

BID DOCUMENTS

including Specifications
for the construction of:

The COUNTY OF MENDOCINO

Willits Library Roof Replacement Project

390 East Commercial Street
Willits, CA 95490



Prepared by:
EXECUTIVE OFFICES
FACILITIES & FLEET DIVISION
841 LOW GAP ROAD
UKIAH, CA 95482

BID# 020-25

Date of Issue:
June 24, 2025

THIS AGREEMENT, made effective on the date it becomes fully executed by all parties, between the County of Mendocino, hereinafter called COUNTY, and **Solano County Roofing Inc., a California Company**, hereinafter called CONTRACTOR.

COUNTY and CONTRACTOR, for the consideration described below, named, agree as follows:

FIRST:CONTRACTOR shall furnish all labor, materials, equipment, mechanical workmanship, transportation, and services for the installation and completion of the **Willits Library Roof Replacement Project**, in accordance with the contract documents, including the Addenda thereto, all as adopted by COUNTY.

SECOND: The work under this contract described below shall be completed within sixty (60) calendar days from the date of the "Notice to Proceed".

THIRD: The Contract consists of the following documents, all of which are fully a part hereof as if herein set out in full, whether or not hereto attached:

1. Invitation to Bid
2. Instructions to Bidders
3. Bidding Documents
4. Agreement
5. General Conditions
6. Unforeseen Physical Conditions
7. Summary of Work
8. Temporary Facilities and Building Services
9. Project Plans and Drawings
10. Technical Specifications
11. Addendum to the Bid

FOURTH: COUNTY shall pay to CONTRACTOR, if CONTRACTOR is the successful bidder, as full consideration for the faithful performance of the Contract, the sum of:

Total Base Bid- Two Hundred and Seventy-One Nine Hundred and Forty-Five Dollars (\$281,945.00)

This sum constitutes the base bid and the following allowances:

Allowance No. 1:- Dry-Rot and Unforeseen Conditions

Payment shall be made each month to CONTRACTOR in accordance with and subject to the provisions embodied in the Documents made a part of this Contract.

IN WITNESS WHEREOF

DEPARTMENT FISCAL REVIEW:

Nara Per
DEPARTMENT HEAD DATE **07/18/2025**

Budgeted: ☒ Yes ☐ No

Budget Unit: 1715

Line Item: 864360

Grant: ☒ Yes ☐ No

Grant No.: _____

CONTRACTOR/COMPANY NAME

By: David D. Miller
Date: 7/21/2025

NAME AND ADDRESS OF CONTRACTOR:

Solano County Roofing Inc., a California
Company

4349 Cordelia Road

Fairfield, CA 94535-4201

COUNTY OF MENDOCINO

By: _____
JOHN HASCHAK, Chair
BOARD OF SUPERVISORS

Date: _____

ATTEST:

DARCIE ANTLE, Clerk of said Board

By: _____
Deputy

I hereby certify that according to the provisions of
Government Code section 25103, delivery of this
document has been made.

DARCIE ANTLE, Clerk of said Board

By: _____
Deputy

INSURANCE REVIEW:

By: Darcie Antle
Risk Management

Date: **07/18/2025**

By signing above, the signatory warrants and
represents that he/she executed this Agreement
in his/her authorized capacity and that by his/her
signature on this Agreement, he/she or the entity
upon behalf of which he/she acted, executed this
Agreement.

COUNTY COUNSEL REVIEW:

APPROVED AS TO FORM:

By: Maureen K. L...
COUNTY COUNSEL

Date: **07/18/2025**

EXECUTIVE OFFICE/FISCAL REVIEW:

By: [Signature]
Deputy CEO or Designee

Date: **07/18/2025**

Signatory Authority: \$0-25,000 Department; \$25,