or storage of materials.

D. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to area approved by the Architect. If additional storage is necessary, Contractor shall obtain and pay for such storage off site without additional expense to the Owner.

E. Do not overload structures with weight that will endanger them.

F. Assume full responsibility for protection and safekeeping of materials and tools stored at the site. Lock vehicles such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

G. Move stored products, temporary facilities, controls or fencing, under Contractor's control, which interfere with operations of the Owner or separate contractors, on or off the site, without cost to the Owner.

H. Minimize disturbance caused by the work. Cooperate with Owner and governing authorities, observe all local ordinances for timing of work.

I. Perform site access activities, including arrival and departure of workers, deliveries, storing, handling and removal of materials, equipment, and debris to minimize dust, mud or accumulated debris, or undue interference with the convenience, sanitation or routine of Owner's activities.

J. Time and coordinate cutovers and connection of new utilities to existing systems and other similar activities to avoid interference with or interruption of Owner's activities.

K. Protect improvements on adjoining properties as well as those on the Owner's property.

L. Restore all improvements damaged by this work to their original condition as acceptable to the owner of the improvement

M. Contractor is responsible for safety and support of structures. Cease operations and notify Architect immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored. Contractor shall assume liability for such movement, settlement, damage or injury.

N. Provide, erect and maintain barricades and guard rails as required by governing regulatory agencies to protect occupants of building and workers. Refer to other pertinent sections of Division 01.
   1. It is the Contractor's responsibility to provide safety and security measures to protect the safety and wellbeing of members of the public who may come into contact with the project site.

O. Protect existing finished work remaining in place from damage due to construction activities. Repair and replace finished work damaged by activities of this contract to the satisfaction of Owner and Architect at no extra cost to the Owner.

P. See Procurement and Contracting Requirements, Section 01 00 00, General Requirements.

1.08 OWNER'S USE OF THE SITE

A. Certain on and off-site work will be performed by others. A portion of this work, including the completion of preceding contracts, may be constructed concurrently with this Contract. The Owner may have various additional contracts for their work and other projects from time-to-time on the site concurrent with this Contract.

1.09 ACCESS

A. Maintain free and safe access to the site and within the site to individual buildings as required by local fire marshal regulations, for fire-fighting equipment, ambulance and police vehicles. Maintain passage to and from adjacent buildings. Do not interfere with Owner's use of the site.
   1. Perform work and provision of temporary facilities and phasing of activities to minimize interference with adjacent facilities or new work areas. Minimize interference with activities of other contractors, the Owner's personnel or the public. Protect persons and property from harm. Maintain required accessways, and other accessways not required but so designated by the Owner or the Contract Documents, free with unrestricted passage.
   2. No utility service, such as water, gas, sewers, electricity, communication or fire protection system serving the project, or any part of it, shall be interrupted without prior written approval of the Owner.

B. This Contractor is responsible to coordinate his Work with the work of other Prime Contractors active on the site.

1.10 EXISTING CONDITIONS

A. Intent of the Drawings is to show existing conditions with information developed from field surveys and Owner's records, and to generally show the extent and type of work required to prepare the existing areas for new work. The information shown on the Drawings is not a guarantee of existing conditions.

1.11 LIQUIDATED DAMAGES AND CONTRACT COMPLETION

A. Liquidated Damages will be assessed beginning on the Date contractually required for Completion and shall continue to accrue until each of the listed conditions are fulfilled.

B. Date of Completion and Beneficial Occupancy is defined as the Date of Completion of all punch list items, including, but not limited to the following:
   1. Confirmation of mechanical and electrical systems testing and balancing, control sequences and operations.

2. Completion of final cleaning, paint touch-up and adjusting.
3. Adjustment and Contractor's certification of the finish hardware operation.
4. Removal of Contractor's temporary facilities and materials.
5. Owner's acceptance of the Work.

C. Owner's occupancy prior to completion of any or all of the above items, or other such missing or incomplete work as may occur, shall not be construed as acceptance of the Work or as Completion when defined for the purposes of assessing Liquidated Damages.

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 NOT USED.

END OF SECTION

SECTION 01-2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 01-3000 - Administrative Requirements: Submittal procedures, coordination.

B. Section 01-6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

C. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.03 DEFINITIONS

A. The following are not considered substitutions;
   1. Revisions to Contract Documents requested by the Owner Or Architect.
   2. Specified options of products, materials, and equipment included in Contract Documents.

B. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
      a. Unavailability.
      b. Regulatory changes.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
      a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms included in the Project Manual are adequate for this purpose, and must be used.

D. Limit each request to a single proposed substitution item.
   1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION SUBMITTAL PROCEDURES

A. Submit electronic copy of Substitution Request Form included in this Project Manual for consideration. Forms provided by proposer or other agencies or organizations are not acceptable. Limit each request to one proposed substitution.

B. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence, including:
   1. Statement of cause for substitution request.
   2. Identify product by specification section and article number.
   3. manufacturer's name, address, and phone number.
   4. List of fabricators, suppliers, and installers as appropriate.
   5. List of similar Projects where proposed products have been used, date of installation and names of Architect and Owner.
   6. Confirmation of regulatory approvals
   7. Product data, including drawings and product samples.
   8. Product Size, weight, configuration of connections, ports or vents.
   9. Fabrication and installation procedures.
   10. Comparison of the qualities of the proposed substitution with that specified.
   11. Cost data comparing the proposed substitution with the product specified.
   12. Any required license fees or royalties.
   13. Availability of maintenance service and source of replacement materials.
   14. Coordination information, including a list of changes or modifications needed to other items of work that will be required to accommodate Proposed substitution.
   15. Statement on the Substitution’s effect on the Construction Schedule.
   16. Written certification by the proposer that the Substitution is equal or better in every respect to that required by the contract Documents and that substitution will perform adequately in the application intended.
   17. Written certification that the proposer will pay for all permits, fees, and costs required to implement the substitution, and including waiver of all claims for additional costs or time extension which may subsequently become apparent, and reimbursement of Owner and Architect for review or redesign services associated with re-approval by authorities.

3.03 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

A. The Bid shall be based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated in the Notice Inviting Bids as “Owner's Standards” or "Sole Source" items as listed in the Owner's Special Conditions.

B. Architect will consider requests for substitutions of specified equipment and/or materials only when requests are received by Architect within fourteen (14) days prior to the date established for the receipt of bids, in conformance with Public Contract Code Section 3400. Do not request substitutions for products designated in the Notice Inviting Bids as “Owner's Standards”.

C. Architect will consider a substitution request only if request is made in strict conformance with provisions of this Section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in this section in the article titled PRODUCTS.

D. Burden of proof of merit of requested substitution is the responsibility of the proposer requesting the substitution.

E. It is the sole responsibility of the proposer requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.

F. When substitution is not accepted, provide specified product.

G. Substitute products shall not be included within the bid without written acceptance by Addendum.

H. No material changes permitted after the bid opening date. All alternate manufacturers and/or materials shall be submitted and approved in writing by the Architect prior to bid due date, except as otherwise provided in this section. Failure to comply with this requirement is grounds for disqualification of substitution.

3.04 LIMITATIONS ON SUBSTITUTIONS SUBMITTED AFTER THE AWARD OF THE CONTRACT

A. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated in the Notice Inviting Bids as “Owner's Standards” or "Sole Source" items as listed in the Owner's Special Conditions.

B. Architect will consider substitution requests received after the established date of the receipt of bids or contract award only when one or more of the following conditions are met and documented:
   1. Specified item fails to comply with regulatory requirement.

2. Specified item is no longer manufactured.
3. Specified item, through no fault of the Contractor, unavailable in the time frame required to meet project schedule.
4. Specified item, through subsequent information disclosure, will not perform properly or fit in designated space.
5. Manufacturer declares specified product to be unsuitable for use intended or refuses to warrant installation of product,
6. Substitution would be, in the sole judgment of the Architect, a substantial benefit to the Owner in terms of cost, time, energy conservation, or other consideration of merit.

C. Notwithstanding other provisions of this section and the above, the Architect may consider a request for substitution after the date of the receipt of bids or contract award, if in the sole discretion of the Architect, there appears to be just cause for such a request. The acceptance of such a late request does not waive any other specified requirement.

D. Architect will consider a request for substitution after the date of the receipt of bids or contract award only if request is made in strict conformance with provisions of this section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in this section in the article titled PRODUCTS.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
1. Review of shop drawings does not constitute acceptance of substitutions indicated or implied on shop drawings.
2. Substitutions will not be considered when requested or submitted directly by subcontractor or supplier.

F. Contractor's failure or inability to pursue the work promptly or coordinate activities properly shall not establish a cause for consideration of Substitutions.

G. Burden of proof of merit of requested substitution is the responsibility of the Contractor.

H. It is the sole responsibility of the Contractor to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.

I. When substitution is not accepted, provide specified product.

J. Substitute products shall not be provided without written acceptance by Change Order.

K. See Procurement and Contracting Section 00 72 13 General Conditions, Article 14.

3.05 GENERAL SUBSTITUTION LIMITATIONS

A. Instructions to Bidders and General Conditions of the Contract specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements related documents and procedures specified in this section.

B. Do not request substitutions after expiration of specified periods.

C. All Performance Requirements listed in Articles titled QUALITY ASSURANCE, DESIGN CRITERIA, PERFORMANCE REQUIREMENTS and WARRANTY must be met and provided with the Request For Substitution.

D. All Salient Physical Attributes must be met and documented with the Request For Substitution.

E. Document each request on Architect's Request For Substitution (RFS) form with complete data substantiating compliance of proposed substitution with Contract Documents. All requests for substitution must be submitted on the specified form which may be obtained from the Architect. Requests received without the Request Form will be rejected.

F. A request for substitution constitutes a representation that the submitter:
1. Waives all claims for additional costs or time extension which may subsequently become apparent.

G. Regulatory Requirements: Proposer requesting the substitution shall be responsible for obtaining all regulatory approvals required for proposed substitutions.
1. All regulatory approval shall be obtained for proposed substitutions prior to submittal of substitution request to Architect.

2. All costs incurred by the Owner in obtaining regulatory approvals for proposed substitutions, including the costs of the Architect and any authority having jurisdiction over the project shall be reimbursed to the Owner. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.

H. Substitution Submittal Procedure:
   1. Submit one original signature copy of only the Request For Substitution Form included in this Project Manual for consideration. Forms provided by proposer or other agencies or organizations are not acceptable. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence, including:
      a. Statement of cause for substitution request.
      b. Identify product by specification section and article number.
      c. manufacturer's name, address, and phone number.
      d. List of fabricators, suppliers, and installers as appropriate.
      e. List of similar Projects where proposed products have been used, date of installation and names of Architect and Owner.
      f. Confirmation of regulatory approvals
      g. Product data, including drawings and product samples.
      h. Product Size, weight, configuration of connections, ports or vents.
      i. Fabrication and installation procedures.
      j. Comparison of the qualities of the proposed substitution with that specified.
      k. Cost data comparing the proposed substitution with the product specified.
      l. Any required license fees or royalties.
      m. Availability of maintenance service and source of replacement materials.
      n. Coordination information, including a list of changes or modifications needed to other items of work that will be required to accommodate Proposed substitution.
      o. Statement on the Substitution’s effect on the Construction Schedule.
      p. Written certification by the proposer that the Substitution is equal or better in every respect to that required by the contract Documents and that substitution will perform adequately in the application intended.
      q. Written certification that the proposer will pay for all permits, fees, and costs required to implement the substitution, and including waiver of all claims for additional costs or time extension which may subsequently become apparent, and reimbursement of Owner and Architect for review or redesign services associated with re-approval by authorities.

3.06 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
   1. The Architect will accept or reject proposed subtitutions within fourteen (14) days of the receipt of the request. If addition documentation is requested, the Architect will render a decision after receipt of that additional documentation.

B. If a decision on a substitution cannot be made within the time allocated, the product specified shall be used.

C. No extension of bid period or contract time will be made for substitution review.

D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an Addendum.

E. Final acceptance of a substitution submitted after the award of the contract will be in the form of a Change Order.

F. Architect/Engineer shall be the judge of the acceptability of the proposed substitution. Architect’s decision on substitution requests is final and does not require documentation or justification.

G. Architect will notify Contractor in writing of decision to accept or reject request.
   1. Architect's decision following review of proposed substitution will be noted on the submitted form.

H. Rejection Of Substitution Request: Any of the following reasons shall be cause for rejection, all as determined by the Architect;

1. Vagueness or incompleteness of Substitution submittal,
2. Insufficient data, failure to meet specified requirements, (including warranty).
3. Qualification of the requirements of the Substitution Form, including modification of any of the requirements.

I. Substitute products shall not be ordered or installed without written acceptance.

J. Owner shall receive full benefit of any cost reduction as a result of any request for substitution.

K. Provide submittals for accepted substitutions in accordance with specified requirements of the respective section and provisions of Section 01-3300 - Submittal Procedures.
   1. An accepted substitution is not acceptable as a submittal. Provide separate submittals for each review.

3.07 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.08 CLOSEOUT ACTIVITIES

A. See Section 01-7800 - Closeout Submittals, for closeout submittals.

B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

3.09 ATTACHMENTS

A. Substitution Request Form referenced in this Section is bound following this Section.

END OF SECTION

SUBSTITUTION REQUEST FORM NO. _____

To: **AXIA Architects, 540 Mendocino Ave, Santa Rosa CA 95401**

Project: _____

We hereby submit for your consideration the following product instead of the specified item for the above project:

Section Paragraph Specified Item

_____

Proposed substitution:_____

Attach complete technical data, including laboratory tests, if applicable. Demonstrate compliance with all specified characteristics of specified item(s). Include complete description of all changes to Contract Documents required to implement proposed substitution. Fill in all blanks below and sign:

A. Does the substitution affect dimensions shown on the drawings?

_____

B. What affect does substitution have on other trades?

_____

C. Differences between proposed substitution and specified item?

_____

D. Manufacturer's guarantees of the proposed substitution and specified items are:

_____ Same _____ Different (explain on attachment)

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item. The undersigned waives all claims for additional costs or time resulting from this substitution. The undersigned will pay for all changes to the building design, including engineering and detailing costs caused by the requested substitution.

Submitted by:_____ Date: _____

Signature

Firm Address/City/Zip Telephone

Remarks:_____

For use by Architect: ____ Accepted ____ Accepted as noted
____ Not accepted ____ Received too late

By _____ Date_____

SECTION 01-2600
CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modification Submittals and Procedures.

B. Documentation of changes in Contract Sum and/or Contract Time.

C. Change procedures.

D. Execution of Change Orders.

E. Correlation of Contractor submittals.

1.02 RELATED SECTIONS

A. Document - Agreement: Monetary values of established Unit Prices.

B. Document - General Conditions: Governing requirements for changes in the Work, in Contract Sum and Contract Time and percentage allowances for Contractor's overhead and profit.

C. Section 01-2500 - Substitution Procedures: Substitution Procedures and Substitution Request Form.

D. Section 01-2900 - Payment Procedures: Payment Applications and Schedule of Values.

E. Section 01-3216 - Construction Progress Schedule: Documentation of Contract Time adjustments.

F. Section 01-6000 - Product Requirements: Product options.

1.03 MODIFICATION SUBMITTALS

A. Submit name of the individual in Contractor's firm authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The following submittals shall be made on forms prepared by the Architect:
   1. Request For Information Forms.
   2. Architect's Supplemental Instructions Forms.
   3. Request For Proposal Forms.
   4. Construction Change Directive Forms.
   5. Change Order Request Forms.
   6. Change Order Forms.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT SUM AND CONTRACT TIME

A. Maintain detailed records of work done. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

C. Provide additional data to support computations:
   1. Quantities of products, labor, and equipment.
   2. Taxes, insurance, and bonds.
   3. Overhead and profit.
   4. Justification for any change in Contract Time.
   5. Credit for deletions from Contract, similarly documented.

1.05 REQUEST FOR INFORMATION ("RFI")

A. An RFI is a written request prepared by the Contractor asking the Architect to provide additional information necessary to clarify an item which the Contractor feels is not clearly shown or called for in the drawings or specifications, or to address questions which have arisen under field conditions.

B. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

C. Submit RFI’s to Architect on the form included in the project manual. Submittals not conforming to this requirement will be returned.

D. Each RFI shall reference all the applicable Contract Documents including specification section, detail, page numbers, drawing numbers, and sheet numbers, etc. Contractor shall make suggestions and/or interpretations of the issue raised by the RFI.

E. The Architect will respond to a RFI within fourteen (14) calendar days after receiving such request. If the Architect cannot respond to the RFI within fourteen (14) calendar days, the Architect shall notify the Contractor, with a copy to the Inspector and the Owner, of the estimated amount of time that will be required to respond.

F. The Contractor may be invoiced by the Owner for any costs incurred for professional services, which shall be deducted from the next progress payment, for each RFI requesting an interpretation or decision of a matter where the information sought is equally available to the party making such request.

1.06 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS ("ASI")

A. An ASI is a written supplemental instruction issued and signed by the Architect for minor changes to the Work, without change in Contract Sum or Contract Time.

B. An ASI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

C. Architect Authority;
   1. The Architect has authority to order minor changes in the Work not involving any adjustment in the Contract Sum, an extension of the Contract Time, or a change which is inconsistent with the intent of the Contract Documents.
   2. The Contractor shall carry out such written orders promptly.

1.07 REQUEST FOR PROPOSAL ("RFP")

A. An RFP is a written request prepared by the Architect asking the Contractor to submit to the Owner and the Architect an estimate of the effect of a proposed change on the Contract Price and the Contract Time.

B. An RFP is a request for pricing only and is a not directive to proceed with the proposed change or to modify the Contract Cost, Contract Time, or the Contract Documents.

C. An RFP shall contain sufficient information, including any necessary drawings and specifications, to enable Contractor to provide the cost breakdowns.

D. Overtime or Premium time work is not authorized for any proposal unless specifically stated otherwise in the proposal description.

E. Owner or Architect may initiate changes by submitting a proposal request to Contractor. Request will include:
   1. Detailed description of the change, products and location of the change in the project.
   2. Supplementary or revised drawings and specifications.
   3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.
   4. A specific period of time during which the requested price will be considered valid.
   5. Such request is for information only and is not an instruction to execute the changes nor to stop work in progress.

F. The Contractor shall not be entitled to Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

1.08 CONSTRUCTION CHANGE DIRECTIVE ("CCD")

A. Definition: A CCD is a written order prepared by the Architect and signed by the Owner and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both.

B. The Owner may by issuing a CCD, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, with the Contract Sum and Contract Time being adjusted accordingly.

C. A CCD shall be used in the absence of agreement on the terms of a CO.

D. Pricing for CCD’s shall be established in accordance with methods specified in General Conditions.

1.09 CHANGE ORDER REQUEST ("COR")

A. Definition: A COR is a written request prepared by the Contractor asking the Owner and the Architect to incorporate a proposed change called for in an RFP or a claim into a Change Order.

B. Change Format: Include all breakdowns as required in I. Format for Change Order Request. Incomplete or improperly prepared COR's will be returned for additional documentation or correction.

1. All proposed change orders requests shall be submitted on forms included in this project manual. Change Order Requests submitted on the Contractor's forms, altered, modified, or incomplete forms will be deemed waived.

C. Terms of Change Order Request: Provide to the Owner, via the Architect, within ten (10) days or such lesser period of time as specifically directed by the terms of a given Request For Proposal, the following:
   1. Full estimate of the cost of the proposed Change upon the Contract Price and the actual cost of construction, include a complete itemized cost breakdown of all labor and material showing the following required to implement the change: actual quantities and unit prices of materials, labor hours, wage rates and all other costs and burdens as may apply.
   2. The effect upon the Contract Time of such Change.
   3. No reservation of rights for future cost or time adjustments will be permitted for COR's. Each COR shall include full and complete compensation for the described change. Submittal of a COR for any proposed change constitutes Contractor's express waiver of claim for added costs or time for that change. Refer to further waiver requirements specified below in the 1.10 CHANGE ORDERS.
   4. All changes in costs and time shall be valid for a minimum of thirty (30) days, and longer as specifically directed by the terms of a given Request For Proposal.

D. Contractor's Certification: All proposed change order requests, including those originated by the Contractor or those filed as claims, must include the following certification by the Contractor:
   1. "The undersigned Contractor approves the foregoing as to the changes in work, if any, and as to the contract price specified for each item and as to the extension of time allowed, if any, for completion of the project as stated herein, and agrees to furnish all labor, materials, and service and to perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of claims which have no basis in fact or which Contractor knows are false are made at the sole risk of the Contractor and may be a violation of the False Claims Act, as set forth in Government Code Sections 12650 et seq. It is understood that the changes to the Contract Documents set forth herein shall only be effective upon approval by the Owner.
   2. "It is expressly understood that the value of the extra work or changes expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the project or resulting from delay to the project. Any costs, expenses, damages, or time extensions not included herein are deemed waived."

E. Changes in Contract Time: Each COR shall include all additional time required to complete the Project. Provide with each COR full documentation of all schedule changes necessary to implement the proposed change, in accordance with the documentation requirements specified in Section 01-3216 - Construction Progress Schedule .
   1. Additional time requested shall not be the number of days to make the proposed change, but shall be based only upon the impact to the Project Schedule as defined in the General Conditions and related Division 01 of the Specifications.
   2. Failure to fully document a request for additional time for work in a given Change Request Request constitutes Contractor's express waiver of additional time for that change and no time extension will be made for that change.

F. Methods of Contract Cost Change Determination: The amount of increase or decrease in the Contract Price described in a COR, if any, shall be determined in one or more of the following ways as applicable to a specific situation:
   1. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
   2. Unit prices stated in the Contractor's original bid, the Contract Documents, or subsequently agreed upon between the Owner and the Contractor;
   3. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
   4. By cost of material and labor and percentage of overhead and profit.

G. Determination of Costs by Material and labor and Percentage of overheard and profit: If the value is determined by this method the following requirements shall apply:
   1. Daily Reports by Contractor.

a. General: At the close of each working day, the Contractor shall submit a daily report to the Inspector, on forms approved by the Owner, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, the location of the Work, and for other services and expenditures when authorized concerning extra work items. An attempt shall be made to reconcile the report daily, and it shall be signed by the Inspector and the Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through the Contractor.
b. Labor: Show names of workers, classifications, and hours worked.
c. Materials: Describe and list quantities of materials used.
d. Equipment: Show type of equipment, size, identification number, and hours of operation, including, if applicable, loading and transportation.
e. Other Services and Expenditures: Describe in such detail as the Owner may require.

H. Basis for Establishing Costs for Change Orders:
1. Labor will be the actual cost for wages prevailing locally for each craft or type of workers at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements.
2. Labor Unit Productivity for a given task or trade shall not be calculated at a lesser productivity than that published by industry references as follows:
a. Mechanical Trades: SMACNA productivity rates increased by 30 percent (30 percent greater productivity for a given task than specified by the reference).
b. Electrical and Division 16 Trades: NECA productivity rates increased by 30 percent (30 percent greater productivity for a given task than specified by the reference).
c. All Other Trades: Lee Saylor Estimating Guide productivity using the “Open Shop Rate” for both labor and materials.
3. Only costs for direct labor related to the Changed or Added Work shall be included. Supervision, Project Manager, Project Engineer, Assistant Superintendent, research and preparation of Change Order Requests and other similar classifications shall be included in the calculation for overhead and not listed separately as line items.
4. The use of a labor classification, which would increase the extra work cost, will not be permitted unless the Contractor establishes the necessity for such additional costs.
5. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
6. Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery.
7. The Owner reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the Owner.
8. Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $100 or less.
9. Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the work is performed.
10. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.
11. Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the Owner than holding it at the work Site, it shall be returned unless the Contractor elects to keep it at the work Site at no expense to the Owner.
12. Other Items. The Owner may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.

13. Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the Owner may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.
14. Overhead. Overhead, including direct and indirect costs shall be included in the line item amount shown in the Article FORMAT FOR PROPOSED COST CHANGE, shall be submitted with the COR and shall include all of the following:
    a. Home office overhead,
    b. Off-Site supervision,
    c. Change Order and Change Order Request preparation/negotiation/research,
    d. Schedule delays,
    e. Project interference and disruption,
    f. Additional guaranty and warranty durations,
    g. On-Site supervision, additional temporary protection,
    h. Additional temporary utilities,
    i. Additional material handling costs,
    j. Additional safety equipment costs.
15. Exclusions: No item included in the paragraph titled "Overhead" above, shall be submitted or included as part of another line item, or as a separate line item. Costs presented for any such item so listed shall be deemed waived.

I. Format for Change Order Request: The format shall be prepared by the Contractor to communicate proposed additions and deductions to the Contract. This format is indicated on the Change Order Request Form provided as an attachment to this Section.

J. The value of such extra work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the project or resulting from delay to the project. Any costs or expenses not included in the COR are deemed waived.

K. Changes may be made by Owner by an appropriate written Change Order, or, at the Owner's option, such changes shall be implemented immediately upon the Contractor's receipt of an appropriate written directive.

L. Architect's Review: Architect will review each Change Order Request and make a written recommendation to the Owner to accept or reject the proposed pricing.

M. Notice required for Contractor-Initiated Change Order Requests: To make a claim for an increase in the Contract Price, or any extension in the Contract Time for completion, Contractor shall give the Owner and the Architect written notice thereof within ten (10) days after the occurrence of the event giving rise to the claim, together with detailed estimates of the impact on the Contract Price and/or the Contract Time.
    1. This notice shall be given by the Contractor before proceeding to execute the Work.
    2. No claim shall be considered unless made in accordance with this Article; however, the mere presentation of such claim shall not establish the validity of the cause giving rise to such claim, or of the extension of the Contract Time, and/or the increase in the Contract Price.
    3. Contractor shall proceed to execute the Work even though the adjustment has been rejected or not agreed upon.
    4. Failure to provide the required notice within the stated time constitutes an express waiver of claim.
    5. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a Change Order.

1.10 CHANGE ORDERS ("CO")

A. No Changes Without Authorization;
    1. There shall be no change whatsoever in the drawings, specifications, or in the Work without an executed Change Order or an order by the Architect for a minor change in the Work as herein provided.
    2. Owner shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the same shall have been authorized by and the cost thereof approved in writing by Change Order.
    3. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order.

4. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications.
5. Notwithstanding anything to the contrary in this Article, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the Owner, the Architect, and the Contractor.

B. Owner will designate in writing the person who is authorized to execute change orders.

C. Contractor may initiate changes by submitting a written notice to Architect containing:
1. Description of the proposed changes.
2. Statement of the reason for making the changes.
3. Statement of the effect on the contract sum and the contract time.
4. Statement of the effect on the work of separate contractors.
5. Documentation supporting any change in contract sum or contract time as appropriate.

D. A Change Order is a written instrument prepared by the Architect and signed by the Owner, the Contractor, the Architect, stating their agreement upon all of the following:
1. a change in the Work;
2. the amount of the adjustment in the Contract Sum, if any; and
3. the extent of the adjustment in the Contract Time, if any.

E. The following paragraphs shall be a part of each Change Order:
1. The compensation (time and cost) set forth in this Change Order comprises the total compensation due the Contractor, all Subcontractors and all Suppliers, at all tiers, for the work or change defined in the Change Order, including all impact on unchanged work. By signing this Change Order the Contractor acknowledges and agrees, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, that the stipulated compensation includes payment for all work contained in the Change Order, plus all payment for the interruption of schedules, extended and unabsorbed overhead costs, delay, disruption, and all impact, ripple impact or cumulative impact on all other work under this Contract. The signing of the Change Order indicates that the Change Order constitutes full mutual accord and satisfaction for the changed work, and that the time and cost under the Change Order constitutes the total equitable adjustment owed the Contractor, all Subcontractors and all Suppliers, at all tiers, as a result of the change. The Contractor, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, agrees to waive all rights, without exception or reservation of any kind whatsover to file any further claim related to this Change Order. No further claim or request for equitable adjustment of any kind whatsover shall arise out of or as a result of this change or the impact of this change on the remainder of the work under this Contract.
2. By execution of this Change Order the Contractor specifically waives, relinquishes, and releases any and all rights under Section 1542 of the California Civil Code which reads as follows: "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR."

1.11 EXECUTION OF CHANGE ORDERS

A. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

B. Transmittal and Distribution:
1. Architect will prepare and execute the Change Order and forward to Contractor.
2. Contractor shall execute the Change Order and forward to Architect. Architect will forward Change Order to Owner.
3. Owner will execute the Change Order and forward to the Architect.

1.12 CORRELATION OF CONTRACTOR SUBMITTALS

A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.

B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 PROJECT FORMS

A. Project Forms referenced in this section are bound following this Section.

B. See also Exhibit "A" in Procurement and Contracting Requirements.

END OF SECTION

[Contractors Logo]

REQUEST FOR INFORMATION

RFI #: 000

RFI Topic: Sample Title

Project:	**Owner:**	**Contractor:**	**Via:**	Email
Project Name	District Name	Company Name	Architect:	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 95000	City, CA 95000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No:	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-00000	1000		Jan 1, 2020

Drawing Ref:

Specification Ref:

Contractor's Question:

Contractor's Proposed Solution:

Contractors Signature: _____ **Date:** _____

Conditions: Perform Work in accordance with the following supplemental instructions which are issued in accordance with the Contract Documents, without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement of these instructions that there will be no change in the Contract Sum or Contract Time.

Architects Response:

Attachments:

Architects Signature: _____ **Date:** _____

AXIA ARCHITECTS

PO BOX 1000
SANTA ROSA, CA 95402

540 MENDOCINO AVE
SANTA ROSA, CA 95401

ARCHITECTS SUPPLEMENTAL INSTRUCTION

ASI #: 000

ASI Topic: Sample Title

Project:	**Owner:**	**Contractor:**	**Via:**	Email
Project Name	District Name	Company Name	Architect:	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 95000	City, CA 95000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No:	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-00000	1000		Jan 1, 2020

Conditions: Perform Work in accordance with the following supplemental instructions which are issued in accordance with the Contract Documents, without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement of these instructions that there will be no change in the Contract Sum or Contract Time.

Architects Instructions:

Refer to the attached (sheet/pages) for supplemental information to the Contract Documents regarding _____.

Attachments:

(List of pertinent attachments, ASK-01, ESK-01, …)

Architects Signature: _____ **Date:** _____

AXIA ARCHITECTS

PO BOX 1000
SANTA ROSA, CA 95402

540 MENDOCINO AVE
SANTA ROSA, CA 95401

REQUEST FOR PROPOSAL

RFP #: 000

RFP Topic: Sample Title

Project:	**Owner:**	**Contractor:**	**Via:**	Email
Project Name	District Name	Company Name	Architect:	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 95000	City, CA 95000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No:	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-00000	1000		Jan 1, 2020

THIS IS NOT A CHANGE ORDER NOR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED.
Submit an itemized proposal for changes in the Contract Sum or Contract Time for proposed modifications described below within ten (10) days of date written above or notify the Architect in writing of the date proposal will be submitted, (not to exceed 30 days).

Overtime or Premium time work is not authorized for this proposal unless specifically stated otherwise below.

Conditions and Disclaimer: All proposals subject to the following: The compensation (time and cost) set forth in response to this proposal comprises the total compensation due the Contractor, all Subcontractors and all Suppliers, at all tiers, for the work or change defined in the Proposal, including all impact on unchanged work. By submitting this proposal the Contractor acknowledges and agrees, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, that the stipulated compensation includes payment for all work contained in the proposal, plus all payment for the interruption of schedules, extended and unabsorbed overhead costs, delay, disruption, and all impact, ripple impact or cumulative impact on all other work under this Contract. The submittal of the proposal indicates that the proposal constitutes full mutual accord and satisfaction for the changed work, and that the time and cost under the proposal constitutes the total equitable adjustment owed the Contractor, all Subcontractors and all Suppliers, at all tiers, as a result of the proposal. The Contractor, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, agrees to waive all rights, without exception or reservation of any kind whatsoever to file any further claim related to this proposal. No further claim or request for equitable adjustment of any kind whatsoever shall arise out of or as a result of this change or the impact of this change on the remainder of the work under this Contract.

Architects Request:

Refer to the attached (sheet/pages) for supplemental information to the Contract Documents and provide cost regarding _____.

Attachments:

(List of pertinent attachments, ASK-01, ESK-01, …)

Architects Signature: _____ **Date:** _____

AXIA ARCHITECTS

PO BOX 1000
SANTA ROSA, CA 95402

540 MENDOCINO AVE
SANTA ROSA, CA 95401

CONSTRUCTION CHANGE DIRECTIVE

CCD #: 000

CCD Topic: Sample Title

Project:	**Owner:**	**Contractor:**	**Via:**	Email
Project Name	District Name	Company Name	Architect:	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 95000	City, CA 95000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No:	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-00000	1000		Jan 1, 2020

INSTRUCTIONS: Contractor shall promptly proceed with the change in the Work described below and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time within ten (10) days of date written above.

Overtime or Premium time work is not authorized for this proposal unless specifically stated otherwise below.

Conditions and Disclaimer: If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs shall be limited to the following:

1) Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

2) Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

3) Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

4) Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

5) Additional costs of supervision and field office personnel directly attributable to the change.

The compensation (time and cost) set forth in response to this directive comprises the total compensation due the Contractor, all Subcontractors and all Suppliers, at all tiers, for the work or change defined in the directive, including all impact on unchanged work. By submitting this directive the Contractor acknowledges and agrees, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, that the stipulated compensation includes payment for all work contained in the directive, plus all payment for the interruption of schedules, extended and unabsorbed overhead costs, delay, disruption, and all impact, ripple impact or cumulative impact on all other work under this Contract. The submittal of the directive indicates that the directive constitutes full mutual accord and satisfaction for the changed work, and that the time and cost under the directive constitutes the total equitable adjustment owed the Contractor, all Subcontractors and all Suppliers, at all tiers, as a result of the directive. The Contractor, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, agrees to waive all rights, without exception or reservation of any kind whatsoever to file any further claim related to this directive. No further claim or request for equitable adjustment of any kind whatsoever shall arise out of or as a result of this change or the impact of this change on the remainder of the work under this Contract.

Architects Directive:

Refer to the attached (sheet/pages) for supplemental information to the Contract Documents regarding _____.

Proposed Adjustments:

1) The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price:

- □ Lump Sum [increase/ decrease] of $ _____
- □ Unit Price of $_____ per _____
- □ As follows: Per AIA A101 Owner/Contractor Agreement

2) The Contract Time is proposed to [be adjusted/ remain unchanged]. The proposed adjustment, if any, is an [increase/ decrease] of _____ days.

Attachments:

(List of pertinent attachments, ASK-01, ESK-01, …)

Architects Signature: _____ **Date:** _____

Contractors Signature: _____ **Date:** _____

Owners Signature: _____ **Date:** _____

[Contractors Logo]

CHANGE ORDER REQUEST

COR #:
COR TOPIC:

Project:	**Owner:**	**Contractor:**	**Via**	Email
Project Name	District Name	District Name	Architect	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 90000	City, CA 90000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No.	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-000000	1000		January 1, 2020

Alteration or revision of this Document, it's terms, or the Certification below is deemed a waiver of any costs, expenses, damages, or time extensions requested.

DESCRIPTION:
[Write a detailed description of the COR]

MODIFICATION TO CONTRACT SUM: $ -

MODIFICATION TO CONTRAACT TIME: 0 DAYS

CONTRACTORS CERTIFICATION AND WAIVER OF CLAIMS:
The undersigned Contractor approves the foregoing as to the changes in work, if any, and as to the contract price specified for each item and as to the extension of time allowed, if any, for completion of the project as stated herein, and agrees to furnish all labor, materials, and service and to perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of claims which have no basis in fact or which Contractor knows are false are made at the sole risk of the Contractor and may be a violation of the False Claims Act, as set forth in Government Code Sections 12650 et seq. It is understood that the changes to the Contract Documents set forth herein shall only be effective upon approval by the governing board of the District."

It is expressly understood that the value of the extra work or changes expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the project or resulting from delay to the project. All costs, expenses, damages, or time extensions not included in this Request are deemed waived by the Contractor.

Contractor's Signature: _____ **Date:** _____

ARCHITECTS ACTION:

- ☐ Review and Comment Only, Forward to Owner
- ☐ REJECT - Not in Proper Form
- ☐ REJECT - Received Too Late
- ☐ REJECT - Inadequate Back-Up

CHANGE ORDER REQUEST

WORKSHEET

COR #: 0

COR TOPIC: 0

Line	TITLE:	ADDED	CREDIT
		ALL LINES SHALL BE FILLED IN (zero values acceptable).	
	GENERAL CONTRACTOR'S WORK		
1	Material (attach itemized quantity and unit cost excluding sales tax)	$ -	$ -
2	Labor (attach itemized hours and rates)	$ -	$ -
3	Equipment (attach invoices)	$ -	$ -
4	**Subtotal**	**$ -**	**$ -**
5	General Contractor's Overhead and Profit, not to exceed fifteen percent (15%) of line 4.	$ -	$ -
6	**Subtotal**	**$ -**	**$ -**
7	Liability and Property Damage Insurance, Worker's Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed twenty-five percent (25%) of line 2.	$ -	$ -
8	**Subtotal** General Contractor Work (sum of lines 4, 6, & 7.)	**$ -**	**$ -**
	SUBCONTRACT WORK (Provide separate breakdown for each subcontract)*		
9	Material (attach itemized quantity and unit cost excluding sales tax)	$ -	$ -
10	Labor (attach itemized hours and rates)	$ -	$ -
11	Equipment (attach invoices)	$ -	$ -
12	**Subtotal**	**$ -**	**$ -**
13	Subcontractor's overhead and profit on work performed by Sub-contractor, not to exceed fifteen percent (15%) of line 12.	$ -	$ -
14	**Subtotal**	**$ -**	**$ -**
15	General Contractor's Overhead and Profit on subcontract work, not to exceed ten percent (10%) of line 14.	$ -	$ -
16	Liability and Property Damage Insurance, Worker's Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed twenty-five percent (25%) of line 10.	$ -	$ -
17	**Total** of Subcontract Work (sum of lines 14, 15 and 16)	**$ -**	**$ -**
18	**Subtotal** General Contractor and Subcontractor Work (sum of lines 8 and 17.)	$ -	$ -
19	Applicable Taxes (itemized by levy and by contract)	$ -	$ -
20	**Subtotal** (sum of lines 18 and 19)	**$ -**	**$ -**
21	Bond not to exceed two percent (2%) of line 20.	$ -	$ -
22	**TOTAL** (sum of lines 20 and 21.)	**$ -**	**$ -**

* Attach additional copies of this page as required to summarize additional subcontracts.

AXIA ARCHITECTS

PO BOX 1000
SANTA ROSA, CA 95402

540 MENDOCINO AVE
SANTA ROSA, CA 95401

CHANGE ORDER

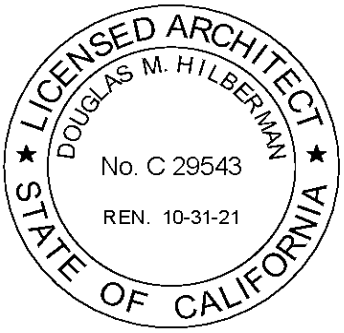
CO #:

Project:	**Owner:**	**Contractor:**	**Via**	Email
Project Name	District Name	District Name	Architect	Yes
Site Name	Contact Name	Contact Name	Owner	Yes
Project Address	Address	Address	Contractor	Yes
City, CA 90000	City, CA 90000	City, CA 90000	Consultant	No
	email@gmail.com	email@gmail.com	Inspector	No

DSA/Permit No.	**Arch Job #:**	**Cont Job #:**	**Date Issued:**
01-000000	1000		January 1, 2020

You are directed to make the following changes in this contract: (Refer to Attached Summary, next page)

Architects Seal:



The original Contract Sum was	$ 10,000,000.00
Net change by previous Change Orders	$ -
The Contract Sum prior to this Change Order	$ 10,000,000.00
The Contract Sum will be UNCHANGED by this Change Order in the amount of	$ -
The new Contract Sum including this Change	**$ 10,000,000.00**
The Contract Time will be UNCHANGED by this Change Order in the amount of	0 Days
The Date of Completion as of the date of this Change Order:	**January 1, 2020**

Not valid until signed by both the Owner and the Architect.

Signature of the contractor indicates his approval herewith, including any adjustment in the Contract Sum or Contract Time. The compensation (time and cost) set forth in this Change Order comprises the total compensation due the Contractor, all Subcontractors and all Suppliers, at all tiers, for the work or change defined in the Change Order, including all impact on unchanged work. By signing this Change Order the Contractor acknowledges and agrees, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, that the stipulated compensation includes payment for all work contained in the Change Order, plus all payment for the interruption of schedules, extended and unabsorbed overhead costs, delay, disruption, and all impact, ripple impact or cumulative impact on all other work under this Contract. The signing of the Change Order indicates that the Change Order constitutes full mutual accord and satisfaction for the changed work, and that the time and cost under the Change Order constitutes the total equitable adjustment owed the Contractor, all Subcontractors and all Suppliers, at all tiers, as a result of the change. The Contractor, on behalf of themselves, all Subcontractors and all Suppliers, at all tiers, agrees to waive all rights, without exception or reservation of any kind whatsoever to file any further claim related to this Change Order. No further claim or request for equitable adjustment of any kind whatsoever shall arise out of or as a result of this change or the impact of this change on the remainder of the work under this Contract.

By execution of this Change Order the Contractor specifically waives, relinquishes, and releases any and all rights under Section 1542 of the California Civil Code which reads as follows:
A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY EFFECTED HIS SETTLEMENT WITH THE DEBTOR.

AXIA ARCHITECTS

PO BOX 1000
SANTA ROSA, CA 95402

540 MENDOCINO AVE
SANTA ROSA, CA 95401

						Calendar Days Added to Contract			
No.	Reference:	Description:	C.O.R. #	Request by:	Amount	Doc	M1	M2	M3
1.					$ -				
2.					$ -				
3.					$ -				
4.					$ -				
5.					$ -				
				TOTAL:	$ -	0	0	0	0

Architects Signature: _____ **Date:** _____

Owners Signature: _____ **Date:** _____

Contractors Signature: _____ **Date:** _____

SECTION 01-2900
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 DESCRIPTION

A. Payment Procedures:
   1. Submittals.
   2. Schedule of Values.
   3. Applications for Payment.
   4. Conditions of Payment.
   5. Final Payment.
   6. Contractor Submittals.

B. Related Documents
   1. Document - Contract (Agreement Between Owner and Contractor).
   2. Document - General Conditions: Progress Payments, Retainages and Final Payment., Applicability of Labor Compliance Program.
   3. Section 01-1100 - Summary of Work.
   4. Section 01-2600 - Contract Modification Procedures.
   5. Section 01-3000 - Administrative Requirements.
   6. Section 01-3100 - Project Management and Coordination.
   7. Section 01-3216 - Construction Progress Schedule.
   8. Section 01-3300 - Submittal Procedures.
   9. Section 01-7700 - Closeout Procedures.

1.02 SUBMITTALS

A. On forms approved by the Owner, the Contractor shall furnish the following:
   1. Within ten (10) days of the award of the Contract, a detailed breakdown of the Contract Price (Schedule of Values) for each Project or Site;
   2. Within ten (10) days of the award of the Contract, a schedule of estimated monthly payment requests (cash flow) due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the Owner may require;
   3. Within ten (10) days, the name, address, telephone number, fax number, license number, and classification of all of its Subcontractors and of all other parties furnishing labor, material, or equipment for its Contract, along with the amount of each such subcontract or the price of such labor, material, and equipment needed for its entire portion of the Work.
   4. Five (5) days prior to the submission of a pay request, an itemized breakdown of work done for the purpose of requesting partial payments;
   5. Five (5) days prior to the submission of a pay request, the minutes of Coordination Meetings per as specified in related section.
   6. Five (5) days prior to the submission of a pay request, updated Construction Progress Schedule as specified in related section..

B. Owner Approval Required:
   1. The Owner shall review all submissions received pursuant to this Section in a timely manner. All submissions must be approved by the Owner before becoming the basis of any payment.

C. Submit itemized applications typed on AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet.

D. Provide itemized data on continuation sheet:
   1. Format, schedules, line items and values: Those of the Schedule of Values accepted by Architect.

E. Obtain signature of Owner's Inspector on Form AIA G703 with each application prior to submittal to Architect.

1.03 SCHEDULE OF VALUES

A. The Schedule of Values shall be used only as the basis for the Contractor’s Progress Payments.

B. Upon request of the Architect, support the values with data which will substantiate their correctness.

C. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
   1. Contractor's construction schedule.
   2. Application for Payment form.
   3. List of subcontractors
   4. List of products.
   5. Liest of principal suppliers and fabricators.
   6. Schedule of submittals.

D. Form of Schedule: Submit schedule on Form AIA G703. Identify schedule with;
   1. Project Name: 421 E Street Tenant Improvement and Location.
   2. Name of Owner: Sonoma Clean Power.
   3. Architect: AXIA Architects and Architect's Project Number: Design Professional's Project Number .
   4. Name and address of Contractor.
   5. Contract designation.
   6. AHJ Permit Number: BLD__-____.
   7. Date of submission.

E. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. Modify detail as requested by Architect.

F. Follow the table of contents of this Project Manual as the form for listing component items.
   1. Identify each line item with the number and title of the respective section of the specifications.
   2. Include separate line items for each section of Division 01.

G. For each major line item which has installed value of more than $10,000.00, list sub-values of major products or operations under the item.

H. For the various portions of the Work:
   1. Itemize separate line item cost for each of following general cost items (if provided):
      a. Performance and payment bonds.
      b. Field supervision and layout.
      c. Temporary facilities and controls.
      d. Mobilization.
   2. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
   3. For items on which progress payments will be requested for stored materials, break down the value into:
      a. The cost of the materials, delivered and unloaded, with taxes paid.
      b. The total installed value.

I. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 APPLICATIONS FOR PAYMENT

A. Procedure: On or before the twenty-fifth (25th) day of each calendar month during the progress of the portion of the Work for which payment is being requested, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized if the project is subject to a Labor Compliance Program, or if directed by the Owner for projects not subject to as Labor Compliance Program, and supported by all of the following, or such portion thereof as Architect requires:
   1. The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
   2. The amount being requested with the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;
   3. The balance that will be due to each of such entities after said payment is made;
   4. A certification that the Record Drawings and Annotated Specifications are current;
   5. The additions to and subtractions from the Contract Price and Time;
   6. A summary of the retentions (each Application shall provide for retention, as set forth above, of the amount due until completion of the Work of the Contractor and Final Acceptance thereof by Owner);

7. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the Owner may require from time to time;
8. The percentage of completion of the Contractor's Work by line item; and
9. A statement showing all payments made by the Contractor for labor and materials on account of the Work covered in the preceding Application for Payment.

B. Application Form - AIA G702:
   1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
   2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
   3. Execute certification with signature of a responsible officer of Contract firm.

C. Continuation Sheets - AIA G703:
   1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
   2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
   3. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
      a. List by Change Order Number, and description, as for an original component item of work.

D. Purchase of Materials and Equipment: The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from Owner. Therefore, payment by the Owner for stored material shall be made only in unusual circumstances where the Architect specifically recommends, and Owner specifically approves, the payment in writing.
   1. Payments made on account of materials and equipment not incorporated in the Work shall be conditioned upon submission by the Contractor, Subcontractor, or vendor of:
      a. Bills of sale and such other documents satisfactory to the Architect and the Owner to establish the Owner's title to such materials or equipment free of all liens and encumbrances, and otherwise protect the Owner's interest, and:
      b. Including, without limitation, provision of applicable insurance and transportation to the Site.
   2. All stored items shall be inventoried, specified by identification numbers (if applicable), released to the Owner by sureties of the Contractor and the Subcontractor and delivered and suitably stored at the Site or at some other location agreed upon in writing by the Owner, if stored off-Site, stored only in a bonded warehouse.

E. Warranty of Title: The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work.

F. Progress Payments:
   1. Payments to Contractor
      a. Within thirty (30) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety percent (95%) of the value of the Work performed up to the last day of the previous month, less the aggregate of previous payments. The value of the Work completed shall be an estimate only, no inaccuracy or error in said estimate shall operate to release the Contractor, or any bondsman, from damages arising from such Work or from enforcing each and every provision of this Contract, and the Owner shall have the right subsequently to correct any error made in any estimate for payment.
         1) See Procurement & Contracting Requirements Section 00 72 13 - General Conditions, Article 43, for Progress Estimates and Payment and retention percentage.

b. The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for work performed, so long as any lawful or proper direction given by the Owner concerning the Work, or any portion thereof, remains uncomplied with. At any time after fifty percent (50%) of the Work has been completed, if the Owner, by action of its governing body, finds that satisfactory progress is being made, the Owner may make any of the remaining payments in full for actual work completed or may withhold any amount up to ten percent (10%) thereof as the Owner may find appropriate based on the Contractor's progress.

2. Payments to Subcontractors: No later than ten (10) days after receipt, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.
3. Percentage of Completion or Payment Information: The Owner will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor, and action taken thereon by the Owner, on account of portions of the Work done by such Subcontractor.
4. No Obligation of Owner for Subcontractor Payment: The Owner shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.
5. Payment to Suppliers: Payment to material or equipment suppliers shall be treated in a like manner to that provided in this Article for Subcontractors.
6. Payment Not Constituting Approval or Acceptance: An approved Request for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of work not in accordance with the Contract Documents.
7. Joint Checks: Owner shall have the right, if necessary for the protection of the Owner, to issue joint checks made payable to the Contractor and Subcontractors and/or material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the Owner and a Subcontractor of any tier, any obligation from the Owner to such Subcontractor, or rights in such Subcontractor against the Owner.

G. Labor Compliance: A determination regarding whether this project is subject to a labor compliance program, as described in subdivision (b) of Section 1771.5 of the Labor Code is included in the Instructions to Bidders. Further information is contained in the General Conditions. The Owner is responsible for enforcement of the terms and conditions of it's Labor Compliance Program.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. Each and every Application for Payment shall be accompanied with the complete substantiating data specified in this Section in the article titled CONDITIONS OF PAYMENT.

B. When the Owner or the Architect requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:
   1. Project.
   2. Application number and date.
   3. Detailed list of enclosures.
   4. For stored products:
      a. Item number and identification as shown on application.
      b. Description of specific material.

1.06 COMPLETION AND FINAL PAYMENT

A. Final Inspection:
   1. Contractor shall immediately upon receipt of the Punch List, initiate work on all items therein related to Contractor's Work and diligently complete the same. Upon receipt of Contractor's written notice that all of the Punch List items have been fully completed and the Work is ready for final inspection and acceptance, Architect shall inspect the Work and shall submit to Contractor and Owner a final inspection report noting the work, if any, required in order to complete the Work in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the Punch List items not yet satisfactorily completed.

2. Upon completion of the Work contained in the final inspection report, the Contractor shall so notify the Owner, who shall again inspect such Work. If the Owner finds the Work contained in such final inspection report acceptable under the Contract Documents and, therefore, the Work fully completed, it shall so notify Contractor, who shall then submit to the Architect its final Application for Payment.
3. Upon receipt and approval of such final Application for Payment, the Architect shall issue a final Certificate of Payment stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The Owner shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the Owner shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from Owner, pay the amounts due Subcontractors.

B. Retainage: The retainage, less any amounts disputed by the Owner or which the Owner has the right to withhold, shall be paid after approval of the Owner of the Architect's Certificate of Payment referred to in paragraph "Final Inspection" of this Article, described above, after the satisfaction of the conditions set forth in paragraph "Procedures for Application for Final Payment" of this Article, described below, and after thirty-five (35) days after the acceptance of the Work and recording of the Notice of Completion by Owner. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents.

C. Procedures for Application for Final Payment: The Application for Final Payment shall be accompanied by the same details as set forth in Article titled APPLICATIONS FOR PAYMENT, and in addition, all of the following conditions must be fulfilled:
1. A full and final waiver of all liens in connection with the Work shall be submitted by Contractor, including a release of lien in recordable form, together with (to the extent permitted by law) a copy of the full and final waiver of all liens, including a release of lien in recordable form, in connection with the Work obtained by Contractor from each person to receive a payment thereunder, which waivers of lien shall be in a form as approved by Owner.
2. The Contractor shall have made, or caused to have been made, all corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of Owner required under the Contract.
3. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.
4. The Contractor shall deliver to the Owner reproducible final Record Drawings and Annotated Specifications showing the Contractor's Work "as built," with the Contractor's certification of the accuracy of the Record Drawings and Annotated Specifications, all guarantees, and operation and maintenance instructions for equipment and apparatus.
5. Architect shall have issued a Final Certificate of Payment.
6. The Contractor shall have delivered to the Owner all manuals and materials required by the Contract Documents.
7. The Contractor shall have removed, or caused to be removed, all waste materials and rubbish from and about the Site, as well as all tools, construction equipment, machinery, surplus material, scaffolding equipment, and any other similar materials of the Contractor or any subcontractor, shall have cleaned, or caused to be cleaned, all glass surfaces, and shall have left the Work broom-clean, except as otherwise provided in the Contract Documents.

D. Fill in Application form as specified for progress payments and use Continuation Sheet for presenting the final statement of accounting.

E. Fill out and submit with application for final payment:
1. AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
2. AIA G706A - Contractor's Affidavit of Release of Liens.
3. AIA G707 - Consent of Surety Company to Final Payment.
4. Release Form 3 Conditional Waiver and Release Upon Final Payment.

F. Fill out and submit to Owner prior to receipt of final payment: Release Form 4 Unconditional Waiver and Release Upon Final Payment

1.07 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to Architect at the times stipulated in the Agreement, and not more frequently than once per month, if not otherwise specified.

B. Submit electronic copies of each Application. See Section 01-3210 - Electronic Correspondence for instructions on eleectronic correspondence. Provide harcopies for signature when requested by the Owner.

C. Each Application shall include all of the items listed in the Article titled CONDITIONS OF PAYMENT.

1.08 CONDITIONS OF PAYMENT

A. Contractor submittal of the following items attached to the Application for Payment Transmittal following this Section with original signature of the Contractor's Project Superintendent, (notarized when the Project is subject to a Labor Compliance Plans) with each and every Application for Payment is a condition precedent to receipt of payment.
   1. Certification of Review of Payment Application by original signature on the Application for Payment Transmittal of Contractor's Superintendent, which shall also be notarized when the project is subject to a Labor Compliance Program. This document shall be counter-signed signifying review and approval by Owner's Inspector of Record.
   2. Application for Payment with schedule of values for the period during which Work was performed. (AIA G702 & AIA G703).
   3. Complete Certified Payroll demonstrating all man-hours expended in each applicable billing period, per scheduled work item or trade for each subcontract or trade. Architect is not required to review or comment on this information.
   4. Completed Daily Reports for the applicable billing period. Contractors shall maintain daily records of their activities, subcontractors present, number of workers representing each subcontractor, number of workers employed by the Contractor, and any other information deemed pertinent by the Contractor. Architect is not required to review or comment on this information.
   5. Completed Construction Progress Schedule Update for the applicable billing period, with all attachments required by the related section.
   6. Provide Certification by original notarized signature of Contractor's Project Superintendent on the Application for Payment Transmittal that the project is on schedule and that the Contractor has experienced no delays or schedule disruptions.
      a. In the event that a Contractor has experienced delay or disruption in the period for which payment is applied, Contractor must so indicate in writing with original signature on Contractor's company letterhead attached to this certification stating the nature of the delay or disruption, the event that precipitated said delay, and the method of recovering the lost time and maintaining the schedule recommended by the Contractor. Failure to so timely indicate delay or disruption shall be construed as a waiver of claim for damages for same.
   7. Certification by original notarized signature of Contractor's Project Superintendent on the Application for Payment Transmittal that Contractor has updated all As-Built Drawings in the Project Superintendent's office.
   8. Completed Conditional Waiver and Release Upon Progress Payment Forms for the Contractor and any and all Subcontractors, second and third tier subcontractors and material suppliers or service providers.
   9. Completed Unconditional Waiver and Release Upon Progress Payment Forms for previous billing period, if any. Contractor to provide one Unconditional Waiver and Release Upon Progress Payment for every corresponding Conditional Waiver and Release submitted with previous Application for Payment.

B. When Architect finds Application and all required submittal attachments properly completed and correct, he will transmit Certificate for Payment to Owner, with copy to Contractor. Incomplete or improper submittals will be returned to the Contractor without action.

1.09 REVIEW OF PROGRESS PAYMENT

A. Owner Approval: The Architect will, within seven (7) days after receipt of the Contractor's Application for Payment, either certify such payment or notify the Contractor in writing of the Architect's reasons for withholding certification in whole or in part as provided above.

B. Architect's Review: The review of the Contractor's Application for Payment by the Architect is based on the Architect's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion, and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the review by the Architect will not be a representation that the Architect has:
   1. Made exhaustive or continuous on-Site inspections to check the quality or quantity of the Work;
   2. Reviewed construction means, methods, techniques, sequences, or procedures;
   3. Reviewed copies of requisitions received from Subcontractors, material and equipment suppliers, and other data requested by the Owner to substantiate the Contractor's right to payment; or
   4. Made on examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.
   5. Reviewed or examined for accuracy or completeness any documentation submitted to comply with the Owner’s Labor Compliance Program.

1.10 DECISIONS TO WITHHOLD PAYMENT

A. Reasons to Withhold Payment: The Owner may decide to withhold payment in whole, or in part, to the extent reasonably necessary to protect the Owner if, in the Owner's opinion, the representations to the Owner required by the Article titled REVIEW OF PROGRESS PAYMENT cannot be made. The Owner may withhold payment, in whole, or in part, to such extent as may be necessary to protect the Owner from loss because of:
   1. Defective Work not remedied;
   2. Stop Notices filed, unless the Contractor at its sole expense provides a bond or other security satisfactory to the Owner in the amount of at least one hundred fifty percent (150%) of the claim, in a form satisfactory to the Owner, which protects the Owner against such claims;
   3. Liquidated damages assessed against the Contractor;
   4. Reasonable doubt that the Work can be completed for the unpaid balance of any Contract Price or by the completion date;
   5. Damage to the Owner, another contractor, or subcontractor;
   6. Unsatisfactory prosecution of the Work by the Contractor;
   7. Failure to store and properly secure materials;
   8. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed change orders, and verified reports, certifications, certified payrolls , any submittals required by the Labor Compliance Program but not enumerated in this or other sections of these specifications, as applicable, and other submittals specified as conditions precedent to receipt of payment in the Article titled CONDITIONS OF PAYMENT;
   9. Failure of the Contractor to maintain record (as-built) drawings;
   10. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;
   11. Unauthorized deviations from the Contract Documents; or
   12. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.
   13. Failure of the Contractor to conform to the requirements of the Labor Compliance Plan as applicable.

B. Written Reasons for Withholding Provided: Upon request of the Contractor whose payment is deferred, the Contractor shall be given a written copy of Owner's reasons for withholding payment.

C. Payment After Cure: When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

D. Labor Compliance Penalties: In addition to the remedy of withholding payment, the Owner may assess penalties as described in the Labor Compliance Program or as otherwise required by law for failure of the Contractor to conform to the requirements of the Labor Compliance Plan.

1.11 SUBSTITUTION OF SECURITIES

A. In accordance with § 22300 of the Public Contract Code, the Owner will permit the substitution of securities for any monies withheld by the Owner to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the Owner, or with a state or federally chartered bank as the escrow agent, who shall then pay such monies to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

B. Securities eligible for investment under this section shall include those listed in Government Code § 16430, bank or savings and loan certificates of deposit, interest-bearing, demand-deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the Owner.

C. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

D. The escrow agreement used for the purposes of this Section shall be substantially similar to the form set forth in Public Contract Code § 22300.

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 PROJECT FORMS

A. Project Forms referenced in this section are bound following this Section.

END OF SECTION

AIA® Document G702® – 1992

Application and Certificate for Payment

TO OWNER:

PROJECT:

APPLICATION NO:

PERIOD TO:

CONTRACT FOR:

CONTRACT DATE:

PROJECT NOS: / /

Distribution to:
OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

FROM CONTRACTOR:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703®, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... $ _____

2. NET CHANGE BY CHANGE ORDERS ..... $ _____

3. CONTRACT SUM TO DATE *(Line 1 ± 2)* ..... $ _____

4. TOTAL COMPLETED & STORED TO DATE *(Column G on G703)* ..... $ _____

5. RETAINAGE:

a. _____% of Completed Work
(Columns D + E on G703) $ _____

b. _____% of Stored Material
(Column F on G703) $ _____

Total Retainage *(Lines 5a + 5b, or Total in Column I of G703)*..... $ _____

6. TOTAL EARNED LESS RETAINAGE ..... $ _____
(Line 4 minus Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... $ _____
(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE ..... $ _____

9. BALANCE TO FINISH, INCLUDING RETAINAGE
(Line 3 minus Line 6) $ _____

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$	$
Total approved this month	$	$
TOTAL	$	$
NET CHANGES by Change Order	$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... $ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA® Document G703® – 1992

Continuation Sheet

AIA Document G702®, Application and Certificate for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached. Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED *(Not in D or E)*	TOTAL COMPLETED AND STORED TO DATE *(D+E+F)*	% *(G ÷ C)*	BALANCE TO FINISH *(C – G)*	RETAINAGE *(If variable rate)*
			FROM PREVIOUS APPLICATION *(D + E)*	THIS PERIOD					
	GRAND TOTAL								

RELEASE FORM 1

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

(Civil Code Sec. 3262 (d) (1))

Upon receipt by the undersigned of a check from:

_____

(Maker of Check)

in the sum of $_____ payable to:_____

(Amount of Check) *(Payee or Payees of Check)*

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanics' lien, stop notice, or bond right the undersigned has on the job of:_____

(Owner)

located at

_____

(Job Description)

to the following extent. This release covers a progress payment for labor, services, equipment or material furnished to:

_____

(Your Customer)

through:_____only and does not cover any retentions retained

(Date)

before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanics' lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment. Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned.

DATED: _____ _____

(Company Name)

PHONE: _____ By:_____

(Signature)

_____ _____

(Contractor's License Number) (Title)

_____

(Street or P.O. Box)

_____

(City, State, Zip)

This form of release complies with the requirements of Civil Code Section 3262 (d) (1). It is to be used by a party who applies for a progress payment when the progress payment check has not yet cleared the bank. This release only becomes effective when the check. properly endorsed, has cleared the bank.

RELEASE FORM 2

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

(Civil Code Sec. 3262 (d) (2))

The undersigned has been paid and has received a progress payment in the sum of $_____ for labor, services, equipment, or material furnished to:

_____(*Your Customer*)

on the job of_____(*Owner*)

located at _____(*Job Description*)

and does hereby release any mechanics' lien, stop notice or bond right that the undersigned has on the above referenced job to the following extent. This release covers a progress payment for labor, services, equipment or materials furnished to:

_____(*Your Customer*)

through: _____*(Date)* only and does not cover any retentions retained before or after the release date: extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon. work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanics' lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract,, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment.

DATED: _____ _____

(Company Name)

PHONE: _____ By:_____

(Signature)

_____ _____

(Contractor's License Number) (Title)

_____

(Street or P.O. Box)

_____

(City, State, Zip)

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

NOTE: This form of release complies with the requirements of Civil Code Section 3262 (d) (2). It is to be used to release claims to the extent that a Progress Payment has actually been received by the releasing party.

RELEASE FORM.3

CONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

(Civil Code Sec. 3262 (d) (3))

Upon receipt by the undersigned of a check from

_____

in the sum of $ _____

Payable to

_____

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of

_____(Owner)

Located at _____(Job description)

This release covers the final payment to the undersigned for all labor, services, equipment or materials furnished on the job, except for disputed claims for additional work in the amount of

$_____.

Before any recipient of this document relies on it, the party should verify evidence of payment to the undersigned.

Dated:_____

By: _____(Company Name)

_____(Title)

This form of release complies with the requirements of Civil Code Section 3262 (d) (3).. It is not effective until the check that constitutes final payment has been properly endorsed and has cleared the bank.

RELEASE FORM 4

UNCONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

(Civil Code Sec. 3262 (d) (4))

The undersigned has been paid in full for all labor, services, equipment or materials

furnished to_____(Your Customer)

on the job of _____(Owner)

located at _____(Job Description)

and does hereby waive and release any right to a mechanic's lien, stop notice or any right against a labor and material bond on the job, except for disputed claims for extra work in the amount of :

$ _____

Dated: _____

_____(Company Name)

By: _____(Title)

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

NOTE: This form of release complies with the requirements of Civil Code Section 3262 (d) (4).

DRAFT

AIA® Document G706™ – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)* Test	ARCHITECT'S PROJECT NUMBER:	OWNER: ☐ ARCHITECT: ☐
	CONTRACT FOR: General Construction	CONTRACTOR: ☐
TO OWNER: *(Name and address)*	CONTRACT DATED:	SURETY: ☐ OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☐ Yes ☒ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

DRAFT

AIA® Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)* Test	ARCHITECT'S **PROJECT NUMBER:**	OWNER: ☐ ARCHITECT: ☐
	CONTRACT FOR: General Construction	CONTRACTOR: ☐
TO OWNER: *(Name and address)*	CONTRACT DATED:	SURETY: ☐ OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

(Signature of authorized representative)

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

DRAFT

AIA® Document G707™ – 1994

Consent Of Surety to Final Payment

PROJECT: *(Name and address)* Test	ARCHITECT'S PROJECT NUMBER:	OWNER: ☐
	CONTRACT FOR: General Construction	ARCHITECT: ☐
TO OWNER: *(Name and address)*	CONTRACT DATED:	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

, SURETY,

on bond of
(Insert name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)

SECTION 01-3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Web-based project software service.

C. Progress photographs.

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

E. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 01-3100 - Project Management and Coordination: Meetings.

B. Section 01-3216 - Construction Progress Schedule: Form, content, and administration of schedules.

C. Section 01-3300 - Submittal Procedures: Submittal Procedures.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01-7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Comply with requirements of Section 01-2600 - Contract Modification Procedures for modification submittals and procedures, change procedures, execution of change orders, and correlation of contractor submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 WEB-BASED PROJECT SOFTWARE SERVICE

A. Refer to General Conditions of the project should a web-based project software system be a requirement of the contract.

B. A web-based project software service may also be used at the Contractor's choice, but must meet the requirements as outlined below.

C. Web-Based Project Software Service: Provide, administer, and use web-based project software to host and manage project communication and documentation.

1. Include, at minimum, the following features:
    a. Project directory, including Owner, Contractor, subcontractors, Architect, Architect's consultants, and other entities involved in the project. Include names of contact persons and contact information for each entity.
    b. Access control for each entity and for each workflow process to determine each entity's digital rights to create, modify, view, and print documents.
    c. Workflow planning, allowing customization of workflow for each project entity.
    d. Creation, logging, tracking, and notification for project communications.
    e. Tracking of project communication statuses in real time, including timestamped response log.
    f. Procedures for viewing PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
    g. Processing and tracking of payment applications.
    h. Processing and tracking of contract modifications.
    i. Creation and distribution of meeting minutes.
    j. Document management for drawings, specifications, and coordination drawings, including revision control.
    k. Management of construction progress photographs.
    l. Mobile device compatibility.
    m. Creation of data analytics reports.
    n. Creation and export of editable logs for software functions. Provide Owner, Architect, and Architect's consultants with rights and ability to download logs when requested.

2. Provide user licenses for use by Owner, Architect, Architect's consultants, and other entities involved in the project.
3. Comply with the software service's current published licensing agreements.
4. Training: Provide one-hour, web-based training session for users of software service. Further training is the responsibility of the user.
   a. Representatives of Owner are scheduled and included in this training.
5. Project Closeout: Architect determines when to terminate the software service for the project. Contractor is responsible for providing archive copies of the files for submission as part of the closeout documentation for review by the Architect and submission to the Owner.

3.02 PRECONTRACT MEETING - SEE SECTION 01-3100

3.03 PRECONSTRUCTION MEETING - SEE SECTION 01-3100

3.04 SITE MOBILIZATION MEETING - SEE SECTION 01-3100

3.05 PROGRESS MEETINGS - SEE SECTION 01-3100

3.06 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01-3216

3.07 PROGRESS PHOTOGRAPHS

A. Submit new photographs at least once a month, within 3 days after being taken.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.

D. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of site clearing.
   2. Excavations in progress.
   3. Foundations in progress and upon completion.
   4. Structural framing in progress and upon completion.
   5. Enclosure of building, upon completion.
   6. Final completion, minimum of ten (10) photos.

E. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
   3. Provide factual presentation.
   4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: via email or in web-based project management software.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.08 SUBMITTALS FOR REVIEW

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

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

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

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01-7800 - Closeout Submittals.

3.09 SUBMITTALS FOR INFORMATION

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

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.10 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01-7800 - Closeout Submittals:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

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

3.11 SUBMITTAL PROCEDURES - SEE SECTION 01-3300

END OF SECTION

SECTION 01-3100
PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordination and project conditions.

B. Related work.

C. Discrepancies.

D. Examination.

E. Pre Contract meeting.

F. Preconstruction meeting.

G. Site mobilization meeting.

H. Progress meetings.

I. Preinstallation meetings.

J. Project coordination meetings.

1.02 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of the various portions of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate hours and days of Work with local ordinances and requirements.

C. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
2. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

D. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.

1. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
2. Contractor shall coordinate Work with work to be performed by the Owner's separate contractors as specified in related documents.

1.03 RELATED WORK

A. Referencing specification sections in "Related Work" articles is for convenience only and shall not be construed as to limit the coordination of the Contract Documents to referenced sections.

B. Documents affecting the work of any section include, but are not limited to, General Conditions, Supplementary Conditions, and Sections in Divison 1 of these Specifications.

C. Work in any section may relate to other work in these documents. The Contractor is responsible to coordinate all work.

1.04 DISCREPANCIES

A. In the event of discrepancy in the Contract Documents or if uncovered conditions are not as anticipated, immediately notify the Architect and secure needed direction.

B. Do not proceed in areas of discrepancy until such discrepancies have been fully resolved.

C. Before starting work, verify governing dimensions at the premises, and examine adjoining work on which this work is dependent. No "Extra" or additional compensation will be allowed on account of differences between actual measurements and dimensions shown. Submit differences discovered during the work to Architect for interpretation before proceeding with the associated work.

D. Any time extension or any increase or decrease of cost resulting from such changes will be adjusted in the manner provided in the General Conditions.

1.05 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequentWork.
   1. Beginning new Work means acceptance of existing conditions.
   2. Examine and verify specific conditions described in individual specification sections.

B. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.06 PRECONTRACT MEETING

A. Architect will schedule a meeting with the Owner and apparent low bidder prior to award of Contract.

B. Attendance Required: Owner, Architect, and Contractor.

C. Agenda: Execution of the Notice of Award, Review of documents required for Preconstruction Meeting.

1.07 PRECONSTRUCTION MEETING

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

B. Attendance Required: Owner, Architect and Contractor.

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

D. Architect will record minutes and distribute copies within five days after meeting to participants, with two copies to Owner, Contractor, participants, and those affected by decisions made.

1.08 SITE MOBILIZATION MEETING

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

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

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and partial occupancy.
   3. Construction facilities and controls provided by Owner.
   4. Temporary utilities provided by Owner.
   5. Security and housekeeping procedures.
   6. Schedules.
   7. Application for payment procedures.
   8. Procedures for testing.
   9. Procedures for maintaining record documents.
   10. Requirements for start-up of equipment.
   11. Inspection and acceptance of equipment put into service during construction period.

D. Architect will record minutes and distribute copies within five days after meeting to participants, with two copies to participants, and those affected by decisions made.

1.09 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at bi-weekly intervals. Provide and discuss “two-week look ahead” schedule reports at these progress meetings. Coordinate progress payments and revised schedule, to monthly meeting attended by an officer of the construction company.

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

C. Attendance Required: Job Superintendent, major Subcontractors and suppliers, Owner, Inspector of Record and Architect as appropriate to agenda topics for each meeting.

D. Architect will record minutes and distribute copies within five days after meeting to participants, with two copies to Owner, Contractor, participants, and those affected by decisions made.

1.10 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

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

D. Prepare agenda and preside at meeting:
   1. Review conditions of installation, preparation and installation procedures.
   2. Review coordination with related work.

E. Architect will record minutes and distribute copies within five days after meeting to participants, with copies to Owner, Contractor and participants.

1.11 PROJECT COORDINATION MEETINGS

A. Contractor will schedule project coordination meetings to be held weekly to coordinate on-going construction issues.

B. Attendance Required: Contractor, job superintendent, Subcontractors, as required.

C. Contractor will prepare agenda and preside at meeting.

D. Contractor will record minutes and distribute copies within five days after meeting to participants, Architect and those affected by decisions made.

E. Copies of the minutes to Architect are required as part of submission of Application for Payment.

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 NOT USED.

END OF SECTION

SECTION 01-3210
ELECTRONIC CORRESPONDENCE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Administrative procedures for Project Electronic Correspondence.

1.02 RELATED SECTIONS

A. Pertinent sections specifying Project Management and Coordination, Submittals and Modification Procedures, Payments.

B. Document - Contract (Agreement Between Owner and Contractor).

C. Document - General Conditions: Progress Payments, Retainages and Final Payment., Applicability of Labor Compliance Program.

D. Section 01-1100 - Summary of Work.

E. Section 01-2500 - Substitution Procedures.

F. Section 01-2600 - Contract Modification Procedures.

G. Section 01-2900 - Payment Procedures.

H. Section 01-3000 - Administrative Requirements.

I. Section 01-3100 - Project Management and Coordination.

J. Section 01-3216 - Construction Progress Schedule.

K. Section 01-3300 - Submittal Procedures.

L. Section 01-6000 - Product Requirements.

M. Section 01-7700 - Closeout Procedures .

N. Technical sections of other divisions.

1.03 PERFORMANCE REQUIREMENTS

A. Project Correspondence shall be conducted by electronic means, except for documents requiring original signatures, or physical samples required for color or texture selection.

B. Provide project correspondence in specified formats.

C. Cost Responsibility: Each party shall be responsible for scanning and printing costs for creating electronic or hard copy correspondence that they may require.
   1. Architect or Owner will not provide printing or scanning.
   2. Include all costs for email, scanning and printing in the Contract Sum.

1.04 SUBMITTALS

A. See Section 01-3300 - Submittal Procedures for submittal procedures.

B. See individual sections for submittals required.

PART 2 PRODUCTS

2.01 FILE FORMATS AND VERSIONS

A. Formats - General: All electronic communications will be conducted in one of the following formats. Non-conforming formats will be rejected.
   1. Word Processing: "*.docx" format, Microsoft Word as part of Office 365..
   2. Spreadsheet: "*.xlsx" format, Microsoft Excel as part of Office 365.
   3. PDF (Portable Document Format): Adobe Acrobat, Current Edition.
   4. Drawings: AutoCAD "*.dwg", 2019 Version, when required an Electronic File Transfer Form shall be executed.
   5. Schedule: See Section 01-3216 - Construction Progress Schedule.

2.02 SOFTWARE AND VERSIONS

A. Software - General: The following products are known to produce documents in the required formats. Other software is acceptable subject to capacity to produce required formats.

B. Word Processing: Any version capable of saving in specified format.
   1. Microsoft Word, www.microsoft.com.
   2. Open Office, www.openoffice.org. Open Office is free of charge, no cost to download.

C. Spreadsheet:
   1. Microsoft Excel, www.microsoft.com.
   2. Open Office, www.openoffice.org. Open Office is free of charge, no cost to download.

D. PDF: Any version capable of saving in specified format.

E. Drawings: AutoCAD, version 2019. No known equal.

F. Schedule: See Section 01-3216 - Construction Progress Schedule.

G. Internet Browser:
   1. Google Chrome.
   2. Mozilla Firefox.
   3. Apple Safari.

2.03 DESIGNATED PERSONNEL

A. All Parties shall designate a primary and a secondary contact for project correspondence. Exception; Project Inspector.

B. All correspondence shall copy the secondary contact.

2.04 CORRESPONDENCE ROUTING

A. Contractor shall correspond directly with the Architect.
   1. Owner and Project Inspector may be copied.
   2. Do not correspond directly with Owner, Inspector, or Architect's consultants.
   3. Architect may grant the Contractor or subcontractor(s) authority to correspond directly with Architect or Architect's consultants should the need arise and shall be on a limited basis.

B. Architect shall correspond directly with the Contractor.
   1. Owner and Project Inspector will be copied.
   2. Architect will not exchange Project Correspondence with subcontractors or parties other than the Contractor. Contractor may grant Architect authority to correspond with subcontractor(s) if the need arises.
   3. Architect's consultants will not correspond directly with Contractor, subcontractors or parties other than the Contractor. Contractor may grant Architect's consultants authority to correspond with subcontractor(s) if the need arises.

PART 3 EXECUTION

3.01 CONTRACTOR ELECTRONIC CORRESPONDENCE PROCEDURES

A. All correspondence in this Article shall be electronic format. A single copy is sufficient.

B. Correspondence not listed in this Article shall be in conventional format. Provide in quantities noted in related sections.

C. General Correspondence (Letters, memos, punchlists, etc. other than described below): Submit via e-mail.
   1. Submit in unsecured PDF format on Contractor's letterhead.

D. Change Order Requests (COR): Submit via e-mail.
   1. Contractor shall submit CORs in unsecured PDF format as outlined in Section 01-2600. Cost back-up information (receipts, invoices, payroll, etc.) shall be included as unsecured PDF as part of the submission.
   2. Architect will respond on the COR form and create a secure PDF for distribution.

E. Request For Information (RFI): Submit via e-mail.
   1. Contractor shall submit RFIs in unsecured PDF format as outlined in Section 01-2600.
   2. Architect will respond on the RFI form and create a secure PDF for distribution.

F. Substitution Request Form (SRF): Submit via e-mail. Exception: physical samples if requested by Architect.

1. Contractor shall submit SRFs in unsecured PDF format as outlined in Section 01-2500. Product back-up information demonstrating compliance with specified attributes shall be included as unsecured PDFs.
2. Architect will respond on the SRF form, with additional documents as required and create a secure PDF for distribution.

G. Submittals: Submit via e-mail. When too large to transmit via e-mail, provide e-mail with submittal cover sheet and provide link to download documents from a cloud based file sharing or transfer service. Exception: Physical samples, as denoted in the appropriate section and requested by the Architect, structural calculations, shop drawings or other items required to have original stamps and signatures of Contractor's delegated design engineers. Submit these signature items by conventional means.
   1. Contractor shall submit Submittals in unsecured PDF as outlined in Sections 01-3300 and 01-6000 and each individual applicable specification section. Product back-up information and shop drawings demonstrating compliance with specified attributes shall be in unsecured PDF.
   2. Architect will respond on their Submittal Review form, with additional documents as required and create a secure PDF for distribution.

H. Schedule of Values: Submit via e-mail.
   1. Contractor shall submit in unsecured PDF format as outlined in Section 01-2900.
   2. Architect will respond on their Submittal Review form, with additional documents as required and create a secure PDF for distribution.

I. Construction Progress Schedule: Submit via e-mail.
   1. Contractor shall submit in unsecured PDF format and native file format of scheduling software as outlined in Section 01-3216.
   2. Architect will respond on his letterhead, as required, with additional documents as required and create a secure PDF for distribution.

3.02 ARCHITECT'S ELECTRONIC CORRESPONDENCE PROCEDURES

A. All correspondence in this Article shall be electronic format.

B. Correspondence not listed in this Article shall be in conventional format.

C. General Correspondence (Letters, memos, punchlists, etc. other than described below): Distributed via e-mail.
   1. Architect will distribute in unsecured PDF format on Architect's letterhead.

D. Meeting Agendas & Minutes and Field Reports: Distributed via e-mail.
   1. Architect will distribute secure PDF's.

E. Architect's Supplemental Instructions: Distributed via e-mail.
   1. Architect will distribute secure PDF's.

F. Requests For Proposal: Distributed via e-mail.
   1. Architect will distribute secure PDF's.

G. Change Orders: Initial copies for review will be distributed via e-mail.
   1. Architect will distribute unsecure PDF's.
   2. The actual Change Order document will be prepared by the Architect as a hard copy and distributed by conventional means for physical original signatures.

H. Review of Applications for Progress Payment & Final Payment: Distributed via e-mail.
   1. See Section 01-2900 for additional infromation, procedures, and requirements.

END OF SECTION

SECTION 01-3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prepare cost loaded Construction schedule using the critical path method (CPM) demonstrating fulfillment of all contract requirements.

B. Submittals and Distribution.

C. Review.

D. Delay Contingency (Rain days).

1.02 RELATED SECTIONS

A. Document – Contract: Contract Duration and provisions for liquidated damages.

B. Section 01-2900 - Payment Procedures: Schedule of values.

C. Section 01-3210 - Electronic Correspondence: Requirements and procedures for electronic correspondence.

D. Section 01-3300 - Submittal Procedures: Schedule of Submittals.

1.03 DEFINITIONS

A. Critical Path Method (CPM): A method of planning and scheduling a construction project where activities are arranged based on activity relationships and network calculations to determine when activities can be performed and the critical path of the Project.

B. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall project duration.

C. Network Diagram: A graphic diagram of a network schedule, showing the activities and activity relationships.

D. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path.
   2. Predecessor activity is an activity that must be completed before a given activity can be started.
   3. Event: An event is the starting or ending point of an activity.
   4. Milestone: A key or critical point in time for reference or measurement.
   5. Float is the measure of leeway in activity performance. Float time shall accrue to the Owner and to the Owner's benefit.
      a. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
      b. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned project completion date.

1.04 SUBMITTALS

A. Submit the following in accordance with Section 01-3300 - Submittal Procedures:
   1. Schedule of Submittals.
   2. Preliminary Schedule.
   3. Periodic Schedule Update with each Application for Payment.

B. Submit initial schedules within fifteen (15) calendar days after date of Owner-Contractor Agreement and the Notice to Proceed. After review, resubmit required revised data within five days.

C. Submit revised Progress Schedules with each Application for Payment. Submittal of revised Progress Schedule is a condition precedent to receipt of Payment.

D. Submit the number of opaque reproductions which Contractor requires, plus three copies which will be retained by Architect. In addition, submit each schedule submittal, including initial submittal, in the Scheduling software's complete and original software file format on Compact Disc – Read Only (CD-ROM). Provide one such disk with each schedule submittal. Architect will retain CD-ROM electronic versions.

E. Submit “two-week look ahead” report in bar-chart format indicating activities scheduled to occur in the up-coming two week period. Provide and discuss these submittals at the progress meetings specified in Section 01039 and additionally as requested by the Architect, Owner or Inspector.

1.05 QUALITY ASSURANCE

A. Scheduler: Contractor's personnel or Specialist Consultant to the Contractor specializing in CPM scheduling with three years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within forty-eight (48) hours of request.

B. Designate, in writing, an authorized representative who will be responsible for the preparation of the CPM schedule and progress of the project. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the Construction Schedule requirements.

C. Within 5 calendar days from Award of Contract, submit demonstration of competence in use of CPM scheduling, including evidence of the use of CPM scheduling as specified above. In the event of failure to satisfy Architect of competence, the Contractor shall be required to employ a qualified CPM consultant to be approved by the Architect.
   1. The cost of revision to the CPM schedule, not resulting from authorized contract changes, shall be the responsibility of the Contractor.

1.06 SCHEDULE OF INSPECTIONS AND TESTS

A. To assist the Owner in the process of obtaining qualified and responsive quotations for testing and inspection services for the Project, submit with Contractor’s baseline schedule, based on the requirements of the Contract Documents, local regulatory codes and the Contractor’s expertise in its field, a schedule of required inspections and tests which includes the following information as a minimum:
   1. Name of Special Inspection or Test;
   2. Quantity or frequency of Special Inspections or Tests;
   3. Projected Dates upon which Special Inspections and Tests are required.

B. Provide schedule of required inspections and tests at the same time required for submission of Contractor’s Baseline Schedule as specified in the pertinent section(s) of Division 01.

1.07 CONSTRUCTION SCHEDULE

A. Prepare the Construction Schedule using the network analysis diagram system known as the critical path method (CPM). Follow procedures outlined in AGC (CPSM).
   1. Proceed with preparation of the network diagram immediately following notification of Contract Award.
   2. Follow the steps necessary to complete development of the network diagram in sufficient time to submit the CPM Schedule so it can be accepted for use no later than 30 days after commencement of the Work.
   3. Conduct educational workshops to train and inform key project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule.
   4. Establish procedures for monitoring and updating the CPM Schedule and for reporting progress. Use "one working day" as the unit of time.

B. CPM Schedule Preparation: Prepare a list of all activities involved in the Project. Include a list of activities required to complete the Work. Provide the best data available for generation of the network diagram and the CPM Schedule.
   1. Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities.
   2. Indicate estimated times for the following activities to be performed:
      a. Preparation and processing of submittals.
      b. Purchase of materials.
      c. Delivery.
      d. Fabrication.
      e. Installation.
   3. Include in the network diagram, separate activities showing:
      a. Preparation and submittal of shop drawings.
      b. Architect's review of shop drawings, including review and selection of colors.
      c. Procurement and delivery of materials and equipment.

d. Installation and testing of major equipment.
e. Required delivery for all Owner supplied, Contractor installed items.

4. Include a legend showing:
   a. Each location or area code number and the place or location it references.
   b. Each responsibility or trade code number and the trade or entity it references.
5. Indicate each building or separate area as a separately scheduled element of the Work.
6. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
7. Where the work of several trades is combined into one activity, the Contractor shall furnish, for each such combined activity, the cost breakdown of each trade on sheets separate from the network diagram. The sum of the costs for each trade shall equal the total dollar value of each such combined activity.
8. Include specified construction delay contingency duration as the final activity preceding project completion.
9. Indicate overtime, weekend and premium-time work, if required to complete project within specified duration.

C. Submit the following supporting data with the submittal of the original CPM construction schedule. Any changes to this information shall be submitted with successive updates and revisions.
   1. The proposed number of working days per week.
   2. The holidays to be observed during the duration of the contract (by day, month, and year).
   3. The planned number of shifts per day.
   4. The number of hours per shift.
   5. The planned usage of major construction equipment on the site, on a monthly basis.
   6. The average weekly manpower usage for each trade to be employed on the project.

D. Processing: Enter prepared data on the processing system. Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM Schedule within the limitations of Contract Time.

E. Format: Display the full network on a single sheet of stable transparency, or other reproducible media, of sufficient width to show data clearly for the entire construction period.
   1. Mark the critical path. Locate the critical path near the center of the network; locate paths with the most float near the edges.
   2. Sub networks on separate sheets are permissible for activities clearly off the critical path.

F. Initial Issue: Prepare the initial issue of the CPM Schedule network diagram from a listing of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports to show the following:
   1. The Contractor or subcontractor and Work or activity.
   2. Description of the activity.
   3. Principal events of that activity.
   4. Immediate preceding and succeeding activities.
   5. Early, late and actual start dates.
   6. Early, late and actual finish dates.
   7. Activity duration in working days.
   8. Total float and free float time. Float time shall accrue to the Owner and to the Owner's benefit.
   9. Average size of work force.
   10. Monetary value of activity (coordinated with the Schedule of Values).

G. Value Summaries: Prepare 2 cumulative value listings, sorted by finish dates.
   1. In first listing, tabulate the following:
   2. Activity number.
   3. Early finish date.
   4. Dollar value.
   5. Cumulative dollar value.
   6. In second listing, tabulate the following:
   7. Activity number.
   8. Late finish date.
   9. Dollar value.
   10. Cumulative value.

11. In subsequent issues of both listings, substitute actual finish dates for activities completed as of listing date.

H. Prepare listing for ease of comparison with payment requests: coordinate timing with progress meetings.
1. In both value summary listings, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
2. Submit value summary printouts following each regularly scheduled progress meeting.
3. Provide monthly project cash flow analysis upon Owner's request at no additional cost.
4. Sequence the work to enable completion of scopes of work identified in intermediate milestones so that separate contracts can be mobilized prior to completion of this contract. Refer to Article titled MILESTONE SCHEDULE in Part 3 of this Section.

1.08 REVISIONS TO SCHEDULES

A. Graphically indicate progress of each activity to date of submittal, and projected completion date of each activity as referenced to the baseline date for that activity as shown in the initial schedule.

B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

C. Insert Delay Contingency activities into the critical path at the point where they occur, incorporating the mutally agreed duration per the Article on DELAY CONTINGENCY. Shorten the initial Delay Contingency activity by this mutually agreed duration.

D. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

E. Revision to the CPM schedule may require reallocation of costs. Revised activity cost data shall be submitted with revised CPM schedules as necessary.

F. After each monthly update or revision, the Contractor shall submit, to the Architect, one complete set of reproducible transparencies of the last accepted CPM schedule, each marked up in red, showing all revisions and changes in accordance with the monthly review meeting.

G. Within five (5) working days after receipt of notice from the Architect, the Contractor shall submit a revised CPM schedule for any of the following reasons:
1. When delay in completion of any activity, or group of activities, indicates an overrun of the contract time or milestone requirement by 20 working days or ten percent (10%) of the remaining duration, whichever is less.
2. Delays in submittals or deliveries or work stoppage are encountered which make replanning or rescheduling of the work necessary.
3. The schedule does not represent the actual prosecution and progress of the project as being performed in the field.

1.09 SUBMITTALS

A. Submit initial schedules within fifteen (15) calendar days after date of Owner-Contractor Agreement. After review, resubmit required revised data within five (5) days.

B. Submit revised Progress Schedules with each Application for Payment. Submittal of revised Progress Schedule is a condition precedent to receipt of Payment.

C. Submit electronic copies of the Schedule per the requirements in Section 01-3210 - Electronic Correspondence. Contractor to submit each schedule submittal, including initial submittal, in the Scheduling software’s complete and original software file format on USB Thumb Drive. Architect will retain electronic versions.

D. Submit “two-week look ahead” report in bar-chart format indicating activities scheduled to occur in the up-coming two week period. Provide and discuss these submittals at the progress meetings specified in Section and additionally as requested by the Architect, Owner or Inspector.

1.10 PROGRESS REPORTING, UPDATING AND REVISIONS:

A. On a date mutually agreed upon by the Architect and the Contractor, a job site progress meeting will be held each month at which time the CPM schedule will be reviewed and updated. Attendees of this meeting shall include the Architect, the General Contractor and subcontractors, if requested by the Architect. The Contractor shall have his copy of the Payment Request form and all other data required by the Contract Documents accurately filled in and completed prior to this meeting. Job Progress and the CPM schedule will be reviewed to verify:
   1. Payment due to the Contractor, based on percentage complete of items in the submitted Payment Request form.
   2. Logic, time and cost data for change order work that is to be incorporated into the CPM schedule or Payment Request form.
   3. Status of as-built record drawings and as-built record specifications.
   4. The Contractor shall submit a narrative report as a part of his monthly progress review and update.

1.11 REVIEW

A. Architect's review is limited to verification of compliance with the Contract start and end dates and inclusion of Contract Time adjustments.

B. To the extent that the CPM schedule or any revised CPM schedule shows anything not jointly agreed upon, it shall be deemed to have not been accepted by the Architect. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase notwithstanding the Architect's acceptance of the CPM schedule.

C. Acceptance of any revised CPM schedule and all supporting data is contingent upon compliance with all other paragraphs of this section and any other previous agreements or requirements with or by the Architect.

1.12 DELAY CONTINGENCY

A. Each Contractor submitting a bid proposal shall make allowance in its proposal and Project Schedule for ten (10) work days for delay to the critical path due to inclement weather or delay due to circumstances beyond the Contractor’s control.

B. All costs and expenses for the project for the full duration of this delay contingency shall be included in the bid price. No claim for additional costs may be made for project expenses incurred during the specified delay contingency.

C. Extension of time for delay due to inclement weather or circumstances beyond the Contractor’s control will be allowed only in the event that the total number of critical path work days delayed exceeds the number of days allowed in paragraph A of this Article. No time extension will be allowed for delays that do not affect the critical path as set forth in the master schedule.

D. No time extension will be allowed for inclement weather occurring on any Saturday, Sunday, National or other holiday, including holidays recognized by specific unions, crafts or trades. Exception: If any day defined above is scheduled as a work day under the provisions of the Article CONTRACTOR’S RESPONSIBILITY FOR COMPLETION and approved by the Architect and Owner, or as otherwise approved by the Owner.

E. A rain day is defined as any day that receives .130” or greater rainfall as reported by a local weather service acceptable to the Architect and is cause for work to be stopped. For the purposes of this project, Rain Days must meet this definition and be mutually approved and agreed upon on the day that a rain day occurs by the Contractor and the Architect. Contractor will post and maintain, in a conspicuous location, a calendar of so-approved rain days at the Contractor’s jobsite office.

1.13 CONTRACTOR'S RESPONSIBILITY FOR COMPLETION:

A. The Contractor agrees that whenever it becomes apparent from the monthly progress review meeting or the schedule that contract completion dates will not be met, he shall take some or all of the following action at no additional cost to the Owner:
   1. Increase construction manpower in such quantities and crafts as will bring the progress of the work into conformance with all other requirements of this section.
   2. Increase the number of working hours per shift, shifts per working day, workdays per week, the amount of construction equipment or any combination of the foregoing, to bring the scheduling and progress of the work into conformance with all requirements of the Contract Documents.

3. Reschedule the work under this contract in conformance with all other contract requirements to demonstrate completion of the contract work within the contract time.
    a. Compensate owner for costs incurred to the Owner for rescheduling or additional testing, inspection, or architectural services made necessary by the Contractor’s actions.

1.14 ADJUSTMENT OF THE CONTRACT TIME:

A. The Contract Time will be adjusted only for causes specified in the Contract Documents.

B. Contractor's Request for Adjustment: Submit each request in writing in the form of a Change Order Request in accordance with procedures specified in Section 01-2600 - Contract Modification Procedures. Include all of the following:
    1. Network Analysis or Bar Chart schedule data and supporting evidence.
    2. Justification for the delay in narrative form.
    3. Network Analysis (CPM) Schedule Requirements:
        a. A sub network showing all CPM logic revisions, duration changes and cost changes for the work in question and its relationship to other activities on the CPM schedule.
        b. Request only number of days justified by network analysis, not the number of days required for an individual change or event.
    4. Promptly provide additional supporting information as the Architect may determine to be necessary.
    5. Requests not conforming to these requirements are deemed to be waived.

C. The Contract Time will be not be adjusted for any reason, including weather, until the latest accepted Progress Schedule clearly displays that the Contractor has completely used all the float time available for the Work. Delays in activities which are not on the critical path in the CPM schedule according to the latest accepted schedule, will not be the basis for an adjustment to the Contract Time.

D. The Architect's determination of an adjustment of the Contract Time shall be based upon the latest schedule accepted at the time of the proposed change (or alleged delay) and all other relevant information.

E. The Architect shall review each request and advise the Contractor of his decision in writing within a reasonable time after receipt of a request and supporting evidence.

F. Submit an updated Progress Schedule whenever the actual field progress of the work does not conform to the accepted schedule in force at the time of theproposed change (or alleged delay). If the Architect determines such an update appropriately reflects the progress of the Work, include the update in the next monthly update release of the Progress Schedule.

1.15 DISTRIBUTION

A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.
    1. Schedule may be distributed according to requirements in Section 01-3210 - Electronic Correspondence.

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

C. Architect will distribute copies to the Owner and the Inspector of Record (IOR).

1.16 SCHEDULING SYSTEMS

A. Prepare schedules using professional quality scheduling software systems designed for this purpose, capable of producing results specified.

B. Acceptable products:
    1. Alternative products may be considered by Owner. Submit to Architect and Owner for review and approval.

1.17 NOT USED

END OF SECTION

SECTION 01-3300
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals required by the Contract Documents. Revise and re-submit as necessary to establish compliance with Contract Documents.
   1. Provide a satisfactory submittal by the second submittal. If repeated resubmittals are required, the Owner may backcharge the Contractor costs of review and processing unanticipated submittals.

B. Forward initial submittals to Architect for review within 35 days of Notice to Proceed.

1.02 WORK NOT INCLUDED

A. Submittals which are not required will not be reviewed by the Architect.

B. The Contractor may require subcontractors to provide drawings, setting diagrams or similar information as part of the coordination of the Work. The Architect will not review this data.

C. Safety Data Sheets (SDS) - Limitation of Review: Certain Submittals require provision of these documents by the Contractor. These documents contain information necessary for operation of the facility. The Architect's review of these submittals is limited to noting inclusion of the document for the Owner's use. No further review or comment on SDS documents by Architect shall be performed or inferred.

1.03 RELATED WORK

A. Document - Contract: Liquidated damages for late submittals.

B. Section 01-3216 - Construction Progress Schedule: List of submittals, dates for submission and dates that reviewed submittals will be required shall be designated in the Construction Schedule.

C. See Section 01-3210 - Electronic Correspondence: additional requirements for electronic transmittal.

1.04 QUALITY ASSURANCE

A. Submit to the Architect for review, product literature, samples and shop drawings as specified or required to fully describe every item proposed for incorporation in the work. Only approved items may be used.

B. Prior to submittal, review and coordinate all aspects of each item. Verify that each item and it's submittals conform to Contract Document requirements. Contractor assumes full responsibility for coordinating and verifying information, quantities and dimensions shown in submittals.

C. Submittals shall include:
   1. Date and revision dates.
   2. Project title and number.
   3. The names of:
      a. Architect/Engineer.
      b. Contractor.
      c. Subcontractor.
      d. Supplier.
      e. Manufacturer.
      f. Separate detailer when pertinent.
   4. Identification of product or material.
   5. Relation to adjacent structure or materials.
   6. Field dimensions, clearly identified as such.
   7. Specification section number.
   8. Applicable standards, such as ASTM number or Federal Specification.
   9. A blank space, 8 inches x 3 inches, for the Contractor and Architect stamps.
   10. Identification of deviations from Contract Documents.
   11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
   12. Signature of and calculations by an engineer, licensed in California, where required by specifications.

D. Indicate review and approval of each submittal prior to transmittal to Architect by affixing Contractor's stamp, initialed or signed, certifying :
   1. Review of submittal
   2. Verification of compliance with requirements of the Contract Documents.
   3. Verification of compatibility with other submittals, shop drawings, substitutions, and work of other trades.
   4. Coordination with existing job conditions and field construction criteria.
   5. Field verification of dimensions.

E. Architect will review Contractor's stamp language. Revise language in accordance with Architect's comments and provide new stamp if required by Architect.

F. Architect will return unreviewed any submittal not stamped by the Contractor in accordance with the above.

G. Direct Architect's attention to all deviations from the Contract Documents . Deviations not so noted shall be considered unreviewed.

H. Direct Architect's attention to any changes made in submittals other than those specifically requested by Architect. Changes not so noted shall be considered unreviewed.

I. Work shall not be fabricated, nor material shipped to project site prior to the distribution of approved submittals from the Architect.

1.05 SUBMITTALS

A. Make electronic submittals as outlined in Section 01-3210 of shop drawings, product data, samples, substitution requests, meeting minutes and other items required by the Contract Documents in accordance with the provisions of this Section

B. Submittals shall include all technical and performance data necessary for the Architect to properly evaluate the submittal. Provide physical samples if requested by Architect, whether expressly specified or not.

C. Incomplete submittals will be return to the Contractor without review. Contractor shall be responsible for delays incurred by incomplete, multiple reviews or rejected submittals.

D. Provide only one make or brand of any product proposed.

E. If electronic submittals are not utilized, Contractor is to submit number of copies required to be returned, plus three (3) copies which will be retained by the Architect, or as specified below. Copies in excess of five (5) will not be returned.
   1. Submit three (3) additional copies of submittals indicated to receive Deferred Approval review.

F. Review Contract Documents and submit initial list of submittals to Architect with Preliminary Construction Schedule as required in Section 01-3216. Establish priority of initial submittals jointly with Architect, based on specified minimum review durations and expected lead times for fabrication and procurement.

G. Stagger submittals for items or products with shorter lead times, reduced coordination needs with other work, or which will be needed later in the construction schedule. Prioritize and coordinate submittals only according to jointly-agreed initial list. Items requiring longer lead times shall be submitted first.

H. Do not provide submittals out-of-sequence. Submittals forwarded earlier than indicated on the jointly agreed schedule may be retained by the Architect for later processing. Required submittals which are not shown on the jointly-agreed schedule, or forwarded at times varying from the agreed achedule will be processed at the Architect’s option. Minimum review period may be extended by the Architect for early or out-of-sequence submittals.

PART 2 PRODUCTS

2.01 SHOP DRAWINGS

A. Shop drawings are to be drawn at large scale, fully detailed and with all materials and stock or purchased components fully identified. Shop drawings are to be submitted when specified and to illustrate every custom fabricated item or assembly.

B. When electronic submittals are not utilized, follow the requirements outlined below for hardcopy shop drawings.
   1. Drawings in excess of 11 inches x 17 inches shall be submitted as specified below.
   2. Drawings larger than 24 inches x 36 inches will be rejected and returned for re-formatting in smaller size. Architect will not review shop drawings larger than 24 inches by 36 inches. Select drawing scales accordingly.

3. Types of prints required:
   a. Submit shop drawings in the form of three (3) reproducible original of each sheet.
4. Review comments will be made on the original which will be retained by Architect. Architect will make copies for distribution to the Owner and Inspector of Record as they require, and for the Contractor in the numbers indicated by the Contractor, up to three. Initial submittal originals will not be returned.

C. Identify each drawing with project name, the Owner's name and account number, the Architect's name and job number, the Contractor's name and the specification section number and drawing detail reference number relating to the work shown.

2.02 PRODUCT DATA

A. Submit detailed technical literature fully describing every product or item proposed for use including manufacturers and items specified. Include manufacturer's detailed specifications, drawings, photographs, performance criteria, installation instructions, test data, samples of colors and finishes and other information required to fully describe the item.
   1. Modify standard product data to delete information which is not pertinent.
   2. Provide additional information which is specifically applicable.

B. Mark all submittals indicating items, options, and finishes proposed, and referencing project specification section and paragraph covering the work in question. Indicate as follows:
   1. Performance characteristics and capacities.
   2. Dimensions and/or clearances required.
   3. Wiring, piping and control diagrams.

2.03 SAMPLES

A. Provide samples identical to the precise article proposed, illustrating functional characteristics with all related parts and attachments. Indicate full range of color, textures and patterns.

B. Identify samples as described Article titled IDENTIFICATION OF SUBMITTALS below. Tag or label samples or transmit in bags or containers with tags and labels. Identify by specification section, submittal numbers and contract.

C. Submit number of samples as indicated above. Where samples of large complete items such as light fixtures, hardware, etc. are required, one sample will suffice.

D. Samples become the property of the Owner and may not be returned following review, at the Owner's option.

2.04 COLORS AND PATTERNS

A. Submit color and pattern selections for all products offering a choice of these attributes unless a specific color or pattern is referenced in the Contract Documents.

B. Submit within 35 days of Notice of Award a list of all required color selections organized by product, including manufacturer and model. Include samples of manufacturer's complete color range for all products.

C. Architect will not select colors or patterns until samples of all items requiring selections have been submitted. Architect will not make partial color selections.

D. Failure to submit all color selections as specified above, thus requiring additional unanticipated time for the Architect to make selections will not be basis for extension of Contract Time.

E. Architect will make color selections within 30 working days following complete submittal of samples. This period will commence with the receipt of the latest incremental submittal, as applicable.

F. Architect will issue Color Schedule.

PART 3 EXECUTION

3.01 IDENTIFICATION OF SUBMITTALS

A. Number submittals consecutively. Refer to submittal by this number in subsequent correspondence and submittals.
   1. Transmit resubmittals under new cover. Use submittal number of original submittal with decimal numeric suffix. Increment suffix by one digit for each subsequent resubmittal of identical items (23.1, 47.2, etc.). Cite original submittal number for reference (i.e. 109).
   2. Do not transmit new submittals with decimal suffix.

B. Transmittal letter for each submittal shall show all information required for identification and checking.

C. Include submittal number on first page and elsewhere as required for identification.

D. Maintain log of submittals and status. Furnish copies to the Architect and Inspector upon request.

3.02 GROUPING OF SUBMITTALS

A. Transmit submittals in groups containing all associated items to ensure availability of information during review. Refer to more specific requirements in the technical divisions.

B. Do not submit partial submittals.

C. Incomplete or partial submittals may be returned for enhancement. No extension of time will be allowed for delays related to incomplete submittals.

3.03 SCHEDULING OF SUBMITTALS

A. Transmit submittals sufficiently in advance of installation for required review, revisions, resubmittals and delivery. Include time required for transmittal by regular mail between the parties involved. No extension of time will be allowed for delays related to late submittals.

3.04 ARCHITECT'S REVIEW OF SUBMITTALS

A. Submittals will be reviewed and stamped by the Architect "No exceptions taken," "Submit Specified Item" or "Make Corrections Noted" to indicate full or conditional approval or "Revise and Resubmit" or "Rejected" to indicate conditional or complete disapproval. Terms are defined as follows:
   1. No Exceptions Taken: Accepted subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.
   2. Submit Specified Item: Submit to the Architect the items indicated for review.
   3. Make Corrections Noted: Same as 1., except that minor corrections as noted shall be made by the Contractor. No resubmittal required.
   4. Revise and Resubmit: Rejected because of major inconsistencies or errors which shall be resolved or corrected by the Contractor prior to subsequent review by the Architect.
   5. Rejected: Submitted material does not conform to plans and specifications in major respect. For example, wrong size, model, capacity or material. Resubmit.
   6. Receipt Acknowledged. Received, recorded and distributed without further action.

B. Submittals reviewed by the Architect which have been stamped shall be deemed to have the following language affixed and made a part thereof, regardless of the initial or subsequent readability of the actual stamp.
   1. Corrections or comments made on submittals during this review do not relieve the contractor from compliance with the requirements of the drawings and specifications. This check is for review of general conformance with the design concept of the project and general compliance with information given in the Contract Documents. The contractor is responsible for confirming and correlating all quantities and dimensions, selection of fabrication processes and techniques of construction, coordinating the work of the trades; and performing the work in a safe and satisfactory manner.

C. Architect’s review of submittals shall be undertaken with reasonable promptness, while allowing sufficient time in the Architect’s professional judgement to permit adequate review.

D. Architect's review of submittals has, as a primary objective, to assist in the completion of the project on time and in conformance with the Contract requirements by permitting review of material and fabricated items prior to ordering. Architect's review of submittals is based only on the data presented and extends only to conformance with general design intent and information contained in the Contract Documents.

E. Architect's approval of submittals does not constitute final acceptance or unqualified approval of items or work proposed or put in place, nor does it constitute acceptance of responsibility for the accuracy, coordination or completeness of submittals. Architect's approval of submittals does not relieve the Contractor from the responsibility for errors, omissions, or compliance with all the requirements of the Contract Documents.

F. Reimbursement of the Architect's costs for review:
   1. Architect will record all time and expenses incurred to review submittals requiring more than two reviews.
   2. Contractor shall reimburse the Architect promptly upon receipt of the Architect's billing and that of the Architect's consultants at standard billing rates for all time and expenses incurred in unanticipated reviews.

3. Upon failure of Contractor to reimburse Architect for such review, with the authorization of the Owner, amounts due the Architect will be deducted from amounts due the Contractor.

G. Architect's review of submittals does not change the Contract in any manner.

3.05 RESUBMITTAL

A. Make all corrections or revisions required by reviewer's comments at Contractor’s expense and resubmit as initially specified above. No additional costs will be authorized for corrections or revisions.

B. Product data and shop drawings:
1. Revise initial drawings or data and resubmit as initially specified.
2. Indicate changes which have been made other than those requested by reviewer.

C. Submit new samples as initially specified.

3.06 DISTRIBUTION

END OF SECTION

SECTION 01-4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. References and standards.

C. Testing and inspection agencies and services.

D. Control of installation.

E. Mock-ups.

F. Tolerances.

G. Manufacturers' field services.

H. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Section 01-4523 - Testing and Inspection Services.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Test Reports: After each test/inspection, promptly submit one copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.04 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on of Authority Having Jurisdiction approval, except where a specific date is established by applicable code.

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

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

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

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

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

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

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

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

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

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

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

3.02 MOCK-UPS

A. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

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

C. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TOLERANCES

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

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

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

3.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

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

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

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

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

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01-4200
REFERENCES

PART 1 GENERAL

1.01 SUMMARY

A. General: This section specifies procedural and administrative requirements for compliance with governing regulations and the codes and standards imposed upon the work. These requirements include the obtaining of permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes, and standards.

1. "Regulations" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

B. Governing Regulations: Refer to General and Supplementary Conditions for requirements related to compliance with governing regulations.

1.02 RELATED DOCUMENTS

A. This section applies to all Contract Documents, Drawings, General and Supplementary Conditions and other Division 01 Specification sections and all technical specifications.

B. All Drawings and General and Supplementary Conditions and other Division 01 Specification sections, and every section of the specifications which lists or refers to a referenced standard.

1.03 REFERENCES

A. CSI/CSC MF - Masterformat; 2016.

1.04 DEFINITIONS

A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including the drawings. (Drawings shall be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon.) Certain terms used in contract documents may be defined in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to the extent they are not stated more explicitly in another element of contract documents.

B. General Requirements: The provisions or requirements of Division 01 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.

C. Indicated: A cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted by direct reference.

D. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect/Engineer," "requested by "Architect/Engineer," and similar phrases. Such implied meaning shall not be interpreted to extend the Architect's/Engineer's responsibility into the Contractor's area of construction supervision or other duty of the Contractor enumerated in the Contract.

E. Approve: Where used in conjunction with Architect's/Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Architect's/Engineer's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by Architect/Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.

F. Project Site: The term "project site" is defined as the space available to Contractor for performance of the work. The extent of project site is shown on the drawings, and may or may not be identical with the description of land upon which the project is to be built.

G. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

H. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.

I. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

J. Installer: The entity (person or firm) engaged by Contractor, or its subcontractor or subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. Such entities (installers) shall be expert in operations they are engaged to perform.

K. Testing Agency (or Laboratory): An independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

L. Products: Materials, systems and equipment.

M. Approved Equal, Or Equal: As approved and accepted by the Architect.

N. Shall: The term "shall" is mandatory.

O. As Required, As Necessary, etc.: Words of similar import mean "as required by the Contract Documents" or "essential to the completion of the Work" in the context of application.

P. Concealed: Embedded in masonry or other construction, installed within furred spaces, within double partitions or above suspended ceilings, in trenches, in crawl spaces, or in enclosures.

Q. Exposed: Not installed underground or "concealed" as defined above, including work and surfaces open in whole or in part to the exterior or weather.

R. Visible: Not "concealed", as defined above.

S. Work: Both labor and materials, and as defined below.

T. The Contract Documents:

1. The Contract Documents consist of the Contract, any addenda thereto, the completed Bid Form, the completed Bond and Insurance forms, the Notice Inviting Bids, the Instructions to Bidders, the General Conditions, the Supplementary General Conditions, the Labor Compliance Program, if any, the Technical Specifications, the Drawings and the Bidder's Questionnaire. All modification(s) amending or extending the work shall be as binding as if originally included in the Contract Documents. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Architect. The Contract Documents are complementary, and each obligation of the Contractor, Subcontractors, material or equipment suppliers in any one shall be binding as if specified in all.
2. The Contract:
    a. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the Owner and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.
3. The Work:
    a. The Work shall include the initial obligation of any Contractor or Subcontractor, who performs any portion of the Work, to visit the Site of the proposed Work, a continuing obligation after the commencement of the Work to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried on under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor or Subcontractor shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated bid documents. The "Site" refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.
4. The Project:

a. The Project is the total construction of the Work performed in accordance with the Contract Documents in whole or in part and which may include construction by the Owner or by separate Contractors.

5. The Drawings:
   a. The Drawings are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect, in the full original size as initially issued, without reduction or enlargement, scanning, translation, or conversion to electronic or other data format.
6. The Specifications:
   a. The Specifications are that portion of the Contact Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services, as prepared or approved by the Architect, in the full original size as initially issued, without reduction or enlargement, scanning, translation, or conversion to electronic or other data format.
7. The Project Manual
   a. The Project Manual is the volume usually assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.05 QUALITY ASSURANCE

A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of AHJ Approval, except where a specific date is established by applicable code.

C. Obtain copies of standards when required by the Contract Documents.
   1. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

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

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

1.06 FORMAT AND SPECIFICATION EXPLANATIONS

A. Format Explanation: The format of principal portions of these specifications is described in the following paragraphs. Although some portions of these specifications may not be in complete compliance with these formats, no particular significance will be attached to such compliance or non-compliance.
   1. Division: A standard category of construction specifications, as defined by CSI/CSC MF "Master List of Numbers and Titles for the Construction Industry".
      a. The Division number or title does not limit meaning or content of a section, nor is fully descriptive of the requirements specified therein, nor is an integral part of the text.
      b. Division groupings consist of individual sections grouped together with other sections of similar or related work as delineated in MasterFormat and as determined at the Architect's option utilizing CSI/CSC MF as a guideline.
      c. Divisions do not correspond to, nor shall be construed to influence trade jurisdictions or assignment of a particular scope to a particular trade or subcontractor. The Contractor is obligated to construct all work as specified.
   2. Section: A portion of the specifications covering one or more segments of the total project, included in the Project Manual to meet project requirements. Each Section is a portion of a Division. Individual sections are grouped together with other sections of similar or related work groupings known as "divisions."
      a. Each section is identified by a 6 digit number and descriptive title (name).
      b. The section number or title does not limit meaning or content of a section, nor is fully descriptive of the requirements specified therein, nor is an integral part of the text.

c. The section numbers and titles are determined at the Architect's option, utilizing CSI/CSC MF as a guideline.
d. Sections do not correspond to, nor shall be construed to influence trade jurisdictions or assignment of a particular scope to a particular trade or subcontractor. The Contractor is obligated to construct all work as specified.

B. Division Numbering:
1. Divisions are numbered according to CSI/CSC MF CSI MasterFormat "Master List of Numbers and Titles for the Construction Industry".
2. Division numbering may be used to facilitate cross-references in the contract documents. Consult listing of Divisions at the beginning of the Project Manual to determine numbers and names of Project Manual Divisions in Contract Documents.

C. Section and Document Numbering:
1. Contract documents are generally numbered according to CSI/CSC MF "Master List of Numbers and Titles for the Construction Industry". Numbers and titles are selected at the Architect's option and may vary from strict CSI format.
2. Section numbering may be used to facilitate cross-references in the Contract Documents at the Architect's option. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of Project Manual must be consulted to determine numbers and names of specification sections in contract documents. The Contractor shall perform all work and coordinate the work of the various trades.

D. Section Format: Each section of specifications has been subdivided into 3 "parts" (PART 1 - GENERAL, PART 2 - PRODUCTS and PART 3 - EXECUTION) to promote uniformity and convenience, in general accordance withCSI/CSC MF.
1. Some sections may not require the use of all three parts and such omission is an intentional act of the Architect intended to reduce redundancy and promote clarity.
2. Subdivision of a section into PARTS does not limit the meaning of, and are not an integral part of text specifying requirements.

E. Subordination of Text: Portions of specification text are subordinated to other portions in the following manner (lowest level to highest):
1. Indented (from left margin) paragraphs and lines of text are subordinate to preceding text which is not indented, or which is indented by a lesser amount.
2. Paragraphs and lines of text are subordinate to sub-article titles, which are printed in upper/lower-case lettering.
3. Sub-articles are the subordinate to article titles, which are printed in uppercase lettering.
4. Subordination (if any) of certain sections (or portions of sections) to other sections is described within those sections.

F. Related Sections: Specification sections may list other sections of other divisions which may include work referenced in that section or otherwise related. This information is not part of the Specification Section, does not expand or limit the scope of the Section, or of the Contract Work and is provided at the Architect's sole option for the convenience of readers of the Contract Documents. No limitation of scope shall be inferred by the listing, or failure to list, any given section as related to any other given section and does not affect the Contractor's duty to coordinate and provide all work specified.

G. Underscoring, where used, is strictly to assist the reader of specification text in scanning text for key words (for quick recall). No emphasis on or relative importance of text is intended where underscoring is used.

H. Imperative language is used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor. At the option of the Architect and for clarity of reading at certain locations, contrasting subjective language may be used to describe responsibilities which must be fulfilled indirectly by Contractor, or when so noted, by others.

I. Page Numbering: Pages are numbered independently for each section and are recorded in the listing of sections (Index or Table of Contents) in Project Manual. The section number is shown together with the page number at the bottom of each page to facilitate the location of text in the Project Manual.

J. Project Identification: Project name (either complete or abbreviated) is recorded at top of each page of specifications to minimize possible misuse of specifications, or confusion with other project specifications.

K. Specification Content: Because of methods by which the project specification has been produced, certain general characteristics of content, and conventions in use of language are explained as follows:
   1. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive," "open generic-descriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
   2. Overlapping and Conflicting Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement is intended and will be enforced, unless specifically detailed language written into the contract documents clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect for a decision before proceeding.
   3. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified, for a particular unit of work, option is intended to be Contractor's regardless of whether or not it is specifically indicated as such.

L. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of the requirements. Refer instances of uncertainty to Architect/ Engineer for decision before proceeding.

M. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of entire set of contract requirements remains with the Contractor.

N. Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

O. Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual word abbreviations of a self-explanatory nature have been included in the texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated.
   1. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

1.07 DRAWING SYMBOLS

A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards," published by John Wiley & Sons, Inc., Current Edition.

B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, these symbols are supplemented by more specific symbols as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect/Engineer for clarification before proceeding.

1.08 INDUSTRY STANDARDS

A. General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effect (and are made a part of contract documents by reference) as if copied directly into the contract documents, or as if published copies were bound herewith. Refer to other contract documents for resolution of overlapping and conflicting requirements which result from the application of several different industry standards to the same unit of work. Refer to individual unit of work sections for indications of which specialized codes and standard the Contractor must keep at the project site, available for reference.
   1. Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
   2. Non-referenced standards are hereby defined to have no particular applicability to the work, except as general requirements of whether the work complies with standards recognized in the construction industry.

B. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of current on date of AHJ Approvalof contract documents.
   1. Updated Standards: At the request of the Architect/Engineer, Contractor or governing authority, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Architect/Engineer will decide whether to issue the change order to proceed with the updated standard.

C. Copies of Standards: The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with recognized industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.
   1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
   2. Although certain copies of standards needed for enforcement of the requirements may be required submittals, the Architect/Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of the requirements.

1.09 GOVERNING REGULATIONS/AUTHORITIES

A. General: The procedure followed by Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contact governing authorities directly for necessary information and decisions having a bearing on performance of the work.

B. Trade Union Jurisdiction: It is a procedural requirement that the Contractor maintain, and require prime subcontractors to maintain, complete current information on jurisdictional matters, regulations actions, and pending actions, as applicable to the work.
   1. Discuss new developments at appropriate project meetings at the earliest feasible dates.
   2. Record information of relevance along with the action agreed upon.
   3. The manner in which contract documents have been organized and subdivided is not intended to be an indication of jurisdictional or trade union agreements.
   4. Assign and subcontract the work, and employ tradesmen and laborers, in a manner which will not unduly risk jurisdictional disputes of a kind which could result in conflicts, delays, claims and losses in the performance of the work.

1.10 SUBMITTALS

A. Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgements, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS

2.01 NOT USED

PART 3 EXECUTION

3.01 NOT USED

END OF SECTION

SECTION 01-4523
TESTING AND INSPECTION SERVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selection and payment of Testing and Inspection Agency
B. Testing and Inspection Agency submittals.
C. Testing and Inspection Agency responsibilities.
D. Testing and Inspection Agency reports.
E. Limits on Testing and Inspection authority.
F. Contractor’s Responsibilities.
G. Architect’s Responsibilities.

1.02 RELATED SECTIONS

A. Drawings and Contract Documents, including General and Supplemental Conditions.
B. Section 01-3216 - Construction Progress Schedule.
C. Section 01-3300 - Submittal Procedures: Manufacturer's Certificates.
D. Section 01-4000 - Quality Requirements.
E. Section 01-7700 - Closeout Procedures: Project Record Documents.
F. Pertinent Sections of other Divisions requiring tests and inspections.

1.03 REFERENCES

A. ASTM C802 - Standard Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction; 2014
B. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).
C. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2024.
D. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.
E. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2021.
F. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
G. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2023.
H. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2021.
I. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.
J. CBSC (CAC) - California Administrative Code, California Code of Regulations, Title 24, Part 1; Most Recent Edition Adopted by the California Building Standards Commission.
K. CBSC (CBC) - California Building Code, California Code of Regulations, Title 24, Part 2, Volumes 1 & 2; Most Recent Edition Adopted by the California Building Standards Commission.

1.04 SUBMITTALS

A. Testing Agency Qualifications:
    1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
    2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Test Reports: After each test/inspection promptly submit electronic copies per Section 01-3210 to Architect, and Contractor, and additional receipients as noted.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test reports are submitted for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

C. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.05 SELECTION AND PAYMENT

A. Owner shall select Testing Agency as outlined in the General Conditions.
   1. Testing Agency shall conform to the following standards and requirements as appilcable to the scope of the testing: ASTM C802, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740, ASTM D543, ASTM E543, ASTM E699, and any additional requirements set forth in the CBSC (CAC), CBSC (CBC), and any other applicable regulation for the work they will be engaged in.

B. Owner will employ and pay for initial testing indicated under specific specification sections and specifically noted to be paid by the Owner.
   1. Contractor shall pay for testing when:
      a. Additional tests and inspections by Owner's testing agency where initial tests and inspections reveal failure to meet Contract requirements.
      b. Excessive inspection time by Owner's testing agency is required by Contractor's failure to provide sufficient workman or to properly pursue the progress of work.
      c. Test(s) deemed necessary by the Owner/Architect to evaluate any substitution proposed by the Contractor.
      d. Testing and inspection for the Contractor's convenience.
      e. Testing and inspection overtime necessitated by the Contractor's schedule.

C. Employment of inspection firm in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

D. Employment of any testing laboratory by Contractor shall be subject to Owner approval; laboratory shall be under direct supervision of a registered Engineer and shall conform to ASTM E329 . Laboratory of concrete producer shall not be acceptable for concrete mix designs.

E. Owner reserves the right to test any material or work of Project at any time, whether or not tests are indicated in Contract Documents.

1.06 QUALITY ASSURANCE

A. Conform to requirements of the referenced standards.

B. Laboratory: Authorized to operate in State in which Project is located.

C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.07 TESTING AGENCY RESPONSIBILITIES

A. Perform inspections, tests, and other services as specified by various specification sections.

B. Test samples of mixes submitted by Contractor.

C. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.

D. Perform specified sampling and testing of Products in accordance with specified standards.

E. Ascertain compliance of materials and mixes with requirements of Contract Documents.

F. Promptly notify Architect/Engineer, and Contractor of observed irregularities or non-conformance of Work or Products.

G. Perform additional tests required by Architect/Engineer.

H. Attend preconstruction meetings and progress meetings.

1.08 AGENCY AND INSPECTION REPORTS

A. After each test, observation or inspection, promptly submit electronic copies of report as outlined in Section 01-3210 to Architect, Engineer, Owner, Contractor, Authority Having Jurisdiction, and as otherwise directed.

B. Include:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in the Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

C. When requested by Architect/Engineer, provide interpretation of test or inspection results.

1.09 LIMITS ON TESTING AND INSPECTION AUTHORITY

A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. Agency or laboratory may not approve or accept any portion of the Work.

C. Agency or laboratory may not assume any duties of Contractor.

D. Agency or laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

A. Provide information regarding activities requiring special inspection and tests to Owner'sinspection and testing laboratory upon request.

B. Deliver to agency or laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

C. Cooperate with laboratory personnel, and provide access to the Work.

D. Provide incidental labor and facilities:
1. To provide access to Work to be tested.
2. To obtain and handle samples at the site or at source of Products to be tested.
3. To facilitate tests.
4. To provide storage and curing of test samples.

E. Notify agency or laboratory and Architect/Engineer forty-eight (48) hours prior to expected time for operations requiring testing services. Become familiar with time constraints of tests required. Schedule work to allow time for performance of required tests.

F. Employ services of an independent qualified testing laboratory and pay for additional samples and tests required by Contractor beyond specified requirements.

1.11 ARCHITECT RESPONSIBILITIES

A. Architect is not responsible for notification of the Testing Agency or scheduling it's work.

B. Architect will not be responsible for the actions of the Testing Agency.

1.12 RE-TESTING

A. When initial tests indicate non-compliance with the Contract Documents, subsequent re-testing shall be performed by the same testing laboratory and the costs thereof shall be paid by the Owner and deducted from the Contract Sums owed to the Contractor.

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 SCHEDULE OF INSPECTIONS

A. Statement of Special Inspections Form or Letter compliying with requirements from Authority Having Jurisdiction and CBSC (CBC) Chapter 17 is attached following this section.

B. Pertinent Sections of other Divisions: Other tests or inspections required; standards for testing.

END OF SECTION

SECTION 01-5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary telecommunications services.

B. Temporary sanitary facilities.

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

D. Security requirements.

E. Waste removal facilities and services.

F. Project identification sign.

1.02 TEMPORARY UTILITIES

A. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.8, Local Conditions and Requirements for provisions for electrical power construction water and operation of existing water facilities.

B. Existing facilities may not be used.

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

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
   2. Internet Connections: Minimum of one; DSL modem or faster.
   3. Email: Account/address reserved for project use.

1.04 TEMPORARY SANITARY FACILITIES

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

B. Maintain daily in clean and sanitary condition.

1.05 BARRIERS

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

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for plants designated to remain. Replace damaged plants.

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

1.06 FENCING

A. Construction: Commercial grade chain link fence.

B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 EXTERIOR ENCLOSURES

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

1.08 SECURITY

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

B. Coordinate with Owner's security program.

1.09 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

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

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

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

F. Do not allow vehicle parking on existing pavement.

1.10 WASTE REMOVAL

A. See Section 01-7419 - Construction Waste Management and Disposal, for additional requirements.

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

C. Provide containers with lids. Remove trash from site periodically.

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

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

1.11 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location indicated.

C. No other signs are allowed without Owner permission except those required by law.

1.12 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

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

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01-6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Owner-supplied products.

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

1.02 RELATED REQUIREMENTS

A. Document - Notice Inviting Bids: Products designated by Owner as "OWNER STANDARDS".

B. Document – General Conditions of the Contract: Product options and substitution procedures.

C. Section 01-1000 - Summary: Lists of products to be removed from existing building.

D. Section 01-1100 - Summary of Work: Identification of Owner-supplied products.

E. Section 01-2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

F. Section 01-3300 - Submittal Procedures: Submittal procedures and requirements.

G. Section 01-4000 - Quality Requirements: Product quality monitoring.

H. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

I. Section 01-7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.03 REFERENCE STANDARDS

A. PCC 3400 - California Public Contract Code; Current Edition.

1.04 SUBMITTALS - SEE SECTION 01-3300

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is encouraged.
   1. See drawings for list of items required to be salvaged for reuse and relocation.

2.02 NEW PRODUCTS

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

B. See Section 01-4000 - Quality Requirements, for additional source quality control requirements.

C. Use of products having any of the following characteristics is not permitted:
   1. Containing lead, cadmium, or asbestos.

D. Where other criteria are met, Contractor shall give preference to products that:

1. If used on interior, have lower emissions, as defined in Section 01-6116.
2. If wet-applied, have lower VOC content, as defined in Section 01-6116.

E. Provide interchangeable components by the same manufacture for components being replaced.

F. Products or equipment referenced with a manufacturer’s name and/or model number shall be provided with all standard materials, components, compliance requirements and features normally furnished for that model or product. These items and requirements are inherent in the specification whether or not individually itemized.

G. Salient Physical Attributes: Physical and other characteristics of products which may not be individually noted in the specifications are essential parts of the product specification. Products shall possess all attributes set forth in the manufacturer's catalog description for the specified item, except for such modifications thereto as may be indicated in the Contract Documents.Such attributes include:
1. Size: Dimensions, Form Factor (relative proportions of height, width, depth). Ability to fit in space provided, without change to other assemblies or systems.
2. Capacity: Ability to fulfill specified requirements.
3. Weight: Ability to be supported and braced by structure as shown.
4. Physical arrangement of connections or ports: Intakes, exhausts, utility connections and other such items; their dimensions, form factors and relative proportions. Connect to other systems, ductwork, utilities, controls without changes to other systems.
5. Required Clearances: Vertical, horizontal, to other equipment or construction, other similar attributes.

H. Proprietary Names, Catalog Numbers and Identification: These attributes may be included for convenience in identifying products. Unless modified by Specifications or notation on Drawings, manufacturer's complete product catalog description for indicated product name or number shall constitute requirements for each product as if fully included in the product specification. Products shall incorporate all features set forth in the manufacturer's catalog description for the standard item, except for such modifications thereto as may be indicated in the Contract Documents.

I. Proprietary names, catalog numbers, and specific requirements as may be set forth, are given to establish standard of design and quality for materials, construction and workmanship. Use of this information to identify products is not intended to preclude use of alternate products by other manufacturers, except as specified in that given section.

J. Manufacturer’s Requirements: All deviations from design requirements shown or specified, resulting either from Contractor’s or supplier’s change of model, or manufacturer’s recommendation, or from submitted alternates or accepted substitutions, shall be clearly indicated on the Contractor's submittals. Contractor shall provide all such manufacturer or supplier supplemental requirements at no additional cost.

2.03 PRODUCT OPTIONS

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

B. Products Specified by Naming a Single Manufacturer with a Provision for Substitutions: Submit a request for substitution in accordance with specified procedures for products meeting specifications from any manufacturer not named. For such specifications, the Architect is aware of only one manufacturer providing products meeting the specification, pursuant to PCC 3400.

C. Products specified as Basis of Design: Products specified by Naming a Single Manufacturer and a list of alternate manufacturers: Submit a request for substitution in accordance with specified procedures for products meeting specifications from any named manufacturer other than the listed manufacturer. For such specifications, listing of additional alternate manufacturers is not a representation that any of the alternate manufacturers will offer products that will be acceptable alternates for the specified items.

D. Products Specified by Naming Multiple Manufacturers with a Provision for Substitutions: Submit a request for substitution in accordance with specified procedures for products meeting specifications from any manufacturer not named.

E. Products Designated as "Owner's Standards", Specified by Naming A Single Manufacturer or Multiple Manufacturers as listed in the Notice Inviting Bids: Use only a product of one of the manufacturers named and meeting specifications. No options or substitutions allowed.

2.04 MAINTENANCE MATERIALS

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

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

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01-2500 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. See Section 01-1100 - Summary of Work for identification of Owner-supplied products.

3.03 TRANSPORTATION AND HANDLING

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

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

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

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

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

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

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

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

3.04 STORAGE AND PROTECTION

A. Provide protection of stored materials and products against theft, casualty, or deterioration.

B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01-7419.

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

D. Store with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

F. For exterior storage of fabricated products, place on sloped supports above ground.
   1. Execute a formal supplemental agreement between Owner and Contractor allowing off-site storage.

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

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

I. Do not store products directly on the ground.

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

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

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

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

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

END OF SECTION

SECTION 01-6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.
   1. All products of each category must comply with applicable regulations in CALGreen.

B. Requirements for VOC-Content-Restricted products.
   1. All products of each category that are installed in the project must comply; applicable laws and ordinances do not allow for partial compliance.
   2. All products of each category must comply with applicable regulations in CALGreen.
   3. Listing of a product in these specifications shall not be construed as a solicitation or requirement to use any product or combination of products in violation of the requirements of South Coast Air Quality Management District SCAQMD 1168.
      a. If a listed product does not meet the requirements of this rule, request approval for use of an alternate product by the same or another manufacturer meeting the requirements of this rule.
      b. Do not use products which do not meet the requirements of this rule.

C. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

A. Section 01-3000 - Administrative Requirements: Submittal procedures.

1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Flooring.
   4. Composite wood.
   5. Products making up wall and ceiling assemblies.
   6. Thermal and acoustical insulation.
   7. Free-standing furniture.
   8. Other products when specifically stated in the specifications.

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Exterior and interior paints and coatings applied on site.
   2. Exterior and interior adhesives and sealants applied on site, including flooring adhesives.
   3. Wet-applied roofing and waterproofing.
   4. Other products when specifically stated in the specifications.

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

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

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

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

C. BIFMA e3 - Furniture Sustainability Standard; Business and Institutional Furniture Manufacturers Association; 2019.

D. CA-CHPS Criteria - Collaborative for High Performance Schools - California - For New Construction & Major Renovations/Additions of Classroom and Non-Classroom Buildings; Current Edition.

E. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.

F. CAL (VOC) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers; 2017.

G. CALGreen - California Green Building Standards Code, "CALGreen" - Part 11, Title 24, California Code of Regulations; Most Recent Edition Adopted by the California Building Standards Commission.

H. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; Current Edition.

I. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

J. CHPS (HPPD) - High Performance Products Database; Current Edition.

K. CRI (GL) - Green Label Testing Program - Certified Products; Current Edition.

L. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.

M. GreenSeal GS-36 - Standard for Adhesives for Commercial Use; 2025.

N. NSF/ANSI 140 - Sustainability Assessment for Carpet; 2019.

O. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).

P. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

Q. SCS (CPD) - SCS Certified Products; Current Edition.

R. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.05 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

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

C. Sustainable Design Reporting: Submit evidence of compliance.
   1. Indentify evidence in submittals with the words "CALGreen VOC Compliance Report".

D. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using Standard Private Office exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
   1. Wet-Applied Products: State amount applied in mass per surface area.
   2. Paints and Coatings: Test tinted products, not just tinting bases.
   3. Evidence of Compliance: Acceptable types of evidence are the following;
      a. Current UL (GGG) certification.
      b. Current SCS (CPD) Floorscore certification.
      c. Current SCS (CPD) Indoor Advantage Gold certification.
      d. Current listing in CHPS (HPPD) as a low-emitting product.

e. Current CRI (GLP) certification.
f. Test report showing compliance and stating exposure scenario used.

4. Product data submittal showing VOC content is NOT acceptable evidence.
5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.

B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
1. Evidence of Compliance: Acceptable types of evidence are:
a. Report of laboratory testing performed in accordance with requirements.
b. Published product data showing compliance with requirements.
c. Certification by manufacturer that product complies with requirements.

C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
1. Evidence of Compliance: Acceptable types of evidence are:
a. Current SCS "No Added Formaldehyde (NAF)" certification; www.scscertified.com.
b. Report of laboratory testing performed in accordance with requirements.
c. Published product data showing compliance with requirements.

D. Furnishings Emissions Standard and Test Method: BIFMA e3 Sections 7.6.1 and 7.6.2, tested in accordance with BIFMA M7.1.
1. Evidence of Compliance:
a. Test report showing compliance and stating exposure scenario used.

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

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
1. These products may be specified in multiple sections throughout these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard and applicable portions of CARB (ATCM) or contain no added formaldehyde resins.
2. Furnishings: Comply with Furnishings Emissions Standard and Test Method and applicable portions of CARB (ATCM).
3. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule and requirements in CALGreen Division 5.5 - ENVIRONMENTAL QUALITY.
2. Aerosol Adhesives: GreenSeal GS-36 and requirements in CALGreen Division 5.5 - ENVIRONMENTAL QUALITY.
3. Joint Sealants: SCAQMD 1168 Rule and requirements in CALGreenDivision 5.5 - ENVIRONMENTAL QUALITY.
4. Paints and Coatings: Each color; most stringent of the following including any additional requirements in CALGreen Division 5.5 - ENVIRONMENTAL QUALITY:
a. 40 CFR 59, Subpart D.
b. SCAQMD 1113 Rule.
c. CARB (SCM).
5. Carpet and Carpet Cushion: Requirements in CALGreen Division 5.5 - ENVIRONMETAL QUALITY and meet testing and product requirements of one of the following:
a. Carpet & Rug Institutute CRI (GL), "Green Label Plus".
b. NSF/ANSI 140 at the "Gold Level".
c. California Department of Publich Health Standard Practice for Testing of VOCsCAL (VOC).
d. Scientific Certifications Systems Sustainability Assessment SCS (CPD).
6. Resilient Flooring: SCS (CPD) RFCI FloorScore Program and requirements in CALGreenDivision 5.5 - ENVIRONMENTAL QUALITY.

a. CA-CHPS Criteria and CHPS (HPPD).

7. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

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

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

END OF SECTION

SECTION 01-6116.01
ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM

FORM

1.01 IDENTIFICATION:

A. Project Name: _____

B. Project No.: _____

C. Architect: _____

1.02 USE OF THIS FORM:

A. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.

B. Contractor is required to obtain and submit this form from each installer of work on this project.

C. For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].

D. If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.

1.03 VOC CONTENT RESTRICTIONS ARE SPECIFIED IN SECTION 01-6116.

2.01 PRODUCT CERTIFICATION

A. I certify that the installation work of my firm on this project:
   1. [HAS] [HAS NOT] required the use of any ADHESIVES.
   2. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
   3. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
   4. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

B. Product data and MSDS sheets are attached.

3.01 CERTIFIED BY: (INSTALLER/MANUFACTURER/SUPPLIER FIRM)

A. Firm Name: _____

B. Print Name: _____

C. Signature: _____

D. Title: _____ (officer of company)

E. Date: _____

END OF SECTION

SECTION 01-7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Pre-installation meetings.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Cleaning and protection.

F. Starting of systems and equipment.

G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

H. General requirements for maintenance service.

1.02 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

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

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Effect on work of Owner or separate Contractor.
      f. Written permission of affected separate Contractor.
      g. Date and time work will be executed.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.03 QUALIFICATIONS

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

1.04 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

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

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

D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

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

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

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

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

1.05 COORDINATION

A. See Section 01-1100 - Summary of Work for occupancy-related requirements.

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

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

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

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

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

G. Coordinate completion and clean-up of work of separate sections.

H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

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

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

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

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

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

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

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

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

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

3.02 PREPARATION

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

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

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

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect seven days in advance of meeting date, unless otherwise noted in the individual section.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

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

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

G. Utilize recognized engineering survey practices.

H. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

I. Periodically verify layouts by same means.

J. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

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

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

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

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

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

F. Grind or bush split-faced masonry or textured materials to achieve hairline fit to adjacent trim, flashings, inserts, escutcheons or other penetrating elements.

3.06 CUTTING AND PATCHING

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

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

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

D. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.

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

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

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

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

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

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

3.07 PROGRESS CLEANING

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

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

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

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

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

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

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

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

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

3.09 SYSTEM STARTUP

A. Coordinate with requirements of Section 01-9113 - General Commissioning Requirements.

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

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

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

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

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

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

3.10 ADJUSTING

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

3.11 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

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

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

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

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

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

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

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

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

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

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

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

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

END OF SECTION

SECTION 01-7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

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

B. Project must comply with mandatory measures located in CALGreenSection 5.408 Construction Waste Reduction, Disposal, and Recyling.

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

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

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

F. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
1. Aluminum and plastic beverage containers.
2. Corrugated cardboard.
3. Wood pallets.
4. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
5. Asphalt paving: May be recycled into paving for project.
6. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
7. Glass.
8. Gypsum drywall and plaster.
9. Plastic buckets.
10. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (http://flooring.dupont.com) and Interface (www.interfaceinc.com) conduct reclamation programs.
11. Paint.
12. Plastic sheeting.
13. Rigid foam insulation.
14. Vinyl siding.
15. Windows, doors, and door hardware.
16. Plumbing fixtures.
17. Mechanical and electrical equipment.
18. Fluorescent lamps (light bulbs).
19. Acoustical ceiling tile and panels.

G. Develop and follow a Waste Management Plan designed to implement these requirements.

H. The following sources may be useful in developing the Waste Management Plan:
1. State Recycling Department, at https://calrecycle.ca.gov/lgcentral/library/canddmodel/instruction/newstructures/.

I. Methods of trash/waste disposal that are not acceptable are:
1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other illegal dumping or burying.
5. Incineration, either on- or off-site.

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

1.02 RELATED REQUIREMENTS

A. Section 01-2500 - Substitution Procedures.

B. Section 01-3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.

C. Section 01-5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.

D. Section 01-6000 - Product Requirements: Waste prevention requirements related to product substitutions.

E. Section 01-6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

F. Section 01-7000 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice of Award of Bid, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
   1. Submit to Architect for Owner's review and approval.
   2. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.

3. Describe as many alternatives to landfilling as possible:
   a. List each material proposed to be salvaged, reused, or recycled.
   b. List the proposed local market for each material.
   c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping fees saved due to diversion of materials from the landfill.
4. Provide alternatives to landfilling for at least the following materials:
   a. Land clearing debris, including brush, branches, logs, and stumps.
   b. Bricks.
   c. Concrete masonry units.

C. Once Owner has determined which of the landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.

D. Waste Management Plan: Include the following information:
1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
   a. List each material proposed to be salvaged, reused, or recycled.
4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

E. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.
3. Landfill Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
   c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
4. Recycled and Salvaged Materials: Include the following information for each:
   a. Identification of material, including those retrieved by installer for use on other projects.
   b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
   c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
   e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
5. Material Reused on Project: Include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. See Section 01-6000 and Section 01-2500.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01-6000:
   1. Relative amount of waste produced, compared to specified product.
   2. Proposed disposal method for waste product.
   3. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01-3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. See Section 01-5000 for additional requirements related to trash/waste collection and removal facilities and services.

C. See Section 01-6000 for waste prevention requirements related to delivery, storage, and handling.

D. See Section 01-7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings.
   1. Prebid meeting.
   2. Preconstruction meeting.
   3. Regular job-site meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. As a minimum, provide:
      a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
      b. Separate dumpsters for each category of recyclable.
      c. Recycling bins at worker lunch area.
   2. Provide containers as required.
   3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
   4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
   5. Locate enclosures out of the way of construction traffic.
   6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
   8. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

SECTION 01-7700
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures and submittals.

B. Final cleaning.

C. Maintenance service.

1.02 RELATED SECTIONS

A. Section 01-2900 - Payment Procedures.

B. Section 01-5000 - Temporary Facilities and Controls.

C. Section 01-7800 - Closeout Submittals.

1.03 SUBMITTALS

A. Submit the following under provisions of Section 01-3300 - Submittal Procedures.
   1. Submittals required by governing or other authorities.
   2. Evidence of payment and release of liens under the provisions of Section 01-2900 - Payment Procedures.
   3. Certificates of insurance for products and completed operations.

B. Submit final Application for Payment as outlined in Section 01-2900 identifying total adjusted Contract Sum, previous payments, and sum remaining due. Adjustments include:
   1. Approved Change Orders.
   2. Deductions for reinspection.
   3. Deductions for deficient work uncorrected.
   4. Other adjustments.
   5. Approved payments.
   6. Contract Sum as adjusted.
   7. Amount remaining due.

C. See Section 01-7800 - Closeout Submittals .

1.04 CLOSEOUT PROCEDURES

A. Submit written certification that The Work, or a designated portion thereof, is substantially complete in accordance with Contract Documents and ready for Architect/Engineer's review.

B. Submit a comprehensive list of work (Punchlist) which is incomplete or in need of correction, and an estimate of the time required to complete the listed work.

C. Within a reasonable time after receipt of this certification and Punchlist, the Architect will perform initial review. Incremental review will not be performed.

D. If the Architect determines that the Work is not substantially complete:
   1. The Architect will promptly notify the Contractor and Owner in writing, setting forth reasons for the determination.
   2. The Contractor shall correct or complete deficiencies in the Work and send a second written certification as above.
   3. The Architect will perform a subsequent review as above.

E. Coordinate corrective work as specified in Section 01-3100 - Project Management and Coordination.

F. Upon the Architect’s determination that the Work is substantially complete, the Architect will:
   1. Prepare the Certificate of Substantial Completion upon AIA G704 with the Contractor’s list of items to be completed or corrected, as verified and amended by the Architect.
   2. Submit the completed Certificate of Substantial Completion to the Contractor and the Owner for written acceptance of their respective duties set forth therein.

1.05 FINAL CLEANING

A. Execute final cleaning prior to Architect’s initial review. Architect will not review work for punchlist before final cleaning is complete.

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

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

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

E. Remove waste, surplus materials and rubbish from the site.

1.06 FINAL INSPECTION

A. Submit written certification that:
   1. Contract Documents have been reviewed;
   2. Work has been inspected;
   3. Work, or a designated portion thereof, is complete in accordance with Contract Documents;
   4. Systems and equipment have been tested in the presence of the Owner;
   5. Work is ready for Architect review.

B. Within a reasonable time after receipt of this certification, the Architect will perform a review to verify the status of the Work.

C. If the Architect determines that the Work is not substantially complete, defective or otherwise in need of correction:
   1. The Architect will promptly notify the Contractor and Owner in writing, setting forth reasons for the determination and listing the deficient work.
   2. The Contractor shall immediately correct or complete deficiencies in the Work and send a second written certification that the Work is complete.
   3. The Architect will perform a subsequent review as above.
   4. Additional review time by the Architect due to incomplete corrections may be “backcharged” to the Contractor by the Owner.

D. When the Architect determines that the Work is complete in accordance with the Contract Documents, the Architect will request the Contractor to make final Application for Payment and Closeout Submittals.

1.07 FINAL SUBMITTALS

A. Submit the following under provisions of Section 01-3300 - Submittal Procedures .
   1. Submittals required by governing or other authorities.
   2. Evidence of payment and release of liens under the provisions of Section 01-2900 - Payment Procedures.
   3. Submittals, reports, certificate, or other documents as required by 01-9113 - General Commissioning Requirements.
   4. Certificates of insurance for products and completed operations.

B. Submit final Application for Payment as outlined in Section 01-2900 identifying total adjusted Contract Sum, previous payments, and sum remaining due. Adjustments include:
   1. Approved Change Orders.
   2. Deductions for reinspection.
   3. Deductions for deficient work uncorrected.
   4. Other adjustments.
   5. Approved payments.
   6. Contract Sum as adjusted.
   7. Amount remaining due.

1.08 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections during the warranty period.

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

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

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

PART 2 PRODUCTS

2.01 NOT USED.

PART 3 EXECUTION

3.01 NOT USED.

END OF SECTION

SECTION 01-7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

D. Spare parts and maintenance products procedures.

1.02 RELATED REQUIREMENTS

A. Document - General Conditions; Performance bond and labor and material payment bonds, warranty, and correction of work.

B. Section 01-3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

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

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

1.03 SUBMITTALS

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

B. Operation and Maintenance Data:
   1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   3. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, Spare Parts Lists and Record Drawings.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
   4. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, Category 8 - Documentation for all equipment warranties, affidavits, and certifications required. See 3.6,B.2.(h)(1) for additional requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

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

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

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

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish main floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.
   6. All pre-bid addenda modifications and new drawings shall be posted into the Record Drawing Set. Clearly indicate superseded documents to avoid confusion.
   7. Contract Modifications: Request for information response, Architect directives, corrective details, Change Orders and other modifications. Include changed information, type of change, date and person responsible for directing change.
   8. Locations and description of existing features uncovered or discovered during construction including in-ground or in-wall utilities, and including records of utility locator surveys.

G. Submit reproducible documents to Architect prior to final Application for Payment.

H. Receipt and acceptance of Record Documents by the Owner is a condition precedent for filing Notice of Completion.

I. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals. See 3.6, D. Record Drawings, for additional requirements.

3.02 OPERATION AND MAINTENANCE DATA

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

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

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

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

E. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, for additional requirements.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

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

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, for additional requirements.

B. Include test and balancing reports.

C. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, for additional requirements.

B. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3.06 WARRANTIES AND BONDS

A. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, for additional requirements.

B. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

C. Verify that documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Retain warranties and bonds until time specified for submittal.

3.07 SPARE PARTS AND MAINTENANCE PRODUCTS PROCEDURES

A. See Procurement and Contracting Requirements, Section 01 00 00 - General Requirements; section 3.6, Submittal Requirements for Manuals and Record Drawings for Technical Manuals, Spare Parts List, for additional requirements.

B. Submit spare parts, maintenance products, keys, and supplemental materials specified in pertinent related sections to the Owner.

C. Submit original Receipts for delivery of these items, including location of storage, attested by the Owner by signature.

END OF SECTION

SECTION 01-8100
GREEN BUILDING DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes general requirements and procedures for compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, CALGreen.
   1. CHAPTER 5 - NONRESIDENTIAL MANDATORY MEASURES

1.03 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 01-7419 - Construction Waste Management and Disposal.

C. Division 01 sections specifying “Operation & Maintenance Data”, “Demonstration and Training” and "Commissioning Requirements".

D. Division 22 sections regarding indoor water use.

E. Division 23 sections regarding indoor air quality.

F. Pertinent sections specifying erosion control.

G. Pertinent sections specifying landscape irrigation, comply with local ordinances or MWELO, whichever is more stringent.

1.04 REFERENCE STANDARDS

A. CALGreen - California Green Building Standards Code, "CALGreen" - Part 11, Title 24, California Code of Regulations; Most Recent Edition Adopted by the California Building Standards Commission.

B. MWELO - California Department of Water Resources Model Water Efficient Landscape Ordinance; Current Edition.

1.05 DEFINITIONS

A. CALGreen Definitions: Certain terms are defined by Chapter 5 of the code. Words and terms used in this section shall have the meanings shown there.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Respond to questions and requests from Architect and the Owner regarding
CALGreen requirments or elements that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures. Document responses as informational submittals.

1.07 INFORMATIONAL SUBMITTALS

A. General: Provide CALGreen submittals in unsecured PDF format as outlined in Section 01-3210, as required by Code and in applicable Specification Sections.

B. CALGreen submittals are in addition to other required submittals. If submitted item is identical to that submitted to comply with other requirements,
denote on that submittal what specific requirements of CALGreen are being met.

C. Acceptable verification submittals are specified in the related sections.

PART 2 PRODUCTS

2.01 REQUIREMENTS - GENERAL

A. Provide products and procedures necessary to confirm CALGreen compliance required in this Section. Although other Sections may specify some CALGreen requirements, the Contractor shall determine additional materials, techniques, means, methods and procedures necessary to comply with requirements.

2.02 STORM WATER POLLUTION PREVENTION PLAN

A. CALGreen Division 5.1 - Site Development: Stormwater Polution Prevention: Comply with requirements of this code section, local ordinances, General Conditions, Special Provisions, and related sections specifying erosion control.

2.03 INDOOR WATER USE

A. CALGreen Division 5.3 - Water Efficiency and Conservation: Comply with requirements of this code section, local ordinances and related sections specifying irrigation systems.

2.04 OUTDOOR WATER USE

A. CALGreen Division 5.3 - Water Efficiency and Conservation: Irrigation Controllers: Comply with requirements of this code section, local ordinances or MWELO, whichever is more strigent, and related sections specifying irrigation systems.

2.05 CONSTRUCTION WASTE REDUCTION

A. CALGreen Division 5.4 - Material Conservation and Resource Efficiency: Construction Waste Reduction, Disposal and Recycling: Comply with requirements of this code section, local ordinances and Section 01-7419.

2.06 BUILDING MAINTENANCE AND OPERATION

A. CALGreen Division 5.4 - Material Conservation and Resource Efficiency: Commissioning: Recycling: Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic wastes and metals, or meet a lawfully enacted local recycling ordinance if more restrictive..

B. CALGreen Division 5.4 - Material Conservation and Resource Efficiency: Commissioning or Testing and Adjusting: Participate in Commissioning or Testing and Adjusting and provide functional performance testing, based on total square footage of the building, and as required by these code sections and as specified in pertinent sections of Division 01.

C. CALGreen Division 5.4 - Material Conservation and Resource Efficiency: Documentation and Training: Provide Operations Training as required by these code sections and as specified in Division 01 sections specifying Demonstration, Training and Closeout Submittals as specified in pertinent sections of Division 01.

2.07 POLLUTANT CONTROL

A. CALGreen Division 5.5 - Environmental Quality: Pollutant Control, Temporary Ventilation, and Duct Coverings: Comply with requirements of this code section, local ordinances and pertinent sections specifying indoor air quality procedures.
   1. During storage, rough installation and until final start-up of HVAC equipment, securely cover all ducts and air distribution component openings with plastic, tape, sheet metal or other methods acceptable to enforcing agency to reduce dust or debris collected in the system.

B. CALGreen Division 5.5 - Environtmeal Quality: Indoor Moisture Control and Indoor Air Quality: Comply with requirements of this code section, local ordinances and pertinent sections specifying indoor air quality procedures. Provide the following precautions as a minimum if not specified elsewhere.

C. CALGreen Division 5.5 - Environmetnal Quality: Finish Material Pollutant Control: All Finish materials shall comply with requirements of this code section, local ordinances and Section 01-6116.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with Section 01-7419 - Construction Waste Management and Disposal.

B. Comply with execution requirements of related sections, including Division 01 and applicable local codes and ordinances.

END OF SECTION

SECTION 02-4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

C. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01-5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

B. Section 01-6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

C. Section 01-7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

D. Section 01-7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

E. Section 07-0150.19 - Preparation for Re-Roofing: Removal of existing roofing, roof insulation, flashing, trim, and accessories.

F. Section 31-2333 - Trench Backfill; Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 DEFINITIONS

A. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.

C. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

PART 3 EXECUTION

2.01 DEMOLITION

A. Remove existing gas supply and gas meter, by Public Utility..

B. Remove other items indicated, for salvage, relocation, recycling, and and disposal.

C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion. See Section 31-2333.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   6. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements to remain in place and not removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

2.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on land survey of the site.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

C. Remove existing work as indicated and required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction as indicated by casual site verification.
   2. Remove items indicated on drawings.

D. Services including, but not limited to, HVAC, Plumbing, and Electrical: Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.
   2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch to match new work.

2.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove materials not to be reused on site; comply with requirements of Section 01-7419 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 1000

CONCRETE FORMING AND ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: All labor, materials and equipment and all operations required to complete all formwork as indicated on the drawings; to produce shapes and configurations as shown, as required; and as specified herein, including:

1. Forms, shores, bracing, removal and other operations as necessary for all cast-in-place concrete and masonry placed.
2. Setting and securing anchor bolts and other metal items embedded in concrete into formwork, using materials and layouts furnished and delivered to jobsite as specified under other sections.

B. Related Sections:

1. Pertinent Sections of Division 03 specifying concrete construction.
2. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete foundations and formwork.

1.2 REFERENCES

A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC): Chapter 19 Concrete.

B. American Concrete Institute (ACI) PRC-347 "Guide to Formwork for Concrete".

C. American Plywood Association (APA) “Concrete Forming Guide”.

D. West Coast Lumberman Inspection Bureau (WCLIB) “Standard Grading Rules for West Coast Lumber”.

E. ACI MNL-066 “ACI Detailing Manual”.

F. ACI SPEC-301 “Specifications for Concrete Construction”.

G. Concrete Reinforcing Steel Institute (CRSI) “Manual of Standard Practice”.

1.3 DESIGN REQUIREMENTS

A. Design, engineer, and construct formwork, shoring and bracing to conform to design and code requirements, resist imposed loads; resultant concrete to conform to required shape, line and dimension.

1.4 SUBMITTALS

A. Limitation of review: Structural Engineer's review will be required only where specifically requested for general architectural applications and features only. Contractor is responsible for structural stability, load-resisting characteristics and sufficiency of form work design.

1.5 QUALITY ASSURANCE

A. General: All form materials shall be new at start of work. Produce high quality concrete construction. Minimize defects due to joints, deflection of forms, roughness of forms, nonconforming materials, concrete or workmanship.

B. Reuse of Forms: Plywood forms may be reused, if thoroughly cleaned of all dirt, mortar, and foreign materials, and undamaged at edges and contact face. Reuse shall be subject to permission from the Architect without exception, and issued in writing. Reuse of any panel which will produce a blemish on exposed concrete, will not be permitted.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Form Materials:

1. Non-Exposed Surface Formwork Facing: Forms for concrete which is not exposed to view, may be of plywood as specified for exposed surfaces, or square edge 1x nominal Douglas Fir, Construction Grade, S4S.
2. Exposed Surface Formwork Facing:
    a. Forms for all exterior and interior concrete flat surfaces unless otherwise specified as board formed shall be new Douglas Fir Plywood (APA) ply, 5/8-inch, B-B Plyform, Class 1, Exterior Type, oiled and edged and edge-sealed conforming to U.S. Product Standard PS 1 in large sheet sizes to achieve joint patterns shown.
    b. All exposed concrete edges shall be chamfered 3/4" minimum or as noted on the drawings.
3. Exposed Surface Formwork - Special Pattern Form Liner:
    a. Forms for all exterior and interior concrete flat surfaces indicated shall be as designated by Architect.

B. Earth Forms: Allowed, subject to soil standing in excavations without ravel or caving.

C. Form Release Agent: Spray-on compound, not affecting color, bond or subsequent treatment of concrete surfaces. Maximum VOC content shall comply with local requirements and California Green Building Code.

D. Accessories: Types recommended by manufacturers or referenced standards to suit conditions indicated;

1. Anchors, spacers, void in-fill materials: sized to resist imposed loads.
2. Form Ties: Prefabricated rod, flat band, or wire snap ties with 1" break-back or threaded internal disconnecting type with external holding devices of adequate bearing area. Ties shall permit tightening and spreading of forms and leave no metal closer than 1" to surface.

E. Corner Chamfers and Rustications: Filleted, wood strip or foam type; sizes and shapes as detailed, or 3/4 x 3/4 inch size minimum if not detailed; maximum possible lengths.

F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

G. Foam Block Formwork: For use only where specified on drawings to create void space under or within concrete. ASTM D6817.

Use Case	InsulFoam Geofoam (or equivalent)	Maximum Density (pcf)	Compressive Resistance at 1% Deformation (psi)	Compressive Resistance at 5% Deformation (psi)	Compressive Resistance at 10% Deformation (psi)
1) Void formwork	EPS-15	0.90	3.6	8.0	10.2
2) Planters	EPS-19	1.14	5.8	13.1	16.0
3) Pedestrian Loads (<=100psf)	EPS-22	1.35	7.3	16.7	19.6
4) Vehicular Loads and Sidewalks (<= 250psf)	EPS-39	2.40	15.0	35.0	40.0

PART 3 – EXECUTION

3.1 EXAMINATION

A. Inspect the substrate and the conditions under which concrete formwork is to be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates and conditions.

B. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

A. If natural soil or compacted fill can be accurately cut and maintained, foundations and grade beams may be poured against earth without forming. Provide positive protection of trench top corners.

B. Maintain earth forms free of water and foreign materials.

3.3 ERECTION – FORMWORK

A. General: Construct formwork in accordance with calculations, and recommendations of ACI PRC-347. Construct forms to the sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in finished structure. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Use selected materials to obtain required finishes.

1. Construct cambers specified in concrete members and slabs in the formwork.
2. Schedule the work and notify other trades in ample time so that provisions for their work in the formwork can be made without delaying progress of the project. Install all sleeves, pipes, etc. for building services systems, or other work. Secure information about and provide for all openings, offsets, recessed nailing blocks, channel chases, anchors, ties, inserts, etc. in the formwork before concrete placement.
3. Deflection: Formwork and concrete with excessive deflection after concrete placement will be rejected. Excessive deflection is that which will produce visible and noticeable waves in the finished concrete.
4. Measure formwork for elevated structural slabs, columns, wall elevations points of maximum camber and submit in writing to the Architect/Engineer prior to placing concrete.

B. Formwork Construction: Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301. Uniform, substantial and sufficiently tight to prevent leakage of concrete paste, readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials. Tie, brace, shore, and support to insure stability against pressures from any source, without failure of any component part and without excessive deflection. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

C. Provide all openings, offsets, inserts, anchorages, blocking, and other features of the work as shown or required. See INSERTS, EMBEDDED PARTS, AND OPENINGS for detailed requirements.

D. Warped, checked, or scuffed forms will be rejected.

E. Maintain membranes, reinforcing and other work free of damage; protect with plywood runway boards or other positive, durable means.

F. Align joints and make watertight. Keep form joints to a minimum.

G. Provide fillet and chamfer strips on external corners of exposed locations and as indicated to form patterns in finished work. Extend patterns around corners and into alcoves, on backs of columns and similar locations not otherwise shown.

1. Produce beveled, smooth, solid, unbroken lines, except as otherwise indicated to conform to patterns.
2. Form corners and chamfers with 3/4 inch x 3/4 inch strips, unless otherwise indicated, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer at changes in direction.

H. Unexposed corners may be formed either square or chamfered.

I. Ties and Spreaders: Arrange in a pattern acceptable to the Architect when exposed. Snap-ties may be used except at joints between pours where threaded internal disconnecting type shall be used.

J. Coordinate this section with other sections of work that require attachment of components to formwork.

K. Reglets and Rebates: Accurately locate, size, and form all reglets and rebates required to receive work of other trades, including flashing, frames, and equipment.

3.4 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not allow excess form coating material to accumulate in the forms or to come into contact with reinforcement or surfaces which will be bonded to fresh concrete.

D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork will be rejected.

E. Leave no residue or stain on the face of the concrete, nor affect bonding of subsequent finishes or work specified in other sections.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

1. Provide openings in concrete formwork to accommodate work of other sections including those under separate contracts (if any). Size and location of openings, recesses and chases shall be in accordance with the section requiring such items. Accurately place and securely support items to be built into forms.

B. Construction Joints: Construct and locate generally as indicated on Drawings and only at locations approved by Structural Engineer, so as not to impair the strength of the structure. Form keys in all cold joints shown or required.

C. Locate and set in place items that will be cast directly into concrete.

D. Rough Hardware and Miscellaneous Metal: Set inserts, sleeves, bolts, anchors, angles, and other items to be embedded in concrete. Set embedded bolts and sleeves for equipment to template and approved shop drawings prepared by trades supplying equipment.

E. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

F. Wood Inserts and Nailers: Provide approved preservative-treated lumber. Set all required nailing blocks, grounds, and other inserts as required to produce results shown. Wood plugs shall not be used.

G. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

H. Piping: Do not embed piping in structural concrete unless locations specifically approved by Structural Engineer.

I. Conduit: Place conduit below slabs-on-grade and only as specifically detailed on structural drawings. Minimum clear distance between conduits shall be 3 diameters. Location shall be subject to Engineer's written approval and shall not impair the strength of the structure.

J. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

1. Provide openings for the introduction of vibrators at intervals necessary for proper placement.

2. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

K. Install Form Liner inserts in accordance with manufacturer's recommendations, to produce patterns and textures indicated.

L. Install waterstops in accordance with manufacturer's recommendations to provide continuous waterproof barrier.

3.6 FORM CLEANING

A. Clean forms as erection proceeds, remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

1. Remove all dirt, chips, sawdust, rubbish, water and foreign materials detrimental to concrete.
2. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.7 FOOTINGS

A. Verify elevations and provide final excavation required for footings prior to placing of concrete.

3.8 EQUIPMENT BASES

A. Form concrete bases for all mechanical and electrical equipment in accordance with approved shop details furnished by other sections.

B. Sizes and locations as indicated and as required to produce results shown.

C. Provide coved base for all equipment bases placed on concrete slabs.

3.9 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI SPEC-301.

3.10 FOAM BLOCK FORMWORK

A. Blocks shall be placed on prepared leveling course for level bearing. Place adjacent blocks in tight contact together. Where placed in multiple layers, orient long axis of upper layer at 90° to lower layer, and so forth for subsequent layers. Anchor blocks as required to prevent movement prior to and during concrete placement. Do not expose to hydrocarbons, solvents, or coal tar.

3.11 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

B. Do not reuse wood formwork more than 2 times for concrete surfaces to be exposed to view. Do not patch formwork.

C. Clean and repair surfaces to be re-used in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.

D. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets.

3.12 FORM REMOVAL

A. Do not loosen or remove forms before minimum curing period has elapsed without employment of appropriate alternate curing methods, approved by the Architect in writing.

B. Remove forms without damage to the concrete using means to ensure complete safety of the structure and without damage to exposed beams, columns, wall edges, chamfers and inserts. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Do not remove forms until the concrete has hardened sufficiently to permit safe removal and the concrete has attained sufficient strength to safely support imposed loads. The minimum elapsed time for removal of forms after concrete has been placed shall be as follows:

1. Columns and Walls: 7 days, provided members are not subjected to overhead loads.
2. Retaining Walls: 21 days minimum.
3. Footings: 7 days minimum. If backfilled immediately, side forms may be removed 24 hours after concrete is placed.
4. Beams, elevated slab, and similar overhead conditions: 28 days unless adequate shoring is provided.

D. Durations listed above are minimums and are subject to extension at the sole judgment of the Architect/Engineer.

E. Reshoring: Reshore members where and if required by Formwork Design Engineer.

F. Do not subject concrete to superimposed loads (structure or construction) until it has attained full specified design strength, nor for a period of at least 14 days after placing.

G. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

3.13 CLEANING

A. Remove excess material and debris associated with this work from the job site.

END OF SECTION

SECTION 03 2000

CONCRETE REINFORCING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reinforcing steel work for all concrete and masonry work as indicated on the drawings and specified herein.
2. Coordinate this work with other work affected by these operations, such as forms, electrical work, mechanical work, structural steel, masonry and concrete.

B. Related Sections:

1. Pertinent Sections of Division 01 specifying Quality Control and Testing Laboratory services.
2. Pertinent Sections of Divisions 03 specifying concrete construction.
3. Pertinent Sections of Divisions 04 specifying masonry construction.
4. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete work.

1.2 REFERENCE STANDARDS

A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC) Chapter 19 Concrete.

B. American Concrete Institute (ACI) SPEC-301 “Specifications for Concrete Construction”.

C. ACI CODE-318 “Building Code Requirements for Structural Concrete and Commentary”.

D. ACI MNL-066 “ACI Detailing Manual”.

E. ASTM International (ASTM) A1064 “Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete”.

F. ASTM A615 “Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement”.

G. ASTM A706 “Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement”.

H. American Welding Society (AWS) D1.4 – “Structural Welding Code - Steel Reinforcing Bars”.

I. Concrete Reinforcing Steel Institute (CRSI) - “Manual of Standard Practice”.

J. CRSI - “Placing Reinforcing Bars”.

1.3 SUBMITTALS

A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. Submit for review prior to fabrication.

B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer.

C. Shop Drawings: Show complete fabrication and placing details of all reinforcing steel. Comply with requirements of ACI MNL-66. Include:

1. Bar sizes and schedules;
2. Shapes of bent bars, layout and spacing of bars, location of splices.
3. Stirrup spacing, arrangements and assemblies,
4. References to Contract Document detail numbers and designations.
5. Wall elevations corresponding to elevations shown in Contract Documents.

D. Product Data: Submit manufacturer's product data, specifications, location and installation instructions for proprietary materials and reinforcement accessories. Provide samples of these items upon request.

E. Certificates: Submit all certifications of physical and chemical properties of steel for each heat number as manufactured, including location of material in structure as specified below in Article titled QUALITY ASSURANCE. All materials supplied shall be tagged with heat numbers matching submitted Mill Test Report analyses.

F. Samples: Provide to the Owner's Testing laboratory as specified in Article SOURCE QUALITY CONTROL.

1.4 QUALITY ASSURANCE

A. Perform work of this Section in accordance with the CRSI “Manual of Standard Practice”, CRSI “Placing Reinforcing Bars”, ACI SPEC-301, and ACI CODE-318.

B. Requirements of Regulatory Agencies, refer to pertinent Sections of Division 01 and CBC.

C. Certification and Identification of Materials and Uses: Provide Owner's Testing Agency with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection and all material identification/test information listed below.

1. Provide manufacturer's Mill Test Reports for all materials. Include chemical and physical properties of the material for each heat number manufactured. Tag all fabricated materials with heat number.
2. Provide letter certifying all materials supplied are from heat numbers covered by supplied mill certificates. Include in letter the physical location of each grade of reinforcing and/or heat number in the project (i.e. foundations, walls, etc.).
3. Unidentified Material Tests: Where identification of materials by heat number to mill tests cannot be made, Owner's Testing Agency shall test unidentified materials as described below.

D. Testing and Inspection: Tests and Inspections required by Independent Testing Agency are specified below in Articles SOURCE QUALITY CONTROL and FIELD QUALITY CONTROL. Duties and limitations of Independent Testing Agency, test costs and test reports in conformance with pertinent Sections of Division 01.

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent requirements of Division 01.

B. Deliver reinforcement to project site in bundles marked with durable tags indicating heat number, mill, bar size and length, proposed location in the structure and other information corresponding with markings shown on placement diagrams.

C. Handle and store materials above ground to prevent damage, contamination or accumulation of dirt or rust.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Reinforcing Steel: Deformed billet steel bars, ASTM A706 Grade 60 or ASTM A615 Grade 60.

1. Welded reinforcement shall be ASTM A706, or A615 meeting carbon requirements of AWS D1.4. Welding shall conform with AWS D1.4.
2. All reinforcement to be unfinished.
3. ASTM A615 reinforcement at special structural concrete walls, concrete coupling beams, and special concrete moment frames shall have maximum yield stress of 78,000 psi and the tensile strength shall be greater than 125% of the actual yield strength. Test ASTM A615 reinforcement for conformance to these criteria prior to fabrication and/or installation.

B. Welded Wire Reinforcement: ASTM A1064.

C. Tie Wire: No. 16 AWG or heavier, black annealed.

D. Concrete Blocks: On-grade conditions only, as required to support reinforcing bars in position.

E. Reinforcing Supports: Plastic or galvanized steel chairs, bolsters, bar supports, or spacers sized and shaped for adequate support of reinforcement and construction loads imposed during concrete placement, meeting ACI and CRSI standards.

1. For use over formwork: Galvanized wire bar type supports complying with CRSI recommendations. Provide plastic tips where exposed to view or weather after removal of formwork. Do not use wood, brick, or other unacceptable materials.

F. Reinforcement Splice Couplers: For use only where specified on drawings. Submit other locations proposed for use to Engineer for review. "L-Series Bar Lock" Coupler Systems for Splicing Reinforcement Bars, UES ER-0319, by Dayton-Superior Corporation.

2.2 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4), unless specifically shown otherwise. Details not specifically shown or indicated shall conform to SP-066 and specified codes and standards.

1. Accurately shop-fabricate to shapes, bends, sizes, gauges and lengths indicated or otherwise required.
2. Bend bars once only. Discard bars improperly bent due to fabricating or other errors and provide new material; do not re-bend or straighten unless specifically indicated. Rebending of reinforcement in the field is not allowed.
3. Do not bend reinforcement in a manner that will injure or weaken the material or the embedding concrete.
4. Do not heat reinforcement for bending. Heat-bent materials will be rejected.

B. Unacceptable materials: Reinforcement with any of the following defects will not be permitted in the work.

1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
2. Bends or kinks not indicated on Drawings or final shop drawings.
3. Bars with reduced cross-section due to rusting or other cause.

C. Tag reinforcement with durable identification to facilitate sorting and placing.

D. Shop Fusion Welded Stirrup/Tie/Spiral Cages

1. Shop fusion welding of stirrup/tie/spiral cages is permitted to aid in fabrication and handling. The following requirements shall be met.
2. All reinforcing bars receiving weld shall be ASTM A706.
3. Longitudinal holding wires shall be ASTM A1064.
4. Shop welding shall be performed by machines under a continuous, controlled process.
5. Quality control tests shall be performed on shop-welded specimens and the test results shall be available, upon request, to the Architect/Engineer.
6. Tack welding of reinforcing steel is not permitted.
7. Welding of any type shall not occur at 90°, 135°, or 180° bends. Circular ties and spirals may be shop fusion welded outside of areas with 90°, 135°, or 180° hook bends.
8. Longitudinal bars shall not be welded to stirrups/ties/spirals.

2.3 SOURCE QUALITY CONTROL

A. The Testing Agency, as specified in the Article QUALITY ASSURANCE, will perform the following:

1. Material Testing:
   a. Identified Steel: When samples are taken from bundled steel identified by heat number, matched with accompanying mill analyses as delivered from the mill, supplemental testing of reinforcing steel is not required.
   b. Unidentified Steel: When identification of materials by heat number matched to accompanying mill analyses cannot be made, perform one tensile test and one bend test per each two and one-half tons or fraction thereof for each required size of reinforcing steel. Tests of unidentified steel shall be performed by the Owner's Testing Agency and costs for these tests shall be paid by the Contractor by deductive change order.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Inspect the conditions under which concrete reinforcement is to be placed. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Coordinate with work of other sections to avoid conflicts or interference. Bring conflicts between reinforcement and other elements to Architect's attention. Resolve conflicts before concrete is placed.

C. Notify Architect, Structural Engineer, and Authority Having Jurisdiction for review of steel placement not less than 48 hours before placing concrete.

3.2 PLACEMENT

A. General: Comply with the specified codes and standards, and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

B. Clean bars free of substances which are detrimental to bonding. Maintain reinforcement clean until embedded in concrete.

C. Place reinforcement to obtain the minimum coverages for concrete protection. Do not deviate from required position. Maintain required distance, spacing and clearance between bars, forms, and ground.

D. Location and Support: Provide metal chairs, runners, bolsters, spacers and hangers, as required.

E. Provide additional steel reinforcement as necessary or as directed, to act as spreaders or separators to maintain proper positioning.

F. Tying and Attachment: Securely tie at all intersections and supports with wire. Prevent dislocation or movement during placement of concrete. Direct twisted ends of wire ties away from exposed concrete surfaces.

G. Separate reinforcing from pipes or conduits with approved non-metallic separators. Do not use wood or steel form stakes or reinforcement used as stakes as support for reinforcement.

H. Accommodate placement of formed openings required by other sections.

I. Obstructions:

1. Where obstructions, block-outs, or penetrations (conduits, raceways, ductwork) prevent continuous placement of reinforcement as indicated, provide additional reinforcing as detailed and as directed by the Structural Engineer to supplement the indicated reinforcement around the obstruction.
2. Place additional trim bars, ties, stirrups, or other elements as detailed and as directed at all opening, sleeves, pipes or other penetrations through structural elements.

J. Welded Wire Reinforcement: Reinforce slabs with 6"x 6"-W1.4 x W1.4 welded wire reinforcement reinforcing, unless otherwise noted on drawings.

1. Provide flat sheets only, no rolls. Straighten, cut to required size, and lay out flat in place.
2. Securely wire-tie reinforcement to other reinforcement at frequent intervals.
3. Extend reinforcement over supporting beams and walls, and to within 1 inch of edge of slabs, construction joints, and expansion joints.

4. Support reinforcement in mid-depth of slab.
5. Lift reinforcement at intervals as slab concrete is placed, ensure proper embedment.

3.3 REINFORCING SPACING AND COVERAGE

A. Spacing: Do not space bars closer than four (4) diameters of the largest of two adjacent bars, except at bar laps, which shall be placed such that a minimum of 2 bar diameters is clear between bars.

B. Where reinforcing in members is placed in two layers, the distance between layers shall not be less than four bar diameters of the largest bar and the bars in the upper layers shall be placed directly above those in the bottom layer, unless otherwise detailed or dimensioned.

C. Coverage of bars (including stirrups and columns ties) shall be as follows, unless otherwise shown:

1. Concrete cast against earth or grade: 3 inches.
2. Concrete exposed to weather or formed and exposed to earth:
   a. #5 & smaller: 1-1/2 inches.
   b. #6 & larger: 2 inches.
3. Concrete not exposed to earth or weather:
   a. #5 & smaller: 1 inch.
   b. #6 & larger: 1-1/2 inches.

3.4 DOWELS, SPLICES, OFFSETS AND BENDS

A. Provide standard reinforcement splices at splices, corners, and intersections by lapping ends, placing bars in contact, and tightly tying with wire at each end. Comply with details shown on structural drawings and requirements of ACI CODE-318.

B. Provide minimum 1-1/2 inch clearance between sets of splices. Stagger splices in horizontal bars so that adjacent splices will be 4 feet apart.

C. Laps of welded wire reinforcement shall be at least two times the spacing of the members in the direction lapped but not less than twelve inches.

D. Splices of reinforcement shall not be made at points of maximum stress. Provide splice lengths as noted on the structural drawings, with sufficient lap to transfer the stress between bars by bond and shear.

E. Spacing:

1. Space bars minimum distance specified and all lapped bars 2 bar diameters (minimum) clear of the next bar.

2. Stagger splices of adjacent bars where possible and where required to maintain bar clearance.
3. Beam or slab top bars shall be spliced mid-span of column support and bottom bars spliced at column supports.
4. Request Architect/Engineer review prior to placement for all splices not shown on the drawings.

F. Reinforcement Couplers: Install at all locations indicated. Install couplers in accordance with manufacturer's recommendations.

3.5 WELDING

A. No reinforcing shall be welded unless specifically indicated. No reinforcing shall be welded without prior approval of the Structural Engineer and the Authority Having Jurisdiction.

B. Only when so approved for use as noted above, all welding shall conform to AWS D1.4, ACI CODE-318, and the following;

1. All welding performed by certified welders.
2. All reinforcement requires preheat prior to welding. All preheat and welding shall be continuously inspected by the Testing Agency.

3.6 MISPLACED REINFORCEMENT

A. Notify Architect/Engineer immediately if reinforcing bars are known to be misplaced after concrete has been placed.

B. Perform no correction or cutting without specific direction. Do not bend or kink misplaced bars.

C. Correct misplaced reinforcing only as directed in writing by the Architect/Engineer. Bear all costs of redesign, new, or additional reinforcing required because of misplaced bars at Contractor's expense.

3.7 FIELD QUALITY CONTROL

A. The Testing Agency as specified in the Article QUALITY ASSURANCE, will inspect the work for conformance to contract documents before concrete placement.

1. Inspection: Provide inspection and verification of installed reinforcement. Confirm that the surface of the rebar is free of form release oil or other coatings.
2. Inspect all preheat and welding activities for steel reinforcement, when these occur.

3. Exception: Shallow foundations & non-structural slabs-on-grade supporting buildings of no greater than three stories and either of concrete design strength 2500psi (or greater) or supporting light-frame construction do not require special inspection. Non-structural patios, driveways, and sidewalks do not require special inspection.

3.8 CLEANING

A. Remove excess material and debris associated with this work from the job site.

END OF SECTION

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: Provide all labor, materials, equipment and services to complete all concrete work required, including, but not limited to, the following:

1. Foundations, beams, columns, elevated slabs, slabs-on-ground, walls, and retaining walls.
2. Installation of all bolts, inserts, sleeves, connections, etc. in the concrete.
3. Joint devices associated with concrete work.
4. Miscellaneous concrete elements, including, but not limited to: equipment pads, light pole bases, flagpole bases, thrust blocks, and manholes.
5. Concrete curing.
6. Coordination with other sections:
   a. Make all preparations and do all work necessary to receive or adjoin other work. Install all bolts and anchors, including those furnished by other sections, into formwork and provide all required blocking.
   b. Install all accessories embedded in the concrete and provide all holes, blockouts and similar provisions necessary for the work of other sections. Provide all patching or cutting made necessary by failure or delay in complying with this requirement at the Contractor's expense.
   c. Coordinate with other sections for the accurate location of embedded accessories.

B. Related Sections:

1. Pertinent Sections of Division 01 specifying Quality Control and Testing Laboratory services.
2. Pertinent Sections of Division 03 specifying concrete construction.
3. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete.
4. Pertinent sections of other Divisions specifying floor finishes and sealants applied to concrete substrates.

1.2 REFERENCES

A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC) Chapter 19 Concrete.

B. American Concrete Institute (ACI) PRC-211.1 “Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete”

C. ACI PRC-213 “Guide for Structural Lightweight-Aggregate Concrete”.

D. ACI SPEC-301 “Specifications for Concrete Construction”.

E. ACI PRC-302.1 “Guide for Concrete Floor and Slab Construction”.

F. ACI PRC-304 “Guide for Measuring, Mixing, Transporting, and Placing Concrete”.

G. ACI SPEC-305.1 “Specification for Hot Weather Concreting”.

H. ACI SPEC-306.1 “Standard Specification for Cold Weather Concreting”.

I. ACI SPEC-308.1 “Specification for Curing Concrete”.

J. ACI CODE-318 “Building Code Requirements for Structural Concrete and Commentary”.

1.3 SUBMITTALS

A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer. Submittals that do not meet these requirements will be returned for correction without review. Submit for review prior to fabrication.

B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents.

C. Product Data: Submit manufacturers' data on manufactured products and other concrete related materials such as bond breakers, cure/sealer, admixtures, etc. Demonstrate compliance with specified characteristics. Provide samples of items upon request.

D. Mix Designs: Submit Mix Designs for each structural concrete type required for work per requirements of articles CONCRETE MIXES and QUALITY ASSURANCE. Resubmit revised designs for review if original designs are adjusted or changed for any reason. Non-Structural mixes need not be submitted for review by Structural Engineer.

E. Shop Drawings: Proposed location of construction and cold joints. Proposed location of all slab construction/dowel joints, control joints, and blockouts.

F. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.

G. Batch Plant Ticket: Include with delivery of each load of concrete. Provide ticket to the Testing Agency and the Architect/Engineer as separate submittals. Concrete delivered

to the site without such ticket shall be rejected and returned to the plant. Each ticket shall include all information specified in Article SOURCE QUALITY CONTROL below.

H. Engineering Analysis: Prepared by a California-licensed Civil or Structural Engineer, justifying construction-imposed loads on slabs, beams, and walls which exceed those allowed by CBC for the specified use.

1. 2000 lbs maximum allowable construction load without analysis.
2. 10,000 lbs maximum allowable construction load with analysis.

I. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.4 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.

B. Concrete construction verification and inspection to conform to CBC 1705.3.

C. Common Sourcing: Provide each of the following materials from consistent sources for entire project.

1. Cement.
2. Fly ash.
3. Aggregate.
4. Slag Cement.

D. Follow requirements of ACI SPEC-305.1 when concreting during hot weather. Follow requirements of ACI SPEC-306.1 when concreting during cold weather.

E. Services by the Independent Testing Agency (includes "Special" Inspections) as specified in this Section and as follows:

1. Perform tests and inspections specified below in articles SOURCE QUALITY CONTROL and FIELD QUALITY CONTROL. Duties and limitations of Independent Testing Agency, test costs and reports to be in conformance with pertinent Sections of Division 01.

F. Contractor shall bear the entire cost of remediation, removal, and/or replacement of concrete determined defective or non-conforming, including Architect/Engineer fees for redesign.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Materials specified by brand name shall be delivered in unbroken packages bearing manufacturer's label and shall be brand specified or an approved equal.

B. Delivery, Handling and Storage of other materials shall conform to the applicable sections of the current editions of the various reference standards listed in this Section.

C. Protect materials from weather or other damage. Sort to prevent inclusion of foreign materials.

D. Specific Requirements:

1. Cement: Protect against dampness, contamination, and warehouse set. Store in weather tight enclosures.
2. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregates. Use only one supply source for each aggregate stock pile.
3. Admixtures:
   a. Store to prevent contamination, evaporation, or damage.
   b. Protect liquid admixtures from freezing and extreme temperature ranges.
   c. Agitate emulsions prior to use.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather (Freezing or near-freezing temperatures) per ACI SPEC-306.1:

1. Heat concrete materials before mixing, as necessary to deposit concrete at a temperature of at least 50°F but not more than 90°F.
2. Do not place concrete during freezing, near-freezing weather, snow, rain or sleet unless protection from moisture and/or cold is provided.
3. Protect from freezing and maintain at a temperature of at least 50°F for not less than seven days after placing. Take special precautions to protect transit-mixed concrete.
4. No salts, chemical protection or admixture are permitted without written approval of Architect/Engineer.
5. Contractor shall maintain an air temperature log for the first 7 days after placement with entry intervals not to exceed 8 hours.

B. Hot Weather per ACI SPEC-305.1:

1. Cool concrete materials before mixing, or add ice in lieu of mix water as necessary to deposit concrete at a temperature below 85°F.
2. Do not place concrete in hot/windy weather without Architect/ Engineer review of procedures.
3. Provide sunshades and/or wind breakers to protect concrete during finishing and immediate curing operations. Do not place slab concrete at air temperature exceeding 90°F.

4. Provide modified mix designs, adding retarders to improve initial set times and applying evaporation reducers during hot/windy weather for review by Independent Testing Agency prior to use.

1.7 MOCK-UP

A. Construct and erect mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish, as result of formwork.

1. Panel Size: Sufficient to illustrate full range of treatment.
2. Number of Panels: 2.
3. Locate as indicated on drawings.

B. If requested by Architect / Engineer, cast concrete against mock-up panel. Obtain acceptance of resulting surface finish prior to erecting formwork.

C. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.

D. Mock-up may remain as part of the Work.

1.8 SCHEDULING AND SEQUENCING

A. Organize the work and employ shop and field crew(s) of sufficient size to minimize inspections by the Testing Agency.

B. Provide schedule and sequence information to Testing Agency in writing upon request. Update information as work progresses.

PART 2 – PRODUCTS

2.1 FORMWORK

A. Comply with requirements of Section 03 1000.

2.2 REINFORCEMENT

A. Comply with requirements of Section 03 2000.

2.3 MATERIALS

A. General Requirements: All materials shall be new and best of their class or kind. All materials found defective, unsuitable, or not as specified, will be condemned and promptly removed from the premises.

B. Cementitious Materials:

1. Portland Cement: ASTM C150, Type II, low alkali conforming to CBC 1903.1.
2. Fly Ash (Pozzolan): ASTM C618, Class F.
3. Slag Cement: ASTM C989, Grade 100 or 120.

C. Concrete Aggregates:

1. Coarse and Fine Aggregates: ASTM C33; Stone aggregate and sand. Specific source aggregate and/or sand or shrinkage characteristics as required for class of concrete specified.
2. Lightweight aggregate: ASTM C330 and C332.
3. Source shall remain constant throughout the duration of the job. The exact portions of the fine aggregates and coarse aggregates to be used in the mix shall be determined by the mix design.
4. Recycled concrete products: Returned plastic concrete may not be used in a mix. Recycled Concrete Aggregate (RCA) is not permitted. Reclaimed coarse aggregate is permitted and shall comply with ASTM C33. Reclaimed fine aggregate is not permitted.

D. Water: ASTM C1602. Potable, clean, from domestic source.

E. Admixtures: All admixtures shall be used in strict accordance with the manufacturer's recommendations. Admixtures containing calcium chlorides or other accelerators shall not be used without the approval of the Architect/Engineer and the Owner's Testing Laboratory.

1. Normal or Mid Range Water Reducing Admixtures: ASTM C494 Type A, “MasterPozzolith” series or "MasterPolyheed" series by Master Builders Solutions, "WRDA" series by W.R. Grace, or equal.
2. Water Reducing Admixture and Retarder: ASTM C494 Type B or D, "MasterSet R” series or “MasterSet DELVO” series by Master Builders Solutions, "Plastiflow-R" by Nox-crete, or equal.
3. High Range Water-Reducing Admixtures: ASTM C494 Type F, "MasterRheoBuild 1000" or “MasterGlenium” series by Master Builders Solutions or equal.
4. Air Entraining Admixtures: ASTM C260, “MasterAir” series by Master Builders Solutions or equal.
5. Viscosity Modifiers: ASTM C494 Type S, “MasterMatrix VMA” series by Master Builders Solutions or equal..

F. Slurry: Same proportion of cement to fine aggregates used in the regular concrete mix (i.e. only coarse aggregate omitted); well mixed with water to produce a thick consistency.

G. High Strength Grout: See section 05 1200 or 05 1100 for requirements.

H. Dry Pack: Dry pack (used only for cosmetic concrete repairs) shall consist of:

1. One part cement to 2-1/2 parts fine aggregate (screen out all materials retained on No.4 sieve), mixed with a minimum amount of water, added in small amounts.
2. Mix to consistency such that a ball of the mixture compressed in the hand will retain its shape, showing finger marks, but without showing any surface water.

2.4 ACCESSORIES

A. Bonding Agent: ASTM C881, Type II Grade 2 Class B or C. Do not allow epoxy to set before placing fresh concrete.

1. “MasterEmaco ADH 326” by Master Builders Solutions;
2. “Rezi-Weld 1000” by W.R. Meadows.

B. Chemical Hardener: Fluorosilicate solution designed for densification of cured concrete slabs. “MasterKure HD 300 WB” by Master Builders Solutions, "LIQUI-HARD" W.R. Meadows Co, or equal.

C. Moisture-Retaining Cover: ASTM C171, type 1, one of the following;

1. Regular Curing Paper, Type I, reinforced waterproof: Fortifiber Corporation "Orange Label Sisalkraft", "Pabcotite" paper, or equal.
2. Polyethylene Film: ASTM D 2103, 4 mil thick, clear or white color.
3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd.

D. Liquid Curing Compound: ASTM C 309, Type 1, Class B, clear or translucent, 25% minimum solids, water base acrylic cure/sealer which will not discolor concrete and compatible with bonding of finishes specified in related sections. W.R. Meadows Co. “Vocomp 25” or equal. Maximum VOC content shall comply with local requirements and California Green Building Code.

E. Under Slab Water Vapor Retarder: Vapor retarder sheet to be ASTM E1745 Class A; 15 mil, single ply extruded polyolefin; permeance no greater than 0.01 U.S. Perms per ASTM E154, ASTM E96 procedure B or ASTM F1249.

1. “Stego Wrap Vapor Barrier (15mil)” by Stego Industries LLC.
2. “Vaporguard” by Reef Industries.
3. Approved Equal.

F. Evaporation Reducer: "MasterKure ER 50”, by Master Builders Solutions.

G. Permeability Reducer: Use only where specifically referred to.

1. ASTMC494 Type S.

2. Admixture Type: Xypex Chemical Corporation "XYPEX Admix C-500", Master Builders Solutions “MasterLife 300” series. Dosage: per manufacturer.
3. Surface-Applied Type: Xypex Chemical Corporation "XYPEX Concentrate. Brush application: 1.25-1.50lb/sq. yd., 5 parts powder to 2 parts water. Master Builders Solutions “MasterSeal 500”. Slurry coat: one part water to 2.25-2.5 parts powder by volume.
4. Approved equal.

2.5 JOINT DEVICES AND MATERIALS

A. Waterstops: Resilient type, meeting Corps of Engineers CRD-C 572. Consult manufacturer for appropriate product for specific use. Submit for review. Install per manufacturers recommendation. Provide W. R. Meadows “Seal Tight” PVC waterstop, Sika “Greenstreak” PVC waterstop, or approved equal.

B. Expansion Joint Filler: ASTM D1751, Nonextruding, resilient asphalt impregnated fiberboard or felt, 3/8 inch thick and 4 inches deep; tongue and groove profile.

1. Products: "Serviced Products", W.R. Meadows, Inc., "National Expansion Joint Company", "Celotex Corporation", or equal.

C. Joint Filler: ASTM D944, Compressible asphalt mastic with felt facers, 1/4 inch thick and 4 inches deep.

D. Sealant and Primer: As specified in Section 07 9000.

E. Slab Joint Sealant: Compatible with floor finishes specified in related sections.

2.6 CONCRETE MIXES

A. General requirements for mix design and submittal of structural class concrete:

1. Provide Contractor submittals to Architect/Engineer not less than 15 days before placing concrete.
2. Contractor shall review mix designs and proposed placing requirements prior to submittal for compatibility to ensure that the concrete as designed can be placed in accordance with the drawings and specifications.
3. Changes or revisions require re-submittal: All variations to approved mix designs, including changing type and/or quantity of admixtures shall be resubmitted to the Architect/Engineer for review prior to use.
4. Mix design(s) for all structural classes of concrete to be prepared by qualified person experienced in mix design. Allow for time necessary to do trial batch testing when required.
5. Preparer to provide backup data and certify in writing that mix design meets:
   a. Requirements of the specifications for concrete durability and quality;

b. Requirements of the California Building Code and ACI CODE-318, including break histories, trial batching test results, and/or a mix designed by a California Registered Civil Engineer per ACI CODE-318 and bearing the Engineer's seal & signature.

6. Clearly note on mix designs with specified maximum W/CM if design permits addition of water on site, or clearly identify in the mix design that no water is to be added on site.
7. Deviations: Clearly indicate proposed deviations, and provide written explanation explaining how the deviating mix design(s) will provide equivalent or better concrete product(s) than those specified.
8. Include adjustments to reviewed mix designs to account for weather conditions and similar factors.

B. Proportioning - General: The following provisions apply to all mix designs:

1. Proportion concrete mixes to produce concrete of required average strength (as defined by ACI CODE-318). Select slump, aggregate sizes, shrinkage, and consistency that will allow thorough compaction without excessive puddling, spading, or vibration, and without permitting the materials to segregate, or allow free water to collect on the surface.
2. Select aggregate size and type to produce dense, uniform concrete with low to moderate shrinkage, free from rock pockets, honeycomb and other irregularities.
3. Mix designs may include water reducing and retarding admixtures to meet or exceed minimum set times (time required to place and finish) and to minimize Water-Cementitious Materials (W/CM). Minimum and maximum criteria presented in this section are guidelines and do not represent a specific mix design.
4. Cement Content: Minimum cement content indicates minimum sacks of cementitious material. Increasing cement content to increase early strengths or to achieve specified W/CM while maintaining water content is discouraged in order to minimize effects of shrinkage.
   a. Substitution of fly ash for Portland cement on an equivalent weight basis up to 25% replacement is permitted, except at high early strength concrete. Replacement in excess of 25% is not permitted unless part of a specified mix design that has been submitted for review.
   b. Substitution of slag cement for Portland cement on an equivalent weight basis up to 45% replacement is permitted, except at high early strength concrete. Replacement in excess of 45% is not permitted unless part of a specified mix design that has been submitted for review.
   c. Such substitution requests may be denied by the Engineer.
5. Water Content: Mix designs with a specified maximum W/CM may be designed with a lower WCR than specified in order to allow addition of water at the site.
6. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301 and this section.

a. For trial mixtures method, employ independent testing agency acceptable to Architect/Engineer for preparing and reporting proposed mix designs.

7. Placement Options: Mix designs may, at the Contractor's option, be designed for either pump or conventional placement with aggregate size, slumps, etc. to be maintained as specified in this section.

C. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations and this section.

D. Proportioning Structural Light Weight Concrete: Comply with ACI PRC-213 recommendations and this section. Maximum cured weight of light weight concrete shall be 120 pounds per cubic feet. General Contractor is responsible for coordinating and providing light weight concrete density to meet the required fire assembly rating of the Construction Documents at the concrete depths provided in the structural drawings. General Contractor to notify the Structural Engineer for review if light weight concrete of the required density for the specified fire assembly rating cannot be sourced.

E. Special mix design requirements for interior concrete floor slabs-on-ground:

1. Proportion concrete mixes per this specification, ACI PRC-211.1, and the requirements below:
2. Fly Ash, shall be substituted for cement on a 1 lb. per 1 lb. basis, with a minimum replacement of 25% and a maximum of 35%. Alternatively, slag cement, shall be substituted for cement on a 1 lb. per 1 lb. basis, with a minimum replacement of 30% and a maximum of 45%.
3. 200 lbs. of 3/8(-) aggregate shall be added to reduce total sand.
4. Reduce total sand to minimum practical.
5. Admixture dosage shall be per manufacturer’s recommendations. Dosage may be increased for workability as long as set times are not excessive for placement and finishing.

F. Special mix design requirements for high volume fly ash concrete:

1. Proportion concrete mixes per this specification, ACI PRC-211.1, and the requirements below:
2. Fly Ash shall be substituted for cement on a 1 lb. per 1 lb. basis, with a replacement of 50%.
3. Minimum strength at 28 days to be 2500 psi; minimum strength at 56 days to be 3000 psi.
4. Add 200-300 pounds 3/8” aggregate to replace portion of fine aggregate.
5. Admixture dosage shall be per manufacturer’s recommendations. Dosage may be increased for workability as long as set times are not excessive for placement and finishing.
6. Concrete shall be wet cured per CONCRETE CURING.

G. Mix Design Minimum Requirements:

Concrete Class	Coarse Aggregate Size (Inches) & Fine Aggregate[3]	Maximum W/CM or Maximum Nominal Slump & Tolerance (Inches)[1,2]	Minimum 28-Day Design Strength	Minimum Cement Sacks/per yd[4]
NON-STRUCTURAL				
1) Lean Concrete (use only where specified)	---	---	---	3.0
STRUCTURAL				
Interior Slab on Ground[5]	1" x #4	W/CM = .45	3,000	6.1
2) Foundation (including continuous footings, pad footings, grade beams, stem walls)	1" x #4	W/CM = .53	3,000	5.0
3) Cast Slab Above Grade on Metal Deck	3/4" x #4	W/CM = .53	3,000	5.0
4) Formed Cast Slab Above Grade, Beams, Columns, Walls, Retaining Walls	1" x #4	W/CM = .46	4,000	6.0
5) Drilled Pier	3/4" x #4	W/CM = .53	3,000	5.0
6) Tilt-Up Concrete Wall Panels	1" x #4	W/CM = .53	3,000	5.25
7) Light Weight Concrete	3/8" x #4 Expanded Shale	3" $\pm$ 1/2"	3,000	5.5
8) High Volume Fly Ash Concrete[6]	1" x #4	W/CM = .45	See footnote 6	6.0

1. The tolerance is the maximum deviation allowable without rejection. The mix design shall be based on the nominal value specified and is without water reducing mixtures. Slump to be measured at the end of the hose.
2. The maximum W/CM is limited at time of placement as noted. No water is to be added on site such that the specified W/CM or maximum slump is exceeded without approval of the testing laboratory and the Architect/Engineer. Workability is to be achieved utilizing an acceptable mid range to high range water reducing admixture.
3. Gradation of aggregate is per ACI CODE-318 and ASTM C33.
4. Minimum cement content includes all cementitious materials.
5. See Article 2.6E for additional requirements at interior slabs on ground.
6. See article 2.6F for additional requirements at high volume fly ash concrete.

2.7 MIXING CONCRETE

A. Batch final proportions in accordance with approved mix designs. All adjustments to approved proportions, for whatever reason, shall be reviewed by the Architect/Engineer prior to use.

B. Batch and mix concrete in accordance with ASTM C94, at an established plant. Site mixed concrete will be rejected.

C. Provide batch and transit equipment adequate for the work. Operate as necessary to provide concrete complying with specified requirements.

D. Place mixed concrete in forms within 1-1/2 hours from the time of introduction of cement and water into mixer or 300 revolutions of the drum whichever comes first. Use of, re-mixing, and/or tempering mixed concrete older than 1 hour will not be permitted.

E. Do not add water at the site to concrete mixes with a maximum specified W/CM unless the water content at batch time provides for a W/CM less than specified and this provision, including the quantity of water which may be added at the site, is specifically noted on the mix design and certification by the mix preparer. See ASTM C94 for additional requirements.

2.8 SOURCE QUALITY CONTROL

A. Services by independent Testing Agency:

1. Batch Plant Certificates: Obtain the weighmaster's Batch Plant Certificate at arrival of truck at the site. If no batch plant certificate is provided, recommend to the General Contractor that the truckload of concrete be rejected. So note in daily log, along with the location of the load of concrete in the structure if the load is not rejected.
   a. Laboratory's inspector shall obtain for each transit mixer Batch Plant Certificates to verify mix design quantities and condition upon delivery to the site.
   b. Certificates to include: Date, time, ingredient quantities, water added at plant and on job, total mixer revolutions at time of placement, and time of departure.
   c. Concrete with specified water cement ratio: Add no water on site unless mix design and batch records each show additional water may be added. See ASTM C94 for additional requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Verify work of other sections is complete and tested as required before proceeding.

3.2 PREPARATION

A. Observation, Inspection and Testing:

1. Architect/Engineer: Notify not less than 2 working days before each concrete placement, for observation and review of reinforcing, forms, and other work prior to placement of concrete.
2. Testing Agency: Notify not less than 24 hours before each placement for inspection and testing.

B. Placement Records: Contractor shall maintain records of time, temperature and date of concrete placement including mix design and location in the structure. Retain records until completion of the contract. Make available for review by Testing Agency and Architect/Engineer.

C. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

D. Verify location, position and inclusion of all embedded and concealed items.

E. Verify installation of vapor retarder under interior slabs on ground, as specified in related section, is complete.

F. Cleaning and Preparation:

1. Remove loose dirt, mud, standing water, and foreign matter from excavations and cavities.
2. Close cleanout and inspection ports securely.
3. Thoroughly clean reinforcement and other embedded items free from loose rust and foreign matter. Maintain reinforcing securely in place. Do not place concrete on hot reinforcing.
4. At cold joints, remove laitance from previously placed concrete surface.
5. Dampen form materials and substrates on which concrete is to be placed at least 1 hour in advance of placing concrete; repeat wetting as necessary to keep surfaces damp. Do not saturate. Do not place concrete on saturated material.
   a. Thoroughly wet wood forms (except coated plywood), bottom and sides of trenches, adjacent concrete or masonry and reinforcement.
   b. Concrete slabs on base rock, dampen rock.
   c. Concrete slabs on vapor retarder, do not wet vapor retarder.
6. Verify that metal forms are clean and free of rust before applying release agent.
7. Thoroughly clean metal decking. Do not place concrete on wet deck surface.
8. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

G. Drill holes in existing concrete at locations where new concrete is doweled to existing work. Insert steel dowels and prepare connections as detailed.
H. Do not overcut at existing concrete work to remain. Contractor is responsible for repair/replacement of overcut concrete to the Owner's satisfaction.

3.3 PIPES AND CONDUITS IN CONCRETE

A. Slabs-on-Ground:

1. No pipe or conduit exceeding 1 inch outside diameter shall be embedded within the specified slab thickness except as specifically detailed.
2. Do not stack or abut pipes, maintain 3 inches minimum clearance.

B. Sleeving and Wrapping:

1. Foundations: Sleeve or wrap all individual pipe penetrations, minimum 1-1/2 inches clear to reinforcing all around.
   a. Sleeves: PVC. Provide 1 inch minimum clear all around O.D. pipe to I.D sleeve, UNO at ends, fill void space with mastic or plastic bituminous cement.
   b. Wrapped Vertical Pipes: Provide 1/8 inch nominal sheet foam with three wraps minimum, UNO.
   c. Wrapped Horizontal Pipes: Provide 1/8 inch nominal sheet foam with eight wraps minimum, UNO.
   d. Underground Fire Lines 4" and Larger: At sleeves provide 2 inch minimum clear all around O.D. pipe to I.D sleeve. At wrapped pipes, provide 1/8 inch nominal sheet foam with sixteen wraps minimum.
2. Slabs or Curbs: Wrap pipes as described above.

C. Space groups of pipes/conduits at least 3 sleeve diameters apart, do not interrupt specified concrete and reinforcement.

1. Provide block-outs as detailed when grouping of pipes/conduits in foundation or other structural member prevents spacing as described. Notify Architect/Engineer for review of any conditions not conforming to details.
2. Center pipe/conduit penetrations in the depth and/or thickness of foundations.
3. Maximum size of pipe/conduit penetrations shall not exceed the least dimension of concrete divided by 3.

D. Do not embed pipes/conduits in concrete slabs on metal deck.

E. Provide the following at pipes/conduits detailed to be embedded in a concrete beam, wall or column:

1. Place as near as possible to center of member with reinforcing as specified on each side.

2. Where reinforcing is located near or at center of member, place pipe or conduit 1 inch minimum clear from reinforcing and provide #3 at 12 inches on center perpendicular to the pipe/conduit. Reinforcing to extend 12 inches minimum past pipe/conduit each side.
3. Maintain ¾ inch clear minimum from added reinforcing to face of concrete where not exposed to weather and 1-1/2 inches clear where exposed to weather.
4. Space embedded items (groups of pipe/conduit, junction boxes or other elements) minimum 3 inches apart.
5. Provide reinforcing in walls, beams, columns as detailed for groups of pipe/conduit. Provide minimum replacement reinforcement of same size and number for interrupted or displaced reinforcement for the full height, length, width of the wall, beam, and/or column on each side of the "effective opening."

3.4 CONCRETE PLACEMENT

A. Transporting:

1. Provide clean, well-maintained equipment of sufficient quantity and capacity to execute the work and produce concrete of quality specified.
2. Handle and transport concrete from mixer to final deposit location as rapidly as practicable. Prevent separation or loss of ingredients.

B. Perform concrete placement by methods which will not puncture, damage or disturb vapor retarder membrane. Repair all damage to vapor retarder membrane before covering.

C. Placement - General: Placement, once started, shall be carried on as a continuous operation until section of approved size and shape is completed. Provide construction joints as detailed on the drawings. Engineer's written approval required for all deviations.

1. Deposition:
   a. Deposit concrete to maintain an approximately horizontal plastic surface until the completion of the unit placement.
   b. Deposit as neatly as practicable in final position, minimize re-handling or flow.
   c. Do not drop concrete freely where reinforcing bars, embeds, or obstructions occur that may cause segregation. Provide spouts, elephant trunks, or other means to prevent segregation during placement.
2. Depth: Layered placement in columns and walls shall not exceed ten feet vertical depth.
   a. Place concrete in minimum 32 inch horizontal lifts.
   b. Schedule placement to ensure that concrete will not take initial set before placement of next lift.

c. No horizontal cold joints are allowed in columns or walls.

3. Progress Cleaning: Remove all concrete spilled on forms or reinforcing steel in portions of structure not immediately concreted. Remove completely before concrete sets.
4. Interruptions: Shut down placement operations and dispose of all remaining mixed concrete and concrete in hoppers or mixers following all interruption in placement longer than 60 minutes.
   a. If such interruption occurs, provide new or relocate existing construction joints as directed by Engineer.
   b. Cut concrete back to the designated line, cleaning forms and reinforcing as herein specified.
   c. Prepare for resumption of placement as for new unit when reason for interruption is resolved.

D. Placement - Elevated Structural Systems: Place as noted for "General" above and as follows:

1. Metal Decking and Structural Steel Beam Systems that are not to be shored: Locate screed lines on primary structural members. Review proposed screed line locations and expected structural deflections with the Architect/Engineer prior to placement of concrete.
2. Place screed lines to match camber of primary girders made of material other than concrete. Locate screeds to provide the minimum specified thickness of concrete at all locations.
3. Compensate for deflection of intermediate structural members and decking by placement of additional concrete.
4. Adjust embedded items to compensate for camber and deflection. Maintain locations within specified tolerances.

E. Consolidation:

1. Consolidate all concrete thoroughly during placement with high-speed mechanical vibrators and other suitable tools. Perform manual spading and tamping to work around reinforcement, embedded fixtures, and into corners of formwork as required to obtain thorough compaction.
   a. Provide vibrators with sufficient amplitude for adequate consolidation.
   b. Use mechanical vibrators at each point of concrete placement.
   c. Keep additional spare vibrators, in addition to those required for use, at the site for standby service in case of equipment failure.
2. Consolidate each layer of concrete as placed.
   a. Insert vibrators vertically at points 18 to 30 inches apart; work into top area of previously placed layer to reconsolidate, slowly withdraw vibrator to surface.
   b. Avoid contact of vibrator heads with formwork surfaces.

c. Systematically double back and reconsolidate wherever possible. Consolidate as required to provide concrete of maximum density with minimized honeycomb.

F. Unacceptable Materials:

1. Do not place concrete that has started to set or stiffen. Dispose of these materials.
2. Do not add water on site to concrete except as specified in the approved mix design, see PART 2 above.

G. Protection of installed work:

1. Do not introduce any foreign material into any specified drainage, piping or duct systems.
2. Contractor shall bear all costs of work required to repair or clean affected work as a result of failure to comply with this requirement.

3.5 CONCRETE JOINTS

A. Structural Joints (Construction/Cold Joints):

1. Locate joints only where shown, or as approved.
2. Review Required: Joints not indicated on the plans shall be located to meet the minimum requirements below, shall not impair the strength of the structure and shall be submitted to Architect/Engineer for review prior to placement of concrete.
   a. Indicate proposed location(s) of construction/cold/expansion joints on shop drawing submittals for review prior to placing concrete.
3. Clean and roughen all surfaces of previously placed concrete at construction joints by washing and sandblasting to expose aggregate to 1/4 inch amplitude.
4. Slabs-On-Ground: Maximum Length of continuous placement shall not exceed 60 feet without special review by the Architect/Engineer. Alternate or stagger placement sections.
5. Foundations, Beams, Elevated Slabs and Joists: Maximum Length of continuous placement shall not exceed 200 foot increments. Provide “keyed” shut-off locations made up with form boards. Extend reinforcing one lap length or more through shut-off.
   a. All reinforcement shall be continuous through construction/cold joint, lapping to adjacent reinforcing in future placement.
   b. Construction Joints in Elevated Slabs: Review all proposed locations with Architect/Engineer.
   c. Construction Joints in Slabs on Metal Decking: Review all proposed locations with Architect/Engineer. Do not locate closer than 48 inches of centerline of beam.

6. Retaining and Basement Walls: Maximum Length of continuous placement shall not exceed 100 foot increments. Provide “keyed” shut-off locations made up with form boards to limit the length of continuous placement and at abrupt changes in wall thickness. Extend reinforcing one lap length or more through shut-off.
    a. Review all proposed locations with Architect/Engineer
    b. Horizontal construction joints are not allowed unless approved by the Engineer
7. Horizontal Construction Joints: Place 2 inch slurry (specified concrete mix less coarse aggregate) at beginning of pour at the bottom of walls unless a prior review of a mock-up section demonstrates that segregation of aggregate will not occur.

B. Expansion/Construction Joints (Dowel Joints and Control Joints):

1. Interior and Exterior Slabs-on-Ground:
    a. Expansion/Construction Joints: Provide dowel joints or control joints at a maximum dimension (in feet) of three times the slab thickness (in inches) in each direction unless noted otherwise (15’-0” maximum). Install joints to match slab level and in straight lines. Locate joints at all reentrant corners including blockouts.
    b. Proportions: Install joints to divide slab into rectangular areas with long dimensions less than 1.5 times short dimension.
2. Exterior Concrete Slabs-on-Ground (walkways, patios):
    a. Expansion/ construction joints: Provide a 2 inch deep troweled groove or asphalt impregnated joint material embedded 50 percent of the slab depth at 12 feet on center, maximum.
    b. Proportions: Place no section with a length larger than two times width. Additionally, place joints at all inside corners and at all intersections with other work.
3. Elevated Structural Slabs: Locate construction joints as specifically indicated on the drawings. All additional proposed locations shall be reviewed by the Architect/Engineer prior to placement.
4. Retaining and Basement Walls:
    a. Contraction Joints: Provide ¾ inch wide beveled wood strips attached to inside face of formwork on each side of the wall. Wood strips shall extend 1/8 times the wall thickness into the wall. Cut 50% of the horizontal reinforcing bars at contraction joint locations
    b. Proportions: Place joints at 2 times the height of the wall on center max, but not less than 10’-0”. Joints shall not exceed 25’-0” on center.
    c. Review all proposed locations with Architect/Engineer

C. Joint Types:

1. Dowel Joint: A keyed joint with smooth dowels passing through to allow unrestricted movement due to contraction and expansion. Joints are as specified on the drawings.
2. Control Joint(s): Shrinkage crack control joints may be of the following types when shown on the drawings. Install joints in a straight line between end points with edges finished appropriate to type. Depth shall be 25% of the slab thickness, unless noted otherwise. Fill joints with sealant as shown on the drawings or as required by related sections.
   a. 1/4 inch wide troweled joint.
   b. Keyed joint: Only at locations where concealed by other finishes.
   c. Masonite Strip, 1/8 inch: Only at locations where concealed by other finishes.
   d. Saw Cut, 1/8 inch: Must be performed within eight hours of completion of finishing. Do not make saw cuts if aggregate separates from cement paste during cutting operation. Prevent marring of surface finish. Fill with flexible sealant.

3.6 VAPOR RETARDER

A. Vapor Retarder Installation: Install as specified in PART 2, ASTM E1643, and per manufacturer's recommendations including taping and lapping of seams, sealing of penetrations, and repair of damage. Do not extend vapor retarder below footings.

3.7 FLATWORK

A. General Requirements for All Concrete Formed & Finished Flat:

1. Edge Forms and Screeds: Set accurately to produce indicated design elevations and contours in the finished surface, edge forms sufficiently strong to support screed type proposed.
2. Jointing: Located and detailed as indicated.
3. Consolidation: Concrete in slabs shall be thoroughly consolidated.

B. Flatwork Schedule:

1. Exterior Slabs-On- Ground: Place concrete directly over sub-base as indicated.
   a. Sub-Base: Clean free-draining, crushed base rock, 4 inch minimum thickness, thoroughly compacted.
2. Interior Concrete Slabs-On- Ground:
   a. Sub-Base: Clean free-draining, crushed base rock, 4 inch minimum thickness, thoroughly compacted.
   b. Vapor Retarder: Install over sub-base.

3.8 FORMED SURFACES

A. Form all concrete members level and plumb, except as specifically indicated. Comply with tolerances specified in ACI CODE-318, ACI SPEC-301, and this specification, except that maximum permissible deviation is 1/4 inch end-to-end for any single member.

B. Cambers: Provide all cambers indicated in the formwork construction. Set screeds to produce specified cambers in the finished concrete.

3.9 CONCRETE FINISHES

A. Flatwork Finishing:

1. Perform with experienced operators.
2. Finish surfaces monolithically. Establish uniform slopes or level grades as indicated. Maintain full design thickness.
3. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains as indicated on drawings.
4. Flatwork Finish Types:
    a. Wood Float Finish: Surfaces to receive quarry tile, ceramic tile, or cementitious terrazzo with full bed setting system, or wood frame for raised finished floors.
    b. Steel Trowel Finish: Surfaces to receive carpeting, resilient flooring, seamless flooring, thin set terrazzo, thin set tile or similar finishes specified in related sections. Trowel twice, minimum.
    c. Broom Texture Finish: Exterior surfaces as indicated or for which no other finish is indicated. Finish as for steel trowel finish, except immediately following first troweling, (depending on conditions of concrete and nature of finish required) provide uniform surfaces texture using a medium or coarse fiber broom.

B. Other Concrete: Provide as required to achieve appearance indicated on structural and architectural drawings and related sections.

1. Repair surface defects, including tie holes, immediately after removing formwork.
2. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
3. Exposed Form Finish: Finish concrete to match forms. Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
    a. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
    b. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.

c. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.

4. Intermediate joint and score marks and edges: Tool smooth and flush unless otherwise indicated or as directed by the Architect.
5. Use steel tools of standard patterns and as required to achieve details shown or specified. All exposed corners not specified to be chamfered shall have radiused edges.

3.10 TOLERANCES

A. Minimum Flatwork Tolerances: Measure flatness of slabs with in 48 hours after slab installation in accordance with ACI PRC-302.1 and ASTM E1155 and to achieve the following FF and FL tolerances:

1. Exterior surfaces: 1/8 inch minimum per foot where sloped to drain. Level otherwise. FF20 and FL15.
2. Interior surfaces not otherwise shown or required: Level throughout. FF25 and FL20
3. Interior surfaces required to be sloped for drainage: 1/8 inch in 10 ft.
4. Finish concrete to achieve the following tolerances:
   a. Under Glazed Tile on Setting Bed: FF30 and FL20.
   b. Under Resilient Finishes: FF35 and FL25.
   c. Flooring manufactureer and pertainent section of Division 9.

B. Formed Surface Tolerances:

1. Permanently Exposed Joints and Surfaces: Provide maximum differential height within two feet of, and across construction joints of 1/16 inch.
2. Vertical Elevations: Elevation of surfaces shall be as shown or approved.

3.11 SEPARATE FLOOR TOPPINGS

A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.

B. Place required dividers, edge strips, reinforcing, and other items to be cast in.

C. Apply bonding agent to substrate in accordance with manufacturer's instructions.

D. Apply sand and cement slurry coat on base course, immediately prior to placing toppings.

E. Place concrete floor toppings to required lines and levels. Place topping in checkerboard panels not to exceed 20 feet in either direction.

F. Screed toppings level, maintaining surface tolerances per above.

3.12 CONCRETE CURING

A. Curing - General: Cure in accordance with ACI SPEC-308.1. Maintain concrete water content for proper hydration and minimize temperature variations. Begin curing immediately following finishing.

B. Protection During Curing: Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. The General Contractor is responsible for the protection of the finished slab from damage.

1. Avoid foot traffic on concrete for minimum of 24-hours after placement.
2. Protect concrete from sun and rain.
3. Maintain concrete temperature at or above 50 degrees F. during the first 7 days after placement. See Article ENVIRONMENTAL REQUIREMENTS.
4. Do not subject concrete to design loads until concrete is completely cured, and until concrete has attained its full specified 28-day compressive strength or until 14 days after placement, whichever is longer.
5. Protect concrete during and after curing from damage during subsequent building construction operations. See Article PROTECTION.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

1. Normal concrete: Not less than 7 days.
2. High early strength concrete: Not less than 4 days.

D. Begin curing immediately following finishing.

E. Surfaces Not in Contact with Forms:

1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than 3 days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
2. Begin final curing after initial curing but before surface is dry.
   a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive.
   b. Curing compound: Apply in two coats at right angles, using application rate recommended by manufacturer.
3. In addition, see specific conditions noted below.

F. Slabs on Ground: Cure by one of the following methods:

1. Water Cure (Ponding): Maintain 100 percent coverage of water over floor slab areas, continuously for minimum 7 calendar days.

2. Spraying: Spray water over floor slab areas and maintain wet for 7 days.
3. Moisture-Retaining Film or Paper: Lap strips not less than 6 inches and seal with waterproof tape or adhesive; extend beyond slab or paving perimeters minimum 6 inches and secure at edges; maintain in place for minimum 7 days.
4. Absorptive Moisture-Retaining Covering: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides and extend beyond slab or paving perimeters 6 inches minimum; maintain in place for minimum 7 days.
5. Liquid Membrane-forming Curing Compound: Provide only when subsequent concrete treatments or finish flooring specified in related sections will not be affected by cure/sealer. Apply curing compound in accordance with manufacturer's instructions at the maximum recommended application rate in two coats, with second coat applied at right angles to first.

G. Elevated Slabs: Cure by one of the following methods.

1. Moisture-Retaining Sheet: As specified for Slab on Ground above.
2. Water Cure: As specified above for minimum 14 days.
3. Apply Membrane Curing Compound as specified above after initial curing period.

H. Concrete on Metal Decking: Moisture-Retaining Sheet method as specified above.

I. Formed Concrete Members: Cure by moist curing with forms in place for full curing period.

1. Protect free-standing elements from temperature extremes.
2. Maintain forms tight for minimum 7 days. Maintain exposed surfaces continuously damp and completely covered by sheet materials thereafter.
3. Maintain all shoring in place. Refer to related sections specifying formwork.
4. Membrane Curing Compound: Apply compound in accordance with manufacturer's instructions in one coat.

J. Foundations: Apply curing compound immediately after floating.

3.13 CONCRETE HARDENER

A. Apply hardener to all floor slabs not receiving other finishes after 30 days minimum curing. Clean slabs of non-compatible cure/sealers or other foreign material(s) and apply in strict accordance with the manufacturer's directions.

3.14 GROUTING AND DRY PACK

A. Set steel plates on concrete or masonry with high strength grout bed, completely fill all voids; thoroughly compact in place. See Section 05 1200 or 05 1100.

B. Bolts or inserts dry packed or grouted in place shall cure for minimum 7 days before tensioning.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspections by Independent Testing Agency: Provided verification and inspection of concrete per CBC Table 1705.3. Provide written reports for to Engineer, Architect, Contractor and Building Official for the following tests and inspections:

B. Testing & Inspection: Provide periodic inspection of reinforcing steel. Provide continuous inspection during placement of structural class concrete, 3000 psi or more. Non-structural class concrete with a design strength of 2500 psi or less to have periodic inspection on a 150 cubic yard basis as required to assure conformance.
   1. Provide periodic inspection of bolts in concrete prior to and during placement where so noted on the construction documents.
   2. Structural Concrete Cylinder Tests: Form in accordance with ASTM C31.
      a. Take four standard 6 inch x 12 inch (or five 4 inch x 8 inch) cylinder specimens on the site, of each class of concrete as specified in PART 2, not less than once a day or for each 150 cubic yards or 5000 sq ft or fraction thereof placed each day.
      b. Record the location of each concrete batch in the building in a log and also note on each specimen.
      c. Perform standard compression test of cylinders in accordance with ASTM C39, one at 7 days and two (three for 4x8 cylinders) at 28 days.
      d. Hold fourth (fifth) cylinder untested until specified concrete strengths are attained.
   3. Structural Concrete Slump Test and Air Tests: Perform slump in accordance with ASTM C143 and air content in accordance with C231 or C173 at the time of taking test cylinders, and/or at one-hour intervals during concrete placing.
   4. Measure and record concrete temperature in accordance with ASTM C1064 upon arrival of transit mixers and when taking specimens. Note weather conditions and temperature.
   5. Determine concrete density in accordance with ASTM C138 at the time of forming test cylinders.
   6. Propose adjustments to reviewed mix designs for Architect / Engineer review to account for variations in site or weather conditions, or other factors as appropriate.
   7. Water Vapor Transmission Tests: Floors receiving floor finishes specified in related sections will be tested prior to installation of flooring systems. Refer to sections specifying floor finishes for related requirements.

C. Services by Contractor:

   1. Rejection of Concrete Materials: Do not use the following without prior written approval of the Architect/Engineer;
      a. Materials without batch plant certificates.

b. Materials not conforming to the requirements of these specifications.

3.16 ADJUSTING

A. Inspect all concrete surfaces immediately upon formwork removal. Notify Architect/Engineer of identified minor defects. Repair all minor defects as directed.

B. Surface and Finish Defects: Repair as directed by the Architect/Engineer, at no added expense to the Owner. Repairs include all necessary materials; reinforcement grouts, dry pack, admixtures, epoxy and aggregates to perform required repair.

1. Repair minor defective surface defects by use of drypack and surface grinding. Specific written approval of Architect/Engineer is required. Submit proposed patching mixture and methods for approval prior to commencing work.
2. Slabs-on- Ground, Elevated Slabs and on Slabs on Metal Deck: Review for "curled" slab edges and shrinkage cracks prior to installation of other floor finishes. Grind curled edges flush, fill cracks of 1/16 inch and greater with cementitious grout.
3. Grind high spots, fins or protrusions caused by formwork; Fill-in pour joints, voids, rock pockets, tie holes and other void not impairing structural strength. Provide surfaces flush with surrounding concrete.

3.17 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required compressive strength, lines, details, dimensions, tolerances, finishes or specified requirements; as determined by the Architect/Engineer.

B. Repair or replacement of defective concrete will be determined by the Architect/Engineer who may order additional testing and inspection at his option. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

C. Specific Defects:

1. "Low-Strength"; Concrete Not Meeting Specified Compressive Strength after 28 days:
   a. Concrete with less than 25% Fly Ash or 35% Slag as cementitious material: Test remaining cylinder(s) at 56 days. If strength requirements are met, concrete strength is acceptable.
   b. Concrete with 25% or more Fly Ash or 35% or more Slag as cementitious material: Test remaining cylinder(s) at 70 days. If strength requirements are met, concrete strength is acceptable.
2. Excessive Shrinkage, Cracking, Crazing or Curling; Defective Finish: Remove and replace if repair to acceptable condition is not feasible.

3. Lines, Details, Dimensions, Tolerances: Remove and replace if repair to acceptable condition is not feasible.
4. Slab sections not meeting specified tolerances for trueness/flatness or lines/levels: Remove and replace unless otherwise directed by the Architect/Engineer. Minimum area for removal: Fifteen square feet area unless directed otherwise by the Architect/Engineer.
5. Defective work affecting the strength of the structure or the appearance: Complete removal and replacement of defective concrete, as directed by the Architect/Engineer.

3.18 CLEANING

A. Maintain site free of debris and rubbish. Remove all materials and apparatus from the premises and streets at completion of work. Remove all drippings; leave the entire work clean and free of debris.
B. Slabs to Receive Floor Finishes Specified in other sections: Remove non-compatible cure/sealers or other foreign material(s) which may affect bonding of subsequent finishes. Leave in condition to receive work of related sections.

3.19 PROTECTION

A. Protect completed work from damage until project is complete and accepted by Owner.

B. Construction Loads: Submit engineering analysis for equipment loads (including all carried loads) specified in article submittals.

C. Keep finished areas free from all equipment traffic for a minimum of 4 additional days following attainment of design strength and completion of curing.

D. Protection of Drainage Systems:

1. Care shall be taken not to introduce any foreign material into any specified drainage, piping or duct system.
2. Cost of work to repair or clean drainage system as a result of failure to comply with this requirement will be back charged to the contractor.

E. Cover traffic areas with plywood sheets or other protective devices; maintain protection in place and in good repair for as long as necessary to protect against damage by subsequent construction operations.

END OF SECTION

SECTION 05-5213
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted guardrails.

1.02 REFERENCE STANDARDS

A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

D. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

E. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

F. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.

D. Fabricator's Qualification Statement.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Allow for expansion and contraction of members and building movement without damage to connections or members.

C. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
   2. Intermediate Rails: 1-1/2 inches diameter, round.
   3. Posts: 1-1/2 inches diameter, round.

D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

E. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

A. Steel Tube: ASTM A500/A500M Grade B cold-formed structural tubing.

B. Steel Pipe: ASTM A53/A53M Grade B Schedule 80, black finish.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D. Straight Splice Connectors: Steel concealed spigots.

E. Galvanizing: In accordance with requirements of ASTM A123/A123M.

1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
2. Interior Components: Continuously seal joined pieces by continuous welds.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/8 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/8 inch.

C. Maximum Out-of-Position: 1/8 inch.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: All labor, materials and equipment and all operations required to complete all rough carpentry and structural framing as indicated on the drawings; to produce shapes and configurations as shown, as required; and as specified herein, including:

1. Structural floor, wall, and roof framing.
2. Floor, wall, and roof sheathing.
3. Rough hardware, framing connectors and fasteners.
4. Treatment of wood.
5. Concealed wood blocking for support of toilet and bath accessories, wall cabinets, wood trim, and other work requiring supporting blocking.
6. Miscellaneous wood nailers and furring strips, including roof applications, other wood framing, furring, shims or blocking as required to complete the work.

B. Related Sections:

1. Pertinent sections of Division 01 specifying Quality Control and Testing Agency services.
2. Pertinent sections of Division 01 specifying Structural Product Requirements: Structural Product Options, Substitution procedures and limitations, transportation, handling and storage.
3. Pertinent sections of Division 03 specifying wood formwork construction and/or setting anchors in concrete.
4. Pertinent section of Division 06 specifying wood construction and materials.
5. Pertinent sections of other divisions specifying steel or concrete construction.

1.2 REFERENCES

A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC): Chapter 23 Wood.

B. American National Standards Institute (ANSI) / American Wood Council (AWC) “NDS - National Design Specification for Wood Construction”.

C. National Institute of Standards and Technology (NIST) / Engineered Wood Association (APA) “PS 1 - Voluntary Product Standard for Structural Plywood”.

D. NIST / APA “PS 2 - Performance Standard for Wood-Based Structural-Use Panels”.

E. NIST “PS 20 - American Softwood Lumber Standard”.

F. Redwood Inspection Bureau (RIS) “Standard Specifications for Grades of California Redwood Lumber”.

G. West Coast Lumber Inspection Bureau (WCLIB) “Standard Grading Rules for West Coast Lumber No. 17”.

H. Western Wood Products Association (WWPA) “Western Lumber Grading Rules”.

I. American Wood Preservers Association (AWPA) “Book of Standards”.

1.3 SUBMITTALS

A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. Submit for review prior to fabrication. Submittals that do not meet these requirements will be returned for correction without review.

1. Substitutions for products specified require conformance to substitution requirements in Division 01.
2. Review of materials and hardware for substitution to products specified is at the additional expense of the Contractor.

B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer.

C. Product Data:

1. Submit manufacturer's product data, specifications, and installation instructions for & location of framing connectors, wood preservative materials, application instructions, and fasteners. Include complete, accurate equivalence data when submitting alternate products to those specified. Provide samples of these items upon request.
2. Submit product data and current ICC-ES report for machine-driven nails, fasteners, and equipment, including dimensions of all fasteners, including head, shank diameter and length.

D. Shop drawings: For manufactured wood products, submit each building as a complete unit. Do not mix components from multiple buildings or units of work in a submittal. Include all of the following;

1. Indicate profiles, sizes, and spacing locations of structural members.

2. Cross-reference all shop drawing detail references to contract document detail references.
3. Secure all field measurements as necessary to complete this work.

E. Manufacturer's Certificate: Submit all certifications of physical and chemical properties of materials as specified below in Article titled QUALITY ASSURANCE.

1. Certify that wood products supplied for rough carpentry meet or exceed specified requirements, including specified moisture content.

1.4 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies, refer to pertinent sections of Division 01 and CBC Chapter 17.

B. All tests shall be performed by a recognized testing agency as specified in pertinent sections of Division 01.

C. Inspection of fabricators is required per CBC 1704.2.5 unless fabricator is registered and approved by the building official. Wood product quality standards:

1. All wood products to comply with article REFERENCES.
2. Factory-mark each piece of lumber and sheathing with type, grade, mill, and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.
3. Sheathing panels to be marked by APA (The Engineered Wood Association).

D. End-Jointed lumber shall not be used.

E. Hardware and engineered wood products shall have current ICC ES Evaluation/research reports that are equivalent to products specified.

F. Employ competent workers experienced in work of the types specified and required.

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent requirements of Division 01.

B. Delivery: Time delivery and installation of carpentry products to avoid delaying other trades whose work is dependent on or affected by this section and to comply with moisture content, protection and storage requirements.

C. Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and sheathing panels to prevent deformation and provide air circulation within stacks.

1. Store materials for which a maximum moisture content is specified only in areas where relative humidity has been reduced to a level where specified moisture content can be maintained.
2. Handle and store materials above ground to prevent damage, contamination, or accumulation of dirt or foreign materials.
3. Provide special protection for horizontal sheathing panels. Deformation of panels due to moisture is not acceptable.

1.6 PROJECT/SITE CONDITIONS

A. Verify all conditions at project site affecting the work; work to field dimensions as required. Coordinate carpentry installation with size, location, and installation of service utilities.

B. Sequence rough carpentry installation activities to allow sufficient time for:

1. Review of all submittals.
2. Indicate submittal review, procurement, and testing activities in the project schedule prior to the start of installation. Installation durations shall be based on hand-nailed installation methods specified.
3. Attainment of specified maximum lumber moisture content.

PART 2 - PRODUCTS

2.1 DIMENSIONED LUMBER

A. General

1. Size per industry standards for nominal sizes shown; S4S (sanded four sides).
2. Warped/twisted and excessively checked members shall not be used regardless of grade marks.
3. At the Contractor's option, engineered lumber of equivalent size and material properties may be substituted for solid sawn lumber where material is difficult to source due to length, availability, etc. Submit proposed substitution to Engineer for review prior to purchasing materials.

B. Moisture content of framing:

1. All sawn lumber to be maximum 19% at time of fastener installation and at time of close-in, unless noted otherwise.
2. The Owner's Testing Laboratory will test for moisture content prior to commencement of close-in.
3. The Contractor shall recognize that excessive shrinkage of lumber results from excess moisture content at the time of installation. The Contractor will compensate for use of such lumber by waiting for acceptable moisture content

before close in and/or by replacing/repairing lumber that has sagged, twisted, or warped prior to close in.

4. Deviation from this specification would require structural redesign of connections and fasteners.

C. Sills/ledgers on concrete or masonry: No. 2 pressure treated Douglas Fir and as called for on the drawings.

D. Interior structural framing shall be Douglas Fir (D.F.) with grades as noted below, unless otherwise specified on the drawings. All grades are per WCLIB standard grading rules.

1. All permanently exposed (interior or protected from weather) framing shall be select structural grade with no box heart.
2. Except per 1 above, unless noted otherwise, minimum grades are:
   a. Floor/roof joists/rafters (2x) and 2x8 & larger studs: D.F. No. 2
   b. 2x4 and 2x6 studs and plates: D.F. No. 2
   c. 4x and larger: D.F. No. 1
   d. Blocking: D.F. No. 2
   e. 6x8 and larger posts and beams may be SGL/CGL per below unless noted otherwise on the drawings.

E. Exterior structural framing (exposed to weather) shall be redwood select structural grade or pressure treated D.F. No. 1, unless noted otherwise.

F. Structural decking shall be D.F. select decking or White Pine select where not exposed to moisture. Where directly exposed to moisture or high humidity for prolonged periods of time, decking shall be Alaskan Yellow Cedar or Port Orford Cedar. Moisture content at time of installation to be less than 12%.

G. Framing not otherwise shown or specified: Douglas Fir construction grade per WCLIB paragraphs applicable to uses and sizes required.

2.2 MANUFACTURED LUMBER

A. All engineered lumber to be maximum 16% at time of fastener installation and at time of close-in, unless noted otherwise.

B. Structural (Certified) Glued Lumber (SGL): SGL shall be manufactured following the American Lumber Standards Committee (ALSC) "Glued Lumber Policy" and meet the requirements of Voluntary Product Standard PS 20 "American Softwood Lumber Standard". Grading shall be per the West Coast Lumber Inspection Bureau (WCLIB) or Western Wood Products Association (WWPA). SGL shall be manufactured with waterproof adhesive. "Stud use only" SGL is not permitted.

1. Acceptable products:
   a. “RMT” by Rosboro.

b. Approved equal.

2. Where specified for use on plan, SGL shall be entirely Douglas Fir lumber. SGL shall be grademarked to match the grade as would be specified for solid sawn lumber in the same location/use.
3. At the contractor's option, SGL may be substituted for solid sawn lumber. SGL species and grade shall match that for the solid sawn member. SGL shall not be substituted for glued-laminated (glulam) members.

C. Laminated Veneer Lumber (LVL): for use as joists, beams, blocking, or studs when so noted on the drawings. Conform to ICC AC 47. Minimum F_b = 2,600 PSI. Minimum E=2,000,000 PSI. Acceptable products:

1. "Microllam LVL" by Trus Joist, ICC ESR-1387
2. "Redlam LVL" by RedBuilt, ICC ESR-2993
3. Approved equal

D. Laminated Strand Lumber (LSL): for use as blocking (flat or vertical) or rim joist when used with I-joist or LVL, when so noted on the drawings. Conform to ICC AC 124. Minimum F_b = 1,700 PSI. Minimum E=1,300,000 PSI. Acceptable products:

1. "Timberstrand LSL" by Trus Joist, ICC ESR-1387
2. "Redlam LSL" by Redbuilt, ICC ESR-1387
3. Approved equal

E. Parallel Strand Lumber (PSL): for use as beams and posts when so noted on the drawings. Conform to ICC AC 47. Minimum material properties for beams: E = 2,200,000 psi; F_b = 2,900 psi; F_c = 2,900 psi (parallel); F_v = 290 psi. Minimum material properties for posts: E = 1,800,000 psi; F_b = 2,400 psi; F_c = 2,500 psi (parallel); F_v = 190 psi. Acceptable products:

1. "Parallam PSL" by Trus Joist, ICC ESR-1387
2. Approved equal

2.3 STRUCTURAL SHEATHING PANELS

A. All sheathing to be maximum 16% at time of fastener installation and at time of close-in, unless noted otherwise.

B. Plywood: Structural sheathing shall conform to product standard PS-1 or PS-2. All panels shall have a minimum bond classification of "Exposure 1" and bear the trademark of the Engineered Wood Association (APA) or other qualified agency. Grades shall be "Rated Sheathing" or "Structural 1" as required on the drawings.

C. Oriented Strand Board (OSB): All structural OSB shall be grade marked by a qualified agency for conformance with Product Standard PS-2 and shall be fabricated with exterior glue. Grades shall be as required on the drawings.

2.4 TREATED WOOD:

A. Treated Lumber and Plywood: Comply with requirements of AWPA Standard U1. See Standard U1 for "Use Category" designations. Do not provide higher Use Category lumber than that specified. Maximum moisture content shall be the same as required above for respective product type.

B. Preservative Treated Lumber

1. General
   a. Preservatives shall be waterborne. Preservative retention rate shall be as required per AWPA Standards U1 & T1. Lumber shall be Douglas Fir No. 2 (or better). Cut faces of treated wood shall be brush treated (two complete applications) prior to installation.
   b. Lumber less than 8 inches above grade and lumber less than 6 inches above exterior hard-surface flatwork shall be treated.
   c. Each piece of wood shall be stamped by the wood preservative applicator to identify its treatment and preservative retention.
2. Lumber at interior, non-weather exposed locations installed adjacent to concrete or masonry shall be Use Category UC2. Examples include sill plates & ledgers and lumber in contact with roofing, flashing, or water proofing. Borate treated lumber meeting AWPA UC2 is acceptable in this application.
3. Lumber at exterior locations, not in contact with soil/ground, shall be Use Category UC3B. Examples include Douglas Fir decking and deck framing.
4. Lumber in contact with soil/ground shall be Use Category UC4A. Examples include timber retaining walls.
5. Poles, posts, and sheathing panels shall be treated as recommended by AWPA Standard U1 per use and exposure.
6. Maximum Volatile Organic Compound (VOC) content of field-applied preservative shall meet local air quality standards and the California Green Building Code. Provide either of the following:
   a. Copper Azole (CA-B) per ICC-ES AC326.
   b. Alkaline/Copper/Quaternary (ACQ).

C. Fire Retardant Treatment: Product and application process must be recommended by manufacturer of treatment as being suitable for painting. Application shall be by a California State Fire Marshal approved licensed contractor.

1. Exterior Type: Use Category UCFB, chemically treated, and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
   a. Treat exposed exterior rough carpentry items, including stairways, balconies, and covered walkways.

b. Do not use treated wood in direct contact with the ground.

2. Interior Type: Use Category UCFA, low temperature (low hygroscopic) type, chemically treated, and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
   a. Treat rough carpentry items as indicated.
   b. Do not use treated wood in applications exposed to weather or where the wood may become wet.

2.5 FASTENERS AND ACCESSORIES

A. General requirements for fasteners:

1. Fasteners shall be of adequate size, spacing, and number to resist design loads under intended use, and types shall be appropriate for the materials or conditions for which used.
2. Provide washers, pre-drilling, etc. as required for proper installation and to prevent damage to framing.
3. Fasteners shall be hot-dip galvanized (ASTM A153), mechanically galvanized (ASTM B695 class 55 minimum), stainless steel (type 303, 304, 305, or 316), silicon bronze, or copper by approved methods for the following applications:
   a. Exterior, exposed use.
   b. In contact with preservative or fire-retardant treated wood.
   c. Nails in contact with preservative treated wood containing ammonia shall be stainless steel.
4. Fasteners in moist corrosive atmosphere to be of stainless steel (type 303, 304, 305, or 316).
5. Where the retention level of ACQ or MCQ preservative is greater than 0.40 pcf, CBA-A preservative is greater than 0.41 pcf, or CA-B preservative is greater than 0.21 pcf, provide stainless steel fasteners (type 303, 304, 305, or 316).
6. All fasteners specified by manufacturer shall be installed in framing hardware, unless noted otherwise.
7. At borate treated lumber a clear zinc coating per ASTM F1941 is acceptable.

B. Nails and nailing not otherwise shown or specified:

1. Comply with requirements of governing building code.
2. For securing materials to hardened concrete or masonry provide hardened steel masonry nails or Simpson Strong-Tie “Titen” screws.
3. For framing and general woodwork: Common bright wire nails (not box nails) with centered full-round heads per ASTM F1667 including Supplement S1. 16d cement coated sinker nails may be used in lieu of common nails for framing, where noted on the drawings. Unless otherwise noted on drawings, nail sizes shall be as follows

a. 8d Common: 0.131”ø x 2-1/2” long with 0.281”ø head.
b. 10d Common: 0.148”ø x 3” long with 0.312”ø head.
c. 16d Common: 0.162”ø x 3-1/2” long with 0.344”ø head.

4. Nails for sheathing panels shall be of common wire with full round heads and shall be of sufficient length to fully develop the nails.
5. Machine-driven nails of all types must comply with the requirements of this section. All proposed nails shall match diameter and penetration of specified nails.
6. Staples shall conform to length and gauges specified and shall be installed to match specified patterns and spacing.
7. Power Actuated Fasteners (PAF): Use only as approved by the Architect/Engineer; operators shall be qualified.

C. Bolts: Malleable iron washers or steel plate washers, unless otherwise shown, shall be provided under all bolt heads and nuts.

1. Machine Bolts: ASTM A307 and ANSI/ASME B18.2.1, standard semi-finished machine bolts as shown or required. Nuts shall be standard size unless noted otherwise and shall be per ASTM A563.
2. Anchor bolts or threaded rod anchors shall conform to ASTM F1554, ASTM A307, or ASTM A36. Anchor bolts shall be headed or end in two nuts tightened against one another, unless noted otherwise. Provide embedded plate washer as indicated on drawings. No upset threads allowed. No L or J bolts allowed.

D. Lag screws: Standard hex lag screws per ANSI/ASME B18.2.1.

E. Wood screws: Standard wood screws per ANSI/ASME B18.6.1.

F. Power Actuated Fasteners (PAF): Hilti X-CP72, ICC ESR-2379; Simpson PDPAWL-300 MG, ICC ESR-2138.

G. Framing hardware: Fabricated sheet metal timber framing connectors shall be manufactured from painted or galvanized G90 steel by Simpson Strong-Tie (connectors specified on drawings are per Simpson Strong Tie, or approved equivalent. Connectors shall be at least 16 gauge material, (1/8 inch plate materials where welded), unless otherwise noted, punched for nailing. All heavy hardware to be fabricated from A36 steel per Division 05, Metals. All hardware intended for exterior exposed use shall be galvanized per G185 ASTM A653 or stainless steel.

1. For contact with preservative or fire-retardant treated wood, provide minimum G185 galvanizing per ASTM A653.
2. Nails and nailing shall conform to the manufacturer’s instructions with a nail provided for each punched hole. Nails to be used with framing accessories are subject to the requirements specified in this Section for fasteners and anchors.

H. Subfloor Glue: Water proof, water base, air cure type, cartridge dispensed conforming to APA Standard AFG-01 or ASTM D3498. Maximum Volatile Organic Compound (VOC) shall meet local air quality standards and the California Green Building Code.

2.6 SOURCE QUALITY CONTROL

A. The Testing Agency, as specified in the Article QUALITY ASSURANCE, will perform testing for moisture content of all lumber at time of fastener installation.

B. The Testing Agency will submit reports as specified in Division 01.

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR STRUCTURAL FRAMING

A. General

1. Refer to drawings for layouts, notes and details, provide framing as required; comply with governing building code requirements.
2. Provide framing to achieve true alignments as surfaces receiving finish materials.
3. It shall be the responsibility of the Contractor to provide and install all wood blocking, furring strips, or grounds detailed or required to provide anchorage for all finishes, accessories, fixtures, etc. as required to complete all work. All blocking and/or backing shall be securely bolted or otherwise anchored in place.
4. Contractor shall be responsible for layout of anchor bolts, and other hardware embedded in concrete when placed by other trades.
5. Provide and install all structural framing, blocking, fasteners, brackets, clips, etc. as required to complete work specified in the Construction Documents.

B. Framing

1. Sill Plates and Ledgers:
   a. Sill plates and ledgers on concrete shall be anchored with bolts, unless noted otherwise, shall have full bearing on concrete, and shall be placed for sheathing panel nailing as indicated. All bolt nuts shall be provided with a cut plate steel washer for bearing on wood.
   b. Provide a minimum of two sill anchor bolts per sill piece with a bolt no less than 4 ½” and no more than 12” from the end of the sill. Bolts to be 5/8" diameter x 12" (18” at curb) long at 48” on centers, unless otherwise shown or noted. Provide additional anchor bolts each side of a notch or hole, as per a typical plate splice, where notch or hole is in excess of 1/3 the plate width. At shear walls, provide a plate washer 3” x 3” x 0.229” minimum between the sill and nut at anchor bolts. Plate washer to extend within ½ inch of the structural wall sheathing. Offset and/or stagger anchor bolts, or provide larger plate washer as required.

c. Anchor bolt holes in sill plates or ledgers shall be 1/16" maximum larger than anchor bolt.

2. Stud Walls and Framing:
   a. Cut studs and posts with square ends, unless otherwise shown or noted. All posts and beams shall be "cut to bear" unless otherwise detailed.
   b. All studs in walls shall be placed with the shortest dimension parallel to the run of the wall. Bearing studs shall extend full height to be the supporting framing as shown; non-bearing studs shall extend to the supporting framing.
   c. Provide double studs on each side of all openings, unless shown or noted otherwise.
   d. All openings in stud walls and partitions shall be framed with headers across the top, as shown, with a minimum size (6" nominal depth x stud width) resting on short cripple studs, and as shown on the drawings.
   e. All stud partitions and walls shall have horizontal solid blocking not less than 2x and of the same width as the stud, fitted and nailed into the studs at mid-height of stud, for studs over 8 feet in height, except as otherwise shown or specified. This blocking shall be so spaced that there shall be no concealed air spaces greater than eight feet in any dimension.
   f. Stud partitions containing plumbing, heating or other pipes shall be so framed as to give proper clearance for piping. Plumbing, heating and vent pipes exceeding 1-1/2" in inside diameter shall not be placed in partitions used as bearing or shear walls unless completely furred clear of the wall. No notching shall be allowed. Pipes shall be placed in the center of the plate using a neat bored hole and the plates shall be strapped on each side with 3" x 36" x 14 gauge steel punched for 10d nails 3" on center, staggered, or as shown on the drawings.
3. Top Plates
   a. Top plates shall be double, set single. Corners where stud wall or partitions meet shall be framed with studs on all surfaces and blocking to form a "rigid" corner with nailing for all corners. Double top plates shall be lapped at corners. Lap splices and nailing per the drawings.
4. Floor, Roof and Ceiling Framing
   a. Joists and beams shall be accurately aligned and the position and spacing of all joists and beams shall be as shown and be coordinated with other framing and to other trades prior to actual construction.
   b. Place all joists and beams with crown up. Cantilevered joists and beams shall be placed with the crown down.
   c. Cutting of wood girders, beams or joists for electrical and mechanical lines shall be limited to cuts and bored holes not deeper than 1/5 of the beam depth from the top and located not farther from the support than three times the beam depth and not less than the beam depth. Cuts in excess of this, or single bored holes with a diameter of more than 1" are not permitted without special provisions for framing the beams.

Location of all cuts in framing shall receive the prior review of the Architect/Engineer.

d. Provide vent holes in rafters and/or blocking as shown and/or directed by the Architect.

3.2 STRUCTURAL SHEATHING

A. General

1. Sheathing nailing shall be as required on the drawings. Do not overdrive (Do not break skin of sheathing face sheet). Over driving will be cause for rejection.
2. Form sheathing may be re-used for concealed sheathing provided the lumber at the time of re-use is approved by the Architect, meets with the framing grade requirements specified herein, is in good condition, and is thoroughly cleaned with all nails removed.
3. Pneumatic nailing devices shall be adjustable so that nail heads do not penetrate skin of sheathing. Contractor shall submit equipment and nails for review prior to use. Refer to PART 2 for other nailing requirements.

B. Roof and Floor Sheathing: Except "Panelized Roofs", lay with face grain perpendicular to roof rafters, roof trusses or floor joists. Stagger sheets. Block all unsupported sheet edges with 2x material unless noted otherwise.

C. Wall Sheathing: Lay with face grain either parallel or perpendicular to studs. Exposed bottom edges shall be sealed as recommended by manufacturer. Block all unsupported sheet edges with 2x materials unless noted otherwise.

D. Panelized Roofs: Where sheathing is set @ 8'-0 1/8" spacing, cut every fourth sheet short by 1/2" to re-align structural framing that has been specified to be spaced at even units of 2, 4 or 8 feet.

3.3 ROUGH HARDWARE

A. General: Nails, spikes, screws, fabricated sheet metal anchors, ties, hangers and any other materials shown or required for the attachment of wood to concrete and wood to steel and wood to wood shall be furnished and installed as part of this work.

B. Framing Nailing: All framing nailing shall conform to minimum requirements of the Building Code, and with details shown on the drawing.

C. Bolts, Lag Screws and Washers:

1. Bolts in wood shall be machine bolts unless otherwise noted and shall be of such length that the bearing length of the threads does not exceed ¼ of the full bearing length in the member holding the threads. Bolt holes in wood shall be 1/32" oversized. Bolt holes for sill plates may be 1/16" maximum oversize.

Holes in steel shall be 1/16" oversize. See Section 3.1 for anchor bolts at sill plates and ledgers.

2. Provide square plate or malleable iron washer and nut at head where bearing is against wood; cut washer under nut where it is against steel. Washer will not be required under head of carriage bolts. Provide malleable iron washers where exposed.
3. All nuts shall be tightened when placed and retightened at completion of the job or immediately before closing with final construction.
4. Lag screws shall be screwed (not driven) into place. Drill pilot hole to 70% of shank diameter. Drill clearance hole to full shank diameter and depth of unthreaded screw length.

D. Wood Screws: Minimum penetration is 10 diameters unless noted otherwise. Where fastening hardwood timber species or where wood tends to split, provide pilot hole 70% of screw shank diameter.

E. Proprietary Fasteners and Hardware: Install per manufacturer's published installation instructions (MPII) and code approval report (e.g. ICC ESR, IAPMO ER, etc). Provide MAX quantity, size, and length of fastener at hardware (i.e. joist hangers, framing, clips, etc) unless otherwise noted per plan.

3.4 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

A. Coordinate installation of wood decking, metal-web wood joists, glued-laminated wood construction, shop-fabricated wood trusses, and wood I- joists.

B. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members. Fasten curbs corner-to-corner and to rafters with framing connectors configured for this application.

C. Blocking:

1. Provide fire blocking at locations and spacing's as required by CBC Chapter 7. Locate other blocking, supplementary framing, backing plates and bracing to facilitate installation of finish materials, fixtures, equipment, services, accessories, and trim requiring attachment and support.
2. Solid block joists and rafters over all supports with blocking of the same size and material as the joist or rafter.

D. Furring:

1. Nominal 1 inch x 3 inch minimum, continuous and spaced at 16 inches on center, maximum.
2. Install plumb, rigid, and level. Shim where necessary to provide a true, even plane suitable to receive the finish required.
3. Attach to concrete and masonry as shown in the contract drawings.

E. Bridging: Use 2 inch solid cross bridging. Nail bottom ends of bridging only after sheathing has been nailed.

F. Stair Framing: Provide with 3 stair stringers for each set of stairs, unless otherwise shown. Cut notches to receive exact size of treads and risers (if any) shown, with no change in dimensions between landings. Provide stringers of size shown, or if not shown, of a size to allow not less than 3-1/2 inch of effective depth, measured perpendicular to the rake of the stringer, after notching.

G. Install miscellaneous metal angles, bolts, and other items; secure into formwork where embedded in concrete.

H. Install accessory items not otherwise set under other sections; after completion of painting and other finishing work; in locations shown or directed by the Architect. Set items plumb, level, and secure using appropriate fastening as applicable.

3.5 FIELD APPLIED WOOD TREATMENT

A. Field treat all end cuts and holes in preservative treated materials per PART 2.

B. Apply two brush coats; or full-immersion dip not less than 15 minutes; or as required to thoroughly saturate all surfaces after cutting.

C. Air dry 2-hours minimum before installation.

3.6 TOLERANCES

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

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum. Provide framed substrates meeting requirements for application of finishes specified in other sections.

D. Exposed surfaces shall be free from dents and tool marks, unsanded rough or torn faces and corners, and other defects.

3.7 FIELD QUALITY CONTROL

A. The Testing Agency, as specified in the Article QUALITY ASSURANCE, will perform the following tests and submit reports as specified in Division 01:

1. Moisture content of all lumber at time of close-in.

2. Periodic special inspection of nailing, bolting, and other fastening within the seismic-force-resisting system including shear walls, wood diaphragms, etc. per CBC Section 1705.13.2, excluding systems with sheathing nailing spacing greater than 4” on center.
3. Special inspection of high load diaphragms per CBC Section 1705.5.1 where designated on documents.

3.8 ADJUSTING

A. Replace all defective work at Contractor's expense.

B. Replace defective or damaged work with conforming work.

C. Correct defects using means that will not injure the materials.

D. Replace defective or damaged work which cannot be corrected in the field with new work, or return defective items to the shop for repair.

E. Repair or replace framing lumber sagged, twisted or warped due to shrinkage from excessive moisture content at time of installation, or from other causes.

F. Adjust to meet specified tolerances.

G. Architect/Engineer shall review all proposals for the repair or replacement of damaged, defective, or missing work.

H. Pay expenses incurred by Owner for Architect/Engineer's costs for (re-)design and obtaining approvals of Authorities Having Jurisdiction (AHJ) necessitated by incomplete, inefficiently scheduled, improperly performed, defective or nonconforming work.

I. Pay expenses due to re-testing and re-inspection necessitated by incomplete, inefficiently scheduled, improperly performed, defective or nonconforming work.

3.9 CLEANING AND PROTECTION

A. Clean all surfaces upon completion of erection, leave free of grime and dirt. Remove unused materials, tools, equipment, and debris from the premises and leave surfaces broomed clean.

B. Waste Disposal: Comply with the requirements of pertinent sections of Division 01 specifying cleaning and disposal.

1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.

4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

C. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

D. Prevent sawdust and wood shavings from entering the storm drainage system.

E. Protect work from damage by subsequent operations.

END OF SECTION

SECTION 06 1733

WOOD I-JOISTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Include: The furnishing and installation of all wood I-joists as shown on the drawings, herein specified and necessary to complete the work.

B. Related Sections

1. Pertinent sections of Division 01 specifying Quality Control and Testing Agency Services.
2. Pertinent sections of Division 06 specifying Rough Carpentry.

1.2 REFERENCES

A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC) Chapter 23 Wood.

B. American National Standards Institute (ANSI) / American Wood Council (AWC) “National Design Standard (NDS) for Wood Construction”.

C. International Code Council Evaluation Service (ICC-ES) “Acceptance Criteria (AC) 14 Prefabricated Wood I-Joists”.

D. American Society for Testing and Materials (ASTM) D5055 “Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists”.

1.3 SUBMITTALS

A. Submit shop drawings, furnished by the Manufacturer, showing all critical dimensions for determining fit and placement in the building and erection instructions.

1.4 QUALITY ASSURANCE

A. All wood I joists shall be manufactured in a shop approved for fabrication by the Authority Having Jurisdiction (AHJ).

B. Wood I-joists are not required to be continuously inspected during fabrication, but must carry a stamp indicating the plant of manufacture, date of manufacture, and logo of the third party independent inspection agency, conforming to AC14, and ASTM D5055.

C. Fabricators must have a minimum of three years experience in manufacturing comparable systems and shall have a valid evaluation report issued by a qualified evaluation agency prescribed in DSA IR A-5.

D. Wood I-joists delivered shall be free from any defects in materials, and the members shall be adequate to carry the design loads for the life of the building.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Joists shall be manufactured from materials in the evaluation report and shall be of sizes and shapes shown on the contract documents.

B. Blocking construction shall be the same as I-joists, unless noted otherwise.

2.2 FABRICATION

A. Camber – None, unless noted otherwise.

B. Tolerances:

1.	Length (between outside bearing edges):	+/- 1/2 inch
2.	Depth:	+/- 3/8 inch
3.	Camber:	+/- 1/4 inch

PART 3 - EXECUTION

3.1 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Wood I-joists shall be stored in a vertical position and protected from the weather. They shall be handled with care so they are not damaged. Provide bearing supports and bracings to avoid bending or overturning of I-joists, and protect I-joists from construction operations.

3.2 ERECTION AND INSTALLATION

A. Use all means necessary to coordinate the work of this section with the work of other sections to ensure proper and adequate erection of the work of this section.

B. Wood I-joists shall be installed in accordance with the approved shop drawings and installation instructions therein.

C. Temporary construction loads, which will cause member stresses beyond design limits, are not permitted.

D. Erection bracing in addition to specified bridging is to be provided to keep the I-joists straight and plumb as required to assure adequate lateral support for the individual I-joist and entire system until the sheathing material has been applied. Bridging as shown on the drawings and per Manufacturer's recommendations shall be installed as erection of I-joists progresses and before any construction loads are placed on the I-joists.

E. Round holes may be cut in the I-joist web as indicated on the drawings. Square or rectangular holes may be cut when the diagonal dimension of the square or rectangular hole does not exceed the diameter of the maximum allowable round holes shown on the drawing. Overcut square or rectangular holes shall be treated as a hole matching the overcut. Holes exceeding maximum holes shown on the drawings are cause for rejection of the I-joist.

F. The Contractor shall give notification prior to enclosing the I-joists to provide opportunity for inspection of the installation.

END OF SECTION

SECTION 06-2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood casings and moldings.

1.02 RELATED REQUIREMENTS

A. Section 09-9113 - Exterior Painting: Painting of finish carpentry items.

B. Section 09-9123 - Interior Painting: Painting of finish carpentry items.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

B. Protect from moisture damage.

C. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by authority having jurisdiction.

C. Exterior Woodwork Items:
   1. Window Casings and Moldings: Clear cedar; prepare for paint finish.

D. Interior Woodwork Items:
   1. Casings and miscellaneous trim: poplar or maple; prepare for opaque finish.
   2. Window Sills: poplar or maple; prepare for opaque finish.
   3. Loose Shelving: Plywood; plastic laminate overlay finish.

2.02 SUSTAINABILITY CHARACTERISTICS

A. Provide sustainably harvested wood, certified or labeled; see Section 01-6000.

B. Provide composite wood products complying with composite wood indoor emission requirements in Section 01-6116.

2.03 LUMBER MATERIALS

A. Softwood Lumber: cedar species, rift sawn, maximum moisture content of 6 percent; with vertical grain, paint grade, to match existing exterior trim

B. Hardwood Lumber: poplar or maple species, rift sawn, maximum moisture content of 6 percent ; with vertical grain , paint grade, to match existing interior trim.

2.04 SHEET MATERIALS

A. Hardwood Plywood: Face species as indicated, plain sawn, book matched, plywood core; HPVA HP-1 Front Face Grade AA, Back Face Grade 1, glue type as recommended for application as shelving.

2.05 HARDWARE

A. Shelf Standards: steel, double slotted, medium duty style, white finish. Quantity as required for support of shelves.

B. Shelf Brackets: steel, adjustable, double slotted, medium duty,10" to 12" style, white finish.
   1. Products:
      a. Knape & Vogt: knapeandvogt.com
      b. McMaster-Carr: mcmaster.com
      c. Richelieu; richelieu.com
      d. Substitutions: See Section 01-6000 - Product Requirements.

2.06 SITE FINISHING MATERIALS

A. Field Finishing: See Section 09-9123.

2.07 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.02 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09-9113 and 09-9123.

C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 06-4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 06-1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 12-3600 - Countertops.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. BHMA A156.9 - Cabinet Hardware; 2020.

E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.

C. Product Data: Provide data for hardware accessories.

D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

E. Sustainable Design Submittal: Documentation for sustainably harvested wood-based components.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Replace, repair, or rework all work for which certification is refused.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
   1. Finish - Exposed Exterior Surfaces: Decorative laminate.
   2. Finish - Exposed Interior Surfaces: Solid phenolic.
   3. Finish - Semi-Exposed Surfaces: Solid phenolic
   4. Finish - Concealed Surfaces: Manufacturer's option.
   5. Door and Drawer Front Edge Profiles: Square edge with thin applied band.
   6. Casework Construction Type: Type A - Frameless.
   7. Adjustable Shelf Loading: 40 psf.
      a. Deflection: L/144.
   8. Cabinet Style: Flush overlay.
   9. Cabinet Doors and Drawer Fronts: Flush style.
   10. Drawer Side Construction: Rabbeted.
   11. Drawer Construction Technique: As recommended by fabricator.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 PANEL CORE MATERIALS

A. Particleboard: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.
   1. Grade: M-2; moisture resistance: MR10.

2.04 LAMINATE MATERIALS

A. Manufacturers:
   1. Wilsonart; Raw Chestnut, 7975-12, soft grain finish: www.wilsonart.com
      a. Sole Source, Basis of Design.
      b. See Section 00 73 13 Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
   2. Formica Corporation; Color Core 2 ; Mission White 933C-58; www.formica.com
      a. Sole Source, Basis of Design
      b. See Section 00 73 13 Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
   3. Substitutions: See Section 01-6000 - Product Requirements.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.05 COUNTERTOPS

A. Countertops: See Section 12-3600.

2.06 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

C. Concealed Joint Fasteners: Threaded steel.

D. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.07 HARDWARE

A. Cabinet Hardware: Comply with BHMA A156.9 for hardware types and grades indicated below:
   1. Product Grade: As required by specified woodworking quality grade.

B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.

C. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.

D. Cabinet Catches and Latches:
   1. Type: Magnetic catch and Push latch.

E. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.

F. Soft-Close, Door and Drawer Adjustable Dampers:

G. Hinges: European style concealed self-closing type, steel with satin finish.

2.08 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   1. Cap exposed plastic laminate finish edges with material of same finish and pattern.

D. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.

E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 07-0150.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Replacement of existing roofing system in preparation for entire new roofing system. Existing roof deck to remain.

B. Removal of existing flashing and counterflashings.

C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

A. Section 07-5419 - Sika Polyvinyl-chloride Roofing.

B. Section 07-6200 - Sheet Metal Flashing and Trim: Replacement of flashing and counterflashings.

1.03 REFERENCE STANDARDS

A. ASTM C1153 - Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging; 2010 (Reapproved 2015).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with affected mechanical and electrical work associated with roof penetrations.

B. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Attendees:
      a. Architect.
      b. Contractor.
      c. Owner.
      d. Installer.
      e. Roofing system manufacturer's field representative.
   2. Meeting Agenda: Provide agenda to participants prior to meeting in preparation for discussions on the following:
      a. Removal and installation schedule.
      b. Necessary preparatory work.
      c. Protection before, during, and after roofing system installation.
      d. Removal of existing roofing system.
      e. Installation of new roofing system.
      f. Temporary roofing and daily terminations.
      g. Transitions and connection to and with other work.

C. Schedule work to coincide with commencement of installation of new roofing system.

1.05 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit for each type of material.

C. Shop Drawings: Indicate size, configuration, and installation details.

D. Preconstruction Test Reports.

E. Materials Removal Company Qualification Statement.

F. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Materials Removal Company Qualifications: Company specializing in performing work of type specified with at least three years of documented experience.
   1. Comply with removal and disposal regulations of local authorities having jurisdiction (AHJ).

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1. When same installer as new roofing system, comply with related requirements of section indicated for new roofing system.
2. Approved by existing roofing system warrantor to work on existing warranted roof system.

C. Preconstruction Testing: Conduct testing by an independent test agency, in accordance with provisions of Section 01-4000 - Quality Requirements.
1. Infrared Roof Moisture Survey: Conduct ground-based, walk-over type survey of roofing system in accordance with ASTM C1153.
2. Submit report of roofing survey including thermal images of suspect roof areas and corresponding daytime photos of these same areas.
3. Provide required testing to locate hazardous materials, such as asbestos, by licensed agency as required for project location.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.08 FIELD CONDITIONS

A. Existing Roofing System: built-up membrane with a granulated cap sheet on flat and low slope wood deck and concrete tile on sloped wood deck roofing.

B. Do not remove existing roofing membrane or tile roofing when weather conditions threaten the integrity of building contents or intended continued occupancy.

C. Maintain continuous temporary protection prior to and during installation of new roofing system.

D. Verify that occupants have been evacuated from building areas when work on structurally impaired roof decking is scheduled to begin.

E. Owner will not occupy building areas directly below re-roofing area.

PART 2 PRODUCTS

2.01 COMPONENTS

A. See the following sections for additional information on components relating to this work:
1. Replacement and removal of existing roofing system in preparation for entire new roofing system, see Section 07-5419.
2. Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, see Section 07-6200 for material requirements.

2.02 MATERIALS

A. Patching materials: provide as necessary to repair rot damaged existing wood roof decking.

B. Temporary Roofing Protection Materials:
1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.02 PREPARATION

A. Sweep roof surface clean of loose matter.

B. Remove loose refuse and dispose of properly off-site.

3.03 MATERIAL REMOVAL

A. Remove only existing roofing materials that can be replaced with new materials as the weather will permit.

B. Remove metal counter flashings.

C. Remove insulation and fasteners, cant strips, crickets, and blocking.

D. Remove underlay.

E. Repair existing wood deck surface to provide smooth working surface for new roof system.

3.04 INSTALLATION

A. Coordinate scope of this work with requirements for installation of new roofing system, see Section 07-5419 for additional requirements.

3.05 PROTECTION

A. Provide temporary protective sheeting over uncovered deck surfaces.

B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.

C. Provide for surface drainage from sheeting to existing drainage facilities.

D. Do not permit traffic over unprotected or repaired deck surface.

3.06 SCHEDULES

A. Entire Roofing Area: Remove existing perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, and vapor retarder.

B. Remove roof mounted mechanical equipment, electrical and plumbing (gas) utilities, mechanical ducts and equipment curbs.

C. See roof demolition drawings.

END OF SECTION

SECTION 07-2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation and integral vapor retarder at cavity wall construction, exterior wall behind gypsum board wall finish, and under roof deck, above gypsum board ceiling.

B. Batt insulation in exterior wall and ceiling construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Shop Drawings: Submit drawings that indicate location of joint or termination detail conditions.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.04 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation in Wood Framed Walls: Batt insulation with no vapor retarder.

B. Insulation in Wood Furred Walls: Closed cell rigid insulation board.

C. Insulation Above Lay-In Acoustical Ceilings: Batt insulation with no vapor retarder. Located above partition walls only.

D. Insulation under Roof Deck: Extruded polystyrene insulation board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Cavity Wall and Ceiling Insulation Board: Comply with ASTM C578, and manufactured using carbon black technology.
   1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Type and Thermal Resistance, R-value: Type IV, 5.6 (0.98), minimum, per 1 inch thickness at 75 degrees F mean temperature.
   4. Board Size: 15-3/4 inch by 96 inch.
   5. Board Thickness: 1-3/4 inch. or as shown on drawings.
   6. Board Edges: Square.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.

3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
4. Formaldehyde Content: Zero.
5. Thermal Resistance: R-value of 13. Minimum at exterior, furred walls
6. Thickness: 3-1/2 inch. Minimum thickness
7. Products:
    a. CertainTeed Corporation; InsulPure: www.certainteed.com/#sle.
    b. Johns Manville; Unfaced Fiberglass: www.jm.com/#sle.
    c. Owens Corning Corporation; EcoTouch PINK FIBERGLAS Insulation: www.owenscorning.com/en-us/#sle.
    d. Substitutions: See Section 01-6000 - Product Requirements.

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665. Acoustic wall insulation
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
3. Thickness: 3 inch. Minimum, match wall thickness.
4. Products:
    a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com/#sle.
    b. ROCKWOOL; COMFORTBATT: www.rockwool.com/#sle.
    c. ROCKWOOL; AFB: www.rockwool.com/#sle.
    d. ROCKWOOL; AFB evo™: www.rockwool.com/#sle.
    e. Thermafiber, Inc; SAFB: www.thermafiber.com/#sle.
    f. Thermafiber, Inc; SAFB FF: www.thermafiber.com/#sle.
    g. Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS

A. Install boards horizontally on walls.
1. Install in running bond pattern.
2. Butt edges and ends tightly to adjacent boards and protrusions.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Tape insulation board joints.

3.03 BOARD INSTALLATION USING CLADDING AND CONTINUOUS INSULATION SUPPORTS

A. Install supports in compliance with system orientation, sizes, and locations as indicated on drawings and in accordance with approved shop drawings.

B. Install supports to fill in exterior ceiling spaces without gaps or voids in insulation.

C. Trim insulation neatly to fit spaces and provide a continuous thermal layer.

3.04 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in interior wall spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.05 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for additional requirements.

3.06 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07-2500
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water-resistive barriers.

1.02 RELATED REQUIREMENTS

A. Section 07-6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.

1.03 REFERENCE STANDARDS

A. AATCC Test Method 127 - Test Method for Water Resistance: Hydrostatic Pressure; 2018, with Editorial Revision (2019).

B. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017 (Reapproved 2023).

C. ASTM D779 - Standard Test Method for Determining the Water Vapor Resistance of Sheet Materials in Contact with Liquid Water by the Dry Indicator Method; 2016.

D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.

E. ASTM D3330/D3330M - Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape; 2004 (Reapproved 2018).

F. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

G. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2018.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on material characteristics.

C. Shop Drawings: Provide drawings of special joint conditions.

D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.05 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE BARRIERS

A. Description: Materials installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly. Primary materials include mechanically applied sheets; accessory materials include flashings and seam tapes.

B. Asphalt Felt: ASTM D226/D226M, Type I, No.15 asphalt felt.

C. Water-Resistive Breathable Barrier: Woven, polyolefin fabric sheet in accordance with ASTM D779, 60-minute water resistance.
   1. Water Vapor Permeance: 10 perms, minimum, when tested in accordance with ASTM E96/E96M, method A.

D. Water-Resistive, Self-Adhering, Drainable Barrier Membrane: Nonwoven, polypropylene membrane with acrylic adhesive and release film.
   1. Thickness: 22.9 mils, 0.0229 inch.
   2. Basis Weight: 4.2 oz/sq yd.
   3. Drainage Efficiency: 94.8 percent, when tested in accordance with ASTM E2273.

4. Hydrostatic Pressure Resistance: Greater than 200 inches, when tested in accordance with AATCC Test Method 127.
5. Water Vapor Permeance: 10 perms, when tested in accordance with ASTM E96/E96M, Procedure A.
6. Peel Adhesion to Oriented Strand Board (OSB) Substrates: Greater than 2 lbf/in, when tested in accordance with ASTM D3330/D3330M.

2.02 ACCESSORIES

A. Seal and Perimeter Tapes: As recommended by water-resistive barrier manufacturer.

B. Sealants: As recommended by water-resistive barrier manufacturer for application.

C. Metal Flashings: See Section 07-6200.

D. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and weather barrier materials.

E. Flexible Flashing: Self-adhering sheet flashing complying with ASTM D1970/D1970M; waive slip resistance requirement if not installed on roof.
   1. Width: 6 inches.
   2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.
   3. Products:
      a. DuPont de Nemours, Inc; FlexWrap: www.dupont.com/building/#sle.
      b. Henry Company; FortiFlash: www.henry.com/#sle.
      c. National Shelter Products, Inc; DRYline ATX Self-Adhering Flashing: www.nationalshelter.com/#sle.
      d. W. R. Meadows, Inc; Air-Shield Butyl Flashing: www.wrmeadows.com/#sle.
      e. Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Install continuous water-resistive barriers where indicated on drawings, with sheets lapped to shed water.

C. Apply sealants within recommended temperature range in accordance with manufacturer's installation instructions.

D. Mechanically Fastened Sheets:
   1. Install sheets in shingle fashion to shed water; align horizontally.
   2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
   3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
   4. Install water-resistive barrier over jamb flashings.
   5. Install head flashings under water-resistive barrier.
   6. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

E. Self-Adhered Sheets:
   1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
   2. Lap sheets shingle-fashion to shed water and seal laps airtight.
   3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.

4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

F. Openings and Penetrations in Exterior Water-Resistive Barriers:
1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.04 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07-4113
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal roof panel system of preformed steel panels.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.

D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

E. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).

F. ICC-ES AC188 - Acceptance Criteria for Roof Underlayments; 2023.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Storage and handling requirements and recommendations.
   2. Installation methods.
   3. Specimen warranty.

C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work to be field-fabricated or field-assembled.

D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.
   1. Include typical panel joint in sample.
   2. Include typical fastening detail.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Test Reports: Indicate compliance of metal roofing system to specified requirements.

I. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Provide strippable plastic protection on prefinished roofing panels for removal after installation.

C. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.06 FIELD CONDITIONS

A. Do not install metal roof panels, eave protection membrane or underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

1.07 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

C. Special Warranty: Provide 5-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Metal Roof Panel Manufacturers:
   1. Drexel Metals Inc; 100SS: www.drexmet.com/#sle.
   2. Metal Roofing Systems, Inc; System 1000 - Metal Roof Panels: www.metalroofingsystems.biz/#sle.
   3. Petersen Aluminum Corporation; PAC T-250 Panel: www.pac-clad.com/#sle.
   4. Taylor Metal Products; Versa Span: www.taylormetal.com/#sle.
   5. Metal Sales; metalsales.us.com, Design Basis.
   6. Substitutions: See Section 01-6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
   1. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
   2. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

2.03 METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Steel Panels:
      a. Zinc-coated steel complying with ASTM A653/A653M; minimum G60 galvanizing.
      b. Steel Thickness: Minimum 24 gauge, 0.024 inch.
   2. Profile: Standing seam, with minimum 1-inch seam height; concealed fastener system for field seaming with special tool.
   3. Texture: Smooth.
   4. Length: Full length of roof slope, without lapped horizontal joints.
   5. Width: Maximum panel coverage of 24 inches.

2.04 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.05 FABRICATION

A. Panels: Provide factory fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

2.06 FINISHES

A. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer's standard line.
   1. Products:
      a. Arkema, Inc; Kynar 500: www.arkema.com/#sle.
      b. PPG; Duranar: www.ppgmetalcoatings.com/#sle.
      c. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com/#sle.
      d. Substitutions: See Section 01-6000 - Product Requirements.

B. Siliconized Polyester Coating: Epoxy primer and silicone-modified polyester (SMP) enamel topcoat with minimum dry film thickness (DFT) of 0.8 mil; color and gloss as indicated on drawings.

2.07 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
   3. Seam Sealant: Factory-applied, non-skinning, non-drying type.

D. Underlayment: Self-adhering polymer modified asphalt sheet complying with ASTM D1970/D1970M, with strippable release film and top surface of woven polypropylene sheet.
   1. Minimum Requirements: Comply with requirements of ICC-ES AC188 for non-self-adhesive sheet.
   2. Sheet Thickness: 22 mils, 0.022 inch, minimum.
   3. Self Sealability: Nail sealability in accordance with ASTM D1970/D1970M.
   4. Low Temperature Flexibility: Comply with ASTM D1970/D1970M.
   5. Water Vapor Permeance: 0.1 perm, maximum, when tested in accordance with ASTM E96/E96M using Desiccant Method (Method A).
   6. Functional Temperature Range: Minus 45 degrees F to 250 degrees F.
   7. Products:
      a. Certainteed Roofing; WinterGuard HT - High Temperature Waterproofing Underlayment: www.certainteed.com/#sle.
      b. Polyglass USA, Inc; Polystick MTS Self-Adhered High Temperature Roof Underlayment: www.polyglass.us/#sle.
      c. Protecto Wrap Company; Protecto Jiffy Seal Ice and Water Guard HT: www.protectowrap.com/#sle.
      d. System Components Corporation, Inc; FelTex SA300: www.systemcomponents.net/#sle.
      e. Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to ensure that completed roof will be free of leaks.

B. Remove protective film from surface of roof panels immediately prior to installation; strip film carefully to avoid damage to prefinished surfaces.

C. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by metal roof panel manufacturer.

D. At locations where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.
   1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
   2. Minimize field cutting of panels. Where field cutting is required, use methods that will not distort panel profiles. Use of torches for field cutting is prohibited.

B. Accessories: Install necessary components that are required for complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.

C. Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.
   1. Install sealant or sealant tape at end laps and side joints as recommended by metal roof panel manufacturer.

3.04 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.

B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07-4646
FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber-cement siding.

1.02 RELATED REQUIREMENTS

A. Section 07-2500 - Weather Barriers: Water-resistive barrier under siding.

1.03 REFERENCE STANDARDS

A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets; 2022, with Editorial Revision (2023).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Manufacturer's qualification statement.

D. Installer's qualification statement.

E. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.

F. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of type specified in this section with not less than three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver and store materials in manufacturer's unopened packaging, with labels intact, until ready for installation.

C. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

D. Protect materials from harmful environmental elements, construction dust, and other potentially detrimental conditions.

1.07 FIELD CONDITIONS

A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.08 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

C. Manufacturer Warranty: Provide manufacturer warranty for years as indicated under Fiber-Cement Siding article sub-headings for "Warranty". Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Smooth.

3. Length: 12 feet, nominal.
4. Width (Height): 5-1/4 inches.
5. Thickness: 5/16 inch, nominal.
6. Finish: Factory applied topcoat.
7. Color: As indicated on drawings.
8. Warranty: 30 year limited; transferable.
9. Products:
    a. Allura, a division of Plycem USA, Inc; Lap Siding: www.allurausa.com/#sle.
    b. James Hardie Building Products, Inc; Hardie Plank: www.jameshardie.com/#sle.
    c. Nichiha USA, Inc; Savannah: www.nichiha.com/#sle.
    d. Substitutions: See Section 01-6000 - Product Requirements.

2.02 ACCESSORIES

A. Trim: Same material and texture as siding.

B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate, 1-1/4 inches, minimum.

C. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Verify that water-resistant barrier has been installed over substrate completely and correctly; see Section 07-2500.

C. Do not begin until unacceptable conditions have been corrected.

D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Protect surrounding areas and adjacent surfaces during execution of this work.

B. Install Sheet Metal Flashing:
    1. Above door and window trim and casings.
    2. Above horizontal trim in field of siding.

3.03 INSTALLATION

A. Install siding in accordance with manufacturer's instructions and recommendations.
    1. Read warranty and comply with terms necessary to maintain warranty coverage.
    2. Use trim details as indicated on drawings.
    3. Touch up field cut edges before installing.
    4. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.

D. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.

E. Do not install siding less than 6 inches from ground surface, or closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.

F. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

3.04 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

B. Clean faced panels in accordance with manufacturer’s maintenance instructions, using cleaning materials and methods acceptable to manufacturer.

3.05 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07-5400
THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered system with thermoplastic roofing membrane.

B. Insulation, flat and tapered.

C. Vapor retarder.

D. Cover boards.

E. Flashings.

F. Roofing stack boots and walkway pads.

1.02 RELATED REQUIREMENTS

A. Section 07-4113 - Metal Roof Panels

B. Section 07-6200 - Sheet Metal Flashing and Trim

C. Section 07-7100 - Roof Specialties

D. Section 07-7200 - Roof Accessories

1.03 REFERENCE STANDARDS

A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

C. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing; 2021.

D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

E. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011 (Reapproved 2019).

F. FM (AG) - FM Approval Guide; Current Edition.

G. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2024).

H. NRCA (RM) - The NRCA Roofing Manual; 2025.

I. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

J. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.

C. Shop Drawings: Submit drawings that indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, mechanical fastener layout, and paver layout.

D. Samples for Verification: Submit two samples 6 by 6 inches in size illustrating roofing membrane and cover board.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

F. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Sustainable Design Documentation: Test report showing solar reflectance index of membrane.

J. Warranty Documentation:
   1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's written verification that installation complies with warranty conditions for waterproof membrane.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this section with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

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

C. Store materials in weather protected environment, clear of ground and moisture.

D. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

E. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 80 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
   1. Warranty Term: 20 years.
   2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Thermoplastic Polyvinyl Chloride (PVC) Membrane Roofing Materials:
   1. Carlisle SynTec Systems; Sure-Flex PVC KEE: www.carlisle-syntec.com/#sle.
   2. GAF; EverGuard PVC XK Fleece Back 60 mil: www.gaf.com/#sle.
   3. Sika Corporation Roofing; Sarnafil PVC: usa.sika.com/sarnafil/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

B. Insulation:
   1. Carlisle SynTec Systems; SecurShield Insulation: www.carlisle-syntec.com/#sle.
   2. GAF; EnergyGuard Polyiso and Tapered Polyiso: www.gaf.com/#sle.
   3. Sika Sarnafil Inc.; Sarnatherm ISO and ISO Tapered.
   4. Substitutions: See Section 01-6000 - Product Requirements.

C. Cover Boards:

1. Johns Manville; DensDeck Prime: www.jm.com/#sle.
2. USG Securock Brand Ultralight Glass-Mat Roof Board; www.usg.com.
3. GAF EnergyGuard HD Plus Polyiso; www.gaf.com
4. Goldbond Building; DexCell Glass Mat; www.goldbondbuilding.com
5. Substitutions: See Section 01-6000 - Product Requirements.

2.02 ROOFING - UNBALLASTED APPLICATIONS

A. Thermoplastic Membrane Roofing: One ply membrane, fully adhered, over insulation.

B. Roofing Assembly Requirements:
   1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
      a. Calculate SRI in accordance with ASTM E1980.
      b. Field applied coating may not be used to achieve specified SRI.
   2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.

C. Acceptable Insulation Types - Constant Thickness Application:
   1. Single layer of polyisocyanurate board. Fiber reinforced felt facers on both sides

D. Acceptable Insulation Types - Tapered Application:
   1. Tapered polyisocyanurate board. Fiber reinforced felt facers on both sides.

2.03 MEMBRANE ROOFING AND ASSOCIATED MATERIALS

A. Membrane Roofing Materials:
   1. PVC: Polyvinyl chloride (PVC) complying with ASTM D4434/D4434M, Type II, sheet contains reinforcing fibers or reinforcing fabrics.
      a. Thickness: 60 mil, 0.060 inch, minimum.
   2. Sheet Width:
      a. Adhered Application: Limit width to 120 inches, maximum, when ambient temperatures are less than 40 degrees F for extended period of time during installation.
   3. Color: White.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Membrane Fasteners: As recommended and approved by membrane manufacturer.

D. Vapor Retarder: Material approved by roof manufacturer complying with requirements of fire rating classification; compatible with roofing and insulation materials.
   1. Fire-retardant adhesive.
   2. Vapor Permeability: 0.019 perm inch, measured in accordance with ASTM E96/E96M.

E. Flexible Flashing Material: Same material as membrane. Coated metal flashing and assemblies by roofing manufacturer, as indicated on the Drawings.

2.04 COVER BOARDS

A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
   1. Thickness: 1/2 inch, fire-resistant.
   2. Thermal Resistance: R-Value 0.43 minimum.

2.05 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
         1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 2, 20 psi (138 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3, 8.4 (1.48), minimum, at 75 degrees F. Minimum 4" total thick
   2. Board Size: 48 by 96 inches.
   3. Board Thickness: As indicated on drawings.

4. Tapered Board: Slope as indicated; minimum thickness 4 inch; fabricate of fewest layers possible.
5. Board Edges: Square.

2.06 ACCESSORIES

A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

B. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.

C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

D. Membrane Adhesive: As recommended by membrane manufacturer.

E. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

F. Insulation Adhesive: As recommended by insulation manufacturer.

G. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

H. Sealants: As recommended by membrane manufacturer.

I. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
1. Composition: Asphaltic with mineral granule surface.
2. Size: As indicated on drawings.
3. Surface Color: light gray.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and reglets are in place.

3.02 PREPARATION - WOOD DECK

A. Verify flatness and tightness of joints in wood decking; fill knot holes with latex filler.

B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 INSTALLATION, GENERAL

A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.

B. Do not apply roofing membrane during cold or wet weather conditions.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

F. Coordinate this work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.04 INSTALLATION - VAPOR RETARDER AND INSULATION, UNDER MEMBRANE

A. Install vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
1. Extend vapor retarder under blocking to deck edge.

2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

C. Attachment of Insulation:
1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and FM DS 1-28 Factory Mutual requirements.

D. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.

E. Lay subsequent layers of insulation with joints staggered minimum 12 inches from joints of preceding layer.

F. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

G. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

H. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

I. At roof drains or scuppers, use boards cut to slope to slope down to roof drains over a distance of 18 inches.

J. Do not install more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate or insulation in direction of drainage.

C. Fully Adhered Application: Apply adhesive to substrate at rate recommended by roofing manufacturer. Fully embed membrane in adhesive. Fully adhere one roll before proceeding to adjacent rolls.

D. Overlap edges and ends and seal seams by heat welding, minimum 3 inches. Seal permanently waterproof. Apply edge sealant as recommended by roofing manufacturer.

E. Mechanical Attachment: Install membrane and mechanical attachment devices in accordance with manufacturer's instructions.

F. At intersections with vertical surfaces:
1. Extend membrane up a minimum 8 inches onto vertical surfaces or to termination at top of parapet wall.
2. Fully adhere flexible flashing over membrane and up to reglets.
3. Insert flashing into reglets and secure.

G. Around roof penetrations, seal flanges and flashings with flexible flashing.

H. Coordinate installation of roof scuppers and related flashings.

3.06 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for additional requirements.

B. Provide daily on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

3.07 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.08 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07-6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, exterior penetrations, and scuppers.

B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products; 2018.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

F. CDA A4050 - Copper in Architecture - Handbook; current edition.

G. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples, 6 by 6 inches in size, illustrating metal finish color.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

2.02 PREPAINTED, METALLIC-COATED STEEL SHEETS

A. Description: Factory-applied coatings applied to metallic-coated steel sheet substrates prior to fabrication by coil coating; topcoat systems consist of primers and organic topcoats on exposed, top side of sheet; washcoats on bottom, unexposed sheet side.

B. Comply with ASTM A755/A755M.

C. Metallic-Coated Steel Sheet Substrates:

D. Substrate Preparation for Prefinishing: Clean and prepare substrate surfaces in accordance with coating manufacturer's recommendations for substrate type and application.

E. Washcoats or Backercoats: Provide washcoats or backercoats in accordance with organic coating manufacturer's recommendations.

F. Primer Coats: Provide basecoat primers in accordance with coating manufacturer's recommendations for substrate type, topcoat, and application.

G. Superior Performance Organic Coating System: Provide thermally cured 70-percent PVDF or FEVE fluoropolymer systems in accordance with AAMA 2605, tested for weathering for 10 years with 5 delta units maximum of color change.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing membrane. Return and brake edges.

2.04 GUTTERS AND DOWNSPOUTS

A. Gutters: 5 Square profile.

B. Downspouts: 4 inch round profile.

C. Downspout Boots: Steel.

D. Seal metal joints.

2.05 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.06 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer Type: Zinc chromate.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Fenestration Perimeter Flashing Attachments: Two-piece flashing receiver and clip of extruded aluminum, at least 0.045 inch thick, for attaching flashing at perimeter of exterior wall fenestration openings.
   1. Provide flashing receiver profile appropriate for flashing applications.

F. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Exterior Flashing Receivers: Install in accordance with manufacturer's recommendations, and in proper relationship with adjacent construction, and as follows:

E. Secure gutters and downspouts in place with concealed fasteners.

F. Slope gutters 1/4 inch per 10 feet, minimum.

G. Connect downspouts to downspout boots, and grout connection watertight.

3.04 SCHEDULE

A. Gutters and Downspouts:

B. Scuppers:

C. Flashings Associated with metal roof panels, including Valley, Hip, Ridge, Eave, Gutter Edge.

D. Counterflashings at Roofing Terminations (over roofing base flashings):

E. Counterflashings at Curb-Mounted Roof Items, including skylights and roof hatches:

END OF SECTION

SECTION 07-7100
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured roof specialties, including copings and counterflashings.

1.02 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.

C. NRCA (RM) - The NRCA Roofing Manual; 2025.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.

C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

D. Samples: Submit one appropriately sized samples of coping.

E. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Roof Edge Flashings and Copings:
   1. Architectural Products Co; Snap-Tight Coping: www.archprod.com/#sle.
   2. Drexel Metals Inc; Snap Coping Max: www.drexmet.com/#sle.
   3. Hickman Edge Systems; PermaSnap Coping: www.hickmanedgesystems.com/#sle.
   4. Metal-Era Inc; Perma-Tite Coping: www.metalera.com/#sle.
   5. Metal Roofing Systems, Inc; Rapid Lock Coping: www.metalroofingsystems.biz/#sle.
   6. Substitutions: See Section 01-6000 - Product Requirements.

B. Counterflashings: For Reglet and surface mount.
   1. ATAS International, Inc; 2-Piece Mounted: www.atas.com/#sle.
   2. Hickman Edge Systems; Drive-Lock Reglet: www.hickmanedgesystems.com/#sle.
   3. Metal-Era Inc; 2 Piece Counterflashing: www.metalera.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 COMPONENTS

A. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
   2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
   3. Wall Width: As indicated on drawings.
   4. Outside Face Height: As indicated on drawings.
   5. Inside Face Height: As indicated on drawings.
   6. Material: Formed steel sheet, galvanized, 22 gauge, 0,03 inch thick, minimum.
   7. Finish: 70 percent polyvinylidene fluoride.
   8. Warranty: 20 years
   9. Color: As selected by Architect from manufacturer's standard range.

B. Counterflashings: Factory fabricated and finished sheet metal that overlaps top edges of base flashing by at least 4 inches, and designed to snap into through-wall flashing or reglets with lapped joints.
   1. Material: Zinc-coated steel sheet, 0.022 inch thick, minimum.

2. Finish: PVDF Coating (Superior Performance).
3. Color: To be selected by Architect from manufacturer's standard range.

2.03 FINISHES

A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

2.04 ACCESSORIES

A. Sealant for Joints in Linear Components: As recommended by component manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Seal joints within components when required by component manufacturer.

C. Anchor components securely.

D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

E. Coordinate installation of flashing flanges into reglets.

END OF SECTION

SECTION 07-7200
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof hatches and access ladders.

1.02 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.

D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.03 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store products under cover and elevated above grade.

1.04 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 5-year manufacturer warranty for defects in material and workmanship. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 ROOF HATCHES

A. Roof Hatch Manufacturers:
   1. Activar Construction Products Group, Inc. - JL Industries; Diamond Series Roof Hatches, Model RHDG Steel: www.activarcpg.com/#sle.
   2. Acudor Products Inc; Galvanized Steel Roof Hatch: www.acudor.com/#sle.
   3. Babcock-Davis; Personnel: www.babcockdavis.com/#sle.
   4. Bilco Company; Type TB (various types and special size): www.bilco.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

B. Ladder Manufacturers:
   1. Precision Ladders, LLC; Roof Access Systems: www.precisionladders.com/#sle.
   2. O'Keeffe's Inc; 500 Access Ladder: www.okeeffes.com.
   3. Alaco Ladder; 561-SE Side Exit: alacoladder.com
   4. Substitutions: See Section 01-6000 - Product Requirements.

C. Flat Roof Access Hatches with Ladder: Factory-assembled roof hatch with flat cover and metal access ladder, complete with hatch operating and release hardware.
   1. Mounting Substrate: Provide frames and curbs suitable for mounting on flat roof deck sheathing with insulation.
   2. Thermally Broken Hatches: Provide insulation within hatch frame and cover.
   3. Ladder: Single section aluminum ladder, fixed to wall framing.
      a. Ladder Room Height Range: 91-3/4 to 110-1/4 inches, nominal.

D. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
   1. Finish: Factory prime paint.
   2. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on inside hollow curb.
   3. Curb Height: As indicated on drawings.

E. Metal Covers: Flush, insulated, hollow metal construction.
   1. Capable of supporting 40 psf live load.
   2. Material: Galvanized steel; outer cover 14 gauge, 0.0747 inch thick, liner 22 gauge, 0.03 inch thick.
   3. Finish: Factory prime paint.
   4. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
   5. Gasket: Neoprene, continuous around cover perimeter.

F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
   1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
   2. Hinges: Heavy duty pintle type.
   3. Hold open arm with vinyl-coated handle for manual release.
   4. Latch: Upon closing, engage latch automatically and reset manual release.
   5. Manual Release: Pull handle on interior.
   6. Locking: Padlock hasp on interior.

G. Size:
   1. 30 inches x 30 inches clear opening, minimum.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

B. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07-9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

B. Section 09-3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.
   7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   8. Sample product warranty.
   9. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation; see Section 01-6116.

G. Executed warranty.

1.05 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints:
      a. Do not seal exterior joints unless indicated on drawings as sealed.
      b. Seal the following joints:
         1) Wall expansion and control joints.
         2) Joints between doors, windows, and other frames or adjacent construction.
         3) Joints between different exposed materials.
   2. Interior Joints:
      a. Do not seal interior joints indicated on drawings as not sealed.
      b. Do not seal gaps and openings in gypsum board and suspended ceilings
      c. Seal the following joints:
         1) Joints between door frames and window frames and adjacent construction.
   3. Do Not Seal:
      a. Intentional weep holes in masonry.
      b. Joints indicated to be covered with expansion joint cover assemblies.
      c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
      d. Joints where sealant installation is specified in other sections.
      e. Joints between suspended ceilings and walls.

B. Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.
   1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, noncuring.
   2. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane traffic-grade sealant.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
   1. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
      a. See Section 09-3000 for sealing between tile and plumbing fixtures.
   2. Other Floor Joints: Self-leveling polyurethane traffic-grade sealant.

D. Interior Wet Areas: restrooms and breakroom areas; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01-6116.

B. Colors: To be selected by Architect from standard colors.

2.03 NONSAG JOINT SEALANTS

A. Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M, A, G, and O; not expected to withstand continuous water immersion or traffic.
   1. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Products:
      a. Adfast USA Inc; Adseal DWS 4580 Series: www.adfastcorp.com/#sle.
      b. Dow; DOWSIL 756 SMS Building Sealant: www.dow.com/#sle.
      c. Dow; DOWSIL 791 Silicone Weatherproofing Sealant: www.dow.com/#sle.
      d. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
      e. Sika Corporation; Sikasil WS-290: usa.sika.com/#sle.
      f. Sika Corporation; Sikasil WS-295: usa.sika.com/#sle.
      g. Tremco Commercial Sealants & Waterproofing; Spectrem 3: www.tremcosealants.com/#sle.
      h. Substitutions: See Section 01-6000 - Product Requirements.

B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.

1. Color: White.
2. Products:
   a. Adfast USA Inc; ADSEAL KB 4800 Series: www.adfastcorp.com/#sle.
   b. Everkem Diversified Products, Inc; TruSil 100: www.everkemproducts.com/#sle.
   c. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
   d. Sika Corporation; Sikasil GP: usa.sika.com/#sle.
   e. Substitutions: See Section 01-6000 - Product Requirements.

C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
2. Color: Match adjacent finished surfaces.
3. Products:
   a. Pecora Corporation; DynaFlex: www.pecora.com/#sle.
   b. Sika Corporation; Sikaflex NP 1: usa.sika.com/#sle.
   c. Sika Corporation; Sikaflex TX1: usa.sika.com/#sle.
   d. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com/#sle.
   e. W. R. Meadows, Inc; POURTHANE NS: www.wrmeadows.com/#sle.
   f. Substitutions: See Section 01-6000 - Product Requirements.

D. Noncuring Butyl Sealant: Solvent-based, single component, nonsag, nonskinning, nonhardening, nonbleeding; nonvapor permeable; intended for fully concealed applications. Acoustic installations.
1. Products:
   a. Pecora Corporation; Pecora BA-98 Non-Skinning Butyl Sealant: www.pecora.com/#sle.
   b. Tremco Commercial Sealants & Waterproofing; Acoustical/Curtainwall Sealant: www.tremcosealants.com/#sle.
   c. Substitutions: See Section 01-6000 - Product Requirements.

2.04 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
3. Color: Gray.
4. Products:
   a. Sherwin-Williams Company; Stampede 1SL Polyurethane Sealant: www.sherwin-williams.com/#sle.
   b. Sika Corporation; Sikaflex SL 1: usa.sika.com/#sle.
   c. Sika Corporation; Sikaflex SL 2: usa.sika.com/#sle.
   d. Substitutions: See Section 01-6000 - Product Requirements.

2.05 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08-1116
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glazed storefront type aluminum doors.

1.02 RELATED REQUIREMENTS

A. Section 08-8000 - Glazing: Glazing materials for aluminum doors and frames.

1.03 REFERENCE STANDARDS

A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

B. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

C. AAMA 701/702 - Performance Specification for Pile Weatherstrips (AAMA 701) and Polymer Weatherseals (AAMA 702); 2023.

D. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

H. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

I. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2023.

J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.

C. Shop Drawings: Include elevations of each opening type.

D. Selection Samples: Complete set of color and finish options, using actual materials, for Architect's selection.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum components in manufacturer's standard protective packaging, palleted, crated, or banded together.

B. Inspect delivered components for damage and replace. Repaired components will not be accepted.

C. Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.

D. Protect materials and finish from damage during handling and installation.

1.07 FIELD CONDITIONS

A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.08 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Manufacturer Warranty: Provide 10-year manufacturer warranty for defects in workmanship and materials. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glazed Aluminum Doors:
   1. Kawneer: kawneer.us
   2. CRL US Aluminum: USalum.com
   3. Old Castle Building Envelope: OBE.com, NS-212; Basis of Design**.**
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 DOORS AND FRAMES

A. Accessibility: Comply with ICC A117.1 and ADA Standards.

B. Glazed Aluminum Doors: Extruded aluminum tube frame, full glazed, without middle rail; factory glazed.
   1. Thickness: Manufacturer's standard for door size and construction.
   2. Stile Width: 2-1/2 inch, nominal.
   3. Top Rail Width: Match stile width.
   4. Bottom Rail Width: 10: minimum.
   5. Finish: Class I - Color anodized.
   6. Seals: Manufacturer's standard.
   7. Glazing, Exterior Doors: Sealed insulating units, 1 inch thick, made of clear 1/4 inch thick fully tempered glass. By door manufacturer. See Section 08-8000.
   8. Manufacturer's Door Hardware: Manufacturer's standard.
      a. Hanging Devices: continuous gear hinge.
         1) Single Door Swing Direction: As indicated on drawings.
         2) Color/Finish to match door.
      b. Securing Devices: As required for project applications.
         1) Lock: Cylinder, thumb turn interior and key operated lock at exterior.
         2) Coordinate with Owner's standard lock/keyway.
         3) Coordinate with Owner's Security Consultant for electric controlled jamb strikes.
      c. Closing Devices: Overhead surface closer
         1) Color/Finish to match door.
      d. Push/Pulls: Offset panic pull
         1) Color/Finish to match door.
      e. Exit Device: Push bar, full width of door.
         1) Color/Finish to match door.
   9. Door Frame: Existing wood frame to remain and modified to fit new door.

C. Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
   1. Provide the following clearances:
      a. Hinge and Lock Stiles: 1/8 inch.
      b. Between Meeting Stiles: 1/4 inch.
      c. At Top Rail and Bottom Rail: 1/8 inch.

2.03 COMPONENTS

A. Replaceable Weatherstripping: AAMA 701/702 wool pile.

2.04 PERFORMANCE REQUIREMENTS

A. Provide door assemblies that have been designed and fabricated in compliance with specified performance requirements.

B. Water Leakage: No uncontrolled leakage on interior face when tested in accordance with ASTM E331 at differential pressure of 7.5 psf.

C. Overall U-value, Including Glazing: 0.77, minimum, measured on exterior door size required for this project.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

2.06 FINISHES

A. Class I Color Anodized Finish: Electrolytically deposited colored anodic coating; AAMA 611 AA-M12C22A44, minimum dry film thickness (DFT) of 0.7 mils, 0.0007 inch.

B. Color: Dark bronze.

2.07 ACCESSORIES

A. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.

B. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.

C. Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.

B. Replace components with damage to exposed finishes.

C. Separate dissimilar metals to prevent electrolytic action between metals.

3.03 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and approved shop drawings.

B. Install exterior doors in accordance with ASTM E2112.

C. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.

D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.

E. Install door hardware, by door manufacturer.

F. Install glazing; set glazing stops and glazing gaskets flush with face of door or frame.

G. Comply with glazing installation requirements. See Section 08-8000.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

3.05 CLEANING

A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.

B. Do not use abrasive, caustic, or acid cleaning agents.

3.06 PROTECTION

A. Protect products of this section from damage caused by subsequent construction until Date of Substantial Completion.

B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

SECTION 08-1213
HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal frames for non-hollow metal doors.

B. Interior glazed borrowed lite frames.

1.02 RELATED REQUIREMENTS

A. Section 08-7100 - Door Hardware: Hardware, silencers, and weatherstripping.

B. Section 08-8000 - Glazing: Glazed borrowed lites.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

H. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

I. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

J. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

K. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

L. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with applicable requirements and in compliance with standards and/or custom guidelines as indicated.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Frames with Integral Casings:
   1. Ceco Door, an Assa Abloy Group company; BQ or DQ Series: www.assaabloydss.com/#sle.
   2. Curries, an Assa Abloy Group company; C Series: www.assaabloydss.com/#sle.
   3. Republic Doors, an Allegion brand; MH Series: www.republicdoor.com/#sle.
   4. Steelcraft, an Allegion brand; DW or K Series: www.allegion.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Refer to Door and Frame Schedule on drawings for frame sizes, fire ratings, sound ratings, finishing, door hardware to be installed, and other variations, if any.

B. Door Frame Type: Provide hollow metal door frames with integral casings.

C. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.

D. Accessibility: Comply with ICC A117.1 and ADA Standards.

E. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.

F. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior frame that is also indicated as being sound-rated must comply with the requirements specified for exterior frames and for sound-rated frames; where two requirements conflict, comply with the most stringent.

G. Hardware Preparations, Selections and Locations: Comply with BHMA A156.115, NAAMM HMMA 830, NAAMM HMMA 831 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

H. Frames for Interior Glazing or Borrowed Lites: Construction and face dimensions to match door frames, and as indicated on drawings.

I. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into head of frame, and flush with top.

2.03 HOLLOW METAL DOOR FRAMES WITH INTEGRAL CASINGS

A. Interior Door and borrowed lite Frames, Non-Fire Rated: Knock-down type.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Frame Finish: Factory primed and field finished.

2.04 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.05 ACCESSORIES

A. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws. For borrowed lite glazing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

A. Install frames in accordance with manufacturer's instructions and related requirements of specified frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Comply with glazing installation requirements of Section 08-8000.

D. Install door hardware as specified in Section 08-7100.

3.03 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

3.04 SCHEDULE - SEE DRAWINGS

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08-1433
STILE AND RAIL WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors, stile and rail design; non-fire rated.

B. Panels of wood.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. WDMA I.S. 6A - Interior Architectural Wood Stile and Rail Doors; 2021, with Errata (2022).

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate stile and rail core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, and factory finishing criteria.

D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Warranty, executed in Owner's name.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
   1. Accredited participant in specified certification program prior to commencement of fabrication and throughout duration of project.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

C. Quality Certification:
   1. Provide labels or certificates indicating that installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver, and store doors in accordance with quality standard specified.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.06 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Include coverage for warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Stile and Rail Wood Doors:
   1. Architectural Concepts, LLC; Panel Doors: www.archconceptsllc.com/#sle.
   2. Karona, Inc: www.karonadoor.com/#sle.
   3. Forte Opening Solutions; Aspiro Authentic Stile & Rail Doors: www.forteopenings.com/#sle.
   4. VT Industries, Inc: www.vtindustries.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

2.02 DOORS

A. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with WDMA I.S. 6A.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; solid lumber construction; mortise and tenon joints. Opaque finish as indicated on drawings.

2.03 DOOR AND PANEL FACINGS

A. Materials for Opaque Finishes: Material allowed by quality standard indicated.

B. Adhesive: Type II - Water Resistant.

2.04 DOOR CONSTRUCTION

A. Vertical Exposed Edge of Stiles: Hardwood for paint finish. Match existing wood stile and rail doors.

B. Fit door edge trim to edge of stiles after applying veneer facing.

C. Panels: Flat. Match existing wood stile and rail doors

D. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

2.05 FINISHES

A. Finish work in accordance with WDMA I.S. 6A for Grade specified and as follows:
   1. Opaque:
      a. Manufacturers standard, in compliance with performance duty level indicated.
      b. Color: As selected by Architect.
      c. Sheen: Semigloss.

B. Seal door top edge with color sealer to match door facing.

2.06 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08-1213.

B. Door Hardware: See Section 08-7100.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standards.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Field-Finished Doors: Trimming to fit is acceptable.

D. Machine cut for hardware.

E. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

A. Comply with specified quality standard for fit, clearance, and joinery tolerances.

B. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inch surface area.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 08-5113
ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Extruded aluminum windows with fixed sash.

B. Factory glazing.

1.02 RELATED REQUIREMENTS

A. Section 06-1000 - Rough Carpentry: Rough opening framing.

B. Section 07-2500 - Weather Barriers: Sealing frame to water-resistive barrier installed on adjacent construction.

C. Section 07-9200 - Joint Sealants: Sealing joints between window frames and adjacent construction.

D. Section 08-8000 - Glazing.

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

B. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

E. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

F. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

G. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2022.

H. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017 (Reapproved 2023).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Include component dimensions, information on glass and glazing, and internal drainage details.

C. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, anchorage locations, and installation requirements.

D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
   1. Evidence of AAMA Certification.
   2. Evidence of WDMA Certification.
   3. Evidence of CSA Certification.
   4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

E. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.

F. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of AAMA CW-10.

B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.08 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a 2 year period after Date of Substantial Completion.

C. Manufacturer Warranty: Provide 10 year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with manufacturer.

D. Manufacturer Warranty: Provide 10-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum Window Manufacturers:
   1. Arcadia, Inc; T200 or T325: www.arcadiainc.com/#sle.
   2. Winco Window Company, Inc; Series 1150S: www.wincowindow.com/#sle.
   3. EFCO; XTherm 2250; efcocorp.com.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 ALUMINUM WINDOWS

A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, related flashings, and anchorage and attachment devices.
   1. Frame Depth: 2 inch. Max.
   2. Provide factory-glazed units.
   3. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
   4. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   5. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
   6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

B. Fixed, Non-Operable Type:
   1. Construction: Thermally broken.
   2. Glazing: Double; clear; low-e.
   3. Exterior Finish: Class II color anodized.
   4. Interior Finish: Class II color anodized.

2.03 PERFORMANCE REQUIREMENTS

A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:

1. Performance Class (PC): AW.
2. Performance Grade (PG): Equivalent to or greater than specified design pressure.

B. Design Pressure (DP): In accordance with applicable codes.

C. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.

D. Water Leakage: No uncontrolled leakage on interior face when tested in accordance with ASTM E331 at differential pressure of 12.11 psf.

E. Air Leakage: 0.1 cfm/sq ft maximum leakage per unit area of outside window frame dimension when tested at 1.57 psf pressure difference in accordance with ASTM E283/E283M.

F. Overall Thermal Transmittance (U-value): 0.35, maximum, including glazing, measured on window sizes required for this project.

G. Forced Entry Resistance: Tested to comply with ASTM F588 requirements for performance level of Grade 40 for specific window style required.

H. Acoustic Performance: Minimum outdoor-indoor transmission class (OITC) rating of 34, when tested in accordance with ASTM E90 and ASTM E1332.

2.04 COMPONENTS

A. Glazing: See Section 08-8000.

B. Fasteners: As recommened by the manufacturer.

C. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.05 MATERIALS

2.06 FINISHES

A. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32, integrally colored anodic coating not less than 0.4 mil thick.

B. Finish Color: Dark bronze.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings and adjoining water-resistive barrier materials are ready to receive aluminum windows; see Section 07-2500.

3.02 PRIME WINDOW INSTALLATION

A. Install windows in accordance with manufacturer's instructions.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

D. Install sill.

E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

F. Install glass and infill panels in accordance with requirements; see Section 08-8000.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

3.05 CLEANING

A. See Section 01-7419 - Construction Waste Management and Disposal for additional requirements.

B. Remove protective material from factory finished aluminum surfaces.

C. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

END OF SECTION

SECTION 08-6200
UNIT SKYLIGHTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Skylights with integral frame.

1.02 RELATED REQUIREMENTS

A. Section 06-1000 - Rough Carpentry: Wood framing for rough opening.

B. Section 06-1000 - Rough Carpentry: Wood support curbs.

C. Section 5400: Roofing system and base flashing at skylight curb.

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

D. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2018).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Include structural, thermal, and daylighting performance values.

C. Shop Drawings: Indicate configurations, dimensions, locations, fastening methods, and installation details.

D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
   1. Evidence of AAMA Certification.
   2. Evidence of WDMA Certification.
   3. Evidence of CSA Certification.
   4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with not less than three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 15 year manufacturer warranty including coverage for leakage due to defective skylight materials or construction. Complete forms in Owner's name and register with manufacturer. Warranty based on commercial products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Unit Skylights:

1. Kingspan Light + Air, LLC; Series 1200 Polycarbonate Unit Skylight: www.kingspanlightandair.us/#sle.
2. Velux America, Inc; VELUX Dynamic Dome: www.veluxusa.com/#sle. **Design Basis.**
3. Substitutions: See Section 01-6000 - Product Requirements.

2.02 SKYLIGHTS

A. Skylights: Factory-assembled glazing in aluminum frame, free of visual distortion, and weathertight.
   1. Shape: Rectangular dome.
   2. Glazing: Double. Polycarbonate.
   3. Operation: None; fixed.
   4. Roof Slope: As indicated on drawings.
   5. Nominal Size: As indicated on drawings.

2.03 PERFORMANCE REQUIREMENTS

A. Provide unit skylights that comply with the following:
   1. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific skylight type:
   2. Allow for expansion and contraction within system components caused by a cycling surface temperature range of 170 degrees F without causing detrimental effects to system or components.

2.04 COMPONENTS

A. Double Glazing: Polycarbonate plastic; factory sealed.
   1. Outer Glazing: Clear transparent.
   2. Inner Glazing: White translucent.
   3. Thermal Transmittance (U-Value): 0.65, maximum.
   4. Ultraviolet (UV) Light Transmission: 0.1 percent, maximum.
   5. Solar Heat Gain Coefficient (SHGC): 0.50 percent, maximum.
   6. Haze: 100 percent.
   7. Luminous Transmittance: 68.9 percent, nominal.

B. Frames: ASTM B221 ASTM B221M Extruded aluminum thermally broken, reinforced and welded corner joints, integral curb frame mounting flange and counterflashing to receive roofing flashing system, with integral condensation collection gutter, glazing retainer; clear anodized finish.

2.05 ACCESSORIES

A. Anchorage Devices: Type recommended by manufacturer, exposed to view.

B. Counterflashings: As shown on drawings..

C. Skylight Protection System: OSHA-compliant; nonpenetrating fall protection.

D. Protective Back Coating: Asphaltic mastic, ASTM D4479/D4479M Type I.

E. Sealant: Elastomeric, silicone or polyurethane, compatible with material being sealed .

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that openings and substrate conditions are ready to receive work of this section.

C. Verify that curbs installed under other sections are complete.

3.02 PREPARATION

A. Apply protective back coating on aluminum surfaces of skylight units that will be in contact with cementitious materials or dissimilar metals.

3.03 INSTALLATION

A. Install skylight units and mount securely to curb assembly; install counterflashing as required.

B. Apply sealant to achieve watertight assembly.

3.04 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down exposed surfaces; wipe surfaces clean.

C. Remove excess sealant.

END OF SECTION

SECTION 08-7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood and aluminum doors.

B. Electrically operated and controlled hardware.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08-1116 - Aluminum Doors and Frames.

B. Section 08-1213 - Hollow Metal Frames.

C. Section 08-1433 - Stile and Rail Wood Doors.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.

D. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

E. BHMA A156.18 - Standard for Materials and Finishes; 2020.

F. BHMA A156.21 - Thresholds; 2025.

G. BHMA A156.22 - Standard for Gasketing; 2021.

H. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

I. CBSC (CBC) - California Building Code, California Code of Regulations, Title 24, Part 2, Volumes 1 & 2; Most Recent Edition Adopted by the California Building Standards Commission.

J. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Contractor is required to provide both a hardware installer and a recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing projects of this size and scope in the project's vicinity for a period of not less than 5 years. The hardware installer or the hardware supplier shall employ an Architectural Hardware Consultant (AHC) who is available at reasonable times during the course of the project for consultation with the owner, architect and contractor regarding the project's hardware requirements. The firm shall have extensive hands-on experience in solving field problems. Must be able to demonstrate the ability to successfully complete a project of this type.

D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
   1. Architect.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.
   4. Owner's Security Consultant / Contractor.

E. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

F. Keying Requirements Meeting:

1. Schedule meeting at project site prior to Contractor occupancy.
2. Attendance Required:
    a. Contractor.
    b. Owner.
    c. Architect.
    d. Installer's Architectural Hardware Consultant (AHC).
    e. Hardware Installer.
    f. Owner's Security Consultant / Contractor.
3. Agenda:
    a. Establish keying requirements.
    b. Verify locksets and locking hardware are functionally correct for project requirements.
    c. Verify that keying and programming complies with project requirements.
    d. Establish keying submittal schedule and update requirements.
4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
    a. Access control requirements.
    b. Key control system requirements.
    c. Schematic diagram of preliminary key system.
    d. Flow of traffic and extent of security required.
5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
    1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
    2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
    3. List groups and suffixes in proper sequence.
    4. Provide complete description for each door listed.
    5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
    6. Include account of abbreviations and symbols used in schedule.

D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
    1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
    2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
    3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

E. Samples for Verification:
    1. Submit minimum size of 2 by 4 inch for sheet samples, and minimum length of 4 inch for other products.
    2. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
    3. Return full-size samples to Contractor.
    4. Submit product description with samples.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

G. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
   1. Submit manufacturer's parts lists and templates.
   2. Bitting List: List of combinations as furnished.

H. Keying Schedule:
   1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

I. Manufacturer's qualification statement.

J. Installer's qualification statement.

K. Supplier's qualification statement.

L. Specimen warranty.

M. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

N. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
   1. Locksets and Cylinders: Three years, minimum.
   2. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer. Meet requirements of Owner's Standard Hardware makes and manufacturers.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: CBSC (CBC), ADA Standards and ICC A117.1.
   3. Listed and certified compliant with specified standards by BHMA (CPD).
   4. Auxiliary Hardware: BHMA A156.16.
   5. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
   6. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electronically controlled door functions by the Owner's Security Contractor. Conduit and junction boxes above the ceiling is provided for Owner's contractor's work.

E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Drawings for door operation groups where existing new stock hardware is to be installed as indicated.

F. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws are not permitted.
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.
   5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.

2.02 HINGES

A. See Section 08-1116 - Aluminum Doors and Frames.

B. See Drawings for existing, salvaged hinges to be reused, provide matching hinges if required. Match manufacturer, size and finish.

2.03 EXIT DEVICES

A. See Section 08-1116 - Aluminum Doors and Frames.

2.04 ELECTRIC STRIKES

A. By Owner's Security Consultant / Contractor.

2.05 CYLINDRICAL LOCKS

A. See Section 08-1116 - Aluminum Doors and Frames.

B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
   1. Bored Hole: 2-1/8 inch diameter.
   2. Latchbolt Throw: 1/2 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.
   5. Provide privacy thumb-turn hardware on restroom doors with "occupied" notification on the exterior side of the door.

2.06 DOOR PULLS AND PUSH BARS

A. See Section 08-1116 - Aluminum Doors and Frames.

2.07 CLOSERS

A. See Section 08-1116 - Aluminum Doors and Frames;

2.08 THRESHOLDS

A. See Section 08-1116 - Aluminum Doors and Frames

B. Manufacturers:
   1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Zero International, Inc: www.zerointernational.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

C. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at interior doors for transition between two different floor types, at restroom doors, unless otherwise indicated.
   2. Provide threshold at each exterior door, unless otherwise indicated.

3. Type: Flat surface.
4. Material: Aluminum.
5. Threshold Surface: Fluted horizontal grooves across full width.
6. Field cut threshold to profile of frame and width of door sill for tight fit.
7. Provide non-corroding fasteners at exterior locations.
8. See Drawings, sill details for accessibility requirements.

2.09 WEATHERSTRIPPING AND GASKETING

A. See Section 08-1116 - Aluminum Doors and Frames.

B. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Hager Companies: www.hagerco.com/#sle.
3. Zero International, Inc: www.zerointernational.com/#sle.
4. Substitutions: See Section 01-6000 - Product Requirements.

C. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
5. Provide door bottom sweep on each exterior door, unless otherwise indicated.

2.10 SIGNAGE

A. See Section 10-1423 for additional signage requirements.

2.11 SILENCERS

A. Manufacturers:
1. Ives, an Allegion brand: www.allegion.com/us/#sle.
2. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
3. Substitutions: See Section 01-6000 - Product Requirements.

B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, color to be coordinated with door frame color, may vary by door.

2.12 WIRELESS ACCESS MANAGEMENT SYSTEMS

A. See Owner's Security Consultant / Contractor.

2.13 EXIT MOTION SENSOR

A. See Owner's Security Consultant / Contractor.

2.14 POWER SUPPLY

A. See Owner's Security Constultant / Contractor.

2.15 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 613; dark oxidized satin bronze, oil rubbed, with bronze base material (former US equivalent US10B); BHMA A156.18. To match existing hardware finish.
2. Exceptions:
a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
b. Door Closer Covers and Arms: Color as selected by Architect from manufacturer's standard colors unless otherwise indicated.
c. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.

d. Hardware for Aluminum Entrance Doors: Finished to match door panel finish, except at hand contact surfaces provide stainless steel with satin finish, unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Do not install surface mounted items until application of finishes to substrate are fully completed.

D. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As shown on Drawings .

E. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01-4000 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01-7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

D. See Section 01-7419 - Construction Waste Management and Disposal for additional requirements.

E. Clean existing, salvaged hardware for reinstallation on new doors.

3.06 PROTECTION

A. Protect finished Work under provisions of Section 01-7000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08-8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Plastic films.

D. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 08-1116 - Aluminum Doors and Frames: Glazed door

B. Section 08-1213 - Hollow Metal Frames: Glazed borrowed lites.

C. Section 08-5113 - Aluminum Windows: Glazing provided by window manufacturer.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASTM C1036 - Standard Specification for Flat Glass; 2021.

D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

E. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

F. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.

G. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

H. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

I. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

J. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

C. Samples: Submit two samples 8 by 8 inch in size of glass units.

D. Certificate: Certify that products of this section meet or exceed specified requirements.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
   2. Guardian Glass, LLC: www.guardianglass.com/#sle.
   3. Pilkington North America Inc: www.pilkington.com/na/#sle.
   4. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

B. Plastic Films Manufacturers:
   1. 3M Window Film; Privacy Film, Matte: solutions.3m.com/wps/portal/3M/en_US/Window_Film/Solutions/#sle.
   2. Avery Dennison; SC900, Supercast, Dusted, Matte: www.averydennison.com/#sle.
   3. LLumar, an Eastman Chemical Company; Architectural, Matte Frost: www.llumar.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   3. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
   1. In conjunction with weather barrier related materials described in other sections, as follows:

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
   2. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
   4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Glass: Any of the manufacturers specified for float glass.
   2. Substitutions: See Section 01-6000 - Product Requirements.

B. Fabricator: Certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

C. Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
   3. Metal-Edge Spacers: Aluminum, mitered and spigoted corners.
   4. Spacer Color: Black.
   5. Edge Seal:
      a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
      b. Color: Black.
   6. Purge interpane space with dry air, hermetically sealed.
   7. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
      a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.

D. Insulating Glass Units: Vision glass, double glazed.
   1. Applications: Exterior glazing unless otherwise indicated.
   2. Space between lites filled with argon.
   3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
      b. Coating: Low-E (passive type), on #2 surface.
   4. Metal edge spacer.
   5. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   6. Total Thickness: 1 inch.
   7. Thermal Transmittance (U-Value): 0.46, maximum.
   8. Solar Heat Gain Coefficient (SHGC): 0.30, maximum.
   9. Glazing Method: Dry glazing method, gasket glazing.

2.05 GLAZING UNITS

A. Monolithic Safety Glazing: Non-fire-rated, interior.
   1. Applications:
      a. Glazed sidelights to doors.
   2. Glass Type: Fully tempered safety glass as specified.
   3. Tint: Clear.
   4. Thickness: 1/4 inch, nominal.
   5. Glazing Method: Dry glazing method, gasket glazing.

2.06 PLASTIC FILMS

A. Decorative Plastic Film: Vinyl type. Interior use only.
   1. Application: See Drawings, Door Schedule, for doors with decorative plastic film.
   2. Series Type: Frosted or Etched.
   3. Color: White.
   4. Thickness Without Liner: 0.002 inch.
   5. Width: 60 inch.

2.07 ACCESSORIES

A. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

3.04 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

E. Place glazing tape on free perimeter of glazing in same manner described above.

F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

G. Carefully trim protruding tape with knife.

3.05 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

C. Install film tight to perimeter of glass and carefully trim film with razor sharp knife. Provide 1/16 inch to 1/8 inch gap at perimeter of glazed panel unless otherwise required. Do not score the glass.

3.06 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.07 CLEANING

A. See Section 01-7419 - Construction Waste Management and Disposal, for additional requirements.

B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

C. Remove nonpermanent labels immediately after glazing installation is complete.

D. Clean glass and adjacent surfaces after sealants are fully cured.

E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.08 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 09-0561
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile or planks.
   2. Carpet tile.
   3. Thin-set porcelain tile.

B. Removal of existing floor paint finishes.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Patching compound.

E. Remedial floor coatings.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2018.

D. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.04 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Manufacturer's qualification statement.
   2. Manufacturer's statement of compatibility with types of flooring applied over remedial product.
   3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
   4. Manufacturer's installation instructions.
   5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

D. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Copies of specified test methods.
   4. Recommendations for remediation of unsatisfactory surfaces.
   5. Product data for recommended remedial coating.
   6. Certificate: Include certification of accuracy by authorized official of testing agency.
   7. Submit report to Architect.
   8. Submit report not more than two business days after conclusion of testing.

E. Adhesive Bond and Compatibility Test Report.

F. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.

1.05 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

C. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
   2. Confirm date of start of testing at least 10 days prior to actual start.
   3. Allow at least 4 business days on site for testing agency activities.
   4. Achieve and maintain specified ambient conditions.
   5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

D. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Keep materials from freezing.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating, Two-Component: Single or multi layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to a degree sufficient to meet flooring manufacturer's emission limits, resistant to alkalinity (pH) level found, and suitable for flooring adhesion without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   2. Use product recommended by testing agency.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
      a. Do not attempt to remove coating or penetrating material.
      b. Do not abrade surface.
      c. Prepare surface according to recommendations of remedial coating manufacturer and according to ASTM D4259.
   3. Preliminary cleaning.
   4. Specified remediation, if required.
   5. Patching, smoothing, and leveling, as required.
   6. Other preparation specified.
   7. Adhesive bond and compatibility test.
   8. Protection.

C. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
   3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with recommendations of testing agency.

C. Comply with requirements and recommendations of floor covering manufacturer.

D. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

E. Do not fill expansion joints, isolation joints, or other moving joints.

3.05 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.06 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.07 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09-2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Resilient metal channel

C. Cementitious backing board.

D. Gypsum wallboard.

E. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07-2100 - Thermal Insulation: Acoustic insulation.

1.03 REFERENCE STANDARDS

A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

C. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

D. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

F. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

I. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

J. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).

K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

L. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

M. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

N. ASTM E413 - Classification for Rating Sound Insulation; 2022.

O. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on gypsum board, accessories, and joint finishing system.

C. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 01-7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

C. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.

B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Resilient Furring Channels: Single leg configuration; 1/2 inch channel depth.
      a. Products:
         1) ClarkDietrich; RC Deluxe Resilient Channel: www.clarkdietrich.com/#sle.
         2) MarinoWARE; RC Max: www.marinoware.com/#sle.
         3) Phillips Manufacturing Co; RC-2 Resilient Sound Channel: www.phillipsmfg.com/#sle.
         4) Substitutions: See Section 01-6000 - Product Requirements.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   4. USG Corporation: www.usg.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required in wet areas.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 1/2 inch.
   5. Mold-Resistant, Paper-Faced Products:
      a. American Gypsum Company; M-Bloc Type X: www.americangypsum.com/#sle.
      b. CertainTeed Corporation; M2Tech 5/8" Type X Moisture & Mold Resistant Drywall: www.certainteed.com/#sle.
      c. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: www.gpgypsum.com/#sle.
      d. USG Corporation; Sheetrock Brand Mold Tough Firecode SCX Panels 5/8 in. (15.9 mm): www.usg.com/#sle.
      e. Substitutions: See Section 01-6000 - Product Requirements.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Horizontal surfaces behind tile in wet areas including countertops and sinks and water closets.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.

a. Thickness: 1/2 inch.

D. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
2. Thickness: 1/2 inch.
3. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: See Section 07-2100.

B. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
1. Corner Beads: Low profile, for 90 degree outside corners.

C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Joint Compound: Setting type, field-mixed.

D. Finishing Compound: Surface coat and primer, takes the place of skim coating.

E. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

D. Cementitious Backing Board: Install over wood framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

E. Installation on Wood Framing: For nonrated assemblies, install as follows:
1. Single-Layer Applications: Screw attachment.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.05 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
2. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch.
2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

C. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.07 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

3.08 PROTECTION

A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION

SECTION 09-3000
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 09-2116 - Gypsum Board Assemblies: Tile backer board.

1.03 REFERENCE STANDARDS

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2023.

B. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

C. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.

E. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.

G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).

H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.

I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

J. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.

K. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

L. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

M. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.

N. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.

O. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.

P. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2024).

Q. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.

R. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018 (Reapproved 2023).

S. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

T. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, and setting details.

D. Samples: Mount tile and apply grout on one plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

E. Installer's Qualification Statement:

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Tile: 1 percent of each size, color, and surface finish combination.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products of each type by the same manufacturer.
   1. American Olean Corporation: www.americanolean.com/#sle.
   2. Architessa: www.architessa.com/#sle.
   3. Dal-Tile Corporation: www.daltile.com/#sle.
   4. Emser Tile, LLC: www.emser.com/#sle.
   5. Substitutions: See Section 01-6000 - Product Requirements.

B. Glazed Wall Tile: ANSI A137.1 standard grade.
   1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
   2. Size: 3 by 9 inch, nominal.
   3. Edges: Cushioned.
   4. Color(s): As indicated on drawings.
   5. Trim Units: Matching bead, bullnose, cove, and base shapes in sizes coordinated with field tile.

C. Porcelain Tile: ANSI A137.1 standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size: 6 by 6 inch, nominal.
   3. Thickness: 0.3 inch.
   4. Edges: Square.
   5. Color(s): As indicated on drawings.
   6. Trim Units: Matching bullnose, cove base, and cove shapes in sizes coordinated with field tile.

2.02 TRIM AND ACCESSORIES

A. Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.

1. Applications:
    a. Open Edges: Bullnose.
    b. Inside Corners: Jointed.
    c. Floor to Wall Joints: Cove base.
2. Manufacturers: Same as for tile.

B. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, set with tile mortar or adhesive.
1. Products:
    a. Blanke Corporation; Blanke - Trims and Profiles: www.blankecorp.com/#sle.
    b. LATICRETE International, Inc: www.laticrete.com/#sle.
    c. Schluter-Systems; Schiene: www.schluter.com/#sle.
    d. Substitutions: See Section 01-6000 - Product Requirements.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Bostik Inc: www.bostik-us.com/#sle.
3. LATICRETE International, Inc: www.laticrete.com/#sle.
4. Mapei Corporation: www.mapei.com/#sle.
5. Schluter-Systems: www.schluter.com/#sle.
6. Substitutions: See Section 01-6000 - Product Requirements.

C. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated.
2. Products:
    a. ARDEX Engineered Cements; ARDEX X 5: www.ardexamericas.com/#sle.
    b. LATICRETE International, Inc; TRI-LITE: www.laticrete.com/#sle.
    c. Mapei Corporation; Adesilex P10 Mosaic & Glass Tile: www.mapei.com/#sle.
    d. Substitutions: See Section 01-6000 - Product Requirements.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Bostik Inc: www.bostik-us.com/#sle.
3. LATICRETE International, Inc: www.laticrete.com/#sle.
4. Mapei Corporation: www.mapei.com/#sle.
5. Substitutions: See Section 01-6000 - Product Requirements.

C. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout where indicated .
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As indicated on drawings.

2.05 MAINTENANCE MATERIALS

A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
1. Composition: Water-based colorless silicone.
2. Products:
    a. STONETECH, a Division of LATICRETE International, Inc; STONETECH Heavy Duty Grout Sealer: www.laticrete.com/#sle.
    b. Merkrete, by Parex USA, Inc; Merkrete Revive: www.merkrete.com/#sle.
    c. Substitutions: See Section 01-6000 - Product Requirements.

2.06 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
   1. Crack Resistance: No failure at 1/8 inch gap, minimum.
   2. Bonded Sheet Membrane Type:
      a. Material: Polyethylene sheet membrane with polyester fleece laminated to underside, 20 mils thick.
      b. Products:
         1) Schluter-Systems; DITRA: www.schluter.com/#sle. Basis of Design.
         2) Laticrete; STRATA_MAT: www.laticrete.com.
         3) Emser Tile: EZ-FLEX40; www.emser.com.
         4) Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09-0561.
   2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.
   3. Follow moisture and alkalinity remediation procedures in Section 09-0561.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install non-ceramic trim in accordance with manufacturer's instructions.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout.
   1. Use uncoupling membrane under all tile unless other underlayment is indicated.

3.05 INSTALLATION - WALL TILE

A. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.

3.06 CLEANING

A. Clean tile and grout surfaces.

3.07 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

3.08 SCHEDULE

A. See Room Schedule on Drawings.

END OF SECTION

SECTION 09-5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 07-2100 - Thermal Insulation: Acoustical insulation.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Evaluation Service Reports: Show compliance with specified requirements.

E. Samples: Submit two samples 4 by 4 inch in size illustrating material and finish of acoustical units.

F. Samples: Submit two samples each, 4 inches long, of suspension system main runner, cross runner, and perimeter molding.

G. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
   2. Certainteed Architectural: www.certainteed.com/ceilings-and-walls/#sle.
   3. USG Corporation: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

1. VOC Content: As specified in Section 01-6116.

B. Acoustical Panels, Type SA-1: Painted mineral fiber, with the following characteristics:
   1. Classification: ASTM E1264 Type III.
   2. Size: 24 by 48 inches. Second Look.
   3. Thickness: 3/4 inch.
   4. Light Reflectance: 0.81 percent, determined in accordance with ASTM E1264.
   5. NRC Range: 0.55 to 0.65, determined in accordance with ASTM E1264.
   6. Ceiling Attenuation Class (CAC): 30 to 35, determined in accordance with ASTM E1264.
   7. Panel Edge: Angled Tegular.
   8. Color: White to match existing panels.
   9. Suspension System: Exposed grid.
   10. Products:
      a. Armstrong, Cortega Second Look to match existing acoustic tiles. Design Basis.
      b. Substitutions: See Section 01-6000 - Product Requirements.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.

B. Exposed Suspension System: Hot-dip galvanized steel grid with steel cap.
   1. Application(s): Seismic.
   2. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width. Match existing tee profile.
   4. Finish: Baked enamel.
   5. Color: White to match existing metal suspension system color.
   6. Products:
      a. Armstrong World Industries, Inc; Prelude XL: www.armstrongceilings.com/#sle.
      b. Certainteed Architectural; 15/16" EZ Stab Classic System: www.certainteed.com/ceilings-and-walls/#sle.
      c. USG Corporation; Donn Brand ZXLA 15/16 inch Acoustical Suspension System: www.usg.com/ceilings/#sle.
      d. Match existing suspension system profile and color.
      e. Substitutions: See Section 01-6000 - Product Requirements.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Hold-Down Clips: Manufacturer's standard clips to suit application.

D. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.

E. Perimeter Moldings: Same metal and finish as grid.
   1. Size: As required for installation conditions and specified Seismic Design Category.
   2. Angle Molding: L-shaped, for mounting at same elevation as face of grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Locate system on room axis according to reflected plan.

C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

F. Where round obstructions occur, provide preformed closures to match perimeter molding.

G. Lay acoustical insulation for a distance of 48 inches either side of acoustical partitions as indicated.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

B. Clean surfaces.

C. Replace damaged or abraded components.

END OF SECTION

SECTION 09-6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile/plank flooring.

B. Resilient base.

C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09-0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

C. Section 09-0561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.

B. ASTM F2195 - Standard Specification for Linoleum Floor Tile; 2018 (Reapproved 2023).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Shop Drawings: Indicate seaming plans and floor patterns.

D. Verification Samples: Submit two samples, minimum 4 by 4 inch in size illustrating color and pattern for each resilient wall base product specified.

E. Verification Samples for plank flooring: Submit two full size planks.

F. Sustainable Design Submittal: Submit VOC content documentation for flooring and adhesives.

G. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

H. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

I. Manufacturer's Qualification Statement.

J. Installer's Qualification Statement.

K. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

L. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 5 percent of each type and color.
   3. Extra Wall Base: 5 percent of each type and color.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Protect roll materials from damage by storing on end.

E. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Linoleum Tile: Homogeneous wear layer bonded to backing, with color and pattern through wear layer thickness.
   1. Manufacturers:
      a. Forbo Flooring, Inc; Marmoleum, Cinch Loc, Trace of Nature 933573, color may vary: www.forboflooringna.com/#sle. Basis of Design.
         1) See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
      b. Substitutions: See Section 01-6000 - Product Requirements.
   2. Minimum Requirements: Comply with ASTM F2195, Type corresponding to type specified.
   3. VOC Content Limits: As specified in Section 01-6116.
   4. Backing: Waterproof HDF with a cork layer backing.
   5. Thickness: 0.386 inch, minimum, with backing.
   6. Tile Size: 12 x 36 inches. Nominal.
   7. Pattern: Marbleized.
   8. Color: As indicated on drawings.

2.02 RESILIENT BASE

A. Resilient Base - Type RB-1: ASTM F1861, Type TP, rubber, thermoplastic; style as scheduled.
   1. Manufacturers:
      a. Tarkett Flooring: www.tarkett.com/#sle. Basis of Design.
         1) See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
      b. Substitutions: See Section 01-6000 - Product Requirements.
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Length: Roll.
   6. Color: As indicated on drawings.
   7. Straight base at carpet.
   8. Cove base at resilient or concrete.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09-0561.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

C. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09-0561.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Loose-Laid Installation: Set flooring in place in accordance with manufacturer's instructions.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Resilient Strips: Attach to substrate using adhesive.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

G. Install flooring in recessed floor access covers, maintaining floor pattern.

H. At movable partitions, install flooring under partitions without interrupting floor pattern.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring with joints and seams as shown on drawings.

C. Install loose-laid tile, fit interlocking edges tightly.

D. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

C. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

3.08 SCHEDULE

A. See Room Schedule on Drawings.

END OF SECTION

SECTION 09-6813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09-0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

C. Section 09-0561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Shop Drawings: Indicate layout of joints.

D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

E. Accessory Samples: Submit two 4 inch long samples of edge strip.

F. Sustainable Design Submittal: Submit VOC content documentation for adhesives.

G. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

H. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

I. Manufacturer's Qualification Statement.

J. Installer's Qualification Statement.

K. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

L. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.05 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. Interface, Inc; Aerial: www.interface.com/#sle. Basis of Design
      a. See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
   2. Substitutions: See Section 01-6000 - Product Requirements.

2.02 MATERIALS

A. Tile Carpeting: Tufted, manufactured in one color dye lot.

1. Tile Size: 10 by 40 inch, nominal.
2. Thickness: 0.09 to 0.12 inch.
3. Color: As Indicated on Drawings.
   a. CPT-1: To Be Determined
   b. CPT-2: To Be Determined
4. Pattern: As indicated on Drawings.
5. Primary Backing Material: To be verified with slab on grade moisture testing and remediation.
6. Pile Density: 5,567 oz/cubic yd to 6,400 oz/cubic yd.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Rubber, color as selected by Architect.

C. Adhesives:
   1. Compatible with materials being adhered; maximum VOC content as specified in Section 01-6116.

D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09-0561.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
   3. Follow moisture and alkalinity remediation procedures in Section 09-0561.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09-0561.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. See Section 01-7000 - Execution and Closeout Requirements for additional requirements.

B. Remove excess adhesive without damage, from floor, base, and wall surfaces.

C. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09-7800
INTERIOR WALL PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Decorative plastic wall paneling.

B. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2023, with Editorial Revision.

B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

C. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's descriptive literature for each specified product. Include anchorage devices specific to project substrate types.

C. Shop Drawings: Submit elevations for each application and location. Indicate details of joints and attachments.

D. Samples: Submit two samples 6 by 6 inches in size, indicating finish, surface design, and color for each type of panels.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Panels: Quantity equal to 5 percent of total installed.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in manufacturer's original packaging, marked with manufacturer's product identification.

B. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

C. Packaging Waste Management: See Section 01-7419.

1.06 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Product Warranty; 1 year for defective product.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Decorative Plastic Wall Paneling:
   1. Crane Composites, Inc; Glasbord FX: www.cranecomposites.com/#sle.
   2. Marlite, Inc; Standard FRP: www.marlite.com/#sle.
   3. Panolam Surface Systems; FRP: www.panolam.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Surface Burning Classification: Provide wall paneling assemblies meeting Class A when tested in accordance with ASTM E84.

2.03 DECORATIVE PLASTIC WALL PANELING

A. Decorative Plastic Wall Paneling:
   1. Panel Size: 4 by 8 feet.
   2. Panel Thickness: 0.075 to 0.09 inch.
   3. Surface Texture: Embossed.
   4. Material: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
      a. Impact Strength: Greater than 6 ft lbf/in, when tested in accordance with ASTM D256.
      b. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   5. Edges: Square.

B. Accessories:
   1. Trim:
      a. Material: Vinyl.
      b. Color/Finish: White.
      c. Divider Bars: Manufacturer's standard, matching and aligning with design pattern.
      d. Inside Corner Trim: Standard angle.
      e. Outside Corner Trim: Standard angle.
      f. Edge Trim: Manufacturer's standard shape.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces for adhered items are clean and smooth.
   1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer.

B. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Install panels in accordance with manufacturer's instructions.

B. Cut and drill holes in panels with carbide tipped saw blades, drill bits, or snips.

C. Apply adhesive to back side of panel using trowel recommended by adhesive manufacturer.

D. Apply panels to wall with vertical joints plumb and horizontal joints level and pattern aligned with adjoining panels.

E. Using a roller, apply pressure to panel face to ensure proper adhesion between surfaces.

F. Install panels with manufacturer's recommended gaps for panel field and corner joints.

G. Fill channels in trim with sealant before mounting to panel.

H. Install trim with adhesive.

I. Seal joints at wall base and between panels with approved sealant to prevent moisture intrusion.

J. Remove excess sealant after paneling is installed and prior to curing.

3.03 ADJUSTING

A. Replace paneling installed out of plumb and/or not aligned with adjacent panels or construction.

3.04 CLEANING

A. Clean panel faces using cleaning agents and methods recommended by manufacturer to remove soiling.

3.05 CLOSEOUT ACTIVITIES

A. See Section 01-7800 - Closeout Submittals for closeout submittals.

3.06 PROTECTION

A. Protect installed interior wall paneling from subsequent construction operations.

END OF SECTION

SECTION 09-9113
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Exposed surfaces of steel lintels and ledge angles.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   6. Floors, unless specifically indicated.
   7. Glass.
   8. Concealed pipes, ducts, and conduits.
   9. Prefinished cement fiber siding and trim.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

D. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Allow 30 days for approval process, after receipt of complete samples by Architect.
   3. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified approved by manufacturer.

1.06 MOCK-UPS

A. See Section 01-4000 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 4 feet long by 4 feet wide, illustrating paint color, texture, and finish.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
   1. Dunn-Edwards Corporation: www.dunnedwards.com/#sle.
   2. Pittsburgh Paints: www.ppgpaints.com/#sle.
      a. Owner's Standard, Basis of Design.
   3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   4. Benjamin Moore; www.benjaminmorre.com.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01-6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01-6116.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: As indicated in Color Schedule.

2.03 PAINT SYSTEMS - EXTERIOR

A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete masonry units and cement plaster.
1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Pigmented Elastomeric, Water Based; MPI #113.
   a. Products:
      1) Benjamin Moore; Ultraspec Masonry Elastomeric Waterproofing Coating.
      2) Dunn-Edwards Corporation; Enduralastic 10 Exterior Elastomeric Wall Coating.
      3) Sherwin-Williams; Loxon XP Waterproofing Masonry Coating; LX11-50 Series
      4) Substitutions: See Section 01-6000 - Product Requirements
3. Top Coat Sheen:
   a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
4. Primer, fillers: As recommended by top coat manufacturer for specific substrate.

B. Paint -Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer as recommended by top coat paint manufacturer.
2. Semi-gloss: Two coats of latex enamel.

C. Galvanized Metals, Alkyd, 3 Coat:
1. One coat galvanize primer. As recommended by top coat paint manufacturer.
2. Semi-gloss: Two coats of alkyd enamel.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Exterior Plaster and Stucco: 12 percent.
2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
4. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Masonry:
   1. Prepare surface as recommended by top coat manufacturer.

G. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

H. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

J. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.07 COLOR SCHEDULE

A. See Drawings; exterior elevations; Exterior Color / Material Schedule.

END OF SECTION

SECTION 09-9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Floors, unless specifically indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Concrete masonry units in utility, mechanical, and electrical spaces.
   10. Acoustical materials, unless specifically indicated.
   11. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01-6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09-9113 - Exterior Painting.

1.03 REFERENCE STANDARDS

A. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system products to be used in project; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Allow 30 days for approval process, after receipt of complete samples by Architect.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01-6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
   1. Dunn-Edwards Corporation: www.dunnedwards.com/#sle.
   2. Pittsburgh Paints: www.ppgpaints.com/#sle.
      a. Owner's Standard, Basis of Design.
   3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01-6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: See Section 01-6116.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: As indicated on drawings.

1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board and wood.
   1. Two top coats and one coat primer.
   2. Top Coat Sheen: See Drawings for Room Schedule.
      a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
      b. Satin: MPI gloss level 4; use this sheen for items subject to frequent touching by occupants, including door frames and railings.
   3. Primer: As recommended by top coat manufacturer for specific substrate.

B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
   1. Medium duty applications include doors and door frames.
   2. Two top coats and one coat primer.
   3. Top Coat Sheen:
      a. Semi-Gloss: MPI gloss level 5; use this sheen for doors and door frames and borrowed lite frames.
   4. Primer: As recommended by top coat manufacturer for specific substrate.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

F. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

G. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.07 COLOR SCHEDULE

A. See Drawings; Room Schedule and Room Schedule Finishes.

END OF SECTION

SECTION 10-1423
PANEL SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Panel signage.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's product literature for each type of panel sign, indicating styles, font, foreground and background colors, locations, and overall dimensions of each sign.

C. Shop Drawings:
   1. Include dimensions, locations, elevations, materials, text and graphic layout, attachment details, and schedules.
   2. Schedule: Provide information sufficient to completely define each panel sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
      a. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
      b. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
      c. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit one sample of each type of sign, of size similar to that required for project, indicating sign style, font, and method of attachment. Sample may be integrated into the work.

E. Verification Samples: Submit samples showing colors, materials, and finishes specified.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

G. Manufacturer's qualification statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain minimum ambient temperature during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Panel Signage:
   1. Best Sign Systems, Inc: www.bestsigns.com/#sle.
   2. FASTSIGNS International, Inc: www.fastsigns.com/#sle.
   3. Inpro Corporation: www.inprocorp.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Accessibility Requirements: Comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most restrictive requirements.

2.03 PANEL SIGNAGE

A. Panel Signage: match existing Owner's Headquarters Office signage.
   1. Application: Room and door signs.
   2. Description: Flat signs with applied character panel media, tactile characters.
   3. Sign Size: 4 inches by 6 inches.
   4. Total Thickness: 1/8 inch.
   5. Sign Edges: Squared.
   6. Letter Edges: Squared.
   7. Corners: Squared.
   8. Color and Font, unless otherwise indicated:
      a. Character Font: Helvetica, Arial, or other sans serif font.
      b. Character Case: Upper case only.
      c. Background Color: grey.
      d. Character Color: white color.
   9. Material: Acrylic plastic base with applied plastic letters and braille.
   10. Profile: Flat panel without frame.
   11. Tactile Letters: Raised 1/32 inch minimum.
   12. Braille: Grade II, ADA-compliant.
   13. One-Sided Wall Mounting: Tape adhesive.

2.04 SIGNAGE APPLICATIONS

A. Room and Door Signs:
   1. Office Doors: Identify with room names and numbers to be determined later, not those indicated on drawings.
   2. Conference and Meeting Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
   3. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
   4. Restrooms: Identify with pictograms, **gender neutral** rooms with braille. Room numbers to be determined later.

2.05 ACCESSORIES

A. Tape Adhesive: Double-sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install with horizontal edges level.

C. Locate panel signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage until substantial completion; repair or replace damaged items.

END OF SECTION

SECTION 10-2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Under-lavatory pipe supply covers.

C. Electric hand/hair dryers.

D. Utility room accessories.

1.02 RELATED REQUIREMENTS

A. Section 09-3000 - Tiling: Ceramic washroom accessories.

B. Section 22-4000 - Plumbing Fixtures: Under-lavatory pipe and supply covers.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2022).

C. ASTM C1036 - Standard Specification for Flat Glass; 2021.

D. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping; 2021.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Bobrick Washroom Equipment , Inc: washroominc.com.com. Basis of Design.
      a. See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
   2. Substitutions: Section 01-6000 - Product Requirements.

B. Under-Lavatory Pipe Supply Covers:
   1. Plumberex Specialty Products, Inc: www.plumberex.com/#sle. Or Equal.
   2. Substitutions: Section 01-6000 - Product Requirements.

C. Electric Hand/Hair Dryers:
   1. Dyson Inc; Dyson Airblade V: www.dyson.com/#sle. Basis of Design.
      a. See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
   2. Substitutions: Section 01-6000 - Product Requirements.

2.02 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, chrome-plated steel brackets, spindleless type for tension spring delivery designed to prevent theft of tissue roll.
   1. Products:
      a. Bobrick: B-265.
         1) Sole Source, Basis of Design.

b. Substitutions: Section 01-6000 - Product Requirements.

B. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gauge refill indicator.
1. Products:
a. Bobrick; Contura Series, B-4112.
1) Sole Source, Basis of Design.
b. Substitutions: Section 01-6000 - Product Requirements.

C. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
1. Products:
a. By Owner - To Be Determined..

D. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by hinged front panel.
1. Minimum capacity: 250 seat covers.
2. Products:
a. Bobrick; Contura Series, B-4221.
1) Sole Source, Basis of Design.
b. Substitutions: Section 01-6000 - Product Requirements.

E. Grab Bars: Stainless steel, smooth surface.
1. Standard Duty Grab Bars:
a. Push/Pull Point Load: 250 pound-force, minimum.
b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
c. Finish: Satin.
d. Length and Configuration: As indicated on drawings.
e. Products:
1) Bobrick; B-5806.
(a) Sole Source, Basis of Design.
2) Substitutions: Section 01-6000 - Product Requirements.

F. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
1. Products:
a. Bobrick Contura Series; B-270.
1) Sole Source, Basis of Design.
b. Substitutions: Section 01-6000 - Product Requirements.

2.03 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:
1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
b. Comply with ASTM C1822, type indicated.
c. Comply with ASME A112.18.9.
d. Comply with ICC A117.1.
e. Microbial and Fungal Resistance: Comply with ASTM G21.
4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
6. Products:
a. Plumberex Specialty Products, Inc; Plumberex Handy-Shield Maxx: www.plumberex.com/#sle.
b. Plumberex Specialty Products, Inc; Plumberex Trap Gear: www.plumberex.com/#sle.
c. Substitutions: See Section 01-6000 - Product Requirements.

2.04 ELECTRIC HAND/HAIR DRYERS

A. Electric Hand and Hair Dryers: Traditional fan-in-case type, with downward fixed nozzle.
   1. Operation: Automatic, sensor-operated on and off.
   2. Mounting: Wall-mounted - surface.
   3. Cover: Polycarbonate.
      a. Color: Sprayed nickel.
      b. Tamper-resistant screw attachment of cover to mounting plate.
   4. Runtime as Hair Dryer: 12 seconds, nominal.
   5. Supply Voltage: 120 V, single phase, 60 Hz, nominal.
   6. Warranty: 5 years.
   7. Electric Hand Dryer Products:
      a. Dyson Airblade V; design@dyson.com.
         1) Sole Source, Basis of Design.
      b. Substitutions: Section 01-6000 - Product Requirements.

2.05 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 18 gauge thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Hooks: 4, 0.06 inch stainless steel rag hooks at shelf front.
   2. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
   3. Length: 34 inches.
   4. Products:
      a. American Specialties, Inc: www.americanspecialties.com/#sle.
      b. Bradley Corp; 9933; bradleycorp.com.
      c. Bobrick; Utility Shelf with mop/broom holders, B-239.
      d. Substitutions: 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

D. See Section 06-1000 for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install plumb and level, securely and rigidly anchored to substrate.

B. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. As indicated on Drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10-4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.02 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.04 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com/#sle.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   3. Oval Brand Fire Products; Oval Dry Chemical Fire Extinguisher - Multipurpose ABC: www.ovalfireproducts.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

B. Fire Extinguisher Cabinets and Accessories:
   1. Activar Construction Products Group, Inc. - JL Industries; Ambassador Series: www.activarcpg.com/#sle.
   2. Larsen's Manufacturing Co; V-2709-SM: www.larsensmfg.com/#sle.
   3. Potter-Roemer; 7013-7023: www.potterroemer.com/#sle.
   4. Substitutions: See Section 01-6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size: 5 pound.
   3. Finish: Baked polyester powder coat, red color.
   4. Temperature range: Minus 65 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinet Construction: Non-fire rated.
   1. Formed primed steel sheet; 0.036 inch thick base metal.

B. Cabinet Configuration: Semi-recessed type.
   1. Size to accommodate accessories. See fire extinguisher size.
   2. Trimless type.

C. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.

E. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

F. Fabrication: Weld, fill, and grind components smooth.

G. Finish of Cabinet Exterior Trim and Door: Baked enamel, white color.

H. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated.

B. Lettering: “FIRE EXTINGUISHER” decal, or vinyl self-adhering, prespaced black lettering in accordance with authorities having jurisdiction (AHJ).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets.

3.03 MAINTENANCE

A. See Section 01-7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

SECTION 11-3013
RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Kitchen appliances.

1.02 RELATED REQUIREMENTS

A. Section 22-0000 - Plumbing

B. Section 26-0500 - Basic Electrical Requirements

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 WARRANTY

A. See Section 01-7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.

C. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.

B. Refrigerator: Free-standing, side-by-side, bottom mounted freezer, and frost-free.
   1. Capacity: Total minimum storage of 24 cubic ft; minimum 15 percent freezer capacity.
   2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
   3. Features: Include glass shelves, automatic icemaker, light in freezer compartment, and in-door water and ice dispenser.
   4. Exterior Finish: Stainless steel.
   5. Manufacturers:
      a. LG; Model LRFXC2416S, Basis of Design.
         1) See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.
      b. Substitutions: See Section 01-6000 - Product Requirements.

C. Undercounter refrigerator; free-standing; 32 inch maximum height, ADA accessible for a 34 inch height countertop.
   1. Capacity: Total minimum storage of 4.9 cubic ft; no freezer.
   2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
   3. Features: Cantilevered shelves
   4. Exterior Finish: Stainless Steel.
   5. Verify hinge side with Owner.
   6. Manufacturers:
      a. Marvel; MARE124-SS31A: www.marvelrefrigeration.com; Basis of Design.
      b. Perlick; HA24RB-4-1R/L; www.perlick.com
      c. True Residential; TURADA-24-LS-A-S; www.true-residential.com.
      d. U-Line; ADA24R; www.u-line.com
      e. Substitutions: See Section 01-6000-Product Requirements.

D. Dishwasher: Undercounter. ADA accessible for 34 inch height countertop.

1. Controls: Solid state electronic.Front touch controls.
2. Wash Levels: Two (2).
3. Cycles: Seven (7), including normal, rinse and hold, short, and machine clean.
4. Features: Include rinse aid dispenser, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
5. Finish: Stainless steel .
6. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
7. Manufacturers:
   a. Frigidaire Home Products; FFBD2420US: www.frigidaire.com/#sle.
   b. GE Appliances; GDT225SSLSS: www.geappliances.com/#sle.
   c. Whirlpool; WDT550SAPZ; www.whirlpool.com .
   d. LG; ADFD5448AT; www.lg.com
   e. Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Anchor built-in equipment in place.

3.03 ADJUSTING

A. Adjust equipment to provide efficient operation.

3.04 CLEANING

A. Remove packing materials from equipment and properly discard.

B. Wash and clean equipment.

END OF SECTION

SECTION 12-2400
WINDOW SHADES - MECHOSHADE SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roller shades.

B. Shade fabric.

1.02 RELATED REQUIREMENTS

A. Section 06-1000 - Rough Carpentry: Concealed wood blocking and grounds for mounting shades and accessories.

B. Section 09-2116 - Gypsum Board Assemblies: Installation of shade pockets, closures, and accessories.

1.03 REFERENCE STANDARDS

A. WCMA A100.1 - Standard for Safety of Window Covering Products; 2022.

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog pages and data sheets for each product, including the following:
   1. Materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories
   2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes, accessories, and operating instructions.
   3. Mounting details and installation methods.

C. Shop Drawings: Include plans, elevations, sections, product details, installation details, and operational clearances.

D. Samples:
   1. For Selection: Include fabric samples in manufacturer's full range of available colors and patterns.

E. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Operation and Maintenance Data: List shade components with part numbers. Include operation and maintenance instructions.
   1. Include methods for maintaining roller shades and recommended cleaning materials and methods.

I. Specimen warranty.

J. Executed warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with minimum ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with minimum ten years of documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory-labeled packages marked with manufacturer's name and product name, fire-test response characteristics, and location of installation using room designation indicated on drawings.

B. Handle and store shades in accordance with manufacturer's recommendations.

1.07 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Ambient Conditions: Do not install roller shades before completing painting and other finish work.

C. Ambient Conditions: Maintain ambient temperature and humidity conditions at levels recommended by manufacturer.

1.08 WARRANTY

A. See Section 01-7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide manufacturer's warranty for interior shading. Complete forms in Owner's name and register with manufacturer. Ensure warranty covers the following:
   1. Shade Hardware: 10 years.
      a. Mecho/5 with ThermoVeil, EuroVeil, EuroTwill, Soho, Equinox, Midnite, Chelsea, or Classic Blackout shade fabric: 25 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. MechoShade Systems LLC: www.mechoshade.com/#sle.
   1. Sole Source, Basis of Design.
   2. See Section 00 73 13 - Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.

B. Substitutions: See Section 01-6000 - Product Requirements.

2.02 ROLLER SHADES

A. General:
   1. Provide shade system components capable of being removed or adjusted without removing mounted shade brackets or cassette support channel.
   2. Provide shade system that operates smoothly when shades are raised or lowered.

B. Basis of Design - Roller Shades: MechoShade Systems LLC; Mecho/5 System: www.mechoshade.com/#sle.
   1. Description: Single roller, manually operated fabric window shades.
      a. Drop Position: Regular roll.
      b. Mounting: Wall mounted.
      c. Size: As indicated on drawings.
      d. Fabric: Ecoveil, 3% openess. Color to be selected from standard options.
   2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated. Accommodate shade fabric roll-up size and weight.
      a. Material: Steel, 1/8 inch thick. Do not use styrene-based plastics, polyester, or reinforced polyester.
      b. Single Shade Operation Width: 180 inches, maximum.
   3. Roller Tubes:
      a. Material: Extruded aluminum.
      b. Size: As recommended by manufacturer for installation conditions, span, and weight of shades.
      c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
         1) Shade Band: Removable and replaceable without removing roller tube from brackets or inserting spline from side of roller tube.
      d. Capable of removal and reinstallation without affecting roller shade limit adjustments.
   4. Hembars: Designed to maintain bottom of shade straight and flat.
      a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
   5. Clutch Operator: Manufacturer's standard material and design integrated with bracket and brake assembly.
      a. Heavy-duty, 1/8 inch steel mounting bracket and integrated steel brake. Clutch and sprocket assembly affix shade support and user control to structure independently of roller tube components.
      b. Provide permanently lubricated brake assembly mounted on oil-impregnated hub with wrapped spring clutch.
      c. Provide brake capable of withstanding minimum pull force of 50 pounds in stopped position.
      d. Mount clutch and brake assembly on support brackets, fully independent of roller tube components.
      e. Shade Hanging Weight: Maximum 50 lb.
   6. Drive Chain: Continuous loop, stainless steel beaded ball chain, 100 pounds minimum breaking strength. Provide upper and lower limit stops.

a. Chain Retainer: Chain tensioning device complying with WCMA A100.1.
b. Limit Stops: Bead stops affixed to chain and traveling across multiple shades to maintain consistent shade band alignment at top and bottom of shade and prevent damage.

7. Managed Lift Force, Hardware: Lifts single band or multiband shade assemblies.
   a. Lifting Force: 3 lb to 8-1/2 lb.
   b. Capable of offset drive with left, right, front, and back allowing use of blackout channels.
   c. Do not allow offset chain drive to cause increase of friction or pull force when operated at maximum 26-degree angle from vertical.
8. Accessories:
   a. Fascia: Removable, extruded aluminum; size to conceal shade mounting, attachable to brackets without exposed fasteners.
      1) Provide fascia capable of installation across two or more shade bands in one piece.
      2) Single Fascia: Accommodate regular roll shades.
      3) Profile: Square.
      4) Configuration: Captured, fascia stops at captured bracket end.
      5) Finish: Baked enamel.
         (a) Color: White.

2.03 SHADE FABRIC

A. Fabric: Nonflammable, color-fast, impervious to heat and moisture, and able to retain shape under normal operation; PVC-free.
   1. Material Composition:
      a. 100 percent TPO coated polyolefin yarn.
   2. Fabrication:
      a. Fabric Orientation: Railroaded, fabric is turned 90 degrees off the roll.
   3. Products:
      a. MechoShade Systems LLC Inc; EcoVeil Screens - 1550 Series (3 percent open): www.mechoshade.com/#sle.
      b. Substitutions: Not permitted.

2.04 ROLLER SHADE FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. For custom shade fabrication, provide field measurements accurate to 1/16 inches.

C. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2-inch space between bottom bar and window sill.
   2. Horizontal Dimensions - Outside Mounting: Cover window frames, trim, and casings completely.

D. Fabric Orientation: Railroaded, with fabric turned 90 degrees off roll.
   1. Seams: Manufacturer's standard.

E. Battens: Manufacturer's standard material, full width of shade, enclosed in welded shade fabric pocket.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. Do not begin installation before preparing substrates.

C. Verification of Conditions: Notify Architect of conditions preventing proper and timely completion of work. Do not proceed without correcting unsatisfactory conditions. Starting installation constitutes acceptance of conditions.

3.02 PREPARATION

A. Clean surfaces before installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

C. Inspect mounting conditions to ensure compliance with approved shop drawings.

D. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings.
   1. Install roller shades level, plumb, square, and true in accordance with manufacturer's instructions. Install blocking plumb, level, and fitted to window mullion.
   2. Locate shade band no closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.
   3. Set upper, lower, and intermediate stop positions of motorized shade bands. Ensure alignment in accordance with dimensional requirements.

3.04 TOLERANCES

A. Ensure alignment of shade bands within single EDU group does not exceed plus or minus 1/8 inches and alignment between shade groupings does not exceed plus or minus 1/4 inches.

B. Ensure dimensional tolerances of maximum 1/16 inches for horizontal surface levelness of shade pocket.

3.05 ADJUSTING

A. Adjust, align, and balance roller shades to operate smoothly, safely, and free from binding or malfunction throughout operational range.

B. Adjust level, projection, and shade centering from mounting bracket. Ensure no telescoping of shade fabric. Ensure smooth shade operation.

3.06 CLEANING

A. Clean roller shade surfaces and exposed components in accordance with manufacturer's instructions.

B. Replace shades that cannot be cleaned to "like new" condition.

3.07 PROTECTION

A. Protect installed products and finished surfaces from damage during phases of installation including preparation, testing, cleanup, and subsequent construction operations.

B. Touch up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 12-3600
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

E. PS 1 - Structural Plywood; 2023.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

C. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

F. Installer's qualification statement.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

B. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate. Mitre all exposed 90 degree edges and corners.
   1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.034 inch nominal thickness.
      a. Manufacturers:

1) Formica Corporation; Coror Core 2; Mission White 933C-58: www.formica.com/#sle.
(a) Basis of Deisgn
(b) See Section 00 73 13 Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements.

b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.

c. Laminate Core Color: Same as decorative surface.

2. Back and End Splashes: Same material, same construction.

C. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Flat Sheet Thickness: 3/4 inch, minimum.
2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.

a. Manufacturers:

1) Wilsonart: www.wilsonart.com/#sle.
(a) Sole Source, Basis of Design.
(b) See Section 00 73 13 Special Conditions; 1.16 Sole Source Findings in Procurement and Contracting Requirements

2) Substitutions: See Section 01-6000 - Product Requirements.

b. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.

c. Color/Pattern Family: Quartz, Marble Falls.

3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1-1/2 inch thick; radiused edge.
5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
6. Skirts: As indicated on drawings.
7. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Premium Grade.

2.02 MATERIALS

A. Wood-Based Components:

1. Wood fabricated from old growth timber is not permitted.
2. Provide sustainably harvested wood, certified or labeled; see Section 01-6000 - Product Requirements.

B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

D. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.

1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.

1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

C. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION

WET-PIPE FIRE SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, Construction Services Agreement, including General and Special Conditions, Division 1 apply to this section.

1.2 DESCRIPTION OF WORK

A. The Contractor shall furnish all labor, tools, equipment, services, and transportation necessary for, or reasonably incidental to, the construction and completion order of the fire protection work, including, but not limited to, the following:
   1. The installation of an automatic fire sprinkler system complete and ready for operation, for the entire building including but not limited to the mechanical equipment rooms, accessible shafts, exterior soffits, canopies, and connection to public water main.
   2. Prepare shop drawings, product submittals based on NFPA 13- 2022 design documents and obtain all necessary approvals. Any major changes Contractor to verify existing site conditions and coordinate with other trade before construction work.
   3. Sprinkler system shall be monitored by a central alarm monitoring company. This monitoring shall include water flow indicators and tamper switches on all control valves.
   4. Provide complete as-built drawings of the fire sprinkler and standpipe system in AutoCAD 2013 version (or higher) using architectural backgrounds. Drawings shall include exact locations of all piping, sprinkler heads, sprinkler control valve assemblies, pipe supports, bracing, etc.
   5. Pay for all necessary fees.
   6. Painting of exposed piping and supports.
   7. Testing and adjusting of completed work, inspections and instructions. All inspections, testing and maintenance work required by NFPA 25 and recommended by the equipment manufacturer shall be provided. Work shall include operation of sprinkler system alarm and supervisory devices.
   8. Repair of all damage done to premises as a result of this installation and removal of all debris left by those engaged in this installation.
   9. Excavation, trenching and backfill required in this section of work.

1.3 RELATED WORK

A. Penetration Fire Stopping.

B. Joint Sealants.

C. Access Doors and Frames.

D. Painting.

E. Fire Alarm System.

F. Electrical.

G. Utilities.

1.4 REFERENCES AND STANDARDS

A. Regulatory compliance: All work performed under this Division shall comply with the latest currently adopted editions of all codes and regulations. The following references and standards are hereby made a part of this Section and work shall conform to applicable requirements herein except as otherwise specified herein or shown on the Drawings.

B. Codes and Standards: Conform to all applicable codes and standards as stated herein and as described in Division 1, including the following:
   1. California Building Code, 2024 Edition.
   2. California Fire Code, 2024 Edition.
   3. State of California Administrative Code (CAC) Titles 8, 17, 21, 22 and 24, 2024 Edition.
   4. California Electrical Code (CEC), 2024 Edition.
   5. Comply with all ADA and California Title 24 requirements for disabled access.
   6. Division of State Architect, State of California (DSA).
   7. Local Fire Prevention Bureau requirements.
   8. Comply with the latest edition of all applicable standards, including ANSI, ASTM, and OSHA.
   9. NFPA - National Fire Association Compliance: Install fire protection systems in conformity with the requirements of the currently adopted editions of the following:
      a. NFPA 13 - Standard for the Installation of Sprinkler Systems
      b. NFPA 24 -Standard for the Installation of Private Fire Service Mains and Their Appurtenances.
      c. NFPA 25 -Standard for the Inspection, Testing and Maintenance of Water Based Fire Protection Systems.
      d. NFPA 70 - National Electrical Code.
      e. NFPA 72 - National Fire Alarm and Signaling Code.

C. Minimum requirements: The requirements of these Specifications are the minimum that will be allowed, unless such requirements are exceeded by applicable codes or regulations, in which the local regulatory code or regulation requirement shall govern.

D. Nothing in the specifications or drawings shall be construed to permit deviation from the requirements of governing codes unless approval for said deviation has been obtained from the legally constituted Authorities Having Jurisdiction and from the Owner's Representative.

1.5 WORK RESPONSIBILITIES

A. Site Conditions:
   1. Examine the drawings and the specifications, survey the existing site conditions, and include necessary allowances in bid proposal.
   2. Resolve conflicts with code requirements, site conditions, the work of other trades, or other mechanical contractors.
   3. Verify the location of all existing utilities prior to construction and protect from damage.
   4. Pay all costs incurred due to damage of existing utilities or other facilities.

B. Responsibility:
   1. Provide complete functioning systems and include all labor, material, associated tools, and transportation required for the system to operate safely and satisfactorily.
   2. Provide all work necessary for a complete wet fire protection system whether or not specifically mentioned in the specifications.
   3. Coordinate the installation of fire protection items with the schedules for work of other trades and other contractors to prevent delays in total work. Assume responsibility for any cooperative work which must be altered due to lack of proper coordination or failure to make proper provisions in time.
   4. Be specifically responsible for ensuring that coordination between the fire sprinkler system work and the fire detection and alarm system work takes place to ensure full awareness of the location of all fire sprinkler system components (including, but not

limited to, control valves, flow switches, supervisory switches and alarm bells) requiring connection to the fire detection and alarm system.

1.6 PERMITS, LICENSES, AND INSPECTIONS

A. Obtain and pay for all permits, fees and inspections required by work under this Section.

B. Inspections: A pre-test for the EOR and IOR shall be carried out prior to the inspection by the Authority Having Jurisdiction from the start to the finish without any repairs or the test restarts from the beginning. All work shall be regularly inspected by the Authority Having Jurisdiction. Certificates of approval shall be delivered to the Owner's Representative. Be responsible for notifying the authority having jurisdiction when work is ready for inspection.

1.7 DRAWINGS

A. Drawings indicate general arrangement of piping and equipment. Should it be necessary to deviate from arrangement or location indicated in order to meet architectural conditions or site conditions, or due to interference with work in other divisions, such deviations as offsets, rises, or drops in piping that may be necessary, whether shown or not, shall be made at contractor's expense.

1.8 COOPERATION WITH OTHER TRADES

A. Schedule work and cooperate with other divisions to avoid delays, interferences and unnecessary work, conforming to construction schedule, making installation when and where required. A special effort shall be made to coordinate with the mechanical contractor so as not to block installation of the mechanical systems. The clearances above ceilings on this project are limited and the ductwork is to have the highest priority. All fire sprinkler work is to be coordinated with the mechanical contractor such that the ductwork can be installed in the locations shown on the mechanical drawings. If installed work is later found to interfere with work of other divisions, make all necessary changes at contractor's expense.

1.9 REVIEW OF CONSTRUCTION

A. The Owner's Representative may review work at any time.

B. Advise Owner's Representative fourteen (14) calendar days in advance that work is ready for review at following times:
1. Prior to buried work.
2. Prior to concealment of contract items those have been completed.
3. When requirements of Contract have been completed.
4. Prior to installation of suspended dry wall and ceiling.

C. Do not backfill or conceal work without Owner Representative's consent.

D. Maintain on job a set of specifications and drawings for use by the Owner's Representative.

E. Noncompliance: Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required and, after it has been completely inspected and approved, make all repairs and replacements with such materials as are necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.10 SYSTEM ACCEPTANCE

A. Acceptance shall be contingent on:
   1. Completion of the installation of all systems required for a complete and functional wet sprinkler system.
   2. Submission and acceptance of operating and maintenance data.
   3. Completion of pipe and valve identification.
   4. Completion of cleaning.
   5. Satisfactory operation of all systems for a period of one (1) week.
   6. Satisfactory completion of the acceptance tests which shall demonstrate compliance with all performance and technical requirements of the Contract Documents.
   7. Submission of as-built drawings.
   8. Final inspection and acceptance by local AHJ.

1.11 DAMAGE BY LEAKS

A. Be responsible for damage to any part of the premises caused by leaks in the pipe or equipment installed under applicable section for a period of twelve (12) months from the date of acceptance of the work by the Owner.

1.12 SUBMITTALS

A. Submit product data in accordance with Division 1 and as follows:

B. Submittal Requirements:
   1. Submit manufacturer's product brochures for all products. Written descriptions of products are not acceptable. Furnish, all at one time, prior to any installation, valid submittal data on material, equipment and devices. Each submitted item shall be indexed and referenced to these specifications and to identification numbers on equipment schedules. Product submittals shall be bound in a three (3) ring binder, with table of contents and tab set for each system. "Product Submittals" shall match "Operations and Maintenance Manuals".
   2. Manufacturers' submittal literature and shop drawings are required on all items to ensure the latest and most complete manufacturer's data is available for review. Requirements of the submittals and Engineer's submittal notes are a part of the work of this Division except that Engineer's notes may not be used as a means of increasing the scope of work of this Division.
   3. Submittals will be checked for general conformance with the design concept of the project but the review does not guarantee quantities shown and does not supersede requirements of this Division to properly design and install work.
   4. To be valid, all product submittals must:
      a. Identify project name and location, Contractor's, Subcontractor's, suppliers or manufacturer's name, address, and telephone number.
      b. Identify manufacturer's name and model numbers.
      c. Clearly indicate and label as such any items proposed as substitution for that specified or shown on plans.
      d. Include all pertinent construction, installation, performance and technical data.
      e. Have all product data sheets clearly labeled to indicate the individual item being submitted. In addition, all required options and accessories shall be clearly marked.
         1) Product data sheets corresponding to items indicated on plans shall be clearly labeled with the corresponding equipment tag number.
         2) Product data sheets corresponding to items indicated in specifications shall be clearly labeled with the specification section, and item numbers.

C. Shop Drawings:

1. General: Prepare and submit plans, sections, details and diagrams to required scales for specified areas. Drawings shall be prepared using AutoCAD 2013 (or higher), format. Drawings shall be coordinated, dimensioned and indicate equipment, pipe, duct, plumbing, and electrical in relation to architectural and structural features. Include minor piping, drains, etc. Indicate exact locations and elevations of valves, piping specialties, access doors, etc.
2. Complete and detailed shop drawings of a scale no smaller than that of the design documents shall be maintained throughout the coordination and construction phase indicating the work of all trades clearly. All equipment including piping, etc. shall clearly identify both top and bottom elevations as well as distances from equipment to established building lines. Coordinate with other trades and field conditions and show dimensions and details including building construction and access for servicing.
3. Use of contract documents for shop drawings is not acceptable.
4. Required Drawings: Prepare and submit drawings for all areas and all fire protection work.

5. Drawings shall be detailed in accordance with NFPA 13, 14 and 20. Shop drawings shall indicate accurate locations of all piping (with all exposed piping clearly designated), sprinkler heads, seismic braces, pipe anchors and hangers, drain locations, inspector test connections, and other apparatus associated with these systems in respect to architectural conditions, structural conditions, lighting layouts, diffuser layouts, plumbing, mechanical, and electrical layouts. Plans shall include necessary engineering features, including hydraulic reference nodes, pipe lengths and pipe diameters as required by the above named code and standards. Complete, accurate legends for all symbols and abbreviations shall be provided on plans. Drawings shall have the same scale and same sheet size used by the other trades to facilitate coordination. Sprinkler shop drawings shall be coordinated with architectural drawings for head locations. Any wall and ceiling changes occurring prior to the submittal of contractor's shop drawings shall be incorporated into the contractor's detailed design at no additional contract cost.
6. Center of tile installation is mandatory.
7. Hydraulic calculations shall be executed on standard 8-1/2 x 11 inch sheets, conforming to the requirements of NFPA 13, and shall indicate pipe numbers, beginning and end node points, all referenced Shop Drawings, and system demand curves. Calculations shall be accomplished using an approved computer program and shall be bound and indexed in a three ring binder matching "Product Submittals" and "Operating and Maintenance Manuals".

D. Product Data:
1. General: Manufacturer's specifications, data sheets, certified drawings, and installation instructions. Include physical and performance data such as weights, sizes, capacities, required clearances, performance curves, acoustical characteristics, finishes, color selection, and accessories. Include certified drawings on major equipment such as fire pumps.

E. Submit product data and brochures for, but not limited to the following:
1. Pipe Material and Fittings.
2. Pipe supports including seismic pipe supports.
3. Fire stopping, including listing system numbers and details.
4. Sprinkler heads, each type and model.
5. Spare sprinkler head cabinets.
6. Valves (all types).
7. Water measuring devices.
8. Valve cabinets.
9. Inspector's test alarm modules.
10. Pressure gauges.
11. Water flow switches.
12. Valve supervisory switches.
13. Alarm Bells.

14. Fire department connections.
15. Test header.
16. Pipe, valve and Identification signs, etc.

1.13 OPERATION AND MAINTENANCE DATA

A. The installing contractor shall provide:
   1. All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed.
   2. Publication titled NFPA 25, **California 2013 Edition,** Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

B. Include, but not limited to the following: List of all equipment with Manufacturer's name, model number, and local representative, service facilities and normal channel of supply for each item. O&M manuals shall be bound in a three (3) ring binder, with table of contents and tab set for each system. "Operation and Maintenance Manuals" to match "Product Submittals",
   1. System Description: Description of start-up and operating procedures.
   2. Controls: Diagrams and description of operating sequence of each system.
   3. Equipment: Manufacturer's brochures, ratings, certified shop drawings, lubrication charts and data, parts list with parts numbers. Mark each sheet with equipment identification number and actual installed condition.
   4. Materials and Accessories: Manufacturer's brochures parts list with part numbers and lubrication data where applicable. Mark each sheet with equipment identification number or system and location of installation; and to specifically identify which options are provided (in case where data sheet shows multiple options).
   5. Certificate of factory tests and code compliance as specified.
   6. Recommend preventive maintenance schedule and procedures.

1.14 RECORD DRAWINGS

A. Record of Job Progress: Keep an accurate dimensional record of the "As-built" locations of all work as required. This record shall be kept up-to-date on prints as the job progresses and shall be available for inspection at all times. In addition, record drawings are to be used by the Owner's Representative for job review and field inspections.

B. "As-Built" documentation shall be transmitted to the Owner within ten days after Owner Representative's acceptance of the completed installation. As-built documentation shall include the following (Unless noted elsewhere, furnish number of copies indicated):
   1. Two (2) copies shall be provided for each drawing. One (1) copy of final AutoCAD drawing files shall also be provided on CD disk, for each drawing.
   2. Four (4) sets of manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.
   3. Four (4) sets of hydraulic calculations and seismic bracing calculations for each sprinkler system updated to include any changes to the installations which affect the calculations.
   4. Four (4) sets of hydrostatic report and NFPA 13 material test certificate for each sprinkler system.
   5. Four (4) sets of operation and maintenance data updated to include submittal review comments and any equipment substitutions.
   6. Manufacturer's literature, reports and operation and maintenance data shall be in a labeled three (3) ring binder.

1.15 QUALITY ASSURANCE

A. Bring to the Owner Representative's attention prior to installation, any conflicts with other trades which will result in unavoidable contact to the equipment, piping, described herein, due-to inadequate space, etc.

B. Bring to the Owner Representative's attention any discrepancies between the specifications and field conditions, changes required due to specific equipment selection, etc., prior to installation.

C. Provide written notification to Owner's Representative a minimum of fourteen (14) days prior to a utility shut down.

D. Obtain inspection and approval from the Owner's Representative of any installation to be covered or enclosed prior to such closure.

E. Restoration of Damage: Repair or replace, as directed by Owner's Representative, materials and parts of premises which become damaged as result of installation of work of this Division. Remove replaced parts from premises.

1.16 QUALIFICATIONS OF INSTALLERS

A. Qualifications:
1. Effective July 1, 2018, a certification card issued by the California State Fire Marshal is required for all fire sprinkler system pipe fitters responsible for installing, altering or repairing water based fire protection system. There must be at least one certified fitter per job site.
2. For the actual installation, and testing of work under this section, use only thoroughly trained and experienced work personnel completely familiar with the items required and the manufacturer's current recommended methods of installation.
3. In acceptance or rejection of the finished installation, no allowance will be made for lack of skill.
4. The execution of the work shall be in strict accordance with the best practice of the trades, the intent of this specification, and all codes and ordinances.

B. Contractor's Qualifications: A firm with at least five (5) years of successful installation experience on projects with fire protection systems work similar and of comparable size and scope to that required for this project. The installer shall have performed at least five (5) similar projects in the San Francisco Bay Area. Contractor shall be prepared to submit written evidence of the installer's experience. Installation of all sprinkler piping, and appurtenances shall be done only by a licensed, fire-protection engineering contractor with at least five (5) years' experience in designing and installing sprinkler and standpipe systems. The Contractor shall possess a valid and current State of California C-16 contractor's license, and shall have held this license under the currently-licensed business name, for a period of not less than five (5) years as of the date of bidding the project and regardless of whether any other license classification is also held. Contractor shall also be capable of providing on-site emergency service within four hours of notification. The contractor shall also be capable of providing drawings in AutoCAD 2013 version (or higher) format.

C. Manufacturer's Qualifications: Firms regularly engaged in manufacture of fire protection products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.

D. Products and Product Listing: All materials and equipment installed as part of this work shall be new and free of defects. All piping components, equipment, valves and other devices shall be UL listed and/or FM approved for fire sprinkler use.

E. Welded Joints: Weld in accordance with procedures established and qualified per ANSI B31.2. Each welder and welding operator shall be qualified per the ANSI procedures as evidenced by a copy of a certified ANSI B31.2 qualification test report. Contractor shall

conduct the ANSI qualification test. Permits for on-site welding/brazing/soldering shall be obtained from the Authorities Having Jurisdiction.

1.17 PRODUCT HANDLING

A. Protection: Use all means necessary to protect the materials of this section before, during and after installation and to protect the installed work and materials of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative.

C. Protection of Materials:
1. Protect materials, equipment and apparatus provided under this Division from damage, water, dust, or similar impairment, both in storage and installation until Notice of Completion has been filed. Materials, equipment or apparatus damaged because of improper storage or protection will be rejected and must be removed from site.
2. Cap openings in pipes with manufactured caps or fittings. Do not use taped caps.
3. Protect premises and work of other Divisions from damage arising out of installation of work of this Division.

1.18 GUARANTEES

A. At completion, provide the Owner's Representative a written guarantee, in triplicate, that work has been performed in accordance with Specifications and that Contractor shall replace or repair, to the satisfaction of the Owner's Representative any portion of the work that fails within the guarantee period after final acceptance provided such failure is due to defects in materials Also agree to replace or repair, with like workmanship and any part of the building or equipment installed by other trades but damaged by them in installing their work.

B. During the guarantee period, make four (4) inspections of the work at three (3) month intervals after final acceptance to check the performance of systems and correct any guaranteed items. Inspections to be made in the presence of the Owner's Representative.

C. Guarantee in writing all fire protection work for a period of twelve (12) months following date of certificate of final acceptance.

D. All apparatus shall be built and installed so as to deliver its full rated capacity at the efficiency for which it was designed.

E. All fire protection and electrical apparatus shall operate at full capacity without objectionable noise or vibration.

F. The fire protection systems shall provide the performance required at standard operating conditions.

G. Where a manufacturer's guarantee/warranty exceeds one (1) year, the longer shall govern.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. General: All pipe and fitting shall be new, acceptable to all Authorities Having Jurisdiction, conform to all applicable standards and codes, and be free from damage and distortion.

B. Pipe shall be Black steel: Schedule 10 for 2-1/2" and larger sizes, Sch. 10/40 for 2" and smaller sizes.

2.2 VALVES

A. Gate valves (Valves 2" and Smaller): MSS SP-80; UL listed and approved, 175 psi Non-shock cold water, bronze body, screw-over bonnet, threaded ends, outside screw and yoke, solid wedge, bronze trim, replaceable seat rings. Provide each valve with supervisory switch.

B. Gate valves (Valves 2-1/2" and Larger): MSS SP-70; UL listed and FM approved, 175 psi non-shock cold water, iron body, bolted bonnet, flanged ends, outside screw and yoke, solid wedge, pre-grooved stem for supervisory switch mounting, bronze trim, replaceable seat rings. Provide each valve with supervisory switch.

C. Butterfly valves (Valves 2" and Larger): MSS SP-67; UL listed and approved, California State Fire Marshal Listed, indicating type, gear operated, ductile iron lug type body, stainless steel stem, nickel plated ductile iron disc, Buena-N seat, 250 psi shock cold water. Provide each valve with a supervisory switch.

D. Ball valves (Inspector's test and drain only-up to 2" max.): MSS SP-110; UL listed and FM Approved, full or standard port, two-piece bronze body construction, chrome plated solid bronze ball, blowout proof stem, and vinyl covered steel handle, 300 psi Non-shock cold water. Provide locking type handle.

E. Check Valves (Valves 2" and Smaller): MSS SP-80; swing type check valve, screwed bonnet, horizontal swing, renewable disc, bronze body, threaded ends, 200 psi non-shock cold water.

F. Check Valves (Valves 2-1/2" and Larger): MSS SP-71; UL listed and FM Approved, swing type check valve, bolted bonnet, horizontal swing, renewable seat and disc, iron body, flanged ends, 175 psi non-shock cold water.

G. Check Valves: MSS SP-71; UL listed and FM Approved, swing type or wafer style silent check valve with double center guided conical spring type, 175 lb. WOG.

H. Drain Valves and Inspector's Test Valves: UL listed, globe, straightway or angle type, ball or butterfly, bronze body, renewable disc, threaded, 150 lb. WOG, equipped with reducer and hose connection with cap or connected to a drain line.

I. Valves install higher than 7'-0" shall be equipped with chain operators, or equivalent.

2.3 SPRINKLER HEADS

A. The acceptable fire sprinkler head manufacturers are Tyco, Victaulic, Viking and Reliable.

B. Exposed Structure Ceiling: UL listed, quick response pendent or upright type with brass finish, 1/2" orifice, quick response sprinkler, or equal. Chrome finish in Public Areas.

C. In Finished Ceilings and Soffits: UL listed, quick response type, 1/2" orifice, with concealed type cover plate assembly, white finish, quick response concealed sprinkler, or equal.

D. Temperature ratings shall be 155 degF. Exception, sprinklers at skylights and electrical room shall be 200 deg F.

E. Sprinkler heads as shown in some spaces, may be located closer together than required by code, but are required to maintain an orderly pattern.

F. Provide spare heads of each temperature rating and type used in a suitable metal cabinet with red enamel finish, cabinet to be located at the direction of Owner's Representative. Number of spare heads in accordance with NFPA 13.

G. Provide sprinkler head guards, UL listed and FM approved for sprinkler heads subject to mechanical damage or for any sprinkler head lower than seven feet (7') above the floor, for all heads in all mechanical, electrical and elevator machine rooms. Head guards shall be factory painted red enamel.

H. For sprinkler heads in exposed areas: Provide sprinkler heads with Teflon coating for corrosion resistance. All sprinkler heads exposed to the outside of the building shall be dry pendent type.

I. Provide standard coverage heads, extended coverage sprinkler heads are not acceptable.

J. Escutcheons shall be factory treated to receive paint.

2.4 HANGERS AND SUPPORTS

A. Hangers and seismic sway bracing shall be designed and installed as required by NFPA 13 and NFPA 14 (including all appendices), and by the California Building Code. Provide steel bracing as to resist earthquake loads, as required for Seismic Zone IV. Specifically, these codes shall be interpreted such that all system components and supports shall be capable of resisting five times the weight of the water filled pipe plus 250 lb. downward; and 0.75 times the weight of the water filled pipe in all other directions. Flexibility, internal pressure, and differential movement between the piping and building shall be allowed for, so that no allowable stress is exceeded in any member.

B. Hangers and components shall be U.L. listed and/or FM approved. All hanger and support components including seismic sway bracing components shall be of the same manufacturer.

C. Hanger Rods: Hanger rod size shall be no less than the standard rod sizes listed on the MSS SP-69. Rods shall be steel rods, threaded at ends only with a minimum safety factor of 5 over the imposed load. All thread rods are not acceptable. Where rod stiffeners are required.

D. Where beam clamps are used, provide beam clamp retaining strap.

E. Powder-driven and explosive type fasteners are not allowed.

F. The end sprinkler on a branch line shall be restrained against excessive vertical and lateral movement by use of a wrap-around hook or by other approved means per NFPA 13.

G. When static pressure exceeds 100 psi, arm over and drops 12 inches and over requires a hanger.

H. Where beam or joist thickness will not accommodate a fastener of a required length, through bolt with the required diameter of the bolt and washer will be acceptable. All thread rods are not acceptable for the required bolt.

2.5 PRESSURE GAUGES

A. U.L. listed and labeled for fire protection sprinkler service, three inch (3") dial, 0-300 psi scale with 5 psi increments, dual range twice the system working pressure, moisture and weather resistant, 1/4" bottom connection, shut-off valve, and brass socket.

2.6 WATER FLOW SWITCHES

A. U.L. listed, California State Fire Marshal listed, and FM Approved, vane type flow switch with retard mechanism or manual adjustment to prevent false alarm, listed for indoor/outdoor use and have tamperproof cover. Provide each with two sets of SPDT contacts and conduit connection for wiring to remote alarm system, Potter Electric Signal Co., VSR, Notifier WFD, or equal. Coordinate installation with Division 28.

2.7 SUPERVISORY (TAMPER) SWITCHES

A. U.L. listed; California State Fire Marshal listed, and FM Approved. Switches shall be listed for indoor/outdoor use, have tamperproof cover, each with two sets of SPDT contacts and conduit connection for wiring to remote alarm system. Switches shall be Potter Electric Signal Co., OSYSU-2 or equal, for OS&Y gate valves, and PIVS-U, or equal for butterfly valves and post indicator valves. Coordinate installation with Division 28 and locate as required by Authorities Having Jurisdiction and as acceptable to the Architect.

2.8 EXTERIOR FIRE ALARM BELLS

A. U.L. listed, California State Fire Marshal listed, and FM approved. Bells shall be listed for indoor/outdoor use, have under dome strikers and operating mechanisms and gongs on bells shall be no smaller than ten inch (10") diameter with an operating voltage of 120 VAC and shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof using a weatherproof electrical box. Otherwise bells shall mount to a standard four-inch (4") square electrical box having a maximum projection of two and one-half inches (2-1/2"). Bells shall be Grinnell Model A with A3 trim, or equal. Coordinate installation with Division 28.

2.9 PIPING IDENTIFICATION

A. All piping are to be identified as follows: Brady Perma-Code, MSI Marking Services Inc., or equal, pressure sensitive self-sticking pipe markers consisting of pipe content wording and arrow indicating directions of flow on ANSI color background. Arrow and wording are two separate markers which shall be placed immediately adjacent to each other. Provide at each end of each marker, two and one-fourth inch (2-1/4") wide self-sticking clear tape around periphery of pipe or insulation to further secure marker. All markers shall be applied to clean surfaces free of dust, grease, oil or any other material which will prevent adhesion. Install after cleaning, painting and insulation is complete. Pipe identification shall comply with ANSI A13.1 "Scheme for the Identification of Piping Systems".

B. Location and visibility for pipe identification:
1. On all horizontal runs spaced twenty feet (20') maximum but not less than once in each room at entrance and exit of each concealed space.
2. At each riser takeoff.
3. Within one foot (1') of each valve and control device.
4. At every change in directional flow.
5. At every pipe passage through wall, floor and ceiling construction.
6. Where capped piping is provided for future connections, provide legible and durable metal tags indicating symbol identification.
7. At all wall and ceiling access panel/doors.
8. Near major equipment items and other points of origination and termination.
9. Pipe identification of sprinkler branch piping is not required.
10. Attention shall be given to visibility with reference to pipe markings. Where pipe lines are located above or below the normal line of vision, the lettering shall be placed below or above the horizontal of the pipe.

2.10 BURIED UTILITY WARNING AND TAPE

A. All underground piping shall be identified with underground warning pipe markers as follows: Brady Perma-Code, Marking Services Inc., or equal, non-adhesive four (4) mil polyethylene plastic tape manufactured specifically for and identification of buried utility lines. Tape shall be of the type provided in rolls, six inches (6") width, color coded for the utility involved, with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning identification for lines shall be "CAUTION WATER LINE BURIED BELOW". Code and letter coloring shall be permanent, unaffected by moisture and other substances contained in trench backfill material.

B. During back-filling of fire line systems, install continuous underground type plastic line markers. Run detector tape continuously along pipe and terminate in adjacent valve boxes or other suitable facilities. No splices will be allowed. Protect tape from damage during installation and backfilling. Tape that is broken, cut or crumpled shall be completely replaced. Install twelve inches (12") above the top of the respective pipe twelve inches (12") below the surface during backfill. Provide detectable type for buried non-metallic pipes.

C. Color Code of underground tape shall be as follows:

ANSI Color Service	Color of Color Field	Color of Text
Fire Protection	Blue	Black

2.11 VALVE TAGS

A. All valves shall have brass identification tag as follows: Brady Perma-Code, MSI Marking Services Inc., or equal, Brass valve identification tag secured with brass chain and "S" hook. Tags shall bear the service identification and numerical identification of the valve.

B. Engrave identification tags with "normally open" (green) or "normally closed" (red).

C. Tags:
1. Minimum two inches (2") triangle for fire protection.
2. No. 18 BS gauge brass with stamped numbers and letters filled in with black enamel paint. Engraving ink, dye and vinyl fill are not acceptable.
3. Identifying number and system letter. Top line shall be 1/4" characters and should abbreviate the service. The second line shall be characters and should list the valve number. Example: 1st floor shall begin 101, second floor shall begin 201.
4. Attach 6"-12" of brass jack chain around bonnet or stem of the valve in a way that it cannot accidentally come off. Attach appropriate size brass "S" hook to the chain in the most conspicuous location. Hang valve tag from the "S" hook. Valve tag should not be attached to the wheel causing interference with valve operation.
5. Provide on: All valves and controls.

2.12 IDENTIFICATION

A. Provide engraved plastic nameplates on all equipment, including but not limited to the following: Pumps (all types). Provide nameplates on each piece of equipment at disconnect and also at the breaker. Nameplates shall conform to the following, provided the equipment can accommodate the minimum sizes outlined:
1. Black background with white lettering.
2. Sizes: Equipment 2"x4", disconnect 1" x 2-1/2", breaker 1" x 3".
3. Lettering shall be 3/4" (1/4" minimum or sized for the maximum per nameplate.
4. Nameplate shall be provided with both adhesive backing and screw holes to insure permanent application.
5. Material shall be 2 ply 1/16" thick with beveled edges.

B. Properly identify each piece of equipment and controls pertaining thereto by nameplates mounted on equipment and controls using round head brass machine screws, pop rivets or contact cement. Cardholders in any form not acceptable. Install with corrosion resistant mechanical fasteners and adhesive and seal with clear lacquer.

C. Place warning signs on machines driven by electric motors which are controlled by fully automatic starters, in accordance with Article 3281, General Industry Safety Orders.

D. Small devices, such as inline pumps, may be identified with tags.

E. Identify control panels and major control components outside panels with plastic nameplates.

F. Identify equipment out of view behind access doors, in unfinished rooms on the face of the access door.

2.13 VALVE AND EQUIPMENT CHARTS

A. Provide five typewritten schedules giving numbers, service and locations, and notations of open or closed, of all tagged valves. Enclose each schedule in separate transparent plastic binder. List piping systems with symbol and color coding on pipe identification chart. List valve model numbers and symbol for service corresponding to piping symbol on valve identification chart. Provide small "key plan" identifying valves as related to column lines. Schematic flow diagrams of each piping system indicating:
1. Location and function of each tagged valve.
2. Type, size and essential features of each system.

B. Submit drafts of valve schedule for review before preparing final sets.

2.14 IDENTIFICATION SIGNS

A. Provide systems with identification signs as specified and as required by NFPA 13, NFPA 14 and any other code requirements.

B. Fire sprinkler signs shall be made of 18-gauge minimum baked enamel aluminum and meet NFPA 13. Signs shall be printed red on white background or white on red background. Each sign shall have holes or slots to facilitate field attachment. All signs shall be secured by the use of tamper-resistant screws.

C. Provide identification signs in accordance with referenced standards, to include, but not be limited to: the fire department connection(s), each control valve, each main or auxiliary drain valve, each inspector's test valve, and, for hydraulically-designed systems, a hydraulic system calculation nameplate. In addition, provide signs identifying all access panels concealing sprinkler control or test valves. Provide a sign on or directly below the local water flow alarm.

D. A permanently installed, metal calculation plate shall be attached at the sprinkler riser indicating sprinkler specifications as required by NFPA 13. Use of plastic tape shall not be permitted on the calculation plate.

E. Approved identification signs shall be provided for outside alarm devices such as bells, etc. The sign shall be located near the device in a conspicuous position and shall be worded as follows: "SPRINKLER FIRE ALARM - WHEN BELL SOUNDS CALL 911".

2.15 SLEEVES AND ESCUTCHEONS

A. Sleeves: Provide sleeves for all pipes passing through slabs, concrete walls, lath and plaster ceilings (except drop nipples for sprinklers) and partitions. Sleeves shall extend three inches (3") above floors and be flush with walls, ceilings, and partitions. In concrete construction, sleeves shall be set in forms prior to pour. Clearance between sleeves and pipes shall be one inch for pipes up to three and one-half inches two inches (2") for pipe sizes four inches (4") and greater, and three inches (3") for seismic joints.

B. Sleeve Materials:
   1. In concrete slabs and walls: Schedule 40 black steel pipe.
   2. Sleeves through waterproof membranes: Sleeves set in walls and slabs may be either cast iron or steel and shall be provided with a flashing clamp device and corrosion resistant clamping bolts.

C. Escutcheons: Primer-coated steel set-screw type.

2.16 IDENTIFICATION SIGNS

A. Seals shall be modular type consisting of interlocking synthetic rubber links shaped to continuously fill the space between the pipe and the opening, zinc galvanized plated bolt and nut, Thunderline Corporation "Link-Seal", Calpico Model CSL Pipe Linx, or with "Link-Seal" WS series steel wall sleeve.

2.17 ACCESS PANELS AND DOORS

A. Furnish under this Division where shown, and required by Regulatory Agencies and for access of all concealed valves, etc. Doors in this Division shall be from same manufacturer

as those specified under Section 08 31 16 for identical appearance and keying. Sizes: 24" x 24" inches minimum for ceilings and 12" x 12" minimum for walls. Furnish fire rated doors when located in rated walls and ceilings. Deliver doors for installation under Section 08 31 13. Mark each door to accurately establish its location.

PART 3 - EXECUTION

3.1 PREPARATION

A. Sprinkler heads in all finished areas shall be installed on a true axis line in both directions with a maximum deviation from the axis line of plus or minus 1/2 inch. At the completion of the installation, if any heads are found to exceed the above-mentioned tolerance, such heads shall be removed and satisfactorily reinstalled. In areas with ceiling tiles, sprinklers shall be installed in center of tiles.

B. Locate pipe and sprinkler heads fully coordinated with the engineered diffusers, reflected ceiling plans, ducts, conduits, light fixtures, curtain tracks and all other ceiling elements. Maintain proper code clearances from all ceiling obstructions.

3.2 GENERAL INSTALLATION

A. Light fixtures and other potential obstructions shall not interfere with the engineered spray patterns of sprinkler heads.

B. Supervisory Switches: For each indicating valve, sprinkler system riser, sprinkler zone, standpipe system riser, main service entrance, and control valve provide a supervisory switch that is connected to the fire alarm system. Standpipe hose valves and test and drain valves shall not be provided with supervisory switches.

C. Water flow Switches: For each sprinkler zone, each standpipe riser and where indicated on drawings, provide a water flow switch. Install water flow switch and adjacent valves in easily accessible locations.

D. System valves and gauges shall be accessible for operation, inspection, tests; and maintenance.

E. No valve and no piece of equipment or trim shall support the weight of any pipe.

F. Provide a pressure gauge on the system side of all control valves, at the top of each sprinkler or standpipe riser.

G. No cutting, drilling or taping of structural members shall be done without prior written approval of the Owner Representative.

H. Powder actuated fastening will not be allowed. Embeds, beam clamps, or drilled fasteners will be required, unless otherwise noted.

I. Provide hydraulic design information signage as required by NFPA 13 and 14.

J. Install access doors in ceilings of rooms where above ceiling access is required.

K. Prepare all piping having welds for Fire Marshal inspection prior to installation.

3.3 PIPING INSTALLATION

A. Carry all exposed and concealed horizontal lines of pipe on specified hangers properly spaced and set to allow the pipe to adjust for expansion and contraction.

B. Check all piping runs beforehand with all other trades. Run piping to maintain proper clearance for maintenance and to clear opening in exposed area. Run piping in strict coordination with mechanical piping, ducts, and equipment, plumbing work, all electrical conduit and equipment, structural, and architectural conditions. All piping shall be installed within designated finished ceiling height as noted on the architectural drawings.

C. Install all exposed piping to or at right angles with building walls and tight to walls or ceilings wherever possible. Piping shall be arranged to form a symmetrical pattern. Horizontal piping shall be supported at intervals not to exceed spacing permitted by NFPA 13 & 14. Vertical risers shall be supported at the base and at each floor level with clamps and hangers.

D. Provide sleeves wherever pipes are run through walls, footings, and slabs, to allow large enough openings for the passage of the pipe. Set sleeves in forms before concrete is poured. Sleeve size shall be not less than a nominal diameter two inches (2") larger than the nominal diameter of piping three and one-half inch (3-1/2") and smaller, and a nominal diameter four inches (4") larger than the nominal diameter of piping four inches (4") and larger. The space between each pipe and sleeve shall be completely closed by packing with code approved mineral fiber materials with a suitable binder or other approved packing material. Piping through rated walls and floors shall be sealed with UL fire rated fireproof material, all in accordance with Fire Marshal's requirements. Pipes through underground exterior walls shall be sealed watertight. Provide link seal protection at sleeves in underground exterior walls and as noted on the drawings.

E. Fire stop all pipes penetrating fire rated construction in with specification Section 07 84 13, Penetration Firestopping.

F. Where exposed pipes pass through walls, ceilings, or floors, provide escutcheon plates in all finished rooms and conspicuous locations. Escutcheon plates must be securely held in position allowing enough clearance to allow for expansion and shall be sufficient size to cover the opening around the pipe.

G. Support all pipe from the building structure so that there is no apparent deflection in pipe runs. Fit piping with steel sway braces and anchors to prevent vibration and/or horizontal displacement under load when required. Do not support pipe from or brace to ducts, other pipes, conduit, or any materials shown on the Drawings. Piping or equipment shall be immobile and shall not be supported or hung by wire, rope, plumber's tape or blocking of any kind.

H. Arrange riser and piping to maintain minimum clear width at stairways of forty-four inches (44") and minimum headroom of seven feet six inches (7'-6") for all piping.

I. Do not run piping through elevator hoist way, machine rooms, machinery spaces and enclosures unless piping is serving these spaces. Branch sprinkler piping serving these spaces shall be provided with a supervised branch shut-off valve and flow switch located at an accessible location outside these spaces. Provide supervisory switch on the branch shut-off valve.

J. Do not run piping through stairways, vaults, electrical rooms and other electrical or electronic equipment spaces and enclosures unless piping is serving these spaces.

K. Sprinkler piping shall not be installed within the vertical space above electrical switchboards, panel boards, distribution boards, or battery charging panels (refer to California Electrical Code).

L. Clean pipe and fittings and keep interiors clean throughout installation. Provide caps on ends of cleaned piping.

M. Use full pipe lengths; random lengths joined by couplings will not be accepted.

N. Provide allowance for expansion and contraction of all pipes and for seismic movement.

O. Provide reducing fittings for all changes in pipe size; provide fittings for all changes in pipe direction. Riser piping shall be installed plumb with offset fittings used where alignment adjustment is necessary.

P. Provide unions for pipe sizes smaller than two inches (2") and flanged or grooved fittings for sizes two inches (2") and larger to permit.

Q. Provide dielectric fittings where dissimilar piping materials are joined.

R. Piping arrangement shall avoid beams, columns, ducts, lighting fixtures, doors, windows, and similar obstructions and openings.

S. Drains, Test Pipes and Accessories: Provide a drain at the base of risers, drain connection on valved sections, and drains at other locations for complete drainage of the system. Provide valve in drain lines and connect to central drain riser. Discharge riser outside over splash block, indirectly over an approved indirect waste receptor as furnished by plumbing section, or as indicated. The main drain shall be capable of discharge test without allowing water to flow onto the floor. If over an indirect waste receptor, verify that receptor is adequately sized to handle flow discharge rate.

T. Install auxiliary drain valves for lines in accordance with NFPA 13.

U. The inspector test valve and piping shall be installed in accordance with NFPA 13, and provided at conveniently accessible locations and shall be supplied from the hydraulically remote point. A sight glass with built-in orifice of the appropriate size shall be installed adjacent to each valve. Discharge shall be to the main or to the outside. Location will permit the valve to be opened wide for sufficient time for testing without causing water damage.

V. The discharge area for the main drain and inspector's test valve shall be protected with a concrete splash pad to prevent damage to landscaping during periodic testing.

3.4 INSTALLATION OF EXTERIOR FIRE ALARM BELLS

A. The bell shall be located on the face of the protected building adjacent to the fire department connection with a mounting height of eight feet (8') to ten feet (10') above finish grade. The bell shall be connected to one of the two sets of contacts on the building flow switch, with power supplied from a dedicated 120 VAC circuit other than that supplying power to the building fire alarm control panel, served by emergency or standby power source (if the building is so equipped). All wiring shall be in conduit, concealed in interior locations.

3.5 FLUSHING, TESTING, AND ADJUSTING

A. Test automatic sprinkler system in accordance with NFPA 13.

B. Perform tests in the presence of authorities having jurisdiction. Provide required labor, materials, equipment and connections and submit results for review. Repair or replace defective work and pay for restoring or replacing damaged work, due to tests, as directed.

C. All equipment required for testing, including fittings for additional operating shall be provided by the Contractor.

D. System Piping Flushing: Underground mains and lead-in connections to system risers shall be completely flushed before connection is made to sprinkler piping. The flushing operation

shall be continued for a sufficient time to ensure thorough, cleaning. The minimum flow rate shall be not less than the hydraulically calculated water demand rate of the system including: hose requirements, or a flow necessary to provide a velocity of not less than ten (10) feet per second, or the maximum flow rate available to the system under fire conditions. After fire sprinkler piping installation has been completed and before piping is placed in service, flush entire sprinkler system, as required to remove foreign substances, under pressure as specified in NFPA 13 and NFPA 24. Continue flushing until water is clear, and check to ensure that debris has not clogged sprinklers. While conducting the flushing operation, the contractor shall exercise care that the water does not create any damage. The contractor shall be responsible for any damage caused by this operation.

E. Hydrostatic Testing: After flushing system, test fire sprinkler piping hydrostatically as required by NFPA 13 but not less than for period of two (2) hours at two-hundred (200) PSIG, or at fifty (50) PSI above maximum static pressure if it is greater than one hundred-fifty (150) PSI. Check system for leakage of joints. Measure hydrostatic pressure at low point of each system or zone being tested.

F. Repair or replace piping system components as required to eliminate leakage.

G. Water remaining in normally dry piping shall be evacuated at completion of testing.

H. All water level sensors, alarm and supervisory signals, tanks and automatic valves shall be performance tested.

I. The inspection, hydrostatic test and flushing of the sprinkler system shall be witnessed by the Authority Having Jurisdiction, and Owner Representative.

J. Provisions shall be made for the proper disposal of water used for, flushing or testing.

K. Provide complete adjustment of sensitivity of water flow and supervisory (tamper) switches. Coordinate with Division 28 Contractor.

L. After the inspection has been approved, the Contractor shall certify in writing the time, date, name and title of the person reviewing the test. This shall also include the description and what portion of the system has been approved.

M. A complete record shall be maintained of all testing that has been approved, and shall be made available at the job site.

N. Upon completion of the work, all records and certifications approving testing requirements shall be submitted to the Owner Representative and before final payment is made.

O. Defective work or material shall be replaced or repaired, as necessary, and the inspection and test repeated, all at Contractor's cost. Repairs shall be made with new materials.

P. No part of any work shall be covered until after it is inspected, tested, and approved.

3.6 INSPECTION

A. After completion of the fire protection installation and at the start of the guarantee period, execute the National Automatic Sprinkler and Fire Control Association, Inc. standard of Inspection Agreement, at no increase in Contract Sum, calling for four (4) inspections of the sprinkler system during the guarantee year (see "Guarantees"), plus the following maintenance to be performed during the course of the fourth inspection:
   1. Operating of all control valves.
   2. Lubrication of operating stems of all control valves.
   3. Operating of electrical alms.
   4. Cleaning of alarm valves.

5. Lubrication of Fire Department hose connection inlets.
6. Main drain test.

B. Fill out Inspection Agreement in triplicate after each inspection and send copies to the Owner Representative.

3.7 PROTECTION, CARE, AND CLEANING

A. Provide adequate means for, and fully protect, all finished parts of the materials and equipment against physical damage from whatever cause during the progress of this work and until final completion.

B. During construction, properly cap all lines and equipment nozzles so as to prevent entrance of sand, dirt, etc. Protect equipment against moisture, plaster, cement, paint or other work of other trades by covering it with polyethylene sheets.

C. Thoroughly clean exterior and interior of piping, equipment, and materials before systems are put into operation. All systems of any nature shall be thoroughly cleaned and flushed of all pipe contaminates such as cuttings, filings, lubricant, rust, scale, grease, solder, flux, welding residue, debris, etc. Any piece of equipment or part of any system which malfunctions or is damaged due to failure or neglect on the part of this Division to observe this paragraph shall be repaired or replaced to the satisfaction of the Owner's Representative by and at the total expense of this Contract.

D. After installation has been completed, clean all systems.
1. Piping and Equipment: Clean exterior thoroughly to remove rust, plaster, cement, and dirt before insulation is applied.
2. Piping and Equipment to Be Painted: Clean exterior of piping, and equipment, exposed in completed structure, removing rust, plaster, cement and dirt by wire brushing. Remove grease, oil, and similar materials by wiping with clean rags and suitable non-toxic solvents. Touch up primer coat as required.
3. Motors, Pumps and Other Items with Factory Finish: Remove grease and oil, and leave surfaces clean and polished.
4. Chrome or Nickel Plated Work: Thoroughly polish.
5. Factory Finished Items: Remove grease and oil and leave surfaces clean and polished.
6. All code stamps and nameplates shall be protected from damage and must be and legible before final inspection.

3.8 PAINTING AND IDENTIFICATION

A. After completion of hydrostatic tests, all system piping exposed to view in or on the building shall be painted in accordance with Section 09 91 00 - Painting.

B. All valve hand wheels shall be painted red enamel.

C. Provide pipe, valve, and equipment identification; and signage in accordance with referenced codes and specifications.

3.9 ACCESSIBILITY

A. The installation of valves, gages, control devices or other specialties requiring reading, adjustment, inspection, repairs, removal or replacement shall be conveniently and accessibly located with reference to the finished building.

3.10 CLOSING IN OF WORK

A. Do not allow or cause any work to be covered up or enclosed until inspected, tested and approved.

3.11 EMERGENCY REPAIRS

A. The Owner reserves the right to make temporary repairs as necessary to keep equipment in operating condition without neither voiding the guarantee bond nor relieving the Contractor of their responsibility during the bonding period.

3.12 CLEANING UP AND REMOVAL OF SCRAP

A. All trash and scrap shall be cleaned up and removed from the site as the work progresses.

3.13 PRELIMINARY OPERATIONS

A. The Owner reserves the right to operate portions of the mechanical system on a preliminary basis without voiding the guarantee.

3.14 TRAINING

A. Provide instruction to the Owner with regard to proper use and operation of the system. Training shall include both classroom and "hands-on" sessions and shall occur after final inspection and testing. Location and timing of the training session is to be arranged with the Owner's Representative.

B. Two weeks prior to scheduled training dates, furnish the Owner's Representative with six (6) bound copies of complete instructions, including catalog cuts, diagrams, drawings, and other descriptive data covering the proper testing, operation, and maintenance of each type of system installed, and the necessary information for ordering replacement parts. In addition, post one (1) copy of complete instructions at the control panel location.

C. Session shall include detailed training and instructions covering the necessary and recommended testing, operating, and maintenance procedures for each type of system. Session shall include training and instructions covering the emergency operation procedures for each type of system.

END OF SECTION

06/08/18

SECTION 22-1400
SITE STORM UTILITY DISTRIBUTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following:

1. Storm drainage piping, fittings and accessories.
2. Connection of drainage systems to municipal sewers.
3. Catch basins, paved area drains, paved area drainage, site surface drainage, detention tank, and detention basin.

1.02 RELATED SECTIONS

A. Section 03-3300 – Cast-in-Place Concrete

B. Section 31-2333 – Trench Backfill

C. Section 32-1123 – Aggregate Base

D. Section 32-1216 – Asphalt Paving

1.03 RELATED REQUIREMENTS

A. Perform all work in accordance with the American Public Works Association California Chapter, California Standard Specifications for Public Works Construction (Latest Edition).

B. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets; 2012.

C. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2012.

D. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2011.

E. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2011.

F. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2008.

1.04 SUBMITTALS

A. See Section 01-3300 – Administrative Requirements for submittal procedures.

1.05 REGULATORY REQUIREMENTS

A. Perform all work in accordance with the American Public Works Association California Chapter, California Standard Specifications for Public Works Construction (Latest Edition).

B. Conform to applicable code for materials and installation of the Work of this section.

1.06 JOB CONDITIONS

A. Coordinate the Work with termination of storm sewer connection outside building, trenching, and connection To foundation drainage system.

PART 2 - PRODUCTS

2.01 STORM SEWER PIPE MATERIALS

A. 4” through 8” injection molded gasketed SDR 35

1. Storm drain fittings shall be manufactured in accordance with ASTM D 3034, ASTM F1336, and CSA B182.2.
2. Gaskets shall be manufactured in accordance with ASTM F 477 or ASTM F 913.

3. Gaskets shall be firmly seated in fitting in order to ensure proper installation and to prevent dislocation or misalignment during system assembly.
4. Gasket joints must comply with ASTM D 3212 Internal Pressure Test (exfiltration) and Vacuum Test (infiltration) at 5 degrees of gasket joint deflection.
5. Where available, reducing branches on injection molded 8" tees, wyes, and tee-wyes shall be minimum SDR18 wall thickness in the reducing branch body and reducing branch hub below the gasket race.

B. 10" through 18" High Density Polyethylene Pipe

1. Use ADS N-12 WT IB pipe (per ASTM F2648) or equal.
2. Shall have a smooth interior and annular exterior corrugations. Joints shall be watertight according to the requirements of ASTM D3212.
3. Gaskets shall be made of polyisoprene meeting the requirements of ASTM F477.
4. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris.
5. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.
6. 12-inch through 18-inch diameters shall have a reinforced bell with a bell tolerance device. The bell tolerance device shall be installed by the manufacturer.

2.02 PIPE ACCESSORIES

A. Fittings

1. Fittings shall conform to ASTM F 2306. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket meeting the watertight joint performance requirements of ASTM F 2306.
2. To assure water tightness, field performance verification may be accomplished by testing in accordance with ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

2.03 CATCH BASIN, CLEANOUT, AND AREA DRAIN COMPONENTS

A. Onsite precast concrete catch basins shall be manufactured by US Concrete, Kristar, Duradrain or approved equal.

1. Inlets shall be constructed with 4000psi reinforced concrete.

B. Onsite precast area drains shall be Christy F08 with V01-71C Cast Iron ADA Compliant Grate or equal.

C. Side inlets shall be provided where Drainage swales are shown to enter the Inlet Structure.

D. Inlet grates in traffic areas to be H-20 load rated. All other inlet grates to be galvanized welded steel per manufacturer.

2.04 BEDDING AND COVER MATERIALS

A. See Sections 31-2323 Trench Backfill

PART 3 - EXECUTION

3.01 TRENCHING

A. See Section 31-2323 for additional requirements.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION – PIPE

A. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

B. Connect to building storm drainage system, foundation drainage system, and public storm drain.

3.03 **INSTALLATION – CATCH BASINS, CLEANOUTS, AND AREA DRAINS**

A. Form bottom of excavation clean and smooth to correct elevation
B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.
C. Establish elevations and pipe inverts for inlets and outlets as indicated.
D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

END OF SECTION

SECTION 26-0500
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included in this Section: All materials, labor, equipment, services, and incidentals necessary to install the Electrical Work as shown on the drawings and as specified hereinafter, including, but not limited to the following:
1. Electrical Demolition
2. New lighting and devices.
3. New branch conduits and wiring,
4. New electrical panels.
5. Voice and data communications
6. All Site Work as indicated on the drawings.
7. All required incidental work, such as testing, and temporary power.
8. Any other electrical work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the drawings.
9. It is the intent of the drawings and specifications that systems be complete and, except as otherwise noted, be ready for operation.

1.02 RELATED WORK

A. Division 1 - General Requirements

B. Firestopping.

1.03 INCORPORATED DOCUMENTS

A. Requirements of the General Conditions, Supplementary Conditions, and Division 1 Sections apply to all work in this Section, unless modified herein.

B. Published specifications, standard tests or recommended methods of trade, industry or government organizations apply to work of this Section where cited by abbreviations noted below, unless modified herein.
1. National Electrical Code, latest edition (NEC).
2. California Building Code, latest edition (UBC)
3. California Energy Conservation Code (Title 24)
4. Underwriters' Laboratories, Inc. (UL).
5. Local Utility Company regulations.

C. All State and Municipal Codes and Ordinances.

1.04 CONDITIONS AT SITE:

A. All will be held to have familiarized themselves with all discernible conditions and no extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.

B. Lines of other services that are damaged as a result of this work shall promptly be repaired at no expense to the Owner to the complete satisfaction of the Owner.

1.05 QUALITY ASSURANCE

A. Conformance:

1. All work shall conform to the applicable requirements of Article 1.03 above.
2. The Contractor shall notify the Architect, prior to submission of bid, about any part of the design which fails to comply with abovementioned requirements.
3. If after contract is awarded, minor changes and additions are required by aforementioned authorities, even though such work is not shown on drawings or covered in the specifications, they shall be included at Contractor's expense.

B. Coordination:
1. The Contractor shall become familiar with the conditions at the job site, and with the drawings and specifications and plan the installation of the electrical work to conform with the existing conditions and that shown and specified so as to provide the best possible assembly of the combined work of all trades.
2. The Contractor shall work out in advance all "tight" conditions, involving all trades and if found necessary, supplementary drawings shall be prepared by this Contractor, for the Architect's approval, before work proceeds in these areas. No additional costs will be considered for work which must be relocated due to conflicts with the work of other trades.

1.06 SUBMITTALS

A. Product Data:
1. Comply with the provisions of Section 013300 - Submittals.
2. Within 15 days after award of the Contract, submit:
   a. Complete material list of all items proposed to be furnished and installed under this Section, including but not limited to the following items: Circuit breakers, panels, conduit, devices, enclosures, etc.
   b. Manufacturers' specifications and other data required to demonstrate compliance with the specified requirements.
   c. Manufacturers' recommended installation procedures which, when approved by the Architect, shall become the basis for inspecting and accepting or rejecting actual installation procedures used on the work.
   d. Lighting Fixtures
3. Shop Drawings: Furnish shop drawings and/or equipment cuts for the following:
   a. Fire Alarm devices
4. Test Reports:
   a. Factory Tests: As specified for specific equipment.
   b. Field Tests: Performance tests as specified for specific equipment.
   c. Megger Tests: As specified under TESTING.
   d. Seismic restraint calculations for equipment, by a Registered Structural Engineer, per Paragraph 3.05 of this Section.
5. Maintenance and Operating Manuals:
   a. Systems Description: Description of operating procedures.
   b. Controls: Diagrams and description of operation of each system.
   c. Equipment: Manufacturer's brochures, ratings, certified shop drawings, maintenance data, and parts lists with part numbers. Mark each sheet with equipment identification number and actual installed condition.
   d. Materials and Accessories: Manufacturer's brochures, parts list with part numbers, and maintenance data where applicable. Mark each sheet with identification number of system and location of installation.
6. Record Documents:
   a. "As-builts": As specified under Paragraph 3.02 of this SECTION.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all trades.

B. Delivery and Storage: Deliver all materials to the job site in their original containers with all labels intact and legible at time of use. Store in strict accordance with approved manufacturers' recommendations.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

D. This Contractor shall personally, or through an authorized representative, check all materials upon receipt at jobsite for conformance with approved shop drawings and/or plans and specifications.

1.08 SCHEDULING/SEQUENCING

A. Place orders for all equipment in time to prevent any delay in construction schedule or completion of project. If any materials or equipment are not ordered in time, additional charges made by equipment manufacturers to complete their equipment in time to meet the construction schedule, together with any special handling charges, shall be borne by this Contractor.

B. The Contractor shall coordinate production and delivery schedule for all Owner-supplied equipment with the equipment suppliers to ensure that all Owner-supplied equipment is delivered to site in coordination with the construction schedule and in such a manner as to cause no delays in completion of the Contract as scheduled.

1.09 REQUIREMENTS

A. The contract drawings indicate the extent and general arrangements of the conduit wiring systems, etc. If any departures from the contract drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted as soon as practicable, and within thirty-five (35) days after award of the electrical contract.

B. UNLESS MATERIAL LIST AND DATA IS RECEIVED AS A COMPLETE AND ALL INCLUSIVE SUBMITTAL WITHIN THE STIPULATED TIME ALL ITEMS SHALL BE PROVIDED AS SPECIFIED -- WITH NO DEVIATIONS PERMITTED.

C. Any and all additional costs incurred by the substitution of electrical material or equipment, or installation thereof, whether architectural, structural, plumbing, mechanical or electrical, shall be borne by the Contractor under this Section.

D. Burden of proof of equality of any substitution for a specified product is the responsibility of this Contractor.

E. Where required by Architect to ascertain equality of substitute product, Contractor may be requested to provide the specified item and the submitted substitution for comparison, at no additional cost to the Owner.

1.10 SEISMIC RESTRAINTS

A. General: Provide seismic restraints per applicable code and as specified or indicated, and to meet the requirements of Seismic Design Category 4. Design restraints to prevent permanent displacement in any direction caused by lateral motion, overturning, or uplift.

B. Requirements:

1. Seismic Importance Factor: 1.25g.
2. Restraint: Required for following:
   a. Distribution Board
   b. Fire Alarm related enclosures and devices
   c. Transformers
   d. Cable Tray
   e. Cabinets

C. If restraint is required, design equipment to withstand the required seismic force criteria, including its internal design, components and frame, and suitable structural elements to which restraining attachments may be fastened.

D. Rigidly Supported Equipment: Restrain per SMACNA where applicable; where not applicable restrain similarly and as recommended by equipment manufacturer.

E. Design:
1. Prepare designs, including arrangements, sizes and model numbers indicated or referenced in applicable standards.

1.11 GUARANTEE

A. This Contractor shall guarantee that all work executed under this Section will be free from defects of materials and workmanship for a period of one (1) year or as per the General Conditions of this project, whichever is longer. Dates shall be from the date of final acceptance of the building. The contractor shall further guarantee that he will, at his own expense, repair and replace all such defective work, and all other work damaged thereby, which becomes defective during the term of the guarantee. Such repair or replacement shall be guaranteed for one (1) year from the date of repair or replacement.

1.12 PERMITS AND INSPECTIONS

A. This Contractor shall obtain and pay for all required permits and arrange for all inspections required.

B. Do not allow or cause any of the work to be covered or enclosed until it has been tested and/or inspected.

1.13 IDENTIFICATION

A. Switchboards Distribution Boards, feeder circuit breakers in switchboards, panels, cabinets, and other apparatus used for the operation of, or control of circuits, appliances or equipment, shall be properly identified by means of engraved laminated plastic descriptive nameplates mounted on apparatus using stainless steel screws. Nameplates shall have white letters with black background and be submitted to the Architect for approval. Cardholders in any form are not acceptable.

B. Provide identification of all pull boxes, junction boxes, and conduit stub-ups on the project as outlined below:
1. For Power Feeders:
   a. Stencil cover with identifying circuit number.
   b. Lettering 1" high.
   c. Color of lettering black.
   d. Place lettering on cover in neat manner; run parallel to long sides of box.
2. For branch circuits, grounding, communication, signal, and control systems boxes and blank conduit stub-outs:

a. Paint inside back of each j-box, front of each cover, and ends of each blank conduit stub-out with identifying system color as listed below:

System	Color
277/480 volt	Orange
120/208 volt	Blue
Telephone/Data	Grey
Ground system	Green
Fire Alarm	Red
Media	Yellow
Security	White

PART 2 - PRODUCTS

2.01 GENERAL

A. Refer to applicable Division 26 and Division 27 Sections for complete products specifications.

2.02 MATERIALS

A. Materials of the same type or classification, used for the same purpose, shall be the product of the same manufacturer.

2.03 ACCEPTABLE MANUFACTURERS

A. Materials shall be of make mentioned elsewhere in this specification. All materials shall be the best of their several kinds, perfectly new and approved by the Underwriters' Laboratories.

B. Where material, equipment, apparatus or other products are specified by manufacturer, brand name, type or catalog number, such designation is to establish standards of desired quality, style and utility and shall be the basis of the bid. Materials so specified shall be furnished under the contract unless changed by written approval of the Architect. Where two or more designations are listed, choice shall be optional with this Contractor, but this Contractor must submit his choice for final approval.

2.04 POSTED OPERATING INSTRUCTIONS

A. Furnish approved operating instructions for systems and equipment where indicated in the technical sections for use by operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal system and equipment. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions as directed. Attach or post operating instructions adjacent to each principal system and equipment including startup, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction as recommended by the manufacturer of each system or equipment. Provide weather-resistant materials or weatherproof enclosures for operating instruction exposed to the weather. Operating instruction shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

B.

2.05 CATALOGED PRODUCTS/SERVICE AVAILABILITY

A. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6,000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonable convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which the work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Drawings:
1. The general arrangement and location of wiring and equipment is shown on the electrical drawings and shall be installed in accordance therewith, except for minor changes required by conflict with the work of other trades.
2. All dimensions, together with locations of doors, partitions, etc. are to be taken from the Architectural Drawings, verified at site by this Contractor.
3. Maintain "as-built" records at all times, showing the exact location of concealed conduits and feeders installed under this contract, and actual numbering of each circuit. Upon completion of work and before acceptance can be considered, this Contractor must forward to red line set and Adobe Acrobat pdf’s to show the electrical work as installed.

B. Measurements: Before ordering any material or closing in any work, verify all measurements on the job. Any differences found between dimensions on the drawings and actual measurements shall be brought to the Architect’s attention for consideration before proceeding.

3.03 FIELD QUALITY CONTROL
A. All workmanship shall be first class and carried out in a manner satisfactory to and approved by the Architect.
B. This Contractor shall personally, or through an authorized and competent representative, constantly supervise the work and so far as possible keep the same foreman and workmen on the job throughout.

3.04 INSTALLATION/APPLICATION/ERECTION

A. All cutting, repairing and structural reinforcing for the installation of this work shall be done by the General Contractor in conformance with the Architect's requirements.
B.

3.05 EARTHQUAKE RESISTANT INSTALLATION/FASTENING:

A. All electrical equipment and raceways shall be anchored to withstand forces generated by earthquake motions. As a minimum, equipment and equipment frames shall be designed to withstand a force of 25% of the weight of the equipment and frame acting at its center of gravity. Anchorage of the equipment and/or frame to the structure shall be for a force of 50% gravity also acting at the center of gravity.

B. For Distribution Board, and Cable Tray, the above values shall be doubled. Design stresses in either case may be increased 1/3 over normal allowable stresses but never beyond yield.

3.06 ADJUSTING AND CLEANING

A. All electrical equipment, including existing equipment not "finish painted" under other sections, shall be touched up where finished surface is marred or damaged.

B. All equipment, lighting fixtures, etc., shall be left in clean condition, with all shipping and otherwise unnecessary labels removed there from.

3.07 SCHEDULES

A. Coordination: Coordinate installation of electrical items with the schedule for other work to prevent unnecessary delays in the total Work.

3.08 WARNING SIGN MOUNTING

A. Provide the number of signs required to be readable from each accessible side, but space the signs a maximum of 30 feet apart.

3.09 PAINTING OF EQUIPMENT

A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

B. Field Applied: Paint electrical equipment as required matching finish or meeting safety criteria. Painting shall be as specified in the respective equipment section.

3.10 TESTS

A. Testing and inspection: See Section 26 0800 - Testing.

- END OF SECTION -

SECTION 26-0800
COMMISSIONING AND TESTING

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included in This Section: All materials, labor, equipment, services and incidentals necessary to perform the testing of the electrical work, including but not limited to the following:
   1. Lighting and devices
   2. Branch conduits and wiring.
   3. Grounding.

B. Any other electrical work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the drawings.

C. All work shall comply with Divisions 26 05 00 and 26 27 00.

1.02 APPLICABLE CODES, STANDARDS, AND REFERENCES

A. All inspections and tests shall be in accordance with the International Electrical Testing Association - Acceptance Testing Specifications.

PART 2 - PRODUCTS

2.01 This article does not apply to testing.

PART 3 - EXECUTION

3.01 GENERAL

A. Final test and inspection to be conducted in presence of Inspector and Architect. Contractor shall conduct at the expense of and Test at a mutually agreed time. Submit written test report.

B. The electrical installation shall be inspected and tested to ensure safety to building occupants, operating personnel, conformity to code authorities and Contract Documents.

3.02 INSPECTIONS AND TESTS

A. Tests: Field tests shall be performed and reports submitted, as per Section 26 05 00-3, Paragraph 1.06.A.4.
   1. Final Inspection Certificates: Prior to final payment approval, deliver to the Owner, with a copy to the Architect, signed certificates of final inspection by the appropriate local authority having jurisdiction.

B. Grounding System:
   1. All ground connections shall be checked and the system shall be checked for continuity.
   2. Ground tests shall meet the requirements of the National Electric Code.

C. Power Distribution System:
   1. Tests: Test Distribution Board, and panel boards for grounds and shorts with mains disconnected from feeders, branch circuits connected and circuit breakers

closed, all fixtures in place and permanently connected and grounding jumper to neutral lifted and with all wall switches closed.

2. Test each individual circuit at each panel board with equipment connected for proper operation. Inspect the interior of each panel.
3. Check verification of color coding, tagging, numbering, and splice make-up.
4. Demonstrate that all lights, jacks, switches, outlets, and equipment operate satisfactorily and as called for.

- END OF SECTION -

SECTION 26 2700
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

A. Work included in this Section: All materials, labor, equipment, services, and incidentals necessary to install the electrical work as shown on the drawings and as specified hereinafter, including but not limited to the work listed below:
   1. Raceways, feeders, branch circuit wiring, wiring devices, safety switches and connections to all equipment requiring electric service.

B. Any other electrical work as might reasonably be implied as required, even though not specifically mentioned herein or shown on the drawings.

1.02 RELATED WORK

A. Division 1 – General Requirements

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. List of Equipment Manufacturers:
   1. Conduit and Conduit Fittings
      - Allied Tube and Conduit
      - Western Tube and Conduit
      - LTV Steel Tubular
      - National Electric Products
      - AFC
      - Republic Steel Corporation
      - Rome Cable Corporation
      - United States Steel Corporation
      - Killark Electric Manufacturing Company
      - Raco
      - VAW Aluminum Company
      - Bridgeport
      - Steel City
      - Thomas & Betts
      - Carlon
      - O.Z. Gedney
      - Appleton
      - Regal

   2. Wire and Cable (600V)
      - American Wire Company
      - General Wire and Cable Corporation
      - Okonite Company
      - Rome Cable Corporation
      - Cerrowire
      - American Insulated Wire
      - AFC Cable Systems

Essex
Simplex Wire and Cable Company

3. Solderless Lugs and Grounding Connections
   Burndy Engineering Company, Inc.
   O.Z. Gedney Company, Inc.
   Penn Union Electric Corporation
   Thomas and Betts Company, Inc.
4. Pull Boxes, Gutters, Special Cabinets

Square D Company

Columbia Electric Manufacturing Company
General Electric Company
Westinghouse Electric Corporation
Circle Awalt

5. Outlet Boxes

Appleton Electric Company

Killark Electric Manufacturing Company
Lew Electric Fittings Company
National Electric Products Corporation
Raco
Steel City Electric Company
Carlon
Bowers

6. Floor Boxes
   Steel City Electric Company
   Harvey Hubbell, Inc.
   RCI
   Walker
7. Wiring Devices

Leviton

Arrow-Hart
Harvey Hubbell, Inc.
Lutron
Bryant

8. Conduit Racks, Hangers

General Electric Company

Killark Electric Manufacturing Company
Caddy
National Electric Products Corporation
Republic Steel Corporation
Rome Cable Corporation
United States Steel Corporation
VAW Aluminum Company
Superstrut
B-Line

9. Safety Switches (Disconnect and Fusible)
   Square D Company
   Cutler Hammer, Inc.
   General Electric Company
   Eaton Corporation

10. Fuses
    Bussman Manufacturing Company
    Chase-Shawmut Company
11. Firestopping
    3M
    Nelson

2.02 MATERIALS

A. Raceways: Only the raceways specified below shall be utilized on this project. Substitutions shall be pre-approved in writing. All bare conduit ends (stub-ups or stub-outs) shall be provided with bushed ends or manufactured insulated throat connectors:

1. Rigid Type - hot dip galvanized or sherardized steel, use on all exterior locations, below deck, below grade or in concrete slab, and to 18" on either side of structural expansion joints in floor slabs (see item 15 below), with completely watertight, threaded fittings throughout.
   a. All rigid steel conduit couplings and elbows in soil or concrete or under membrane to be ½ lap wrapped with Scotch #50 tape and threaded ends coated with T&B #S.C.40 rust inhibitor prior to installation of couplings.
   b. ½ lap wrapp all rigid steel conduit stub-ups from slab or grade to 6" above finished grade level with Scotch #50 tape.
2. In lieu of rigid steel conduit for power and control raceways and branch circuit conduits in soil or concrete slabs, "Schedule 40" PVC with Schedule 80 PVC conduit elbows and stub-ups may be used with code size (minimum No. 12) ground wire. A “stub-up” is considered to terminate 6" above the finished surface.
   a. Schedule 80 PVC conduit shall be used in all concrete footings or foundations and to 18" of either side of footings or foundation walls.
   b. Schedule 80 PVC conduit shall be used in all concrete masonry unit (CMU) walls or columns.
   c. All conduit runs in concrete floor slabs (where allowed) shall be installed to comply with all applicable UBC and structural codes to maintain the structural integrity of the floor slab. Where conflicts occur, alternate routing shall be provided at no additional cost to the Owner.
3. Intermediate metal conduit shall be used in all exposed interior locations, except that electrical metallic tubing may be used in some locations as noted below. Utilize steel compression type fittings for all exposed conduit runs, unless otherwise noted. Cast fittings are unacceptable.
4. Electrical metallic tubing may be used exposed in electrical and mechanical rooms and in unfinished spaces and in concealed and furred spaces, made up with steel watertight or steel set screw type fittings and couplings. Set screws shall have hardened points. Cast fittings are unacceptable.
5. Use flexible conduit for all motor, transformer and recessed fixture connections (minimum ½"); "Seal-tite" type used outdoors, and in all wet locations, provide with code size (minimum No. 12) bare ground wire in all flexible conduit.
6. Conceal conduit in ceiling, or walls of all areas where possible, all exposed conduits installed parallel to building members.
7. Fasten conduits securely to boxes with locknuts and bushings to provide good electrical continuity.
8. Provide chrome escutcheon plates at all exposed wall, ceiling and floor conduit penetrations.
9. Support individual suspended conduits with heavy malleable strap or rod hangers; supports for ½ inch or 3/4 inch conduit placed on maximum 7-foot centers; maximum 10-foot centers on conduits 1 inch or larger.
10. Support multiple conduit runs from Kindorf B907 channels with C-105 and C-106 straps.

11. Conduit bends - long radius.
12. Flash conduits through roof, using approved roof jack; coordinate with General Contractor.
13. To facilitate pulling of feeder conductors, install junction boxes as shown or required.
14. All empty conduits on the project shall be provided with a nylon pull rope to allow pulling of future conductors intended for the specific raceway. Provide plastic wire-tie style nameplate tags on each end of pull rope with printed identification of conduit use and the location of the opposite end of the rope.
15. Where conduits pass through structural expansion joints in floor slab, rigid galvanized conduit shall be used 18" on either side of joint, complete with Appleton expansion couplings and bonding jumpers, or equal. All above grade expansion joint crossings shall also utilize expansion joint couplings or flex conduit transitions as required for each particular installation. No solid conduits shall be allowed to cross expansion joints without proper provisions for building and seismic movement.
16. Minimum cover of conduits in ground outside of building - 24 inches, unless otherwise noted.
17. Provide and install exterior wall conduit seals and cable seals in the locations listed below. Coordinate installation and scheduling with other trades:
    a. Conduit seals through exterior wall or slab (below grade): O.Z. Gedney series “FSK" in new cast in concrete locations, series "CSM" in cored locations.
    b. Conduit seals through exterior wall or slab (above grade): O.Z. Gedney series "CSMI."
    c. Cable seals at first interior conduit termination after entry through exterior wall or slab: O.Z. Gedney series "CSBI." Coordinate quantity of conductors at each location.

B. Outlet Boxes and Junction Boxes:
1. One piece steel knockout type drawn boxes, unless otherwise noted, sized as required for conditions at each outlet or as noted.
2. Flush-mounted boxes equipped with galvanized steel raised covers for device mounting flush with finished surface. Provide extension rings as required on all acoustical or additional wall treatment areas to bring top of cover flush with finished surface (coordinate with architectural drawings). Devices shall be capable of being tightly mounted to boxes without distorting or bending device or mounting hardware.
3. Boxes for fixture outlets: 4-inch octagon or larger as required, or as noted.
4. Outlet and switch boxes for wet locations, cast aluminum FS or FD type with cast aluminum gasketed spring lid cover. Weatherproof “Bell” type boxes are not acceptable.
5. All connectors from conduit to junction or outlet boxes shall have insulated throats. Connectors shall be manufactured with insulated throats as integral part. Insertable insulated throats are unacceptable.
6. Conduit Bodies: Malleable iron type, with lubricated spring steel clips over edge of conduit body, O-Z/Gedney type EW, or equal.

C. Wire and Cable:
1. 600-volt class, insulation color coded, minimum No. 12 awg for branch circuits, No. 14 for control circuits.
2. All conductors shall be copper.
3. Insulation type:
    a. Standard locations: #12 to #1 AWG: THWN for wet locations and THHN for dry locations. #1/0 through #4/0 AWG: XHHW (55 Mils). 250MCM

and larger: XHHW (65 Mils). All wire sizes used shall be based on a 75 degree insulation rating, unless specifically used with 90 degree rated breakers and devices.

b. High temperature and non-standard locations: Provide wire type and insulation category suitable for area of use as defined in NEC table 310-13.

4. Conductors No. 8 and larger and as otherwise noted on drawings shall be stranded. Conductors No. 10 and smaller shall be solid.
5. Install all wiring (low voltage and line voltage) in conduit unless noted otherwise in the drawings, but do not pull into conduit until plastering and taping have been completed and conduits and outlets have been thoroughly cleaned and swabbed as necessary to remove water and debris.
6. Approximately balance branch circuits about the neutral conductors.
7. Connections to devices from "thru-feed" branch circuit conductors to be made with pigtails, with no interruption of the branch circuit conductors.
8. Neutral conductor identified by white outer braid, with different tracers of "EZ" numbering tags used where more than one neutral conductor is contained in a single raceway.
9. Neatly arrange and "marlin" wires in panels and distribution panelboards with "T and B Ty-rap" or approved equal plastic type strapping.
10. All wire and cable shall bear the Underwriters' Label, brought to the job in unbroken packages; wire color-coded as follows:

Voltage	Phasing	A	B	C	N
120/208	3PH4W	Black	Red	Blue	White
208	3PH3W	Black	Red	Blue	--
277/480	3PH4W	Brown	Orange	Yellow	White
480	3PH3W	Brown	Orange	Yellow	--
120/240	3PH4W	Black	Red	Blue	White
240	3PH3W	Black	Red	Blue	--

11. The equipment grounding conductor shall be insulated copper; where it is insulated, the insulation shall be colored green.
12. Label each wire of each electrical system in each pull box, junction box, outlet box, terminal cabinet, and panelboard in which it appears with "EZ" numbering tags indicating the connected circuit numbers.
13. Install feeder cables in one continuous section unless splices are approved by Architect. Exercise care in pulling to avoid damage or disarrangement of conductors, using approved grips. No cable shall be bent to smaller radius than the spool on which it was delivered from the manufacturer. Color code feeder cables at terminals. Provide identifying linen tags in each pullbox.

D. Lugs and Connectors: Thomas and Betts "lock-tite", for No. 4 and larger wire; "Scotchlock" fixed spring type with insulator for No. 6 and smaller wire.

1. All splices made up with wire nut connectors shall be solidly twisted together with electricians pliers before connector is installed to ensure a proper connection in the event of wire nut failure. No exceptions.
2. Connectors listed or labeled for “no wire twisting required” are not an acceptable substitute for actual wire twisting.
3. Utilize porcelain type connectors in all high temperature environments (above 105 degrees Celsius).

E. Splice Insulation: "Scotch" electrical tape with vinyl plastic backing or rubber tape with protective friction tape for interior work.

1. Provide watertight cast splices for all conductors in site pullboxes or wet locations.

F. Firestopping: as manufactured by 3M Fire Protection Products or equal.
   1. Fire-rated and smoke barrier construction: Maintain barrier and structural floor fire and smoke resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of construction, at separations required to permit building movement and sound vibration absorption, an at other construction gaps.
   2. Systems or devices listed in the UL Fire Resistance Directory under categories XHCR and XHEZ may be used, providing that it conforms to the construction type, penetration type, annular space requirements and fire rating involved in each separate instance, and that the system be symmetrical for wall penetrations. Systems or devices must be asbestos free.

- END OF SECTION -

SECTION 27-6000
VOICE AND DATA COMMUNICATION SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION

A. Provide and Install new Voice/Data outlets and cabling in building as indicated on drawings and outlined in this specification.
B. Provide labeling on outlets and cables as outlined in this specification
C. Tie-into an existing Main Distribution facility, MDF, in electrical room.
D. Provide testing and documentation of cables as outlined in this specification.

1.02 RELATED WORK

A. Division 1 – General Requirements.

B. Section 26 0500 – Basic Electrical Requirements

C. Section 26 2700 Basic Electrical Materials & Methods

1.03 INCORPORATED DOCUMENTS

A. Requirements of the General Conditions, supplementary conditions, and Division 1 Sections apply to the work of this section, unless modified herein.

B. Published specifications, standard tests or recommended methods of trade, industry or government organizations shall apply to work of this section where cited by abbreviations noted below, unless modified herein.
1. National Electrical Code, latest edition, (NEC), Article 800-4.
2. Underwriters' Laboratories, Inc. (UL), UL 1459, UL 1863.
3. TIA/EIA-569-A "Commercial Building Standard for Telecommunications Pathways and Spaces."
4. TIA/EIA-568-B. "Commercial Building Telecommunication Standard".
5. TIA / EIA-568-B.2-1 For 250 MHz frequency range transmission over category 6 cabling system.
6. IEEE B02.11b "Wireless Network standard"
7. TIN / EIA – 606 "Labeling and marking standards for cable 6 and pathways."

1.04 CONTRACTOR QUALIFICATIONS

A. Contractor must possess a valid state Contractor's License and must have successfully performed at least three projects of similar scope, within two years of the date of this bid. Proof of performance shall be in the form of reference sheets, which shall include a brief description of the project, , the project foreman or superintendent's name, and the name, address, and telephone number of a project contact.

B. Contractor must be able to prove to the satisfaction of Owner that it has significant experience in the installation of data and communication systems. Installation must a thorough knowledge of testing procedures. Contractor must provide a minimum of three references supporting its claim of experience for similar projects within the two years prior to this bid. Documentation must be included with the bid documents submitted.

C. Contractor must have been in business and in the business of installing telecommunications systems, continuously, for a period of at least three years, prior to the date of this bid.

1.05 SUBMITTALS

A. General: Comply with the requirements of section 26500 – Submittals.

B. Submit complete list of all items of materials to be furnished, and installed to the owner for compliance review prior to purchasing the materials. Submittals shall include:
1. Complete bill of materials and equipment, including a complete listing of the characteristics of the equipment as specified.
2. Proposed cable markers and labeling, and patch panel and connector block labeling and color-coding.
4. List of instrumentation to be used for system testing.

C. Submit Contractor's qualifications as outlined in Section 1.03 above.

D. Submit "as-built" record drawings at the completion of the installation and testing.

E. The Contractor shall submit all testing documentation prior to acceptance of the work by the Owner.

1.06 GENERAL REQUIREMENTS

A. The data communications to individual outlets shall consist of twisted pair copper workstation cabling.

B. Terminations:
1. All data cables shall be terminated on modular patch panels.
3. All active equipment will be provided and installed by the owner.

1.07 FUNCTION AND OPERATION

A. The function of the data communications cable system is to transmit data signals from a central location to multiple individual data outlet locations. Upon completion of the work outlined in this specification, the entire cable system, including cable, and communications outlets shall be tested to (and meet) Category 6 compliance.

1.08 GUARANTEE

A. The Cabling System shall meet the performance requirements of the ANSI/TIA/EIA-568-B standard. The warranty on the material, services, and operation of the cabling system to this specification must be for a period of at least 15 years. The connecting hardware shall have a lifetime extended warranty against defects in material and workmanship.

B. The warranty must include the following statements regarding the cabling system:
1. "Will support and conform to TIA/EIA-568-B specifications covering any current or future application which supports transmission over a properly constructed horizontal cabling system premises network which meets the channel and/or basic link performance as described in TIA/EIA-568-B".
2. "Will be free from defects in material or faulty workmanship for the entire warranty period".

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Copper & Fiber Cable:
- Superior Essex
- Avaya
- Siecor
- Mohawk
- Berk-Tek
- Or Equal

Copper Patch Panels and Devices:
- Leviton
- Avaya
- Ortronics
- Siemon
- Panduit
- Or equal

Cabinets and Racks:
- ESW (Encore)
- Leviton
- Homaco
- Chatsworth
- Or Equal

Firestopping
- STI (Specified Technologies, Inc.)
- 3M
- Or equal

Cable Runway:
- B-Line
- Chatsworth
- Mono-System Inc.
- Or Equal

2.02 MATERIALS

A. Copper Cable:

1. Horizontal distribution cables (data/voice) shall be four unshielded twisted pairs, #23AWG, Superior Essex Type non-plenum Cat. 6 or equal, with the following characteristics:
   a. Maximum DC resistance: 9.4 Ohms per 100 meters
   b. Maximum mutual capacitance @ 1kHz: 14 nF per 1000 feet.
   c. Maximum attenuation @ 250 MHz: 33 db per 100 meters.
   d. Characteristic impedance @ 1.0 – 250.0 MHz: 100 Ohms (+) 22%
   e. Meet or exceed TIA/EIA-568-B, Category 6
   f. ACR: 7 dB @ 250 MHz
   g. Color- Blue
2. Horizontal cable shall meet the following requirements.
   a. Cable jacket marking: Must be legible and shall contain the following information:
      (1) Manufacturer's name.
      (2) Copper conductor gauge.

(3) Pair counts.
(4) UL and CSA listing.
(5) Manufacturer's trademark.
(6) Category rating.
(7) Sequential foot markings, in 1-foot increments.

3. Data Equipment Inter-Connect patch Cords: Four twisted-pair stranded, Category 6 Enhanced Power Sum, 24 AWG copper conductors. Individual conductors PVC jacketed. Each conductor provided with unique color code. Manufacturer terminated on each end with Avaya Category 6 8-pin / 8-position modular plug to be pinned as per EIA / TIA 568 B. Connector plug shall be polarized to prevent polarity reversal or split pairs, and shall be factory-marked to indicate top of connector. Inter-connect cord shall be UL listed.
   a. The Contractor shall complete data interconnects between patch panels and Owner-provided active network electronics.
   b. Minimum performance specifications:
      (1) The data equipment inter-connect cable must meet the impedance, attenuation and NEXT requirements for Category 6 Horizontal Cable of EIA / TIA 568 B.
   c. Lengths as required running from the data station cable terminations to the ports on equipment mounted in any rack position. Minimum length shall be 5 feet and the maximum length shall be 15 feet.

B. Data Outlets

1. Cable termination hardware shall be individual; Category 6 Channel rated Leviton (or equal) jacks for both data and voice. The listed product shall have the following characteristics:

   a. One eight-position, eight-conductor jack (nonkeyed), TIA/EIA-568-B Compliant, wired to T568B, Leviton category 6 extreme #61109-R*6 (* indicates color – see below).

   b. The cover of the information outlet shall be labeled above the jack. The number on the outlet jacks shall coincide with the identification requirements listed in Section 3.01-S-3 below.

   c. The color of all faceplates and blank inserts or visible mounting plates shall match the adjacent power or signal outlet covers on the project (provided under another section).

   d. The devices at outlets and the devices in the patch panels shall be of the same manufacturer and same type.

   e. See Drawings for number of jacks at each outlet, jack arrangement, and mounting type.

2. The 8-pin 8-position jacks at terminal blocks and at each 4-pair termination shall be labeled with laser-printed polyester self-laminating wrap-around labels.

   a. Eight-pin 9-position jack label-faceplates;

      (1) All labels shall be polyester and white in color;

      (2) All labels shall be 1.80-inch in width and 0.375-inch in length;

      (3) Labels shall have an adhesive backing;

(4) Labels shall be attached to the faceplate by adhesive and clipping in behind the snap in clear plastic cover;

(5) Labels shall be laser printed with the labeling scheme as specified;

(6) Labels shall be Panduit Pan-CODE Laser Labels (PLL) part EFPL-1 or equal.

b. Terminal block designation strip:

(1) All labels shall be polyester;

(2) Labels shall be white in color for 4-pai data station cable terminations, located within a blue plastic label holder;

(3) Labels shall be attached to the designation strip provided with the blue plastic holders;

(4) All labels shall be 7.88 inches in width and 0.50 inches in length;

(5) Labels shall have an adhesive backing;

(6) Labels shall be laser-printed with the labeling scheme as specified;

(7) Labels shall be Panduit Pan-CODE Laser Labels (PLL) [art number PLL-22-Y3-1 or equal.

C. Termination Hardware (Data)

1. All cables installed for data application shall be terminated in rack-mounted modular patch panels and the entire installation shall be in compliance with TIA/EIA-568-B Category 6 requirements.

2. Data patch panels are existing and are located in existing MDF rack.

PART 3 – EXECUTION

3.01 CABLE AND WIRE INSTALLATION:

A. This contractor shall be responsible for the provision and installation of all data and voice cables including all supports, hangers, and hardware necessary for a complete installation. Under no circumstances shall cables be laid on the suspended ceiling. This contractor shall be responsible for providing and installing all necessary cable support hardware to meet Category 6 requirements.

1. T-Bar Suspended Ceilings: Copper station cabling may be run outside of conduits when routed above T-Bar suspended ceilings. Cables installed in this fashion are to be run horizontally in bundles and tied down neatly suspended from J-hooks, and well clear of any light fixtures or other electrical appliances that may affect data transmissions.

B. At each data closet cables are to be segregated by type, neatly tied together and routed to the patch panels and telephone terminal blocks. All cables shall be tagged.

C. Cable distances from patch panels to data outlet shall not exceed 300 feet. This contractor is responsible to ensure the distance specified is not exceeded.

D. Care shall be exercised in routing both station and backbone/tie cables so as to avoid areas where sources of high levels of EMI (such as electric motors, transformers and fluorescent lighting fixtures) may exist. Maintain a minimum distance of 12” from these sources when run parallel. Cross at 90-degree angles where crossing must occur.

E. Each station cable shall be “home run” (no splices or cross connection points) between jacks and patch panels or telephone blocks.

F. All openings or raceway transitions through firewalls and floors shall utilize UL listed fire-rated penetrations.

G. No more than (2) 90-degree bends shall be allowed on all conduit runs for the horizontal voice/data cabling system, without an intermediate pullbox or junction box.

H. Labeling: Labeling shall include, but not be limited to:

1. Labeling telecommunications outlet faceplates;

2. Labeling station cables;

3. Labeling terminal blocks;

4. The intent of the final labeling is to allow the Owner or persons contracted by the Owner to identify any part of the structured cabling system through physical identification of the components and their related components at the specified access point without the use of electrical, electronic or mechanical means of identification.

5. Copper station – cable sheath labels:

a. Copper station cable sheaths at 8-pin 8-position jacks, at junction boxes, enclosures, and pull boxes shall be labeled with laser-printed polyester self-laminating wrap-around labels.

(1) All labels shall be polyester with white color.

(2) All labels shall be at least 1.00- inches in width and 1.33-inch in length; with a 0.5-inch x 1-inch printable area;
(3) Labels shall have an adhesive backing;

(4) Labels shall be attaché to cable sheaths by wrapping around the sheath with the adhesive back self-laminating portion;

(5) Labels shall be laser printed with the labeling scheme as specified;

6. Cable / outlet / jack / termination identification:

a. Each copper cable, its associated 568A jack at the outlet, and the associated C-4 connecting block on the terminal block or patch panel shall be labeled with a unique identifier consisting of the following:

(1) The IDF room number where the station cable is terminated, ###.

(2) The end user room number in which the 4-pair cable is terminated and the telecommunications outlet is located, ###.

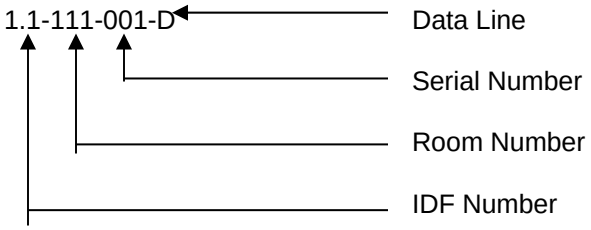
(3) A 3-digit serial number, rest to 001 for each room, which sequentially identifies each telecommunications jack / cable in a room, ###.

(4) The type of service provided by a Particular cable, either D for data or V for voice.

(5) Example of IDF 107, user room 129, jack /cable number 1 (data cable): 107-129-001-D.

b. The following are examples of the numbering scheme:

(1) IDF room 1.1, User Rm. 111, Jack/ cable 1, Data line.



7. Cable identification:

a. Label the cable sheath at the termination shelf and on the innerduct as the fiber optic cables pass through IDFs and pull boxes.

b. Each SC connector in each termination shelve shall be labeled with a unique identifier as noted on the Drawings.

8. Cable sheath identification:

a. Identify multi-pair copper riser cable sheaths with machine-generated labels at the following locations:

(1) Within 12 inches of the point that the cable exits the top or bottom of the 110P-type terminal block column.

(2) Within 12 inches of the point that the cable enters a splice.

(3) At 40-foot intervals above T-Bar ceilings.

(4) At pull boxes

(5) Within 12 inches of the point that the cable enters or exits wall and floor sleeves.

I. Warning Tags: At each location where fiber cable is exposed, it shall be marked with warning tags. These tags shall be yellow or orange in color, and shall contain the warning: “CAUTION FIBER OPTIC CABLE”. The text shall be permanent, black, block characters, and at least 3/16 high. A warning tag shall be permanently affixed to each exposed cable or

bundle of cables, at intervals of not more than (5) feet. Any section of exposed cable, which is less than five (5) feet in length, shall have at least one warning tag affixed to it.

3.02 FIRE AND SMOKE PARTITION PENETRATIONS

A. Conduit sleeves shall be provided as part of this contract as a means of routing cables through fire-rated walls and floors. Openings in sleeves and conduits used for system cables and those that remain (empty) spare shall be sealed with an approved fireproof, removable sagging material at completion. Sleeves, which pass vertically from floor to floor, shall be sealed in a similar manner using an approved re-enterable system. Additional penetrations through rated assemblies, necessary for passage of voice/data wiring, shall be made using an approved method and permanently sealed after installation of cables.

3.03 TESTING AND DOCUMENTATION

A. Refer also to Section Testing.

B. The Owner reserves the right to have a representative present during all or a portion of the testing process. If the Owner selects to be present during testing, results will only be acceptable when conducted in the presence of the Owner.

3.4 COPPER CABLE TESTING AND DOCUMENTATION

A. Copper Cable pair connector terminations:

1. During copper connector termination, visually verify all terminations.

a. Assure proper seating of connector block on terminal strips of all insulation displacement connectors;
b. Assure proper seating of splice connector modules;

c. Assure proper twist in cable pairs is maintained at terminations and splices.

d. All unacceptable connectors shall be inspected after rework.

2. Verify that the copper cable sheath is properly clamped at the splice closures to eliminate strain on the copper pair terminations.

3. Verify that the copper cable sheaths are properly bonded at splice closures and terminations.

4. Verify that all labeling and color-coding is correct.

B. Paired and multi-conductor riser metallic cables:

1. After terminating and splicing the cables, test all cable pairs for continuity, ground fault, proper cross-connection, shorts and crossed pairs.

2. For multi-pair cables: For 100-pair or smaller, replace entire cable if bad pair or conductor is found. For larger pair counts cables, replace if more than 1 percent of pairs are bad.

C. All test results and corrective procedures are to be documented and submitted to the Owner within 5 working days of test completion.

1. Paired and multi-conductor metallic cable test reports: As a minimum, also provide cable number, cable type, pair or conductor count, individual pair or conductor numbers number of cross connects and / or conductor, total number of serviceable pairs or conductors in cable.

D. Recommended test equipment (obtain approval of Owner's Representative prior to using substitute test equipment):

1. Metallic cable pair tester.

a. The Contractor shall utilize a FLUKE DSP-100 test instrument with firmware version 3.0 or newer, or equivalent Class II Category 6 Field Tester.

E. Four-pair Category 6 station cables testing and submittal process:

1. Submit cable schedule and testing schedule to Owner's Representative.

2. After terminating both ends of all UTP cables, test all UTP Category 6 station cables. Conduct tests with a 110 to 8-pin 568A patch cable in place on both ends.

3. Each jack in each outlet shall be tested for TIA/EIA-568-B Category 6 compliance, using an appropriate Level 2 testing instrument, to verify both the integrity of all conductors and correctness of the termination sequence. Testing shall be performed between modular jacks at the outlets and the modular jacks at the patch panels.

4. Test Criteria: The system shall be tested to TIA/EIA-568-B Category 6. The test path shall include jacks, station cables, jack panels, and adapter cables.

5. Documentation – Copper Cabling:

a. Maintain accessible documentation of the following test results and cable records. This documentation shall be formatted and maintained systematically in accordance with the requirements stated in ANSI/TIA/EIA-06, "Administration Standard for the Telecommunications Infrastr4uctures of Commercial Buildings".

b. Documentation of all cable testing is required. The contractor shall provide a table of test results in a 3-ring binder submitted with the as-built drawings. The table shall include:

(1) 100 MhZ sweep test, polarity checks, Near End Cross Talk, Signal Attenuation, Noise, DC loop back resistance, pair-by-pair continuity, and the installed length for all Data/Voice station cables and pairs.

(2) The report shall indicate all defective pairs and test results of all pairs listed above. Cables not complying with TIA/EIA-568-B Category 6 tests shall be identified to the Owner for corrective action, which may include replacement at no additional expense to the Owner.

3.5 ACCEPTANCES

A. Prior to acceptance all the following conditions must be met:

1. All required the Contractor shall make submittals and deficiencies or rejected submittals shall be corrected.

2. All specified cable management devices including cable ladder, steel wire cable tray, 2-sided vertical rack cabling sections, horizontal ring panels, and fiber optic troughs shall be installed as indicated and specified. All parts not installed shall be inventoried and provided to the Owner in the manufacture's packaging.

3. All seismic bracing shall be in place.

4. All specified station cabling with associated termination components, labeling and fire stopping shall be installed properly. Any component not installed shall be inventoried and provided to the Owner in the manufacturer's packaging; loose miscellaneous parts shall not be accepted.

5. Terminal blocks shall be clean and free of trimmed or cut-off copper pairs, sheaths, armors, cable lubricants or any other disposables used in the installation of the station cables.

6. All station cables shall be neatly dressed behind the terminal blocks in the IDF.

7. All required submittals indicated in Paragraph 1.03 of this Specification Section shall be made by the Contractor, and any deficiencies or rejected submittals shall be corrected.

8. Any deficiencies and punch list items shall be corrected.

9 All as-built documentation shall be complete, reviewed, and provided by Owner.

10 Acceptance of the data communications system by the Owner shall be based on the result of testing, functionality, and the receipt of documentation.

3.6 RECORD DRAWINGS

A. The project record drawings shall show the types, locations, cable numbers and pair counts of installed twisted-pair cable:

1. Cable routing and numbers.

END OF SECTION

SECTION 31-2333
TRENCH BACKFILL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Sections Includes the following:
   1. Handling and storage of materials to be used for trench backfill.

1.02 RELATED SECTIONS

A. Section 22-1400 – Site Storm Utility Distribution Systems
B. Section 32-1123 – Aggregate Base
C. Section 32-1216 – Asphalt Paving
D. Section 32-1313 – Concrete Paving
E. Section 33-1416 – Site Water Distribution and Transmission Systems

1.03 SUBMITTALS

A. Provide sieve analysis for each type of fill provided by reputable testing laboratory.
B. Materials Sources: Submit name of imported materials source.

1.04 JOB CONDITIONS

A. Provide sufficient quantities of fill per requirements. When necessary, store materials on site in advance.
B. When fill materials need to be stored on site.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.
C. Verify that survey benchmarks and intended elevations for the Work are as indicated.
D. Protect fences and other features to remain.
E. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving and curbs from excavating equipment and vehicular traffic.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe Bedding Materials
   1. In general, pipe bedding material shall meet all pipe manufacturer recommendations. When there is discrepancy between the following directives and the manufacturer's recommendations for pipe bedding material, the more conservative engineering grade quality of materials shall be used as directed by the engineer.
   2. Pipe bedding material around the pipe from six (6) inches under the pipe to six (6) inches over the pipe shall consist of native clay and/or sand. This native pipe bedding material shall be incidental to the associated pipe installation. This material shall be free from clods, frozen material, or stones larger than three-quarters (3/4) inch in their maximum dimension. Where wet or otherwise unstable conditions exist, the material in this zone shall be free draining, non-plastic material. Where suitable material is available in the material excavated from the trench, the contractor may procure the select material by screening, sifting or manually sorting the material removed from the trench in a manner approved by the engineer.
   3. Type 1 Pipe Bedding, material around the pipe from six (6) inches under the pipe to six (6) inches over the pipe, shall be used when on-site native soil is unsuitable or as directed by the engineer. This material shall be silt, clay, silty sand, silty gravels, or clayey sand or gravel (ASTM D-2487 classification ML, CL, ML-CL, SM, SC, GM, GC, SW, SP) free of stones larger than ¾ inch in their maximum dimension.

4. Trench Foundation material is required for foundation in over-excavated trenches and shall consist of the bedding material from six (6) inches under the pipe and below. The bedding material shall consist of clean gravel or sand having a maximum size of one and one-half (1½) inches, with zero to five percent (0 to 5%) passing the #200 sieve.

B. Cement Treated Controlled Density Fill(CDF)

1. Where trenches are within 3-feet of structural foundations, or at the discretion of the contractor, CDF backfill may be used in lieu of granular fill.
2. Cement Treated fill shall meet the following criteria:
    a. Cement – 42lbs/C.Y.
    b. Water – 325 lbd/C.Y.
    c. Coarse Aggregate(No.57) – 1700lbs/C.Y.
    d. Sand(ASTM C33) – 1845lbs/C.Y.

PART 3 - EXECUTION

3.01 INSTALLATION

A. COMMON AND SELECT BACKFILL

1. All trenches shall be backfilled immediately after grade, alignment and jointing of the pipe has been inspected and approved. Leakage tests, pressure tests or tests for alignment and grade shall be performed after backfill. If any tests fail, the contractor shall be responsible for work required to correct the defects.
2. After the select pipe bedding material has been placed and compacted as specified above, the remainder of the trench backfilling shall be done. All backfill material shall be free from cinders, ashes, refuse, organic and frozen material, boulders, or other materials that are unsuitable. From one (1) foot above the top of pipe to six (6) inches below the ground surface, or to the subgrade elevation for streets or paved surfaces, material containing stones up to four (4) inches in the greatest dimension may be used.
3. Where shown on the plans, the contractor shall provide embankment over the pipe above the original ground surface to a height, which will satisfy the minimum depth of cover requirements. Such embankment shall be constructed to the cross section shown on the plans.

B. TRENCH BACKFILL

1. Materials used for bedding and backfill shall be carefully deposited in layers with a depth suitable to the equipment used for compaction. All backfill material requiring the addition of water shall be wetted and mixed to a uniform consistency prior to placing in the trench.
2. Compaction by flooding will not be permitted.
3. If the backfilled trench has not been tested at required intervals during backfilling, the contractor shall provide excavation equipment to dig compaction test holes through each layer of backfill. Should tests fail, the contractor shall remove all trench backfill above the failed lift and rework to passing moisture and compaction in the area of deficiency. Engineer shall determine the area of deficiency. All work required to bring the failed test area into specification shall be at the contractor expense. Passing backfill tests only assures the owner that the minimum acceptable level of testing was achieved. The passing tests do not relieve the contractor of his responsibility to compact the entire trench and does not relieve his guarantee of the trench as identified in this specification.
4. For graveled streets and alleys, the backfill shall be completed by blading the stripped gravel back over the trench and re-compact.
5. Each service line shall be backfilled and compacted to the same requirements as the main line trench. Each service must have at least one passing compaction test.

C. CEMENT TREATED FILL PIPE SADDLE

1. Where vertical or horizontal clearance between a water and a sewer line identified in section 33-1416 site water distribution piping cannot be maintained, the water line shall be encased in a cement treated fill pipe saddle.

END OF SECTION

SECTION 32-1123
AGGREGATE BASE

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. This describes subgrade preparation for paved and building pad areas and placement and compaction of aggregate base.

1.02 RELATED SECTIONS
A. Division 01 – General Requirements
B. Section 32-1216 – Asphalt Paving

1.03 RELATED REQUIREMENTS
A. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method: 2007, or as otherwise directed by the site soils engineer.

1.04 DELIVERY, STORAGE, AND HANDLING
A. When necessary, store materials on site in advance of need.
B. When aggregate materials need to be stored on site, locate stockpiles there indicated.
   1. Separate differing materials with dividers or stockpiles separately to prevent intermixing
   2. Prevent contamination
   3. Protect stockpiles from erosion and deterioration of materials.

1.05 JOB CONDITIONS
A. Traffic Control: Minimize Interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities by material stockpiling.
   1. Do note close or obstruct streets, walks, or other adjacent occupied of used facilities without permission from owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE
A. Aggregate base shall have a resistance value of at least 78 and conform to the requirements for Class 2 Aggregate Base, as described in Section 26 of the Caltrans Standard Specifications.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION
A. After satisfactory compaction of all utility trench backfills in areas to be paved, subgrade soils shall be prepared in accordance with the civil engineering plans.
B. In engineered fill areas, the subgrade should be moisture conditioned to within 2% of optimum moisture content and compacted in accordance with the civil engineering plans. After compacting, the subgrade shall be sprinkled regularly to moisten the surface and to prevent from drying out and/or cracking prior to the placement of aggregate base.

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3.02 PLACEMENT AND COMPACTION
A. The aggregate base shall be placed in accordance with Sections 26 of the Caltrans Standard Specifications and compacted to at least 95 percent relative compaction. The thickness of the aggregate base shall be as shown on the plans.

B. Place aggregate in maximum 6 inch layer and roller compact to specified density.
C. Level and contour surfaces to elevations and gradients indicated.
D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.01 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
B. Scheduled Compaction Thickness: Within 1/4 inch.
C. Variation From Design Elevation: Within 1/2 inch.

3.02 FIELD QUALITY CONTROL

A. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, or as otherwise directed by the site soils engineer.

END OF SECTION

SECTION 32-1216
ASPHALT PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following:

1. Single course bituminous concrete paving.
2. Double course bituminous concrete paving.

1.02 RELATED SECTIONS

A. Section 32-1123 – Aggregate Base Courses
B. Section 32-1313 – Concrete Paving
C. Section 32-1723 – Painted Pavement Markings

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with California Department of Transportation standards.
B. Obtain materials from same source throughout.

1.04 JOB CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
B. Place bitumen mixture when temperature is not more than 15 degrees F below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asphalt Cement: ASTM D 946
B. Primer: In accordance with Caltrans Standards.
C. Tack Coat: In accordance with Caltrans Standards.

PART 3 - EXECUTION

3.01 EXAMINATIONS

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
B. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

A. Section 02231 - Aggregate Base Courses.

3.03 PLACING ASPHALT PAVEMENT – DOUBLE COURSE

A. Place binder course to 2 inch compacted thickness.
B. Place wearing course within two hours of placing and compacting binder course.
C. Place wearing course to 1 inch compacted thickness.
D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
E. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

A. Flatness: Maximum variation of ¼ inch measured with 10 foot straight edge.
B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
C. Variation from True Elevation: Within 1/2 inch.

3.05 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.

END OF SECTION

SECTION 32-1313
CONCRETE PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The Section describes the requirements for providing portland cement concrete paving, including accessibility ramps, sidewalks, concrete paving, curbs, gutters.

1.02 RELATED SECTIONS

A. Division 01 - General Conditions.
B. Division 32 - Earthwork
C. Section 32 – Aggregate Base

1.03 SUBMITTALS

A. Product data: Furnish for proprietary materials and items, including reinforcement and forming accessories, admixtures, joint systems, curing compounds, and other materials requested by the Architect.
B. Design Mixes: Furnish for each class of concrete.
C. Laboratory Test Reports: Submit evaluation of concrete materials and mix design tests.
D. Concrete Finish: Refer to finishing Schedule this specification.
    1. Provide concrete curing and sealing compounds.
    2. Provide paving color:
        a. Concrete Manufacturers standard gray.
        b. Custom colors shall be approved by the Architect from samples provided by the contractor and created as herein listed.

1.04 QUALITY ASSURANCE

A. Concrete Standards: Comply with provisions of the following standards except where more stringent requirements are specified:

    1. ACI 211.1, “Standard Practice for Selecting Proportions for Normal Weight, Heavy Weight and Mass Concrete”.
    2. ACI 301, “Specifications for Structural Concrete for Buildings”.
    3. ACI 304R, “Guide for Measuring, Mixing, Transporting and Placing Concrete”.
    4. 305R, “Hot Weather Concreting”.
    5. ACI 306R, “Cold Weather Concreting”.
    6. ACI 309R, “Guide for Consolidation of Concrete”.
    7. ACI 318, “Building Code Requirements for Structural Concrete”.
    8. CRSI, “Manual of Standard Practice”.

B. Concrete Manufacturer: Complying with ASTM C94 requirements for production facilities and equipment.
C. Concrete Testing Service: Engage an independent testing agency to perform materials evaluation tests and to design concrete mixes.

1.01 JOB CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for construction activities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Forms: Steel, wood, or other suitable materials of size and strength to resist movement during concrete placement and to retain alignment until removal.

1. Use straight forms, free of distortion and defects.
2. Use flexible spring steel forms or laminated boards to form radius bends as required.
3. Coat with a non-staining form release agent that will not discolor or deface concrete.

B. Concrete Reinforcement:

1. Reinforcing Bars and Tie Bars: ASTM A615, Grade 60, deformed.
2. Welded Wire Mesh (WWM): Welded plain cold-drawn steel wire fabric, ASTM A185. Furnish in flat sheets, roll goods will not be allowed. WWM is not approved for use throughout site. It is only allowed in special cases, approved by the engineer.
3. Joint Dowel Bars: Plain steel bars, ASTM A615, Grade 60. Cut bars true to length with ends square and free of burrs.
4. Supports and Reinforcement: Chair, spacers, dowel bar supports and other devices for spacing, supporting, and fastening reinforcing bars., welded wire fabric, and dowels in place. Use wire bar-type supports complying with CRSI specifications.

C. Concrete:

1. Portland Cement: ASTM C150, Type I.
2. Fly Ash: ASTM C618, Type F. (no more than 15% of total mass of cementitious material, fly ash + cement)
3. Normal-Weight Aggregates: ASTM C33, Class 4, and as follows. Provide aggregates from a single source.
4. Maximum Aggregate Size: 1 inch.
5. Do not use fine or coarse aggregates that contain substances that cause spalling.
6. Local aggregate not complying with ASTM C33 that have been shown to produce concrete of adequate strength and durability may be used when acceptable to the Architect.

D. Water: Potable.

E. Admixtures (supply as needed to meet mix design criteria or schedule):

1. Water-Reducing Admixture: ASTM C494, Type A.
2. High-Range Water-Reducing Admixture: ASTM C494, Type F or G.
3. Water-Reducing and accelerating Admixture: ASTM C494, Type E.
4. Water-Reducing and Retarding Admixture: ASTM C494, Type D.

F. Curing Materials:

1. Absorptive Cover: Burlap cloth made from jute or kenaf.
2. Moisture-Retaining Cover: Waterproof paper of polyethylene film.
3. Clear Waterborne Membrane-Forming Curing Compound: ASTM C309, Type I, Class B.
4. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

G. Related Materials:

1. Bonding Agent: Acrylic or styrene butadiene.
2. Epoxy Adhesive: ASTM C881, two-component material suitable for dry or damp surfaces. Provide material, type, grade, and class to suit requirements.

H. Expansion Joints: ½" asphaltic impregnated felt, full depth of concrete section.

I. Concrete Coloring: Color:

1. Standard Gray:
    a. Application: Typical unless noted otherwise on Plan Documents and as listed herein.
2. Integral Color:
    a. Application: As noted on Plan Documents and herein specified.
    b. Mfgr: DAVIS Color additive: (800) 682-2525
    c. Product: Integral color admixture:
    d. Color: As selected by architect from manufacturers complete range of colors.
    e. Composition:
        i. Pure mineral oxide pigment powder
        ii. Meet ASTM C – 979

iii. Stain

2.02 CONCRETE MIX

A. Prepare design mixes for each type and strength of normal-weight concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trail batch method, use a qualified independent Testing Agency for preparing and reporting proposed mix designs.
B. Proportion concrete mix designs according to ACI 211.1 and ACI 301 to provide normal weight concrete with the following properties:

1. Compressive Strength at 28 Days:
   a. Ultra-light Strength Concrete (slurry backfill) – 500 psi (+/- 250 psi) used for Slurry backfill for pipe trenches only where noted on plans.
   b. Light Strength Concrete - 2,500 psi. min.
      i. Water main Thrust blocking (Class B Concrete).
      ii. Backflow assembly housekeeping pads.
      iii. Sign/fence post footings (use surrounding slab mix strength when in concrete paved areas)
      iv. Bollard post footings(use surrounding slab mix strength when in concrete paved areas)

   c. Medium Strength Concrete - 3,000 psi. min.
      i. Sidewalks & other pedestrian (non-vehicular) slabs
      ii. Concrete curbs
      iii. Concrete mow strips
      iv. Concrete fence aprons
      v. Landscape & seating walls not exceeding 4’ in retained height.(measured top of footing to top of retained soil, or if no footing, top of lower grade to top of retained soil)

   d. Heavy Strength Concrete - 4,000 psi. min.
      i. Vehicular Concrete Slabs.
      ii. Vehicular Flush Curbs (driven over)
      iii. Vehicular Rolled Curbs (driven over)

2. Maximum Water-Cement Ratio at Point of Placement: 0.50.

C. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the contractor when characteristics of materials, project conditions, weather, test results or circumstances warrant.
D. Slump Limits: Provide concrete, at point of final discharge, of proper consistency determined by Test Method ASTM C143. Slump, 4" plus or minus 1".
E. Mix Design: All concrete used in this work will be designed for strength in accordance with provisions of CBC, Section 1905A.3. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review. Fly ash may be used in concrete to improve workability in amounts up to 15% of cement weight.
F. Slab Thickness: As shown on plans.

2.01 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with ASTM C94.
   1. When air temperature is between 85°F and 90°F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes. When air temperature is above 90°F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. Proof-roll prepared subgrade surface to check for unstable areas and required additional compaction.
B. Remove loose material from compacted subgrade immediately before placing concrete.

C. Do not begin paving work until unsatisfactory conditions have been corrected.

3.02 FORM CONSTRUCTION

A. Set forms to required grades and lines, rigidly braced and secured.
1. Install sufficient quantity to allow continuous progress of work.
2. Check completed formwork for grade and alignment to following tolerances:
a. Top of forms not more than 1/8 inch in 10 feet.
b. Vertical face on longitudinal axis, not more than 1/4 inch in 10 feet.
3. Clean forms after each use, and coat with form release agent as required.

3.03 REINFORCEMENT

A. General: Comply with CRSI recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, or other bond-reducing materials.

C. Arrange, space, and securely tie bars an bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire fabric in lengths as long as possible. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.04 JOINTS

A. General: Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline unless otherwise indicated.

B. Joints at Existing Concrete: All joints between existing concrete and new concrete are to include dowels a minimum of #4 bars at 2'-0" on center, 6" maximum from the ends, epoxy set into existing concrete a minimum of 4" in length at the centerline of the existing concrete slab.

C. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas indicated. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness. Form in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool. These joints shall be placed to divide up new concrete paving into sections no larger than 75 sq. ft.

D. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than 1/2 hour, unless paving terminates at isolation joints.
1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys. Embed keys at least 1-1/2 inches into concrete.
2. Continue reinforcement across construction joints.
3. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

E. Isolation Joints: Form isolation joints of preformed joint filler strips abutting concrete curbs, catch basin, manholes, inlets, structures, walks, other fixed objects, and where indicated.
1. Extend joint fillers full width and depth of joint, not less than 1/2 inch or more than 1 inch below finished surface where joint sealant is indicated. Place top of joint fill flush with finished concrete surface when no joint sealant is required.
2. Protect top edge of joint filler during concrete placement with a metal, plastic, or other temporary preformed cap.

3.05 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in.

B. Remove frost from subbase and reinforcing before placing concrete.

C. Moisten subgrade if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevations and alignment.

D. Comply with requirements of ACI 304R for measuring, mixing, transporting, and placing concrete.

E. When pumping concrete, no more than 1 gallon of water per cubic yard of concrete mix may be added to the hopper.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

H. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping.

Use equipment and procedures to consolidate concrete complying with ACI 309R.

1. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement and side forms.
2. Use only square faced shovels for hand-spreading and consolidation. Carefully consolidate to avoid dislocating reinforcing, dowels and joints.

I. Screed paved surfaces with a straightedge and strike off. Use bull floats or darbies to form a smooth surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.
J. Curbs and Gutters: If automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results. Machine placement shall produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete.
K. Cold-Weather Placement: Comply with ACI 306R. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
L. Hot-Weather Placement: Place concrete complying with ACI 305R when hot weather conditions exist.

3.06 CONCRETE FINISHING AND COLOR

A. Float Finish: Begin floating when bleed water sheen has disappeared, and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand-floating if area is small an inaccessible to power units. Finish surfaces to true planes within a tolerance of 1/4 inch in 10 feet. Cut down high spots and fill low spots. Refloat surface immediately to a uniform granular surface.

1. Final Finish: Provide a medium-to-fine textured broom finish by drawing a soft bristle broom across concrete surface perpendicular to line of traffic to provide a uniform fine line texture finish.

B. Final Tooling: Tool edges of paving, gutters, curbs, and joints formed in fresh concrete with a jointing tool to a radius of 1/4 inch. Repeat tooling of edges and joints after applying surface finishes. Eliminate tool marks on concrete surfaces.
C. Coloring and Texture/Stamping

1. Refer to architectural plan documents for color. Architect to approve color from contractor supplied samples/mock-ups.
2. Refer to architectural plan documents for texture/stamping. Architect to approve texture/stamping from contractor supplied samples/mock-ups.

3.07 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.
B. Evaporation Control: In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply in accordance with manufacturer's instructions after screeding and bull floating, but before floating.
C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination.

1. Moisture Curing: Keep surfaces continuously moist for not less than 7 day with water, a continuous water-fog spray, or absorptive cover kept continuously wet.
2. Moisture Retaining Cover: Cover concrete with moisture retaining cover with side and end laps sealed.
3. Curing Compound: Apply in accordance with manufacturer's instructions. Recoat areas subjected to rainfall within 3 hours after initial application.

3.08 FIELD QUALITY CONTROL TESTING

A. Employ a qualified independent Testing Agency to sample materials, perform tests, and submit test reports during concrete placement.

REPAIRS AND PROTECTION

A. Repair or replace broken or defective concrete, as directed by Architect.
B. Protect concrete from damage until acceptance of work. Prohibit traffic for at least 14 days after placement.

1. When construction traffic is permitted, remove surface stains and spillage of materials as they occur.
2. Sweep concrete pavement and wash free of stains, discolorations, dirt and other foreign material prior to final inspection.

END OF SECTION

SECTION 32-1613
CONCRETE
CURB & GUTTER

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. This section includes the following:
1. Concrete Curbs and Gutters

1.02 RELATED SECTIONS
A. Section 32-1313 – Concrete Paving
B. Section 32-1723 – Painted Pavement Markings
C. Section 32-1723 – Tactile Warning Surfacing

PART 2 - PRODUCTS

2.01 CONCRETE
A. Concrete shall be in accordance with Section 73 the Caltrans Standard Specifications. Do not increase workability of concrete by adding water unless proportionate amounts of cement are added to the mix. Reject and dump away from site, concrete which attains initial set before placing. (Note: Do not dump waste concrete on site.)

2.02 EXPANSION JOINT MATERIAL
A. Expansion Joint Material shall be in accordance with Section 73 of the Clatrans Standard Specifications.

PART 3 - EXECUTION

3.01 PREPARATION
A. The subgrade shall be constructed true to grade and cross section as shown on the plans. It shall be watered and thoroughly compacted before placing the concrete. All soft or spongy material shall be removed to a depth of not less than 0.5 foot below subgrade, and the resulting space filled with earth, sand or gravel of quality that when moistened and compacted will form a stable foundation.
B. The subgrade and forms shall be wet immediately in advance of placing concrete.

3.02 FORMWORK
A. Formwork may be of plywood, plyscord 2 x 4, 2 x 6, 2 x 8 or equal.
B. Forms shall be smooth on the side placed next to the concrete and shall have a true smooth upper edge and shall be rigid enough to withstand the pressure of fresh concrete without distortion.
C. Formwork to be accurate, straight and plumb. Form slab with sideboards above grade. Avoid fins and rough spots on exposed surfaces of concrete. All forms shall be thoroughly cleaned.
D. Forms shall be carefully set to alignment and grade and shall conform to the required dimensions. Forms shall be held rigidly in place by stakes. Clamps, spreaders and braces shall be used where required to ensure rigidity in the forms.
E. Contractor shall notify Inspector at completion of formwork with all reinforcing in place. Do not pour until Inspector has inspected formwork 24 hours minimum notice shall be given.

3.03 CONCRETE JOINTS
A. Expansion joints shall be placed in sidewalks and walkways at every curb and gutter at curb returns at a minimum of every 30 feet (30').
B. Weakened plane joints shall be spaced at a five-foot (5') maximum.

3.04 WORKABILITY

A. Do not increase workability of concrete by adding water unless proportionate amounts of cement are added to mix. Reject and dump away from site concrete, which attains initial set before placing. (Note: Do not dump waste concrete materials on site.)

3.05 INSERTS AND SLEEVES

A. Check that all inserts, anchors, sleeves are installed before placing concrete. Clean and wet all forms and excavations before placing. Rod thoroughly during placing.

B. Obtain from other trades, locations and sizes of openings for their work and provide for as required. Do cutting and patching as required by other trades. Cooperate with trades installing concrete embedded materials provided under other sections.

3.06 FINISH

A. After screeding, work with wood trowel to compact concrete, eliminate voids and depressions. Steel trowel to smooth surface free from trowel marks or apparent unevenness. Do not sprinkle dry cement on surface. Concrete shall have a uniform medium to fine textured broom finish.

B. Protect from sun. Do not strip until third day or as directed. Keep flatwork wet for seven days.

C. Protect all exposed surfaces, including flatwork as required to protect the work from damage by impact, stains from rubbish and work from other trades. Damaged surfaces shall be replaced at no added cost to the owner.

E. No impressions for advertising of Contractor’s name or other messages shall be impressed in any concrete.

END OF SECTION

SECTION 32-1723
PAINTED
PAVEMENT
MARKINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following:
1. Furnish and install all painted lines, directional arrows, handicapped symbols, or similar markings on paved surfaces, as shown on the drawings or specified herein, as required by jurisdiction having authority, and as required to complete the work.

1.02 RELATED SECTIONS

A. Section 32-1216 – Asphalt Paving
B. Section 32-1313 – Concrete Paving
C. Section 32-1613 – Concrete Curb & Gutter

1.03 RELATED REQUIREMENTS

A. Reference Standards: Comply with the requirements of the reference standards noted herein, except where more stringent requirements are described herein or otherwise required by the Contract Documents.
B. California Department of Transportation Standard Specifications for Road and Bridge Construction, current edition.
C. Manual on Uniform Traffic Control Devices" latest edition.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's published descriptive literature and complete specifications for products specified herein.

1.05 QUALITY ASSURANCE

A, Qualifications: Pavement marking applicator shall be regularly engaged in this type of work, and shall provide adequate, experienced manpower and proper equipment to complete the work.

1.06 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials in manufacturer's original, unopened containers, with labels intact and legible.

1.07 JOB CONDITIONS

A. Environmental Requirements: Do not apply pavement marking when ambient air and pavement surface temperature is below 40°F for paint and below 50°F for epoxy and thermoplastic marking materials, or when moisture in any form is present on the pavement surface.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Traffic Marking Paint: Acrylic Waterborne Paint or Low Volatile Organic Compound (VOC) solvent base paint, lead and chromate free, ready-mixed, cold-applied traffic marking paint complying with Caltrans specification, white or yellow color as designated on the plans for striping and lane markings, white and blue at international handicapped parking symbols. Acceptable products include Devoe Exterior "Safety Line" or approved equal.

B. Thermoplastic Marking Material: Reflectorized thermoplastic pavement striping materials composed of pigment, filler, resins, and glass reflecting spheres, conforming to AASHTO M-249, white or yellow as designated on the plans or as required by applicable public works requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which the work of this Section will be performed. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work implies acceptance of all areas and conditions.

3.02 PREPERATION

A. Surface Preparation: Allow fresh pavement surfaces to weather at least 30 days prior to application of traffic marking paint.

3.03 APPLICATION

A. Traffic Marking Paint: Unless otherwise indicated, apply traffic marking paint in nominal 4” wide stripes at the rate of 100 to 110 sf/gal.

B. Thermoplastic Marking Material:

1. Apply in molten state or by flame-spray methods as applicable for material type.
2. Apply molten material to uniform dimension and line thickness of 1/8” to 3/16”.
3. Apply flame-spray powder at the rate of 14 to 21 oz per 30 seconds.

C. Patterns and Symbols:

1. Unless otherwise indicated, apply traffic markings in nominal 4” wide stripes with clear and sharp dimensions. See drawings for striping patterns, directional arrows and symbols.
2. Unless otherwise indicated, use yellow markings at lane striping and directional symbols, white markings at parking striping and white and blue markings at international handicapped symbols.
3. Comply with ANSI 117.1 and ADA requirements for graphic symbols, stall widths, and access aisles at handicapped parking spaces. Provide approved templates for symbols and directional arrows.

END OF SECTION

SECTION 32-1726
TACTILE
WARNING
SURFACING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following:
1. Plastic tactile and detectable warning tiles for pedestrian walking surfaces.

1.02 RELATED SECTIONS

A. Section 32-1313 – Concrete Paving

B. Section 32-1613 – Concrete Curb & Gutter

1.03 RELATED REQUIREMENTS

A. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Rule; current edition (ADAAG).
B. 49 CFR 27, 37, and 38 - Standards for Accessible Transportation Facilities, Final Rule; Department of Transportation; current edition.
C. ASTM A666-15 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.
D. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.
E. AMS-STD-595 - Colors Used in Government Procurement (Fan Deck); 2017

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.
B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

PART 2 - PRODUCTS

2.01 TACTILE AND DETECTABLE WARNING TILES

A. Plastic Tactile and Detectable Warning Tiles: ADAAG compliant, g lass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory applied removable protective sheeting.

1. Installation Method: Cast in place.
2. Shape: Rectangular.
3. Dimensions: 24 inches by 36 inches.
4. Pattern: In-line pattern of truncated domes complying with ADAAG.
5. Edge: Square.
6. Color: AMS-STD-595, Table IV, Federal Yellow No. 33538.

2.01 ACCESSORIES

A. Fasteners: ASTM A666-15, Type 304 stainless steel
1. Type: Countersunk, color matched composite sleeve anchors
2. Size: 1/4 inch diameter and 1 -1 /2 inches long.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's written instructions.
   1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
   2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.

B. Install units fully seated to substrate, square to straight edges and flat to required slope.

3.02 INSTALLATION, CAST IN PLACE

A. Concrete:

   1. See Section 32-1313 - Cast-in-Place Concrete.
   2. Slump: 4 to 7 percent.

B. Tamp and vibrate units as recommended by manufacturer.

C. Place and position weights on unit while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

END OF SECTION

SECTION 32-3136
SECURITY GATES AND BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fixed Bollards

1.02 RELATED REQUIREMENTS

A. Section 32-1313 - Concrete Paving: Installation of adjacent paved surfaces.

1.03 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.05 WARRANTY

A. See Section 01-7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 NON-AUTOMATED BARRIERS

A. Fixed Bollards: Permanently installed tubular steel bollards.
   1. Post Design: Round, diameter 4-1/2 inches.
   2. Mounting: Surface mounted through the flange. (4) concrete wedge anchor bolts or equal.
   3. Height: 36 inches.
   4. Finish: Standard powder coat finish, grey or silver.
   5. Top: Welded steel dome steel cap
   6. Reflective Banding: None
   7. Products:
      a. Reliance Foundry; Bollard R-7236, www.reliance-foundry.com. Basis of Design
      b. Bollards Plus; SMB4X36(PP): www.bollardbarrier.com.
      c. Vevor: Safety Bollard; www.vevor.com
      d. Substitutions: See Section 01-6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
   1. Verify location of existing utilities, grades and conditions of substrate.
   2. Verify concrete mounting substrate.
   3. Confirm newly installed concrete is of sufficient strength to accept work.

3.02 PREPARATION

A. Protect existing work from damage due to installation of this work.

B. Confirm installation of adjacent equipment is complete.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

A. See Section 01-4000 - Quality Requirements, for additional requirements.

3.05 CLEANING

A. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

B. See Section 01-7419 - Construction Waste Management and Disposal for additional requirements.

3.06 PROTECTION

A. Protect installed units from subsequent construction operations.

END OF SECTION

SECTION 33-1416
SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following:
   1. Pipe and fittings for site water lines.
   2. Valves.

1.02 RELATED SECTIONS

A. Perform all work in accordance with the American Public Works Association California Chapter, California Standard Specifications for Public Works Construction (Latest Edition)
B. Section 31-2333 – Trench Backfill
C. Section 32-1123 – Aggregate Base
D. Section 32-1216 – Asphalt Paving
E. Section 32-1313 – Concrete Paving

1.03 RELATED REQUIREMENTS

A. AWWA C 105: Polyethylene encasement for ductile-iron pipe systems.
B. AWWA C110 (A21.10-87): Standard for Ductile-Iron and Gray-Iron Fittings, three inch (3”) through forty-eight inch (48”), for Water.
C. AWWA C 153 (A21.53-06): Ductile-Iron Compact Fittings for Water Service.
D. AWWA C 207; Steel Pipe Flanges for Waterworks Services, Sizes four inch (4”) through one hundred forty-four (144”)
E. AWWA C 500; Gate Valves for Water and Sewerage Systems.
F. AWWA C 504; Rubber-Seated Butterfly Valves.
G. AWWA C 509; Resilient-Seated Gate Valves for Water and Sewerage Systems.
H. AWWA C 515; Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service
I, AWWA C 550; Protective Interior Coatings for Valves and Hydrants.
J. AWWA C 800; Underground Service Line Valves and Fittings.
K. AWWA C 900; PVC Pressure Pipe, four inch (4”) through twelve inch (12”) for Water.
L. AWWA C 905; Large Diameter (greater than twelve inch (12”)) PVC Pipe.
M. AWWA C 906; Polyethylene (PE) Pressure Pipe and Fittings four inch (4”) through sixty-three inch (63”) for Distribution and Transmission.
N. AWWA C 907; Polyvinyl Chloride (PVC) Pressure Fittings for Water — four inch (4”). through eight inch (8”).
O. AWWA C 909; Molecular Oriented Polyvinyl Chloride (PVCO) Pressure Pipe (four inch (4”) through twelve inch (12”)).

1.04 SUBMITTALS

A. See Section 01-3000 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE

A. Perform all work in accordance with the American Water Works Association.
B. When required by engineer, contractor shall furnish certification by the manufacturer of the pipe to be furnished on this project, certifying that the pipe and fittings comply with the applicable specifications. Required certification shall accompany each delivery of material.
C. All pipe shall be clearly marked with type, class and/or thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage.

1.06 JOB CONDITIONS

A. When materials need to be stored on site.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from deterioration of materials.

B. Verify that survey benchmarks and intended elevations for the Work are as indicated.
C. Protect fences and other features to remain.
D. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving and curbs from

excavating equipment and vehicular traffic.

PART 2 - PRODUCTS

2.01 MATERIALS

A. PIPE

1. Ductile Iron Pipe

a. Ductile iron pipe shall conform to the provisions of AWWA C151. Pipe shall be pressure class 350.

b. Pipe joints shall be mechanical joint or “Push-On” joints conforming to AWWA C11.

c. The interior of the pipe shall have a cement mortar lining conforming to the requirements of AWWA C104. The outside surface of pipe designed for underground service shall receive a bituminous coating approximately one (1) mil thick.

d. When polyethylene encasement is required, the requirements of AWWA C105/A21.5-88 shall be met.

2. Polyvinyl Chloride (Pvc) Pressure Pipe

a. PVC pipe for water mains twelve inches (12”) or smaller shall meet the requirements of AWWA C900, “Polyvinyl Chloride Pressure Pipe”, made to ductile iron O.D.’s for “Push-On” joints. Pipe joints shall be with an elastomeric gasket or joint. Pipe shall be DR-18 pressure class 150.

b. Large diameter (greater than twelve inches (12”)) PVC PIPE shall conform to AWWA C900 Specifications.

3. Molecularly Oriented Polyvinyl Chloride (Pvco) Pressure

a. PVCO pipe for water mains twenty-four inches (24”) or smaller shall meet the requirements of AWWA C909, “Molecularly Oriented Polyvinyl Chloride Pressure Pipe”, made to ductile iron O.D.’s for “Push-On joints. Pipe joints shall be with an elastomeric gasket or joint. Pipe shall be pressure class 150.

4. Polyethylene Pressure Pipe

a. Black Polyethylene material used for the manufacture of polyethylene pipe and fittings shall be PE 3608 high density polyethylene meeting ASTM D 3350 cell classification 345464C and the name of the pipe and fitting manufacturer shall be listed in PPI (Plastic Pipe Institute) TR-4 with a standards grade HDB rating of one thousand six hundred (1600) psi at seventy-three degrees Fahrenheit (73ºF). The material shall be listed and approved for potable water in accordance with National Sanitation Foundation (NSF) Standard 61.

b. HDPE pipe shall be manufactured to the requirements of ASTM F 714 and AWWA C906. Pipe shall be DR-11 pressure class 160.

c. HDPE pipe shall have three equally spaced pairs of longitudinal blue color stripes or the pipe specification in blue text co-extruded into the pipe outside surface or the pipe specification printed in blue text on the outside surface of the pipe.

B. COUPLINGS

1. Couplings shall be of ASTM A 53, ASTM A 512, or carbon steel having a minimum yield strength of thirty thousand (30,000) psi. Coating shall be fusion bonded epoxy coated and be a minimum of ten (10) mils thick. Bolts and nuts are to be either 304 or 316 stainless steel. Couplings are to be Smith-Blair 411 series, Dresser Style 38, or Engineer approved equal.

C. FITTINGS

1. Cast iron or ductile iron fittings used for water mains shall be Class 250 conforming to AWWA C110, “Gray-Iron and Ductile Irons Fittings for Water” or AWWA C153, “Ductile-Iron Compact Fittings for Water Service”. Joints for Ductile Iron and PVC Pipe shall be mechanical joint or “Push-On” joints conforming to AWWA C111. The interior and exterior of the fitting shall have a fusion bonded epoxy coated lining conforming to AWWA C116.

2. PVC fittings may be used for water mains four inches (4”) through twelve inches (12”) in diameter and shall conform to AWWA C907 or an Engineer approved equal.

3. HDPE butt fusion fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D 3350, and approved for AWWA use. Butt fusion fittings shall have a manufacturing standard of ASTM D 3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. All fittings shall be suitable for use as pressure conduits, and per AWWA C 906, have nominal burst values of three and one-half (3-1/2) times the Working Pressure Rating (WPR) of the fittings.

4. HDPE fittings may be joined together using Mechanical Joint (MJ) adapters. These fittings shall be made from PE 3408 HDPE, with a cell Classification of 345464C as determined by ASTM D 3350. MJ adapters shall have a manufacturing standard of ASTM D 3261. They shall have a pressure rating equal to the pipe unless otherwise specified on the plans.

5. HDPE pipe and fittings may be joined to water pipe and fittings made of a different material using Engineer approved electrofusion couplings. Fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D 3350. Electrofusion Fittings shall have a manufacturing standard of ASTM F 1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All electrofusion fittings shall be suitable for use as pressure conduits, as per AWWA C 906, have nominal burst values of three and one-half (3-1/2) times the Working Pressure Rating (WPR) of the fitting.

D. VALVE RESTRAINTS

1. Mechanical Joint Valve: EBAA Iron Series 2000 or approved equal.
2. Push-on Joint Valve: Ford Series 1300, EBAA Iron Series 1600, or approved equal.

E. VALVE BOXES

1. Valve boxes shall be concrete, eight inch (8”) diameter adjustable valve boxes. The cast iron cover of the valve box shall have the word “Water” stamped thereon.
2. Valve boxes shall be Christy F08 series concrete, 8” with extension sleeve or an Engineer approved equal.

F. COMPRESSION CONNECTIONS

1. Ends of polyethylene tubing inserted in compression connections should be fitted with insert reinforcement.

G. PIPE INSULATION

1. Pipe insulation shall be high density, extruded polystyrene foam insulation board for buried service.
2. The five-year (5) aged R Value per inch shall be five (5) when tested at seventy-five degrees Fahrenheit (75°F) mean temperature in accordance with ASTM C 518.
3. Pipe insulation shall have a minimum compressive strength of twenty-five (25) psi when tested in accordance with ASTM D 1621.
4. The pipe insulation shall have a maximum water absorption of 0.1% by volume when tested in accordance with ASTM C 272.

H. TRACER WIRE

1. Tracer wire for open cut trenching installations shall be Copperhead® SuperFlex 1030, #10 AWG copper-clad steel conductor with 30 mil HDPE insulation rated for direct bury use and 513 lb minimum break load, or Engineer approved equal. Insulation shall be blue in color.
2. All wire connectors for splicing of tracer wire shall be rated for direct bury applications.
3. Tracer wiere shall be tested for continuous conductivity prior to placing the pipe into service. Tracer wire for directional drilling or boring shall be Copperhead® SoloShot 1045, #10 AWG high strength copper-clad steel conductor with 45 mil HDPE insulation rated for direct bury use and 2,032 lb minimum break load, or Engineer approved equal. Insulation shall be blue in color.

I. WARNING TAPE

1. Warning tape shall be at least three inches (3”) in width and shall have a minimum overall thickness of five (5) mils. Tape shall be impervious to all known alkalis, chemical reagents, and solvents found in soil. Color coding shall be in conformance with the APWA/ULCC Color Code. Warning tape shall have a maximum imprint length of thirty-six inches (36”).

PART 3 - EXECUTION

3.01 EXAMINATION
A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.02 PREPARATION
A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
B. Remove scale and dirt on inside and outside before assembly.
C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING
A. See sections on excavation and backfill for additional requirements.

3.04 INSTALLATION – PIPE
A. Route pipe in straight line.
B. Install pipe to allow for expansion and contraction without stressing pipe or joints.
C. Install tracer wire or tape 6 inches above top of pipe; coordinate with Section 31-2333

3.05 INSTALLATION – VALVES
A. Set valves on solid bearing.
B. Center and plumb valve box over valve. Set box cover flush with finished grade.
C. Where valve box is set greater than 18” above valve nut provide pvc sleeve to within 1” of box lid.

END OF SECTION

APPENDIX A:

MOLD LAB REPORT

NOTE: THIS DOCUMENT HAS BEEN PREPARED BY THE OWNER'S CONSULTANT AND IS PROVIDED FOR REFERENCE ONLY.

EMSL Analytical, Inc.

464 McCormick Street San Leandro, CA 94577

Tel/Fax: (510) 895-3675 / (510) 895-3680

http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order: 092413554
Customer ID: ENVU62
Customer PO:
Project ID:

Attention: Steven Ramos
Insight Environmental
245 Kentucky St, Ste A
Petaluma, CA 94952

Project: Mold Sampling/421 E St

Phone: (707) 775-7800
Fax:
Collected Date: 07/15/2024
Received Date: 07/19/2024 10:00 AM
Analyzed Date: 07/22/2024

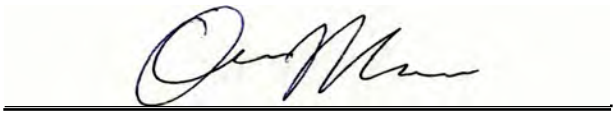
Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	092413554-0001			092413554-0002			092413554-0003		
Client Sample ID:	38604183			38602584			38602590		
Volume (L):	75			75			75		
Sample Location:	Office 2			Office 3			Office 4		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	1	40	12.5
Ascospores	1	40	50	1	40	18.2	1	40	12.5
Aspergillus/Penicillium++	-	-	-	-	-	-	1	40	12.5
Basidiospores	-	-	-	2	80	36.4	2	80	25
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	1	40	50	3	100	45.5	2	80	25
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	1	40	12.5
Zygomycetes	-	-	-	-	-	-	-	-	-
Torula++	-	-	-	-	-	-	-	-	-
Total Fungi	**2**	**80**	**100**	**6**	**220**	**100**	**8**	**320**	**100**
Hyphal Fragment	-	-	-	1	40	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.



Oscar Merino, Laboratory Manager
or other Approved Signatory

Initial report from: 07/22/2024 12:32 PM

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Customer PO:
Project ID:

Attention: Steven Ramos
Insight Environmental
245 Kentucky St, Ste A
Petaluma, CA 94952

Project: Mold Sampling/421 E St

Phone: (707) 775-7800
Fax:
Collected Date: 07/15/2024
Received Date: 07/19/2024 10:00 AM
Analyzed Date: 07/22/2024

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	092413554-0004			092413554-0005			092413554-0006		
Client Sample ID:	3860 2582			38604194			3860 4186		
Volume (L):	75			75			75		
Sample Location:	Office 5			Office 6			Office 7		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	3	100	38.5	-	-	-	-	-	-
Aspergillus/Penicillium++	-	-	-	1	40	50	1	40	30.8
Basidiospores	-	-	-	-	-	-	1	10*	7.7
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	2	80	30.8	1	40	50	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	1	40	30.8
Myxomycetes++	1	40	15.4	-	-	-	1	40	30.8
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	1	40	15.4	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Torula++	-	-	-	-	-	-	-	-	-
Total Fungi	**7**	**260**	**100**	**2**	**80**	**100**	**4**	**130**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	1	40	-	1	40	-	-	-	-
Pollen	-	-	-	1	40	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	2	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

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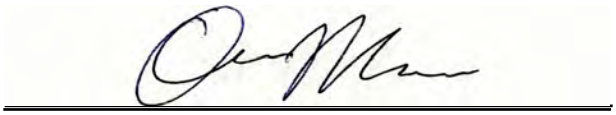

Oscar Merino, Laboratory Manager
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Fax:
Collected Date: 07/15/2024
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Analyzed Date: 07/22/2024

Project: Mold Sampling/421 E St

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	092413554-0007			092413554-0008			092413554-0009		
Client Sample ID:	38604184			38602585			38602580		
Volume (L):	75			75			75		
Sample Location:	Office 8			Office 9			Office 10		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium++	8	300	62.5	-	-	-	-	-	-
Basidiospores	2	80	16.7	-	-	-	1	40	100
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	20.8	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Torula++	-	-	-	-	-	-	-	-	-
Total Fungi	**13**	**480**	**100**	**-**	**None Detect**	**-**	**1**	**40**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-
Pollen	1	40	-	-	-	-	1	40	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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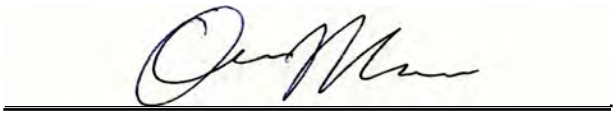

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Phone: (707) 775-7800
Fax:
Collected Date: 07/15/2024
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Analyzed Date: 07/22/2024

Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	092413554-0010			092413554-0011			092413554-0012		
Client Sample ID:	38604190			38604187			38604185		
Volume (L):	75			75			75		
Sample Location:	Office 14			Office 15			Kitchen		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	1	40	66.7	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium++	-	-	-	-	-	-	-	-	-
Basidiospores	-	-	-	2	80	100	1	40	100
Bipolaris++	-	-	-	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-	-	-	-
Cladosporium	1	10*	16.7	-	-	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	10*	16.7	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-
Torula++	-	-	-	-	-	-	-	-	-
Total Fungi	**3**	**60**	**100**	**2**	**80**	**100**	**1**	**40**	**100**
Hyphal Fragment	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	1	40	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-	-	1	-

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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Phone: (707) 775-7800
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Collected Date: 07/15/2024
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Analyzed Date: 07/22/2024

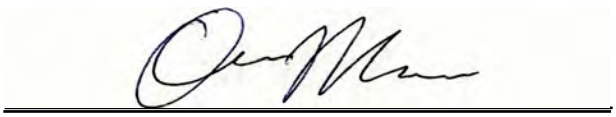
Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number:	092413554-0013			092413554-0014		
Client Sample ID:	38604195			38604192		
Volume (L):	75			75		
Sample Location:	Exterior 1			Exterior 2		
Spore Types	**Raw Count†**	**Count/m³**	**% of Total**	**Raw Count†**	**Count/m³**	**% of Total**
Alternaria (Ulocladium)	-	-	-	1	10*	0.6
Ascospores	7	300	34.9	5	200	11.4
Aspergillus/Penicillium++	1	40	4.7	8	300	17.1
Basidiospores	3	100	11.6	4	200	11.4
Bipolaris++	-	-	-	-	-	-
Chaetomium++	-	-	-	-	-	-
Cladosporium	7	300	34.9	21	880	50.3
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-
Fusarium++	-	-	-	-	-	-
Ganoderma	2	80	9.3	2	80	4.6
Myxomycetes++	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-
Rust	1	40	4.7	1	40	2.3
Scopulariopsis/Microascus	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-
Torula++	-	-	-	1	40	2.3
Total Fungi	**21**	**860**	**100**	**43**	**1750**	**100**
Hyphal Fragment	-	-	-	1	40	-
Insect Fragment	-	-	-	-	-	-
Pollen	1	40	-	1	40	-
Analyt. Sensitivity 600x	-	42	-	-	42	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-
Skin Fragments (1-4)	-	1	-	-	1	-
Fibrous Particulate (1-4)	-	1	-	-	1	-
Background (1-5)	-	1	-	-	1	-

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.



Oscar Merino, Laboratory Manager
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Initial report from: 07/22/2024 12:32 PM

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APPENDIX B:

ASBESTOS SURVEY REPORT

NOTE: THIS DOCUMENT HAS BEEN PREPARED BY THE OWNER'S CONSULTANT AND IS PROVIDED FOR REFERENCE ONLY.

INSIGHT ENVIRONMENTAL
7077757800
steve@insightebc.com
http://www.envirovue.com

ASBESTOS SURVEY REPORT

421 E St
Santa Rosa, CA 95404

Sonoma Clean Power
07/15/2024

Inspector
Steve Ramos
Certified Inspector
707.775.7800
steve@insightebc.com

TABLE OF CONTENTS

The summary report is provided as a convenience to you the client. This summary does not represent the entire report. We recommend and encourage you to read the entire report. The summary may not contain important facts that may alter your opinion of the building under evaluation.

1: EXECUTIVE SUMMARY

Information

Cover Letter

Insight Environmental is pleased to submit the enclosed Asbestos Inspection Survey for this which was performed by Steve Ramos a California Certified Asbestos Consultant.

If you are required to submit a form for asbestos demolition/renovation form to the Bay Area Air Quality Management District you will need the following information to complete your form:

- **Name of the company that conducted the survey:** Insight Environmental
- **Address:** 245 Kentucky St., Ste A
- **City/State/Zip:** Petaluma CA 94952
- **Phone:** (707) 775-7800
- **Name of the person who completed the survey:** Steven Ramos CAC/CSST #: 17-6062

If you have questions or comments regarding the information in this report or if we can be of further assistance, please do not hesitate to contact the undersigned at (707) 775-7800.

Sincerely,

Steve Ramos
CAC # 17-6062

Introduction: Introduction

At the request of the client, Insight Environmental performed a survey for asbestos-containing construction materials (ACCM). The work was performed by Steven Ramos, a Certified Asbestos Consultant (#17-6062). The scope of work was conducted in compliance with current state and federal asbestos regulations; a summary of applicable regulations is included in an appendix to this report. Every effort was made to survey all accessible suspect materials.

2: ASBESTOS INSPECTION METHODS AND PROCEDURES

Information

Methodology Introduction: Inspection Procedures

If available and provided prior to the inspection, Insight Environmental reviewed the building's asbestos file for previously identified ACM. The inspection process began with a visual survey of the site for bulk debris or ash debris that may contain asbestos. The suspect materials identified were then described and categorized into homogeneous areas. Homogeneous areas consist of suspect materials that are identical in color, appearance, pattern, texture, and date of installation. Samples were collected in accordance with AHERA requirements detailed at 40CFR Part 763, Subpart E.

Sampling Methods: Sampling Method

All of the suspect materials identified were described and categorized into homogeneous areas (HAs). An HA consists of all identified material found in various locations in a building that are identical in color, appearance, pattern, texture, and date of installation. The HA can be described only within a single building (i.e., red floor tile in different buildings on the same campus, even if installed on the same day, compose different HAs). The asbestos inspection was conducted according to modified Asbestos Hazard Emergency Response Act (AHERA) guidelines using a minimum number of samples collected from each HA, which meets the sampling criteria found in 29 CFR 1926.1101. Samples of suspect miscellaneous materials were collected in a randomly distributed manner sufficient to determine whether the materials were asbestos-containing. No samples were collected from any HA where the inspector determined that the material was non-ACM (such as carpet, carpet pad without mastic, foam, glass, wood, rubber, ceramic tile, etc.). Samples were obtained with tools designed to penetrate a material without creating excessive dust. A utility knife, chisel, and coring sleeve were utilized, rather than scratching a sample from the surface of suspect materials, in an effort to obtain a sample that was representative of all layers of the material. The area was pre-wetted to reduce fiber generation during the sampling process. Insight Environmental sampling procedures incorporate the use of plastic zip-lock bags labeled in a unique numbering sequence to store the bulk samples. Information about bulk samples, including the sample number and material description, were noted on the chain-of-custody sheets as each sample was collected.

Laboratory Procedures and Analysis: PLM Procedures

Bulk samples were submitted to the laboratory under chain of custody and analyzed by PLM using EPA Method 600/R-93/116, July 1993, in accordance with 40 CFR 763, Subpart F, Appendix A (AHERA), and if applicable, the point Count Method 600/R-93/116, July 1993, by EMSL Analytical located in San Leandro CA. Bulk samples of suspected ACM were examined under a stereomicroscope to identify suspect fibers. A polarized light microscope equipped with a dispersion staining objective lens was used to determine which of the suspect fibers are asbestos. The various asbestos minerals were identified on the basis of their unique optical characteristics. Reported asbestos percentages were based on visual volume estimates. Laboratory analysis reports and chain of custody are provided as an attachment to this report.

Asbestos Materials Classification: Material Classes

Surfacing Material

Interior ACBM that has been sprayed on, troweled on, or otherwise applied to surfaces (structural members, walls, ceilings, etc.) for acoustical, decorative, fireproofing, or other purposes. This includes acoustical plaster, hard plasters (wall or ceiling), fireproofing insulation, spray-applied or blown-in thermal material, joint or patching compound (wall or ceiling), and textured paints or plasters.

Thermal Insulation (TSI)

Insulation used to control heat transfer or prevent condensation on pipes and pipe fittings, boilers, breeching, tanks, ducts, and other parts of hot and cold water systems; heating, ventilation, and air conditioning (HVAC) systems; or other mechanical systems. These insulation materials include pipe lagging, pipe wrap, HVAC duct insulation, block insulation, cements and muds, and a variety of other products such as gaskets and ropes.

Miscellaneous Materials

Other, mostly non-friable products and materials found on structural components, structural members or fixtures, such as floor tile, ceiling tile, construction mastic for floor and ceiling materials, sheet flooring, fire doors, asbestos cement pipe and board, wallboard, acoustical wall tile, and vibration damping cloth. "Miscellaneous materials" do not include thermal system insulation or surfacing materials.

3: ASBESTOS RESULTS

Information

Findings and Results: Date of Survey
2024-07-15

Findings and Results: Materials Sampled
Drywall, Surface Texture, Ceiling Tiles, Adhesives, Joint Compound

Findings and Results: Materias Classification
Surfacing Materials, Miscellaeous

Findings and Results: Status
RACM, Non-Detect

Findings and Results: Status Details: ACM

Asbestos Containing Materials are present. Asbestos is a hazardous substance and its maintenance, handling, removal and disposal is regulated by federal, state and local agencies. While the presence of the asbestos containing materials at the site does not require that they be removed, they must be properly managed if they are left in place. Personnel who are required to disturb the asbestos-containing materials must be properly trained and knowledgeable in asbestos procedures, specifically, they should be certified by DOSH. If the asbestos-containing materials are to be removed or should demolition or renovation activities at the site involve the identified asbestos-containing materials, the materials must be removed by a registered asbestos abatement contractor.

Insight Environmental recommends that any material which cannot be adequately identified as having been previously tested negative, be assumed to be asbestos-containing until such time as testing proves otherwise. If the asbestos-containing materials are to be left in place, Insight Environmental recommends that an Asbestos Operations and Maintenance Plan be developed to properly manage the identified and assumed asbestos-containing materials until such time as they are removed. Envirovue recommends that one staff member, who will develop and manage the program, be assigned as an Operations and Maintenance (O&M) Program Manager. The person should receive appropriate training and be charged with coordinating periodic O&M inspections. These inspections should include surveying all asbestos-containing building products in the facility. Defects such as signs of increased wear, water damage, vandalism and impact damage should be noted and repaired immediately. Materials with significant damage or that are visibly deteriorating should be removed. All construction or remodeling activities in the buildings should be reviewed by the O&M Program Manager in the planning stage to determine if the planned work will disturb the ACM and if preparatory abatement work will be required.
A complete record should be maintained of all findings (including this report), procedures, and actions regarding ACCM in the building. This record should also contain names of technical advisors, inspectors, consultants, and all staff time, material and costs associated with asbestos management and abatement. In the future, if ACCM management cost recovery is sought from manufacturers, suppliers, or contractors, or in the event of litigation, this information will be required.
The surface texture in the IT closet is greater than 1% asbestos and is a surfacing material. If this material is removed or disturbed it would be considered a Class 1 Job by Cal-OSHA standards and Regulated Asbestos Containing Material by the BAAQMD for disposal and transportation. All other locations are considered Non-Detect based on extensive sampling is similar locations throughout the building.

4: ASBESTOS REGULATIONS

Information

Confidentiality and Health Affects

Confidentiality & Limitations

This report was prepared for the sole use of the client(s) the only intended beneficiaries of our work. No other party should rely on the information contained herein without the prior written consent of Insight Environmental and the Client(s). Insight Environmental understands that our services to the Client are to be held in strict confidence. Insight Environmental will not discuss or disclose any information about our services to any third party without the Client's consent.

This air quality assessment was planned and implemented on the basis of a mutually agreed scope of work. The survey was conducted in conformance with generally accepted current standards for identifying and evaluating asbestos in construction materials. Insight Environmental uses only qualified professionals to perform building surveys; the reasonable effort was made to survey accessible suspect materials. Although state-of-the-art techniques were implemented during this investigation, the scope of work may extend beyond that which could not be assessed through reasonable visual and analytical means. All findings and recommendations presented within reflect generally accepted industrial practices and the professional opinion of Insight Environmental. The investigation was performed within the limitations prescribed by the client. No warranties, either expressed or implied nor guarantees, are made. The sample results and instrument readings on which this report was developed should be considered a "snapshot" of the conditions at the time of sample collection. Due to the complexity of HVAC systems, Insight Environmental cannot guarantee the completeness of decontamination work conducted on HVAC systems. All medical questions and concerns should be addressed by a qualified medical physician.

Insight Environmental assessment of the risk of exposure to airborne asbestos fibers followed generally accepted protocols and is based on conditions at the time of the survey. Insight Environmental is not responsible for changes in conditions or accepted protocols subsequent to our site visit.

Asbestos Health Effects

Asbestos can cause asbestosis, lung cancer, and mesothelioma. The onset of asbestosis has been linked to the concentration of the asbestos dust, the type of asbestos fiber in the dust, and the length of exposure. It is a progressive disease that may develop fully 20 to 30 years after the first exposure. It is characterized by scarring of the lungs, and will significantly decrease the ability of the lungs to exchange air.

Mesothelioma, or cancer of the lining of the lung or abdominal cavity, may occur without evidence of asbestosis. Mesothelioma may occur after a short, intensive exposure to asbestos fibers. Approximately 85 percent of all mesothelioma cases are attributable to asbestos exposure. According to the Department of Labor, information is insufficient at the present time to set an exposure standard (other than zero) that could assure the prevention of mesothelioma in all workers, since the disease may occur following a very limited exposure 10 to 15 years earlier. People exposed to industrial concentrations of asbestos are at risk five times greater than the general public of developing lung cancer.

Cigarette smoking is strongly implicated as a "co-carcinogen" among asbestos workers. Calculations suggest that cigarette-smoking asbestos workers have approximately 50 to 90 times the risk of developing lung cancer compared with other smokers.

Types Uses and Medical Information

Types of Asbestos

The word asbestos refers to several types of naturally occurring fibrous minerals. Deposits of asbestos are found throughout the world. The primary sites of commercial production are Canada, Russia, South Africa, and the United States. Asbestos gained widespread use in commercial products because it was readily available, inexpensive, and because it is strong, it does not burn, it does not conduct heat or electricity well, and it is impervious to chemical corrosion.

Medical Information

The medical community has identified three primary diseases which can be linked to asbestos exposure; asbestosis, lung cancer, and mesothelioma of the pleura or the peritoneum. These asbestos-related diseases may have a latency period of 20 40 years. The primary route of exposure is the inhalation of fibers. Asbestos is only considered a danger to human health when it is airborne and breathable.

Uses of Asbestos

Asbestos is comprised of a group of natural minerals. Unlike other minerals, however, the crystals of asbestos form long, thin fibers. Asbestos deposits are found throughout the world, but the primary sites of commercial asbestos production are Canada, Russia, and South Africa. Commercial mining of asbestos in the United States was halted in the 1980s. Once extracted from the earth, asbestos-containing rock is crushed, milled (or ground), and graded. This produces long, thread-like fibers of the material. What appears to the naked eye as a single fiber is actually a bundle of hundreds or thousands of fibers, each of which can be divided even further into tiny fibers (fibrils), invisible without the aid of a microscope. Asbestos materials are divided into two groups -- serpentine and amphibole. All asbestos in the serpentine group is called Chrysotile. This is the most common type of asbestos found in buildings in the United States, accounting for approximately 95 percent of the asbestos found in the nation's buildings. It is commonly known as "white asbestos" because of its natural color. The amphibole group contains five types of asbestos. Amosite, the second most common type of asbestos found in buildings in the United States, is often referred to as "brown asbestos" for the color of the natural mineral. Crocidolite, or "blue asbestos" has been used in high-temperature insulation products and on chemical-resistant surfaces, such as laboratory tables for chemistry and biology classes (upon occasion, the custodial staff will drill holes in tabletops for new fixtures without realizing that the material may contain crocidolite. The remaining three types of asbestos in the amphibole group -- Anthophyllite, Tremolite, and Actinolite -- are rare and have little commercial value. They are occasionally found as contaminants or minor constituents in asbestos-containing materials.

5: STATE CERTIFICATION

Information

State Certification

Asbestos
CAC
Certification

APPENDIX C:

LEAD SURVEY

NOTE: THIS DOCUMENT HAS BEEN PREPARED BY THE OWNER'S CONSULTANT AND IS PROVIDED FOR REFERENCE ONLY.

INSIGHT ENVIRONMENTAL
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LEAD SURVEY

421 E St
Santa Rosa, CA 95404

Sonoma Clean Power
07/15/2024

Inspector
Steve Ramos
Certified Inspector
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TABLE OF CONTENTS

1: EXECUTIVE SUMMARY

Information

Scope of Work

The scope of services for this project did not include an interview with the client or their representative(s) (if applicable) to determine the approximate construction date and painting the history of the building and areas to be tested, the performance of field and laboratory testing programs, and the preparation of a report detailing where and at what concentrations lead was found. During the lead coating inspection, Insight Environmental may not conduct lead testing in every room and/or sample every painted/varnished/stained building component. However, all like building materials, i.e., same color/substrate, etc., are grouped together and considered positive or negative in conjunction with the building materials that were sampled. Insight Environmental conducts sampling of building materials that are representative of the possible lead-containing materials in a building.

Routes of Exposure

Adults and children can get lead into their bodies if they:

- Breathe in lead dust (especially during activities such as renovations, repairs, or painting that disturb painted surfaces).
- Swallow lead dust that has settled on food, food preparation surfaces, and other places.
- Eat paint chips or soil that contains lead. Lead is especially dangerous to children under the age of 6.
- At this age, children's brains and nervous systems are more sensitive to the damaging effects of lead.
- Children's growing bodies absorb more lead.
- Babies and young children often put their hands and other objects in their mouths. These objects can have lead dust on them. Women of childbearing age should know that lead is dangerous to a developing fetus.
- Women with a high lead level in their system before or during pregnancy risk exposing the fetus to lead through the placenta during fetal development.

Health Effects of Lead Exposure

Children
Lead affects the body in many ways. It is important to know that even exposure to low levels of lead can severely harm children. In children, exposure to lead can cause:

- Brain Nerve Damage Hearing
- Nervous system and kidney damage
- Learning disabilities, attention-deficit disorder, and decreased intelligence
- Speech, language, and behavior problems
- Poor muscle coordination • Decreased muscle and bone growth
- Hearing damage

Adults
While low-lead exposure is most common, exposure to high amounts of lead can have devastating effects on children, including seizures, unconsciousness, and in some cases, death. Although children are especially susceptible to lead exposure, lead can be dangerous for adults, too. In adults, exposure to lead can cause:

- Harm to a developing fetus
- Increased chance of high blood pressure during pregnancy
- Fertility problems (in men and women)
- High blood pressure
- Digestive problems
- Nerve disorders
- Memory and concentration problems
- Muscle and joint pain

Protecting Yourself from Lead

If you think your building has lead-based paint:

- Don't try to remove lead-based paint yourself.
- Always keep painted surfaces in good condition to minimize deterioration.
- Get your home checked for lead hazards. Find a certified inspector or risk assessor at epa.gov/lead.
- Talk to your landlord about fixing surfaces with peeling or chipping paint.
- Regularly clean floors, window sills, and other surfaces.
- Take precautions to avoid exposure to lead dust when remodeling.
- When renovating, repairing, or painting, hire only EPA- or state-approved Lead-Safe certified renovation firms.
- Before buying, renting, or renovating your home, have it checked for lead-based paint.
- Consult your healthcare provider about testing your children for lead. Your pediatrician can check for lead with a simple blood test.
- Wash children's hands, bottles, pacifiers, and toys often.
- Make sure children eat healthy, low-fat foods high in iron, calcium, and vitamin C.
- Remove shoes or wipe soil off shoes before entering your house.

XRF Lead-based Paint Present

XRF Testing was performed on the testing combinations of concern for this project and it was determined that the following materials tested are considered lead-based paint. For this scope of work, the components tested did rise above the threshold limit of 1.0 mg/cm2 and are considered lead-based paint (LBP) by legal definition as stated in the California Code of Regulations. See the details in the report for specific locations.
The metal beam at the front exterior of the building was determined to be lead based paint.

Visual Observations Summary

A visual survey of the property,structure, or area of concern (as stated in the scope of work) was conducted, the purpose of which is to visibly rate the condition of the paint or coating. Paint coatings will be rated as "intact", "fair", or "poor" as defined in the 1995 HUD Guidelines Chapter 7.
All lead based paint surfaces were “intact” at the time of inspection. However, the planned renovation may render some of the materials in a “poor” state. Lead safe work practices will be required.

Lead Hazard Summary Findings

At the time of the survey, there were no lead hazards observed in the area included in the scope of work.

2: VISUAL OBSERVATIONS

Information

Survey: Types of Assessments

An inspection is a surface-by-surface investigation to determine whether there is lead-based paint in a home or child-occupied facility, and where it is located. Inspections can be legally performed only by certified inspectors or risk assessors. Lead-based paint inspections determine the presence of lead-based paint. It is particularly helpful in determining whether lead-based paint is present prior to purchasing, renting, or renovating a home, and identifying potential sources of lead exposure at any time.

A risk assessment is an on-site investigation to determine the presence, type, severity, and location of lead-based paint hazards (including lead hazards in paint, dust, and soil) and provides suggested ways to control them. Risk assessments can be legally performed only by certified risk assessors. Lead-based paint risk assessments are particularly helpful in determining sources of current exposure and in designing possible solutions. You can also have a combined inspection and risk assessment. With any of these options, the risk assessor or inspector will provide you with a written report of findings.

A visual survey of the property and structure was conducted, the purpose of which is to visibly rate the condition of the paint or coating. Paint coatings will be rated as "intact", "fair", or "poor" as defined in the 1995 HUD Guidelines Chapter 7.

Survey: Intact

All surfaces were “intact” at the time of inspection. However, the planned renovation may render some of the materials in a “poor” state. Lead safe work practices will be required.

3: LEAD HAZARD SUMMARY

Information

General: Renovation and Repair

Common renovation, repair and painting activities that disturb lead-based paint (like sanding, cutting, replacing windows, and more) can create hazardous lead dust and chips which can be harmful to adults and children. Home repairs that create even a small amount of lead dust are enough to poison your child and put your family at risk.

General: Lead Safe Work Practices

In homes built prior to 1978 the State of California requires the use of lead-safe work practices for homeowners and contractors to follow whenever there is the potential for creating lead dust hazards. The basics of lead-safe work practices are containment and clean-up. Containment procedures involve the use of plastic or drop clothes on the ground in the work areas. Ensuring that lead contaminated dust isn't tracked into other rooms by implemented cleaning or containment of shoes, tools, etc. Clean up is just as it sounds - clean up the tools and work area so they are free of all dust which likely contains lead-contaminated dust if lead paint was disturbed during the project. Here are some references and guides for implementing and using lead-safe work practices:

Lead-Safe Homeowner Guide

California Department of Public Health

General: Waste Characterization

LBP is defined in Title X of the 1992 Housing and Community Development Act as equal to, or greater than 1.0 milligram per centimeter squared (mg/cm2) or 0.5% by weight. During renovation or demolition activities of a building that contains LBP, abatement of the LBP may not be necessary; however, measures must be taken to protect workers from LBP exposure. In addition, waste material must be tested for lead content before disposal. A LBP survey should be performed prior to demolition or renovation of each building to determine what materials contain LBP so appropriate health and safety measures can be taken and those materials can be segregated for disposal purposes. Employers of construction workers are responsible for the development and implementation of a worker protection program in accordance with OSHA regulations found in 29 CFR, Parts 1926.20 and 1926.62 (e); Cal/OSHA, Title 8, Sections 1529 and 1532; and Title 17, California Code of Regulations, Division 1, Chapter 8, to minimize worker risk of lead exposure by minimizing the generation of hazardous air emissions and waste through the use of safe work practices and engineering controls. If a demolished material containing LBP fails either the disposal lead content toxicity characteristic leaching procedure (TCLP) (5mg/L) or the California regulatory limits for hazardous waste, which are the Soluble Threshold Limit Concentration (STLC) (5mg/L) and the Total Threshold Limit Concentration (TTLC) (1,000 mg/kg), it must be considered a hazardous waste and managed accordingly.

General: Lead-Based Paint Present Intact

Lead-based paint was observed in some components for this residence. The components condition was rated as "intact" which is defined by having little to no deterioration in the coating. An intact component is not considered a lead-hazard as defined by the State of California. Lead-based components that become deteriorated will be lead hazards. With appropriate inspection and maintenance, these lead-based components will remain intact.

General: No Lead Hazards Identified

The building was inspected per the scope of work and evaluated with an XRF device. The State of California defines a lead hazard using the following definition: “Lead hazard” means deteriorated lead-based paint, lead-contaminated dust, lead-contaminated soil, disturbing lead-based paint or presumed lead-based paint without containment, or any other nuisance which may result in persistent and quantifiable lead exposure. One or more of these were assessed for this evaluation and there were no quantifiable lead hazards present.

4: LEAD BASED PAINT REGULATIONS

Information

Regulations Summary

US EPA Regulations. Lead-Based Paint Hazards During Remodeling Activities. On June 1, 1999, the USEPA final rule regarding LBP hazards during remodeling activities of residential properties went into effect. This rule requires renovators to provide consumers with a pamphlet providing information on LBP hazards during renovation or remodeling activities and how to protect their families from lead hazards before beginning renovation activities, which disturb more than two square feet of paint in pre-1978 housing.

40 CFR Part 745 (Final Rule). The USEPA has mandated that every state adopts abatement protocols and institute a training and certification program for inspectors, workers, supervisors, etc. This certification rule went into effect in August 1998, and beginning in August 1999 USEPA's abatement work practices were required to be followed. If a state had not implemented State Lead Regulations before this date, the USEPA's program guidelines were to be followed. As of April 1998, over 50 percent of the states had adopted lead regulations, mostly addressing LBP in child-occupied residential housing. It must be noted, however, that the USEPA Final Rule certification and work practice requirements apply to lead abatement in child-occupied facilities, with minimal direct impact on commercial property operations. The USEPA is also in rulemaking to establish LBP testing and abatement practices and worker training requirements applicable to renovation of property built before 1978. This action is supported by new USEPA studies showing hazardous lead dust levels generated by conventional renovation of lead painted components.

Residential Lead-Based Paint Hazard Reduction Act of 1992. Public Law 102-550: Title X of the Housing & Community Development Act of 1992 deals with training requirements for managing and procedures for evaluating the risks of identified LBP.

OSHA Regulations. 29 CFR 1926.62 Lead Exposure in Construction, Applies to "all construction work where an employee may be occupationally exposed to lead." If lead is present in detectable levels, the Contractor must perform a negative exposure assessment to ensure that their workers will not be exposed to airborne lead above the allowable personal exposure limits, use applicable safe work practices as outlined by 1926.62 and have all personnel that may be exposed to the potential hazard trained in lead awareness. A property owner is obligated by federal OSHA regulations to inform employees and outside contractors of the known presence of a hazardous material that may be encountered during their work activities including lead-based paint (Right to Know).

29 CFR 1910.134: Use of Respirators. The OSHA Respiratory Protection Standard defines the program and requirements as to when personnel are allowed to wear respirators, maintenance of respirators, etc. In general, OSHA coverage extends to all private sector employers and employees. Those not covered under the standard typically include self-employed persons and federal, state, and local municipal employees.

Federal Housing Urban Development (HUD). Hazard Identification and Abatement. Lead-Based Paint: Guidelines for Hazard Identification & Abatement in Public Housing (September 1990) deals with the requirements for testing and managing the potential for LBP exposure in public housing primarily focused on the safety of children. The HUD standard of the definition of Lead Based Paint Coated surfaces remains 5000 PPM by weight.

California Department of Public Health. California Title 17. Title 17 is specific for California and has its basis in the HUD Guidelines. California Code of Regulations, CCR 35000 - 36100, detail how and when lead hazard evaluations are conducted, what types of abatement are required, and by whom can the work be done and applies to all renovation remodeling, painting, operations, and maintenance involving lead-based coatings. The law specifically identifies the different types of lead hazard evaluations which include: paint inspection, risk assessment, clearance inspection, and lead hazard screens. The law distinguishes between permanent abatement and interim controls. The requires the use of containment and cleaning procedures for all renovation, painting, and remodeling involving lead-based coatings activities and requires clearance testing for full abatement projects.

5: CERTIFICATION

Information

CDPH Certificate: **Current Lead Assessor Certificate**

The consultants current certificate is valid until December 2024.


PublicHealth

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL: CERTIFICATE TYPE: NUMBER: EXPIRATION DATE:

APPENDIX D:

FIRE SPRINKLER CUT SHEETS

NOTE: SEE FIRE PROTECTION DRAWINGS
PROVIDED FOR REFERENCE ONLY

VIKING®

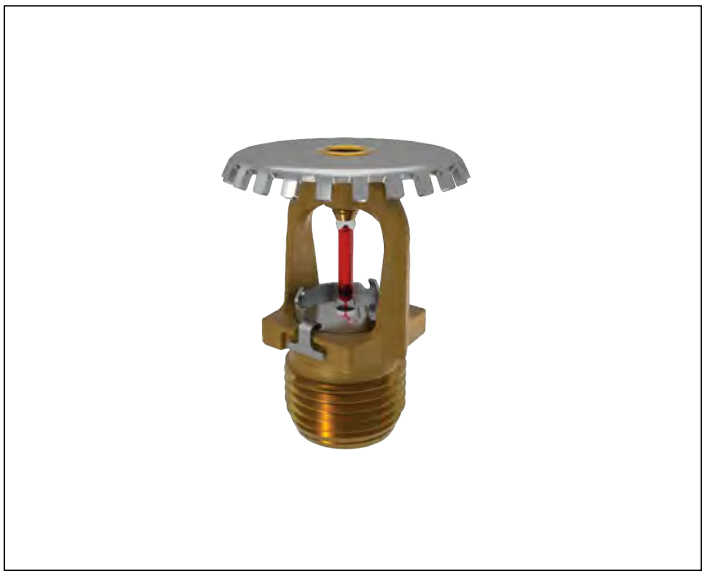
TECHNICAL DATA SHEET

VK3001 Quick Response Upright Sprinkler K5.6 (80.6)

1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler”:

VK3001: Quick Response, Standard Coverage, Upright, K5.6 (80.6) Sprinkler.



2. INTENDED USE

The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements.
2. the recognized design and installations standards issued, for example NFPA, FM, EN, VdS, or LPCB.
3. the latest revisions of all applicable manufacturer’s documentation.

Governmental codes, ordinances, and standards may apply and may differ from one another.

⚠ WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

Refer to section 5 for details and requirements that must be followed.

cULus Listed

VdS Approved

FM Approved

UKCA Approved

CE

MED Approved

LPCB Approved

China Approved

4. TECHNICAL SPECIFICATIONS

4.1 Definitions

Standard Upright Sprinkler: A sprinkler intended to be oriented with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. These sprinklers are marked “SSU” (Standard Spray Upright) or “UPRIGHT” on the deflector.

Corrosion-Resistant Sprinkler: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers. Sprinklers can be ordered as corrosion resistant sprinklers and can be used with escutcheons when allowed by the approval body.

4.2 Ratings and Physical Characteristics

Parameter	Value
Minimum operating pressure	7 psi (0.5 bar)
Maximum rated pressure	UL: 250 psi (17 bar) FM and CE: 175 psi (12 bar)
Factory tested pressure	500 psi (35 bar)
Thread size	1/2" NPT or 15 mm BSPT
Nominal K–factor	5.6 U.S. (80.6)
Minimum temperature rating (glass bulb)	–65 °F (–55 °C)

4.3 Markings and Dimensions

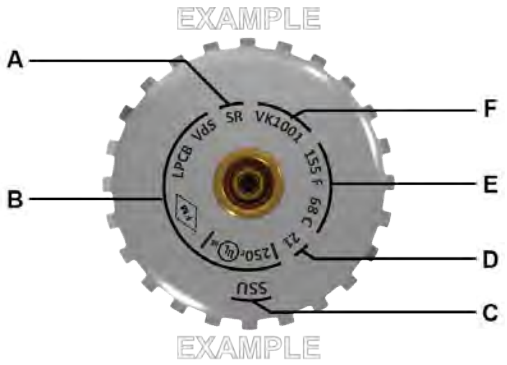


Figure – 1: Markings

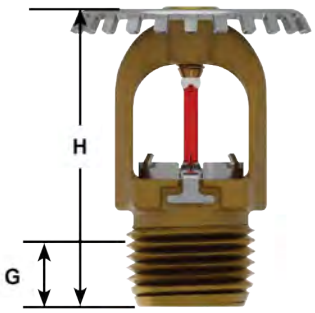


Figure – 2: Dimensions

Ref	Description	Value
A	Response type	QR: Quick Response
B	Listings and Approvals	See sections 3 and 5
C	Sprinkler type	SSU: Standard Spray Upright
D	Manufacture date (year)	See marking
E	Nominal temperature rating	See marking
F	Manufacturers Sprinkler Identification Number (SIN)	VK3001
G	Nominal pipe engagement	7/16” (11 mm)
H	Height	1-15/16” (49 mm)

4.4 Materials of Construction

NOTICE: Do not disassemble the sprinkler.

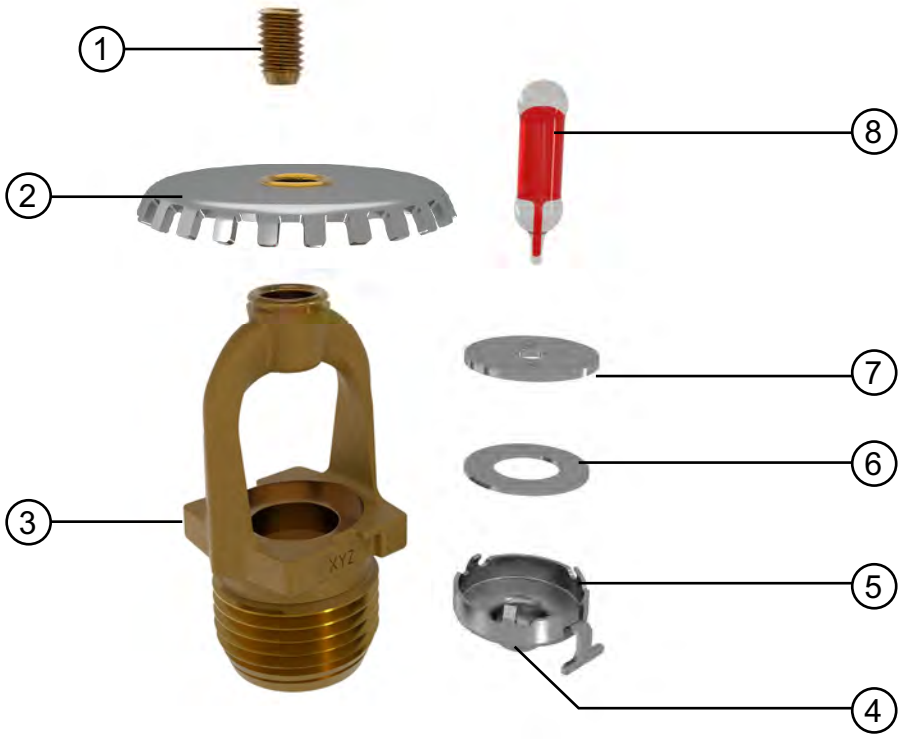


Figure – 3 Sprinkler Components

Ref	Description	Material
1	Compression screw	Brass CW612N, CW508L, UNS–C36000 or UNS–C26000
2	Deflector	Stainless steel UNS S30400
3	Sprinkler body	CW602N, UNS–C84400 or QM brass
4	Pip cap seal	Polytetrafluoroethylene (PTFE)
5	Pip cap shell	Stainless steel UNS–S44400
6	Belleville spring	Nickel alloy
7	Pip cap disc	Stainless steel UNS–S30100
8	Bulb	Glass, nominal 0.10" (3 mm) diameter

5. LISTING AND APPROVAL DESIGN REQUIREMENTS

5.1 Listing and Approval Specifications

Sprinkler Base Part Number[1]	Thread Size		Approval Body							
	NPT	BSPT	cULus	FM	CE	LPCB	VdS	UKCA	MED	China
Maximum WWP PSI (bar) ⟶			250 (17)	175 (12)						
23869	1/2"	—	A1	A1	A1	A1	A1	A1	A1	—
23881	—	15 mm	A1	A1	A1	A1	A1	A1	A1	—
26755	—	15 mm	B2	B2	—	—	—	—	—	B2

Approval Specification (Temperature Ratings) Key:

A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)

B = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)

Approval Specification (Finishes) Key:

1 = Brass, Chrome, White Polyester [2,3], Black Polyester[2,3], and ENT [3,4]

2 = Chrome

1 For complete part number, refer to Viking's current price list.

2 For White Polyester and Black Polyester, other colors are available upon request and will carry the same Listings and Approvals as the standard colors.

3 cULus Listed as corrosion-resistant.

4 FM Approved as corrosion-resistant.

5.2 cULus Listing Requirements and Details

The sprinkler is cULus Listed as indicated in Table 5.1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. This sprinkler is designed for use in light and ordinary hazard occupancies.

5.3 FM Approval Requirements and Details

The sprinkler is FM Approved as quick response Non–Storage upright sprinkler as indicated in the FM Approval Guide. The sprinkler is also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of –3 psi (–207 mbar). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling. For specific application and installation requirements, refer to the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2–0).

5.4 Additional Approval Requirements and Details

Refer to Table 5.1 for approved configurations allowed by each of the following approvals.

- CE CPR: Standard EN 12259-1:1999 +A3:2006; Declaration of Performance DOP_VK3001.
- LPCB: Standard EN 12259-1:1999 +A3:2006; Certificate Number 096m.
- VdS: Standard EN 12259-1:1999 +A3:2006; Certificate Number G 422005.
- UKCA: Standard EN12259-1:1999 +A3:2006; Declaration of Conformity UKCA DOC_S5048.
- MED: Standard EN 12259-1:1999 +A3:2006; Declaration of Conformity DOC_MED_XT1.
- China Approval: Approved according to China GB standard.

For specific application and installation requirements, refer to the latest applicable governmental codes, ordinances, and standards for the installation location.

5.5 Corrosion-Resistant Coatings

The corrosion resistant coatings have passed the standard corrosion tests required by the approving agencies and are listed and approved as indicated in Table 5.1. These tests do not represent all possible corrosive environments. The Electro-less Nickel PTFE (ENT) finish passed the UL 199 thirty day corrosion test and is cULus listed and FM Approved as corrosion resistant. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.

Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment. The ENT finish has not been evaluated for environments containing chlorine, such as indoor swimming pools. It is not recommended for these applications.

5.6 Sprinkler Guards and Water Shields

The sprinkler is approved for use with the Model XG Sprinkler Guard and the Model XWU upright water shield. Refer to the Guards and Water Shields for XT1 Sprinklers technical data sheet for more information.

5.7 Available Temperature Ratings

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

6. ORDERING PROCEDURE

6.1 Sprinkler

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to section 5):
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.

NOTE: For Polyester, insert the desired temperature rating suffix where the dash (–) is shown.

EXAMPLE: 23869MB/W = VK3001 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

NOTE: When ordering sprinklers that will be installed into InstaSeal® CPVC fittings, refer to Form No. F_032219 for installation instructions. Use the InstaSeal® alignment tool and NOT the sprinkler wrench for InstaSeal® sprinkler installations.

1. Sprinkler Base Part Number	
See Section 5	
23869	1/2" NPT
23881	15 mm BSPT
26755*	15 mm BSPT

*Only for China

2. Finish	
Description	Suffix
Brass	A
Chrome	F
White Polyester	M–/W
Black Polyester	M–/B
ENT	JN

3. Temperature Rating			
Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
135 °F (57 °C)	Orange	100 °F (38 °C)	A
155 °F (68 °C)	Red	100 °F (38 °C)	B
175 °F (79 °C)	Yellow	150 °F (65 °C)	D
200 °F (93 °C)	Green	150 °F (65 °C)	E
286 °F (141 °C)	Blue	225 °F (107 °C)	G
OPEN	—	—	Z

6.2 Sprinkler Accessories

Figure – 4: Sprinkler Accessories

Ref.	Part Number	Description
1)	23559MB	Straight wrench: required for proper installation
2)	01724A	Sprinkler cabinet: holds up to 6 sprinklers
3)	01725A	Sprinkler cabinet: holds up to 12 sprinklers (not shown)
4)	26676	InstaSeal® alignment tool

7. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L–4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking–emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

Handling and Installation Instructions

Model XT-1 Upright Sprinklers

	bg	Инсталирайте и пуснете продукта в експлоатация само ако следната инструкция е ясно разбрана.		**lv**	Produkta iemontēšanu un ekspluatācijas sākšanau veikt tikai tad, ja dotā instrukcija ir pilnībā saprasta.
	cs	Namontujte a spusťte do provozu produkt pouze tehdy, když jste jasně pochopili tento návod.		**lt**	Produktą montuokite ir pradėkite eksploatuoti tik tuomet, jei aiškiai suprantate šią instrukciją.
	de	Du må kun montere og idriftsætte produktet, hvis du har forstået følgende vejledning til fulde.		**mt**	Installa u ħaddem il-prodott biss jekk l-istruzzjonijiet li ġejjin jinftiehmu b'mod ċar.
	de	Produkt nur einbauen und in Betrieb nehmen, wenn die nachfolgende Anleitung klar verstanden wird.		**nl**	Product alleen installeren en in gebruik nemen, als de volgende instructies begrepen zijn.
	el	Η εγκατάσταση και θέση σε λειτουργία του προϊόντος επιτρέπονται μόνο εάν οι ακόλουθες οδηγίες έχουν γίνει κατανοητές.		**no**	Ikke installer og ta i bruk produktet uten at følgende anvisninger er tydelig forstått.
	en	Do not install and commission the product unless you have clearly understood the instructions below.		**pl**	Produkt należy montować i uruchamiać tylko wtedy, gdy poniższe instrukcje są w pełni zrozumiałe.
	es	Instalar el producto y ponerlo en funcionamiento solo cuando se hayan comprendido claramente las siguientes instrucciones.		**pt**	Instalar e colocar o produto em funcionamento somente se as instruções a seguir forem claramente compreendidas.
	et	Paigaldage toode ja kasutage seda ainult siis, kui saate alljärgnevast juhendist selgelt aru.		**ro**	Montați produsul și puneți-l în funcțiune numai dacă instrucțiunea următoare este înțeleasă clar.
	fi	Tuotteen saa asentaa ja ottaa käyttöön vain, jos jäljempänä oleva ohje ymmärretään selvästi.		**ru**	Не устанавливайте и не принимайте оборудование в эксплуатацию, если вы четко не поняли инструкции ниже
	fr	N'installer et ne mettre en service le produit que si les instructions suivantes ont été clairement comprises.		**sk**	Namontujte a spustite do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
	ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigeann tu na treoracha thios go soileir.		**sl**	Izdelek vgradite in zaženite samo, če ste dobro razumeli navodila v nadaljevanju.
	hr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumjeli donje upute.		**sr**	Не инсталирајте и не пуштајте производ у рад ако нисте јасно разумели упутства у наставку.
	hu	Csak akkor építse be a terméket és helyezze üzembe, ha a következő útmutatót egyértelműen megértette.		**sv**	Montera och driftsätt produkten endast om du förstår den efterföljande instruktionen.
	Is	Settu ekki upp eða taktu vöruna í notkun nema þú hafir skilið greinilega leiðbeiningarnar hér að neðan.		**tr**	Aşağıdaki talimatları açıkça anlamadan ürünü kurmayın ve devreye almayın.
	it	Montare il prodotto e metterlo in funzione solo se si sono comprese appieno le seguenti istruzioni.			

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler”:

- VK1001 Standard Response Upright Sprinkler K5.6 (80.6)
- VK2001 Standard Response Upright Sprinkler K8.0 (115)
- VK2002 Standard Response Upright Sprinkler K8.0 (115)
- VK3001 Quick Response Upright Sprinkler K5.6 (80.6)
- VK3501 Quick Response Upright Sprinkler K8.0 (115)
- VK3502 Quick Response Upright Sprinkler K8.0 (115)
- OTHER APPLICABLE DOCUMENTS

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler refer to the appropriate *Technical Data Sheet*.

3. TRANSPORT AND HANDLING

⚠ WARNING

A damaged or compromised sprinkler poses the risk of fatal consequences.

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

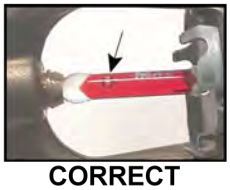
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal position while observing the bulb to see the bubble.
- NEVER use a sprinkler that has been dropped or damaged.
- ALWAYS Protect the sprinkler from mechanical damage during storage, transport, and handling.
- NEVER use sprinklers that have been painted by anyone other than the manufacturer.
- ALWAYS protect sprinklers from being painted during installation or replacement in accordance with the installation standards.
- NEVER clean sprinklers with anything other than 7 psi or lower compressed air.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- Destroy every damaged or compromised sprinkler.

NOTICE

Protect sprinklers during transport and handling.

- ALWAYS handle the sprinkler with care.
- ALWAYS keep the protective cap on the sprinkler during transport and handling.
- NEVER remove the protective cap until the fire sprinkler system is placed in service and the potential for mechanical damage no longer exists.
- ALWAYS protect the sprinkler from direct sunlight during transport and handling.
- ALWAYS store sprinkler in a cool, dry, protected area.
- ALWAYS use original manufacturer's shipping containers.
- NEVER store a sprinkler loose in a box, bin, bucket, or other type of container.
- ALWAYS keep the sprinkler separated from other sprinklers.
- NEVER allow metal parts to contact the sprinkler operating elements.

NOTE: If the glass bulb included on the sprinkler has been exposed to ultraviolet light, the color inside the bulb may fade. This color change does not affect the operation of the sprinkler.



CORRECT
(Bulb intact, bubble visible)

CORRECT
(Protective caps in place)

CORRECT
Container

INCORRECT
(bulb cracked, fluid missing)

INCORRECT
(Protective caps not in place)

INCORRECT
(Stored loose in a box)

4. INSTALLATION

⚠ WARNING

Installation by insufficiently qualified personnel poses the risk of fatal consequences.

- This sprinkler must be installed properly by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ CAUTION

Cutting Hazard.

Sprinklers, accessories, cabinets, and packaging can have sharp edges that can cause cuts.

- Wear appropriate personal protective equipment (gloves) while handling product.

NOTICE

If the sprinkler will be installed into an IS-W2 InstaSeal™ fitting, refer to F_021123 or F_032219 (CPVC InstaSeal™ adapter) for the proper installation instructions.

Optional Guards, Shields, and Escutcheons: If the sprinkler shall be installed together with a guard, shield, or escutcheon refer to the applicable documents for the products used.

1. Install all required piping in the intended installation location.
2. Verify that the sprinkler model/style, K-factor, temperature rating, and response characteristics are appropriate for the intended installation location. See Table 1 and Figure 4.
3. Inspect the sprinkler for damage. Destroy every damaged or compromised sprinkler.
   The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:
   - Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
   - Sprinklers that have been field painted, caulked, or mechanically damaged.
   - Sprinklers showing signs of corrosion.
4. Verify that the sprinkler is protected with the protective cap or clip.
5. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only. Do not allow a build-up of compound inside the sprinkler inlet (Figure1).

Figure – 1

6. **NOTICE: Do not use the deflector to start threading the sprinkler into a fitting. Use ONLY the approved wrench to install the sprinkler. Refer to the sprinkler's *Technical Data Sheet*.**

   Carefully slide the proper wrench onto the wrench flats (Figure 2).

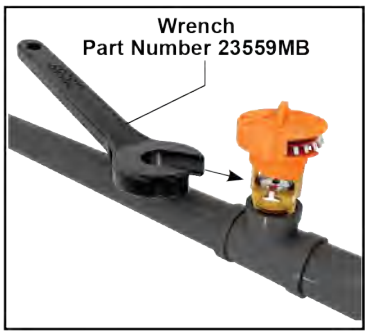


Figure – 2

7. **NOTICE: Over-tightening the sprinkler can cause permanent damage. For 1/2" NPT (or 15 mm BSPT) sprinkler, tighten up to a maximum torque of 14 ft-lbs (19 Nm). For 3/4" NPT (or 20 mm BSPT) sprinkler, tighten up to a maximum of 20 ft-lbs (27,1 Nm).**
   Tighten the sprinkler as necessary (Figure 3). If applicable, install a sprinkler guard and water shield.

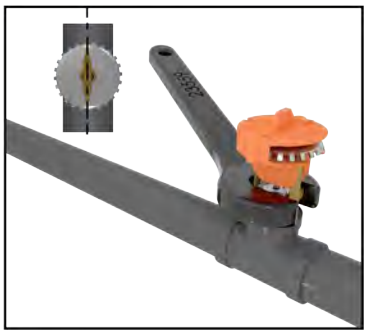


Figure – 3

8. **NOTICE: Sprinkler protective caps/clips must be removed from the sprinkler before placing the system in service. Test the entire sprinkler system.**
   Refer to the applicable system documentation, regulations, and standards to ensure compliance.

Table 1: Sprinkler Markings

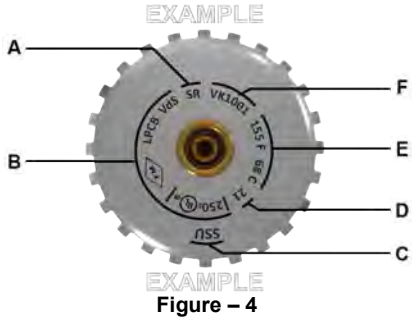
Ref	Parameter	
A	Response type	
B	Listings and approvals	
C	Sprinkler type	
D	Manufacture date	
E	Nominal temperature rating	
F	Manufacturer's Sprinkler Identification Number (SIN)	

Figure – 4

5. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L–4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking–emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

VIKING®	Operation and Maintenance Instructions	Model XT-1 Sprinklers

1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler” (SR=Standard Response, QR=Quick Response):

- VK1001 SR Upright Sprinkler K5.6 (80.6)
- VK2001 SR Upright Sprinkler K8.0 (115)
- VK2002 SR Upright Sprinkler K8.0 (115)
- VK3001 QR Upright Sprinkler K5.6 (80.6)
- VK3501 QR Upright Sprinkler K8.0 (115)
- VK3502 QR Upright Sprinkler K8.0 (115)
- VK1021 SR Pendent Sprinkler K5.6 (80.6)
- VK2021 SR Pendent Sprinkler K8.0 (115)
- VK2022 SR Pendent Sprinkler K8.0 (115)
- VK3021 QR Pendent Sprinkler K5.6 (80.6)
- VK3521 QR Pendent Sprinkler K8.0 (115)
- VK3522 QR Pendent Sprinkler K8.0 (115)
- VK1181 SR Conventional Sprinkler K5.6 (80.6)
- VK1201 SR Conventional Sprinkler K8.0 (115)
- VK1202 SR Conventional Sprinkler K8.0 (115)
- VK3101 QR Conventional Sprinkler K5.6 (80.6)
- VK3541 QR Conventional Sprinkler K8.0 (115)
- VK3542 QR Conventional Sprinkler K8.0 (115)

⚠ WARNING

Cancer and Reproductive Harm www.P65Warning.ca.gov

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler, refer to the appropriate Technical Data Sheet. In case an installed sprinkler needs to be replaced, refer to the appropriate Handling and Installation Instructions for the installation of the new sprinkler.

3. MAINTAINING OPERATIONAL READINESS

Functionality

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to control or extinguish the fire.

⚠ WARNING

This section contains important safety information. Read and follow all information.

Damaged or Compromised Sprinklers

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

- NEVER clean, paint, or caulk sprinklers.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- NEVER expose sprinklers to temperatures exceeding the maximum allowed ambient ceiling temperature. See the Technical Data Sheet.
- ALWAYS replace a compromised or damaged sprinkler.
- NEVER attempt to repair or reassemble a sprinkler.
- ALWAYS replace operated sprinklers and cover assemblies and sprinklers exposed to corrosive products of combustion.
- Replacement of sprinklers must only be performed following the instructions in section 4.

The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:

- Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
- Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged.
- Sprinklers showing signs of extraordinary corrosion.

Obstructions and obstacles

Obstructions and obstacles may compromise sprinkler discharge patterns which are critical for proper fire protection.

- NEVER attach items to sprinklers or hang items from the ceiling in an area protected with sprinklers.
- NEVER install walls in areas protected with sprinklers without having a specialized company verifying the design of the sprinkler system.
- ALWAYS remove obstructions and obstacles to sprinkler spray patterns.

Sprinkler systems that have been subjected to a fire

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible.

- After an event of fire, the entire sprinkler system must be inspected for damage and repaired as necessary.
- Refer to the minimum requirements of the Authority Having Jurisdiction for replacement of sprinklers.
- Consider the employment of a fire patrol as long as the sprinkler system is out of service.

Inspections and testing

The owner is responsible for having the sprinklers inspected and tested according to standards of the applicable approval body and to the requirements of the Authority Having Jurisdiction to maintain proper operating condition of the system.

- Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler.

The applicable approval body or Authority Having Jurisdiction may require sprinklers to be replaced after a specified term of service.

- Refer to the standards of the applicable approval body, such as NFPA, FM, VdS, or LPCB, and the requirements of the Authority Having Jurisdiction for detailed inspection, testing and replacements requirements.

Sprinklers removed from the system for testing or for any other purpose must be replaced according to section 4.

4. REMOVAL AND REPLACEMENT

⚠ WARNING

Removal and replacement of sprinklers by insufficiently qualified personnel poses the risk of fatal consequences in case of fire.

- Removal or replacement of sprinklers must be performed by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ WARNING

Removal and replacement of sprinklers will temporarily eliminate the fire protection capabilities of the sprinkler system.

- Consider the employment of a fire patrol in the affected area.
- Prior to proceeding, notify all Authorities Having Jurisdiction.

⚠ WARNING

Re-installation of a removed sprinkler may compromise the operational safety of the sprinkler system.

- NEVER reinstall a removed sprinkler.
- ALWAYS use new sprinklers for replacement.

1. Select new sprinklers with identical performance characteristics as well as respective accessories such as escutcheons, cover plates, and protective caps. A stocked spare sprinkler cabinet may be provided for this purpose on site.
2. According to appropriate system description and/or valve instructions, remove the system from service, drain all water, and relieve all pressure on the piping.
3. Only for flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly of the old sprinkler by gently unthreading or pulling it off the sprinkler body (depends on the sprinkler model used).
4. Use the proper sprinkler wrench for the old sprinkler according to its Technical Data Sheet.
5. Only for flush and concealed style sprinklers, but not for domed concealed sprinklers: Replace the plastic protective cap over the old sprinkler and fit the wrench over the cap.
6. Use the wrench to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
7. Install the new sprinkler by following its Handling and Installation Instructions.
8. Place the system back in service and secure all valves.
9. Check for and repair all leaks.

5. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.

6. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L–4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking–emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

VIKING®

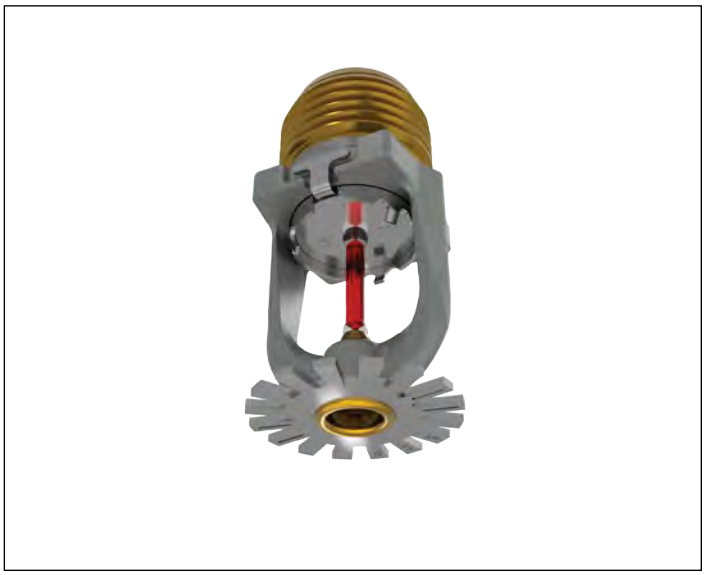
TECHNICAL DATA SHEET

VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)

1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler”:

VK3021: Quick Response, Standard Coverage, Pendent, K5.6 (80.6) Sprinkler.



2. INTENDED USE

The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements.
2. the recognized design and installations standards issued, for example NFPA, FM, EN, VdS, or LPCB.
3. the latest revisions of all applicable manufacturer’s documentation.

Governmental codes, ordinances, and standards may apply and may differ from one another.

⚠ WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

Refer to section 5 for details and requirements that must be followed.

cULus Listed

VdS Approved

FM Approved

UKCA Approved

CE

MED Approved

LPCB Approved

China Approved

4. TECHNICAL SPECIFICATIONS

4.1 Definitions

Standard Pendent Sprinkler: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. These sprinklers are marked “SP/RP” (Standard Pendent/Recessed Pendent). When a standard pendent sprinkler is used with a recessed escutcheon, it becomes a recessed pendent sprinkler.

Recessed Sprinkler: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. **NOTICE: Do not recess any sprinkler not listed or approved for use with the escutcheon. Refer to Section 5.**

Corrosion-Resistant Sprinkler: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers. Sprinklers can be ordered as corrosion-resistant sprinklers and can be used with escutcheons when allowed by the approval body.

4.2 Ratings and Physical Characteristics

Parameter	Value
Minimum operating pressure	7 psi (0.5 bar)
Maximum rated pressure	UL: 250 psi (17 bar) FM and CE: 175 psi (12 bar)
Factory tested pressure	500 psi (35 bar)
Thread size	1/2” NPT or 15 mm BSPT
Nominal K–factor	5.6 U.S. (80.6)
Minimum temperature rating (glass bulb)	–65 °F (–55 °C)

4.3 Markings and Dimensions

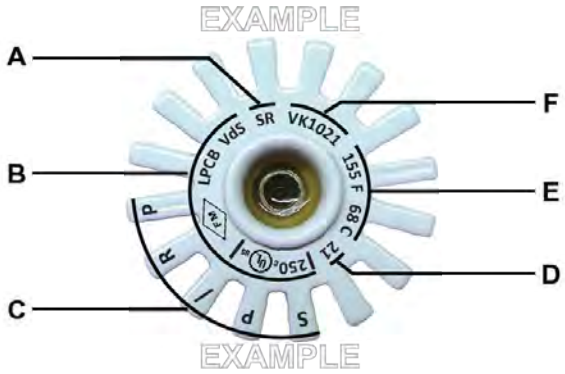


Figure – 1 Markings

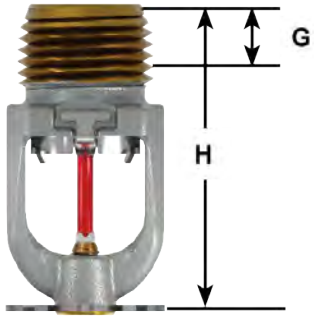


Figure – 2: Dimensions

Ref	Description	Value
A	Response type	QR: Quick Response
B	Listings and Approvals	See sections 3 and 5
C	Sprinkler type	SP/RP: Standard Pendent/Recessed Pendent
D	Manufacture date (year)	See marking
E	Nominal temperature rating	See marking
F	Manufacturers Sprinkler Identification Number (SIN)	VK3021
G	Nominal pipe engagement	7/16” (11 mm)
H	Height	1-15/16” (49 mm)

4.4 Materials of Construction

NOTICE: Do not disassemble the sprinkler.

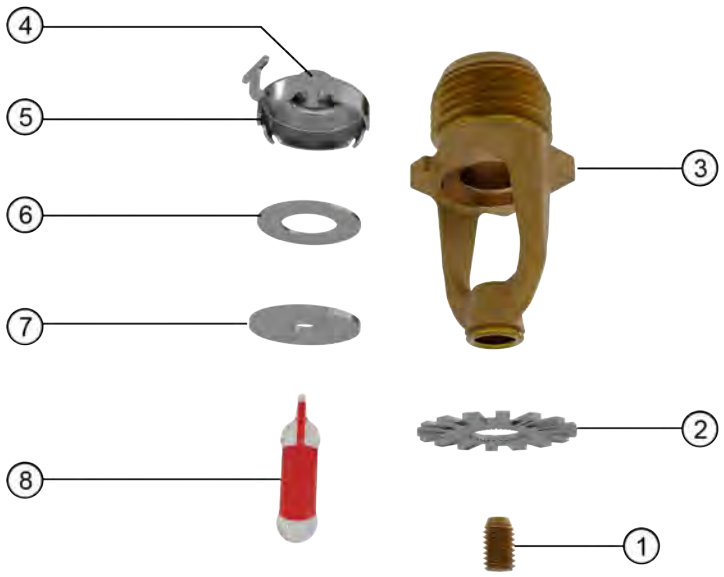


Figure – 3 Sprinkler Components

Ref	Description	Material
1	Compression screw	Brass CW612N, CW508L, UNS–C36000 or UNS–C26000
2	Deflector	Stainless steel UNS S30400
3	Sprinkler body	CW602N, UNS–C84400 or QM brass
4	Pip cap seal	Polytetrafluoroethylene (PTFE)
5	Pip cap shell	Stainless steel UNS–S44400
6	Belleville spring	Nickel alloy
7	Pip cap disc	Stainless steel UNS–S30100
8	Bulb	Glass, nominal 0.10" (3 mm) diameter

5. LISTING AND APPROVAL DESIGN REQUIREMENTS

5.1 Listing and Approval Specifications

Sprinkler Base Part Number[1]	Thread Size		Approval Body							
	NPT	BSPT	cULus	FM	CE	LPCB	VdS	UKCA	MED	China
Maximum WWP PSI (bar) ⟶			**250 (17)**	**175 (12)**						
23870	1/2"	—	A1, A2X, A3Y	A1, B2X, B3Y	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y	—
23882	—	15 mm	A1, A2X, A3Y	A1, B2X, B3Y	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y	—
26756	—	15 mm	C4	C4	—	—	—	—	—	C4

Approval Specification (Temperature Ratings) Key:

A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)
B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
C = 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)

Approval Specification (Finishes) Key:

1 = Brass, Chrome, White Polyester [2,3], Black Polyester[2,3], and ENT [3,4]
2 = Brass, Chrome, White Polyester [2,3], and Black Polyester [2,3]
3 = ENT [3,4]
4 = Chrome

Approval Specification (Escutcheons) Key:

X = Installed with Viking Recessed Escutcheons Models E-1, E-2, E-3, NP-1, NP-2, and NP-3, or Viking Standard Surface Mounted Escutcheons
Y = Installed with Viking Recessed Escutcheons Models E-1 and NP-1, or Viking Standard Surface Mounted Escutcheons

1 For complete part number, refer to Viking's current price list.

2 For White Polyester and Black Polyester, other colors are available upon request and will carry the same Listings and Approvals as the standard colors.

3 cULus Listed as corrosion-resistant.

4 FM Approved as corrosion-resistant.

5.2 cULus Listing Requirements and Details

The sprinkler is cULus Listed as indicated in Table 5.1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. This sprinkler is designed for use in light and ordinary hazard occupancies. Venting is not required.

5.3 FM Approval Requirements and Details

The sprinkler is FM Approved as quick response Non–Storage pendent sprinkler as indicated in the FM Approval Guide. The sprinkler is also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of –3 psi (–207 mbar). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling. For specific application and installation requirements, refer to the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2–0).

5.4 Additional Approval Requirements and Details

Refer to Table 5.1 for approved configurations allowed by each of the following approvals.

- CE CPR: Standard EN 12259-1:1999 +A3:2006; Declaration of Performance DOP_VK3021.
- LPCB: Standard EN 12259-1:1999 +A3:2006; Certificate Number 096m.
- VdS: Standard EN 12259-1:1999 +A3:2006; Certificate Number G 422006.
- UKCA: Standard EN12259-1:1999 +A3:2006; Declaration of Conformity UKCA DOC_S5048.
- MED: Standard EN 12259-1:1999 +A3:2006; Declaration of Conformity DOC_MED_XT1.
- China Approval: Approved according to China GB standard.

For specific application and installation requirements, refer to the latest applicable governmental codes, ordinances, and standards for the installation location.

5.5 Corrosion-Resistant Coatings

The corrosion-resistant coatings have passed the standard corrosion tests required by the approving agencies and are listed and approved as indicated in Table 5.1. These tests do not represent all possible corrosive environments. The Electro-less Nickel PTFE (ENT) finish passed the UL 199 thirty-day corrosion test and is cULus listed and FM Approved as corrosion-resistant. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.

Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment. The ENT finish has not been evaluated for environments containing chlorine, such as indoor swimming pools. It is not recommended for these applications.

5.6 Sprinkler Guards and Water Shields

The sprinkler is approved for use with the Model XG Sprinkler Guard and the Model F-1 water shield. Refer to the Guards and Water Shields for XT1 Sprinklers technical data sheet for more information.

5.7 Escutcheons

The sprinkler is approved for use with various styles of Viking escutcheons. Specific installation dimensions apply that must be observed. Refer to the sprinkler's Handling and Installation instructions for more information.

5.8 Available Temperature Ratings

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

6. ORDERING PROCEDURE

6.1 Sprinkler

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to section 5):
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.

NOTE: For Polyester, insert the desired temperature rating suffix where the dash (–) is shown.

EXAMPLE: 23870MB/W = VK3021 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

NOTE: When ordering sprinklers that will be installed into InstaSeal® CPVC fittings, refer to Form No. F_032219 for installation instructions. Use the InstaSeal® alignment tool and NOT the sprinkler wrench for InstaSeal® sprinkler installations.

1. Sprinkler Base Part Number	
See Section 5	
23870	1/2” NPT
23882	15 mm BSPT
26756*	15 mm BSPT

*Only for China

2. Finish	
Description	Suffix
Brass	A
Chrome	F
White Polyester	M–/W
Black Polyester	M–/B
ENT	JN

3. Temperature Rating			
Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
135 °F (57 °C)	Orange	100 °F (38 °C)	A
155 °F (68 °C)	Red	100 °F (38 °C)	B
175 °F (79 °C)	Yellow	150 °F (65 °C)	D
200 °F (93 °C)	Green	150 °F (65 °C)	E
286 °F (141 °C)	Blue	225 °F (107 °C)	G
OPEN	—	—	Z

6.2 Sprinkler Accessories

Figure – 4: Sprinkler Accessories

Image Reference	Part Number	Description
1)	23559MB	Straight wrench: required for proper installation
2)	23560MB	Recessed socket wrench
3)	01724A	Sprinkler cabinet: holds up to 6 sprinklers
4)	01725A	Sprinkler cabinet: holds up to 12 sprinklers (not shown)
5)	06419A	Model E-1 Slip-on style recessed escutcheon
	07902	Model E-1 Slip-on style recessed escutcheon (stainless steel)
6)	11038	Model E-2 Threaded recessed escutcheon
7)	18347	Model E-3 Threaded recessed escutcheon (large diameter outer cup)
8)	01960A	Large standard flat surface mount escutcheon (steel)
	09488	Large standard flat surface mount escutcheon (stainless steel)
9)	26676	InstaSeal® alignment tool
10)	02960A	Small standard flat surface mount escutcheon (steel)
	07526	Small standard flat surface mount escutcheon (stainless steel)
11)	01961B	Large standard raised surface mount escutcheon (brass)

7. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L–4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking–emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

Handling and Installation Instructions

Model XT-1 Pendent Sprinklers

	bg	Инсталирайте и пуснете продукта в експлоатация само ако следната инструкция е ясно разбрана.		**lv**	Produkta iemontēšanu un ekspluatācijas sākšanau veikt tikai tad, ja dotā instrukcija ir pilnībā saprasta.
	cs	Namontujte a spusťte do provozu produkt pouze tehdy, když jste jasně pochopili tento návod.		**lt**	Produktą montuokite ir pradėkite eksploatuoti tik tuomet, jei aiškiai suprantate šią instrukciją.
	de	Du må kun montere og idriftsætte produktet, hvis du har forstået følgende vejledning til fulde.		**mt**	Installa u ħaddem il-prodott biss jekk l-istruzzjonijiet li ġejjin jinftiehmu b'mod ċar.
	de	Produkt nur einbauen und in Betrieb nehmen, wenn die nachfolgende Anleitung klar verstanden wird.		**nl**	Product alleen installeren en in gebruik nemen, als de volgende instructies begrepen zijn.
	el	Η εγκατάσταση και θέση σε λειτουργία του προϊόντος επιτρέπονται μόνο εάν οι ακόλουθες οδηγίες έχουν γίνει κατανοητές.		**no**	Ikke installer og ta i bruk produktet uten at følgende anvisninger er tydelig forstått.
	en	Do not install and commission the product unless you have clearly understood the instructions below.		**pl**	Produkt należy montować i uruchamiać tylko wtedy, gdy poniższe instrukcje są w pełni zrozumiałe.
	es	Instalar el producto y ponerlo en funcionamiento solo cuando se hayan comprendido claramente las siguientes instrucciones.		**pt**	Instalar e colocar o produto em funcionamento somente se as instruções a seguir forem claramente compreendidas.
	et	Paigaldage toode ja kasutage seda ainult siis, kui saate alljärgnevast juhendist selgelt aru.		**ro**	Montați produsul și puneți-l în funcțiune numai dacă instrucțiunea următoare este înțeleasă clar.
	fi	Tuotteen saa asentaa ja ottaa käyttöön vain, jos jäljempänä oleva ohje ymmärretään selvästi.		**ru**	Не устанавливайте и не принимайте оборудование в эксплуатацию, если вы четко не поняли инструкции ниже
	fr	N'installer et ne mettre en service le produit que si les instructions suivantes ont été clairement comprises.		**sk**	Namontujte a spustite do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
	ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigeann tu na treoracha thios go soileir.		**sl**	Izdelek vgradite in zaženite samo, če ste dobro razumeli navodila v nadaljevanju.
	hr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumjeli donje upute.		**sr**	Не инсталирајте и не пуштајте производ у рад ако нисте јасно разумели упутства у наставку.
	hu	Csak akkor építse be a terméket és helyezze üzembe, ha a következő útmutatót egyértelműen megértette.		**sv**	Montera och driftsätt produkten endast om du förstår den efterföljande instruktionen.
	Is	Settu ekki upp eða taktu vöruna í notkun nema þú hafir skilið greinilega leiðbeiningarnar hér að neðan.		**tr**	Aşağıdaki talimatları açıkça anlamadan ürünü kurmayın ve devreye almayın.
	it	Montare il prodotto e metterlo in funzione solo se si sono comprese appieno le seguenti istruzioni.			

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler”:

- VK1021 Standard Response Pendent Sprinkler K5.6 (80.6)
- VK2021 Standard Response Pendent Sprinkler K8.0 (115)
- VK2022 Standard Response Pendent Sprinkler K8.0 (115)
- VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)
- VK3521 Quick Response Pendent Sprinkler K8.0 (115)
- VK3522 Quick Response Pendent Sprinkler K8.0 (115)

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler refer to the appropriate *Technical Data Sheet*.

3. TRANSPORT AND HANDLING

⚠ WARNING

A damaged or compromised sprinkler poses the risk of fatal consequences.

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

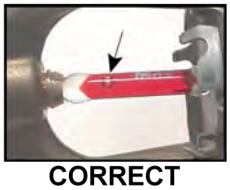
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal position while observing the bulb to see the bubble.
- NEVER use a sprinkler that has been dropped or damaged.
- ALWAYS Protect the sprinkler from mechanical damage during storage, transport, and handling.
- NEVER use sprinklers that have been painted by anyone other than the manufacturer.
- ALWAYS protect sprinklers from being painted during installation or replacement in accordance with the installation standards.
- NEVER clean sprinklers with anything other than 7 psi or lower compressed air.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- Destroy every damaged or compromised sprinkler.

NOTICE

Protect sprinklers during transport and handling.

- ALWAYS handle the sprinkler with care.
- ALWAYS keep the protective cap on the sprinkler during transport and handling.
- NEVER remove the protective cap until the fire sprinkler system is placed in service and the potential for mechanical damage no longer exists.
- ALWAYS protect the sprinkler from direct sunlight during transport and handling.
- ALWAYS store sprinkler in a cool, dry, protected area.
- ALWAYS use original manufacturer's shipping containers.
- NEVER store a sprinkler loose in a box, bin, bucket, or other type of container.
- ALWAYS keep the sprinkler separated from other sprinklers.
- NEVER allow metal parts to contact the sprinkler operating elements.

NOTE: If the glass bulb included on the sprinkler has been exposed to ultraviolet light, the color inside the bulb may fade. This color change does not affect the operation of the sprinkler.



CORRECT
(Bulb intact, bubble visible)

CORRECT
(Protective caps in place)

CORRECT
Container

INCORRECT
(bulb cracked, fluid missing)

INCORRECT
(Protective caps not in place)

INCORRECT
(Stored loose in a box)

4. INSTALLATION

⚠ WARNING

Installation by insufficiently qualified personnel poses the risk of fatal consequences.

- This sprinkler must be installed properly by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ WARNING

Incorrect recessed installation poses the risk of fatal consequences.

- For recessed applications, this sprinkler must be installed according to the dimensions shown in Figure 1.

⚠ CAUTION

Cutting Hazard.

Sprinklers, accessories, cabinets, and packaging can have sharp edges that can cause cuts.

- Wear appropriate personal protective equipment (gloves) while handling product.

NOTICE

If the sprinkler will be installed into an IS-W2 InstaSeal™ fitting, refer to F_021123 or F_032219 (CPVC InstaSeal™ adapter) for the proper installation instructions.

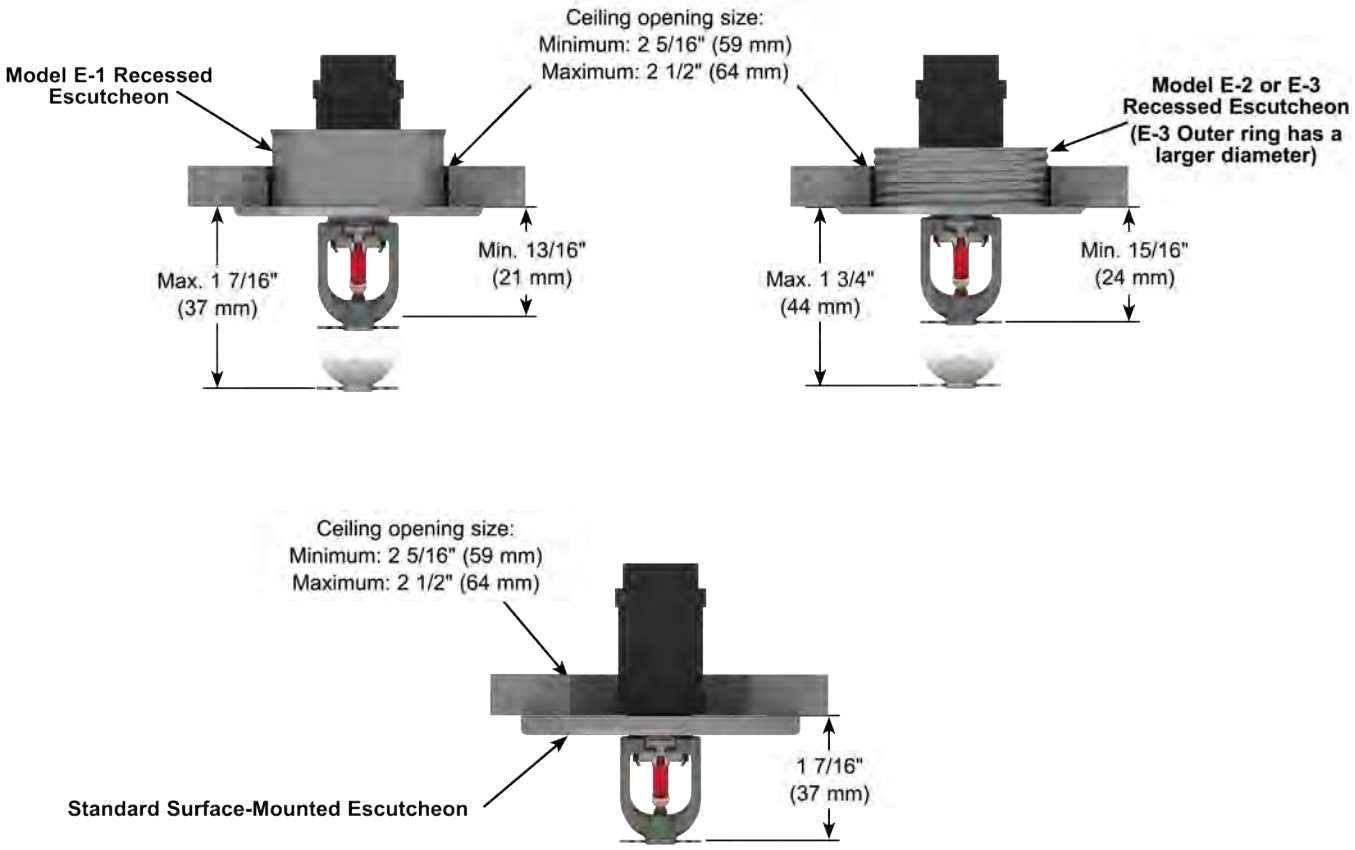


Figure – 1 Installation Dimensions with Viking Escutcheons

Optional Guards, Shields, and Escutcheons: If the sprinkler shall be installed together with a guard, shield, or escutcheon refer to the applicable documents for the products used.

1. Install all required piping in the intended installation location.
2. Verify that the sprinkler model/style, K-factor, temperature rating, and response characteristics are appropriate for the intended installation location. See Table 1 and Figure 5.
3. Inspect the sprinkler for damage. Destroy every damaged or compromised sprinkler.
   The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:
   - Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
   - Sprinklers that have been field painted, caulked, or mechanically damaged.
   - Sprinklers showing signs of corrosion.
4. Verify that the sprinkler is protected with the protective cap or clip.
5. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only. Do not allow a build-up of compound inside the sprinkler inlet (Figure 2).

Figure – 2

6. If applicable, Install the escutcheon on the sprinkler threads.
7. **NOTICE: Do not use the deflector to start threading the sprinkler into a fitting. Use ONLY the approved wrench to install the sprinkler. Refer to the sprinkler's *Technical Data Sheet*.**

   a) **For recessed sprinkler wrench (Figure 3a)**: Carefully slide the wrench sideways around the protective cap and push upwards to engage with the sprinkler wrench flats.

   b) **For the standard sprinkler wrench (Figure 3b)**: Carefully slide the wrench onto the sprinkler wrench flats.

a b

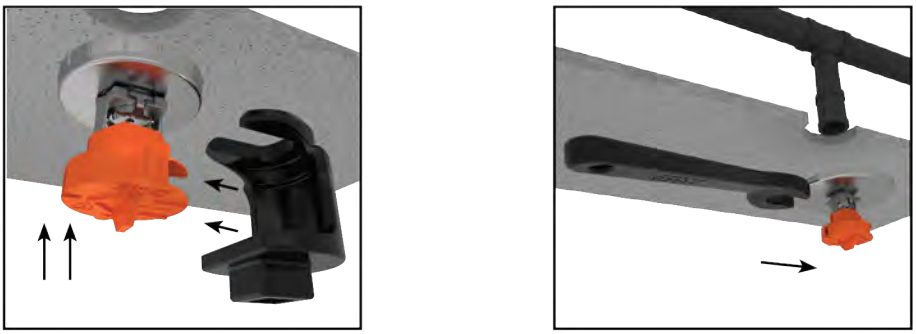


Figure – 3

8. **NOTICE: Over-tightening the sprinkler can cause permanent damage. For 1/2" NPT (or 15 mm BSPT) sprinkler, tighten up to a maximum torque of 14 ft-lbs (19 Nm). For 3/4" NPT (or 20 mm BSPT) sprinkler, tighten up to a maximum of 20 ft-lbs (27,1 Nm).**
Tighten the sprinkler as necessary (Figure 4a and 4b). If applicable, install a sprinkler guard and water shield.

a b

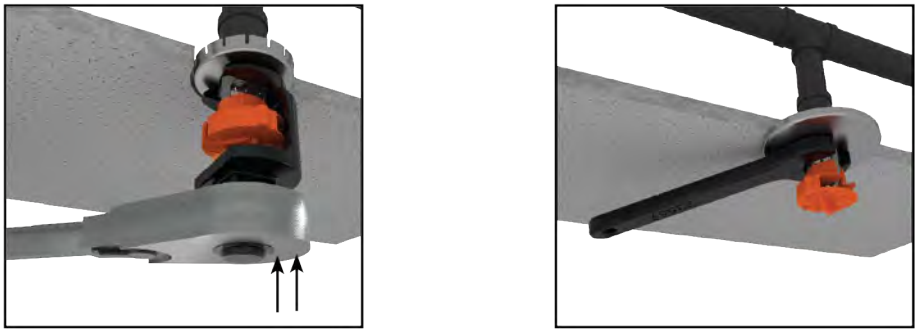


Figure – 4

9. **NOTICE: Sprinkler protective caps/clips must be removed from the sprinkler before placing the system in service. Test the entire sprinkler system.**
Refer to the applicable system documentation, regulations, and standards to ensure compliance.

Table 1: Sprinkler Markings

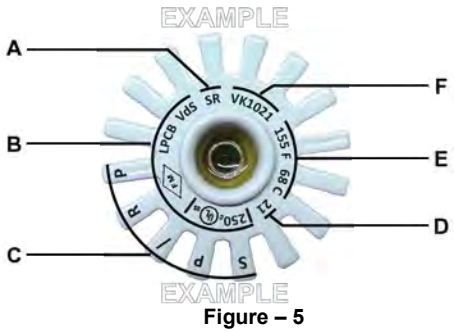
Ref	Parameter	
A	Response type	
B	Listings and approvals	
C	Sprinkler type	
D	Manufacture date	
E	Nominal temperature rating	
F	Manufacturer's Sprinkler Identification Number (SIN)	

Figure – 5

5. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L–4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking–emea.com

Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061
Fax: (+65) 6 278 4609
vikingAPAC@vikingcorp.com

VIKING®	Operation and Maintenance Instructions	Model XT-1 Sprinklers

1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler” (SR=Standard Response, QR=Quick Response):

- VK1001 SR Upright Sprinkler K5.6 (80.6)
- VK2001 SR Upright Sprinkler K8.0 (115)
- VK2002 SR Upright Sprinkler K8.0 (115)
- VK3001 QR Upright Sprinkler K5.6 (80.6)
- VK3501 QR Upright Sprinkler K8.0 (115)
- VK3502 QR Upright Sprinkler K8.0 (115)
- VK1021 SR Pendent Sprinkler K5.6 (80.6)
- VK2021 SR Pendent Sprinkler K8.0 (115)
- VK2022 SR Pendent Sprinkler K8.0 (115)
- VK3021 QR Pendent Sprinkler K5.6 (80.6)
- VK3521 QR Pendent Sprinkler K8.0 (115)
- VK3522 QR Pendent Sprinkler K8.0 (115)
- VK1181 SR Conventional Sprinkler K5.6 (80.6)
- VK1201 SR Conventional Sprinkler K8.0 (115)
- VK1202 SR Conventional Sprinkler K8.0 (115)
- VK3101 QR Conventional Sprinkler K5.6 (80.6)
- VK3541 QR Conventional Sprinkler K8.0 (115)
- VK3542 QR Conventional Sprinkler K8.0 (115)

⚠ WARNING

Cancer and Reproductive Harm www.P65Warning.ca.gov

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler, refer to the appropriate Technical Data Sheet. In case an installed sprinkler needs to be replaced, refer to the appropriate Handling and Installation Instructions for the installation of the new sprinkler.

3. MAINTAINING OPERATIONAL READINESS

Functionality

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to control or extinguish the fire.

⚠ WARNING

This section contains important safety information. Read and follow all information.

Damaged or Compromised Sprinklers

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

- NEVER clean, paint, or caulk sprinklers.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- NEVER expose sprinklers to temperatures exceeding the maximum allowed ambient ceiling temperature. See the Technical Data Sheet.
- ALWAYS replace a compromised or damaged sprinkler.
- NEVER attempt to repair or reassemble a sprinkler.
- ALWAYS replace operated sprinklers and cover assemblies and sprinklers exposed to corrosive products of combustion.
- Replacement of sprinklers must only be performed following the instructions in section 4.

The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:

- Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
- Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged.
- Sprinklers showing signs of extraordinary corrosion.

Obstructions and obstacles

Obstructions and obstacles may compromise sprinkler discharge patterns which are critical for proper fire protection.

- NEVER attach items to sprinklers or hang items from the ceiling in an area protected with sprinklers.
- NEVER install walls in areas protected with sprinklers without having a specialized company verifying the design of the sprinkler system.
- ALWAYS remove obstructions and obstacles to sprinkler spray patterns.

Sprinkler systems that have been subjected to a fire

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible.

- After an event of fire, the entire sprinkler system must be inspected for damage and repaired as necessary.
- Refer to the minimum requirements of the Authority Having Jurisdiction for replacement of sprinklers.
- Consider the employment of a fire patrol as long as the sprinkler system is out of service.

Inspections and testing

The owner is responsible for having the sprinklers inspected and tested according to standards of the applicable approval body and to the requirements of the Authority Having Jurisdiction to maintain proper operating condition of the system.

- Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler.

The applicable approval body or Authority Having Jurisdiction may require sprinklers to be replaced after a specified term of service.

- Refer to the standards of the applicable approval body, such as NFPA, FM, VdS, or LPCB, and the requirements of the Authority Having Jurisdiction for detailed inspection, testing and replacements requirements.

Sprinklers removed from the system for testing or for any other purpose must be replaced according to section 4.

4. REMOVAL AND REPLACEMENT

⚠ WARNING

Removal and replacement of sprinklers by insufficiently qualified personnel poses the risk of fatal consequences in case of fire.

- Removal or replacement of sprinklers must be performed by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ WARNING

Removal and replacement of sprinklers will temporarily eliminate the fire protection capabilities of the sprinkler system.

- Consider the employment of a fire patrol in the affected area.
- Prior to proceeding, notify all Authorities Having Jurisdiction.

⚠ WARNING

Re-installation of a removed sprinkler may compromise the operational safety of the sprinkler system.

- NEVER reinstall a removed sprinkler.
- ALWAYS use new sprinklers for replacement.

1. Select new sprinklers with identical performance characteristics as well as respective accessories such as escutcheons, cover plates, and protective caps. A stocked spare sprinkler cabinet may be provided for this purpose on site.
2. According to appropriate system description and/or valve instructions, remove the system from service, drain all water, and relieve all pressure on the piping.
3. Only for flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly of the old sprinkler by gently unthreading or pulling it off the sprinkler body (depends on the sprinkler model used).
4. Use the proper sprinkler wrench for the old sprinkler according to its Technical Data Sheet.
5. Only for flush and concealed style sprinklers, but not for domed concealed sprinklers: Replace the plastic protective cap over the old sprinkler and fit the wrench over the cap.
6. Use the wrench to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
7. Install the new sprinkler by following its Handling and Installation Instructions.
8. Place the system back in service and secure all valves.
9. Check for and repair all leaks.

5. DISPOSAL

At end of use the product described here should be disposed of via the national recycling system.

6. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968–9501
Fax: 269–818–1680
Technical Services: 1–877–384–5464
techsvcs@vikingcorp.com

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21, Z.I, Haneboesch
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VIKING®	TECHNICAL DATA	STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Viking Standard and Quick Response Concealed Pendent Sprinkler VK4621 is a small thermosensitive, glass-bulb sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired. The low-profile cover assemblies provide up to ½" (13 mm) of vertical adjustment.

Features:

- K5.6 (80.6 metric).
- Quick response glass bulb operating element.
- Integral threaded adapter cup accepts push-on or thread-on cover plates.
- Low-profile, small diameter, removeable cover plates offer almost flush appearance upon installation and allow ease of maintenance.
- Protective cap prevents damage during installation and finishing and keeps errant overspray from coating internal parts.
- Various finishes available to meet design requirements.
- Optional Electroless Nickel PTFE (ENT) coating provides corrosion resistance (see Approval Chart).

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Class 2015
Also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207mbar)

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

Refer to the Approval Charts and Design Criteria on for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:
Minimum Operating Pressure: 7 psi (0.5 bar)
Maximum Working Pressure: FM - 175 psi (12 bar). UL - 250 psi (17.2 bar)
Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" NPT or BSPT
Nominal K-Factor: 5.6 U.S. (80.6 metric*)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)

* Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:
Sprinkler body: QM Brass
Deflector: Phosphor Bronze UNS-C51000
Deflector Pins: Stainless Steel UNS-S43000
Pip Cap and Insert Assembly: Copper UNS-C11000, SS UNS-S30400 and SS UNS-S31600
Compression Screw: UNS-C36000
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Cover Adapter: Cold Rolled Steel JIS G3141 and Carbon Steel UNS-G10100 (per JIS G3141)
Shipping Cap: High Density Polyethylene

Cover Plate Materials:
Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800 or Stainless Steel UNS-S30400
Spring: Beryllium Nickel
Solder: Eutectic

Ordering Information: Refer to Tables 1 and 2.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards and installation instructions in this document.

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5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches, releasing the deflector. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the deflector, forming a uniform spray pattern over a specific area of coverage determined by the water supply pressure at the sprinkler to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: ORDERING INFORMATION

Instructions:
(1) Select a Sprinkler Base Part Number
(2) Add the suffix for the desired Finish
(3) Add the suffix for the desired Sprinkler Temperature Rating
(4) Order a cover plate (refer to Table 2)

Example:
24682AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

Sprinkler Base Part No.	Size		1: Finishes		2: Temperature Ratings				
	NPT	BSPT	Description	Suffix[1]	Sprinkler Temperature Classification	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature[2]	Suffix
24682	1/2"	--	Brass	A	Ordinary	155 °F (68 °C)	Red	100 °F (38 °C)	B
22962	--	1/2"	ENT [3,4,6]	JN	Intermediate	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
					Intermediate	200 °F (93 °C)	Green	150 °F (65 °C)	E

Accessories

Sprinkler Wrenches and Tools (see Figure 1):

A. Installation wrench: 24339[5]
B. Protective cap removal tool: 24340
C. Concealed Cover Plate Installer Tool Part Number: 14412[7] (available since 2007)
D. Large Concealed Cover Plate Installer Tool Part No. 14867[7] (available since 2007)

Sprinkler Cabinet:

Part number 01731A.

Footnotes

1. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. UL Listed as corrosion resistant.
4. The corrosion resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.
5. Require a 3/8" ratchet which is not available from us.
6. FM Approved as a decorative finish.
7. The installer tool is for push-on style cover plates only.

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TABLE 2: COVER PLATE ORDERING INFORMATION

Instructions:
(1) Select a Cover Plate Base Part Number
(2) Add the suffix for the desired Finish
(3) Add the suffix for the required Cover Plate Nominal Rating.

Example:
23190MC/W = 165 °F (74 °C) Temperature Rated 2-3/4" (70 mm) diameter Round Cover Plate with a Painted White finish.

1: Select a Cover Plate Base Part Number[3]						2: Select a Finish	
Thread-On Style			Push-On Style				
Base Part Number	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type	Description	Suffix[5]
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F
23174	3-5/16 (84)	Round	23463	3-5/16 (84)	Round	Brushed Chrome	F-/B
23179	3-5/16 (84)	Square	23482	3-5/16 (84)	Square	Bright Brass	B
23193[4]	2-3/4 (70)	Stainless Steel Round	23455	2-3/4 (70)	Stainless Steel Round	Antique Brass	B-/A
						Brushed Brass	B-/B
23183[4]	3-5/16 (84)	Stainless Steel Round	23473	3-5/16 (84)	Stainless Steel Round	Brushed Copper	E-/B
						Painted White	M-/W
23174-/CR	3-5/16 (84)	Clean Room	23463-/CR	3-5/16 (84)	Clean Room	Painted Ivory	M-/I
23183-/CR	3-5/16 (84)	Stainless Steel Round Clean Room	23473-/CR	3-5/16 (84)	Stainless Steel Round Clean Room	Painted Black	M-/B

3: Temperature Rating Matrix[1,2]				
Cover Plate Nominal Rating (Required)	Temperature Classification	Sprinkler Nominal Rating	Sprinkler Maximum Ambient Ceiling Temperature[2]	Suffix
UL: 135 °F (57 °C) FM: 139° F (59 °C)	Ordinary	155 °F (68 °C)	100 °F (38 °C)	**A**
165 °F (74 °C)	Intermediate	175 °F (79 °C)	150 °F (65 °C)	**C**
165 °F (74 °C)	Intermediate	200 °F (93 °C)	150 °F (65 °C)	**C**

Footnotes

1. The sprinkler temperature rating is stamped on the deflector.
2. Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
4. Stainless Steel versions are not available with any finishes or paint.
5. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.

TECHNICAL DATA

STANDARD AND QUICK RESPONSE CONCEALED PENDENT SPRINKLER VK4621 (K5.6)

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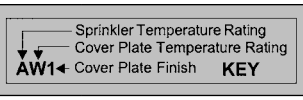
Approval Chart

Concealed Pendent Sprinkler VK4621



Sprinkler Base Part No.[1]	SIN	Thread Size		Nominal K-factor		Maximum Water Working Pressure		Listings and Approvals[3] (Refer also to Design Criteria)	
		NPT	BSPT	U.S.	metric[2]	cULus	FM	cULus[4]	FM
Standard Response Applications									
24682A	VK4621	1/2”	--	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
24682JN[7,8]	VK4621	1/2”	--	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
22962A	VK4621	--	1/2”	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
22962JN[7,8]	VK4621	--	1/2”	5.6	80.6	--	175 psi (12 bar)	--	AV1, BX1, AS2, BT2
Quick Response Applications									
24682A	VK4621	1/2”	--	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
24682JN[7,8]	VK4621	1/2”	--	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
22962A	VK4621	--	1/2”	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--
22962JN[7,8]	VK4621	--	1/2”	5.6	80.6	250 psi (17.2 bar)	--	AV1, BX1, AS2, BT2, AY3, BZ3	--

Sprinkler Temperature Ratings	Cover Plate Assembly Temperature Ratings[5]	Cover Plate Assembly Finishes
A = 155 °F (68 °C) B = 175 °F (79 °C) and 200 °F (93 °C)	S - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved Stainless Steel cover 23193 and 23455, or 23183 and 23473 (large diameter) T - 165 °F (74 °C) Stainless Steel cover 23193 and 23455 or 23183 and 23473 (large diameter) V - 135 °F (57 °C) cULus Listed or 139 °F (59 °C) FM Approved cover 23190 and 23447, 23174 and 23463 (large diameter), or 23179 and 23482 (square cover plate) X - 165 °F (74 °C) cover 23190 and 23447, or 23174 and 23463 (large diameter) Y - 135 °F (57 °C) Clean Room Cover 23174A-/CR and 23463A-/CR or 135 °F (57 °C) Stainless Steel Clean Room Cover 23183A/CR and 23473A/CR Z - 165 °F (74 °C) Clean Room Cover 23174C-/CR and 23463C-/CR	1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted[6] White, Painted[6] Ivory, or Painted[6] Black 2 - Stainless Steel 3 - Polished Chrome, Painted White, Painted Ivory, or Painted Black

Footnotes

1. Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
2. Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
3. This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
4. Listed by Underwriter’s Laboratories for use in the U.S. and Canada.
5. The 135 °F (57 °C) [139 °F (59 °C)] covers have an orange label. The 165 °F (74 °C) covers have a white label.
6. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.
7. cULus Listed as corrosion resistant.
8. FM Approved as a decorative finish.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 2.

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DESIGN CRITERIA - UL

(Also refer to Approval Chart)

cULus Listing Requirements:

Concealed Pendent Sprinkler VK4621 is cULus Listed as quick response for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.

- For hazard occupancies up to and including Ordinary Hazard, Group II.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13. Maximum spacing allowed is 15 ft. (4.6 m).
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

DESIGN CRITERIA - FM

(Also refer to Approval Chart)

FM Approval Requirements:

Viking Concealed Pendent Sprinkler VK4621 is FM Approved as a standard response **Non-Storage** concealed pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

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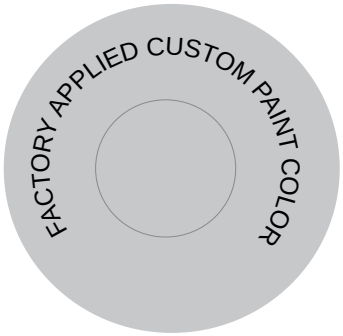
A

Installation Wrench

B

Cap Removal Tool

Figure 1: Sprinkler Wrench and Cap Removal Tool



All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates the custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 2: Identification of Custom Paint

Figure 3: Square Cover Assembly

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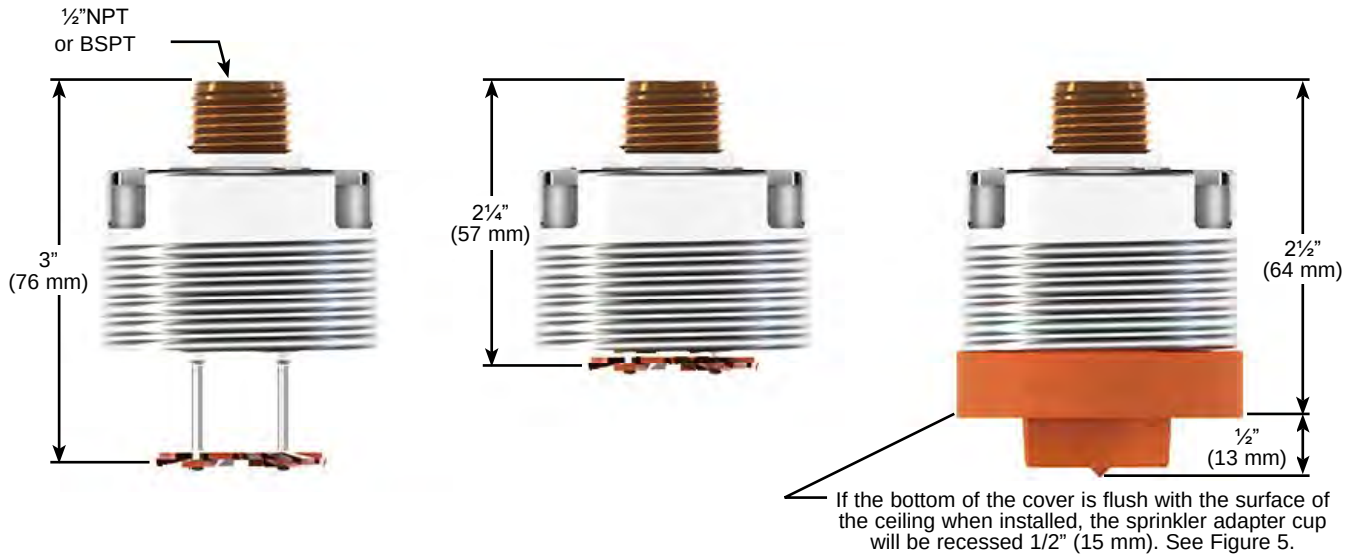
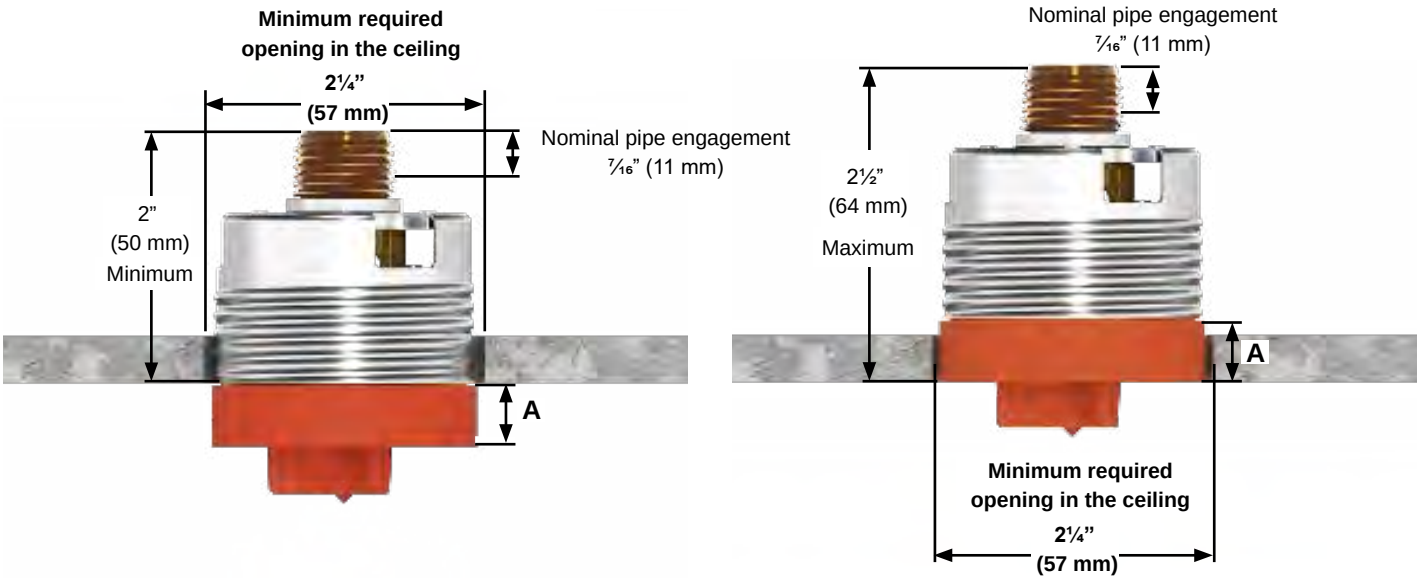


Figure 4: Sprinkler Dimensions



Install the sprinkler so the finished surface of the ceiling lines up within the marked ½" (13 mm) range on the protective cap (A).

Figure 5: Sprinkler Installation Dimensions

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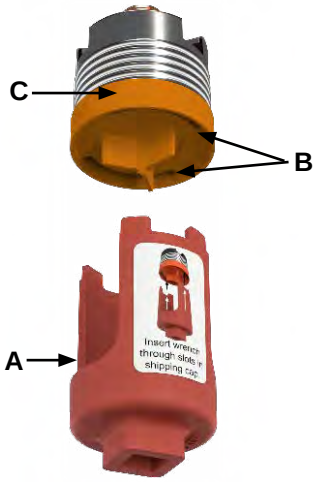
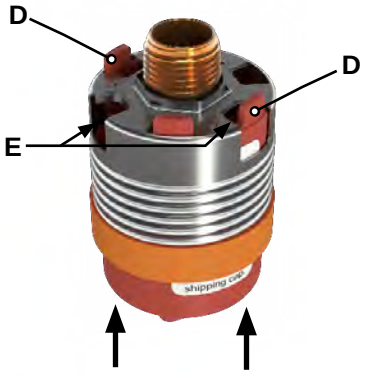
USE ONLY the designated sprinkler wrenches shown in this document. Permanent damage to the sprinkler assembly can occur if the proper wrench is not used. Other sprinkler wrenches available from Viking may fit into the sprinkler adapter cup; however, only the wrenches shown here are designed to properly install this sprinkler.

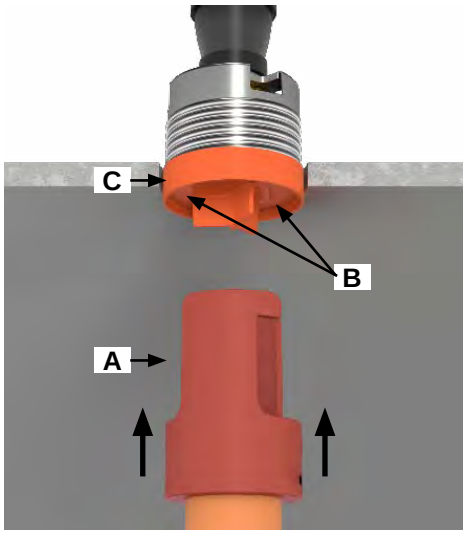


Step 1:
Insert the wrench (A) into the slots (B) on the protective cap (C).



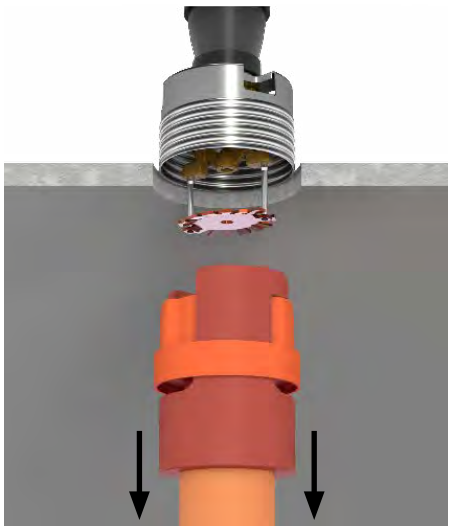
Step 2:
Rotate the wrench slightly in either direction until the tines on the wrench (D) line up with the vent openings (E) on the adapter cup and lock into place. NOTE: A leak tight seal must be achieved. Turn the sprinkler clockwise 1 to 1-½ turns past finger-tight.

Figure 6: Using the Sprinkler Wrench



Step 1:
Attach a piece of CPVC pipe as shown and tighten the thumb screw (not shown); then, insert the tool (A) into the slots (B) in the protective cap (C).

Step 2:
Rotate the tool slightly to lock into place.



Step 2:
Gently, pull downward to remove the protective cap. The deflector will slide downwards on the pins.

Figure 7: Using the Cap Removal Tool

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Minimum

Maximum

Install the cover plate by inserting the adpater into the adapter cup and pushing or threading into place (depending on style). Snug the cover plate in place by rotating clockwise. Ensure the cover plate is flush with the ceiling as shown to allow airflow through the sprinkler assembly.

Figure 8: Installing the Cover Plate

VIKING	BULLETIN	CARE AND HANDLING OF SPRINKLERS

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SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

  Maximum Torque:

  1/2" NPT: 14 ft-lbs. (19.0 N-m)

  3/4" NPT: 20 ft-lbs. (27.1 N-m)

  1" NPT: 30 ft-lbs. (40.7 N-m)

CORRECT (Original container used)

INCORRECT (Placed loose in box)

CORRECT (Protected with caps)

INCORRECT (Protective caps not used)

CORRECT (Piping is in place at the ceiling)

INCORRECT (Sprinkler at floor level)

CORRECT (Special installation wrenches)

INCORRECT (Designated wrench not used)

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

⚠ WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.

VIKING	BULLETIN	CARE AND HANDLING OF SPRINKLERS

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PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

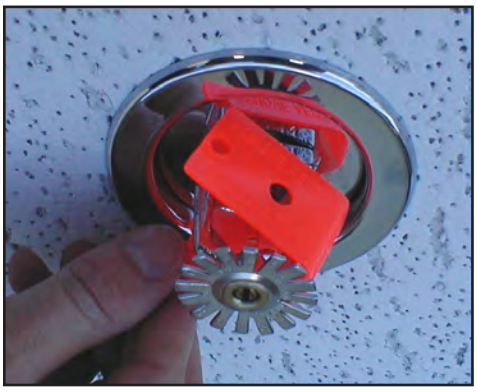

Figure 1: Sprinkler shield being removed from a pendent sprinkler.

Figure 2: Sprinkler cap being removed from a pendent sprinkler.

Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.

⚠WARNING Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

*** Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.**

VIKING	BULLETIN	CARE AND HANDLING OF SPRINKLERS

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CAUTION CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.

Concealed Sprinkler and Adapter Assembly with Protective Cap

Concealed Sprinkler and Adapter Assembly (Protective Cap Removed)

Cover Plate Assembly (Pendent Cover 12381 shown)

GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
  -- Use original shipping containers.
  -- Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

VIKING	BULLETIN	CARE AND HANDLING OF SPRINKLERS

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USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature[1]	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

[1] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

⚠WARNING Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

VIKING	TECHNICAL DATA	SPRINKLER OVERVIEW

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1. DESCRIPTION

Viking fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.

WARNING: Cancer and Reproductive Harm- www.P65Warnings.ca.gov

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word “Viking”, the sprinkler identification number (SIN) consisting of “VK” plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSU” (Standard Sprinkler Upright) or “UPRIGHT” on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked “SSP” (Standard Sprinkler Pendent) or “PENDENT” on the deflector.

Viking Technical Data may be found on The Viking Corporation’s Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

CONVENTIONAL SPRINKLER: An “old style” sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS. Marked “C U/P” (Conventional Upright/Pendent) on the deflector.

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VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked “SIDEWALL” on the deflector with an arrow and the word “FLOW”. (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked “UPRIGHT” or “PENDENT”.)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked “SIDEWALL” and “TOP” with an arrow and the word “FLOW”.

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked “EC”.

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast- actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked “QREC”.

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked “SSP”, “PEND”, or “SIDEWALL” and “TOP”.

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the “B” dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the “A” dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of “large” water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked “HIGH CHALLENGE” and “UPRIGHT”.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked “ESFR” and “UPRIGHT” or “PEND”.

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.

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Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking’s current list price schedule or contact Viking directly.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

BULLETIN

REGULATORY AND HEALTH WARNINGS

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1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herin as they relate to legally mandated jurisdictional regions.

⚠ WARNING

STATE OF CALIFORNIA, USA

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titaninum dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to **www.P65Warnings.ca.gov**

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at **www.vikinggroupinc.com** or contact Viking directly.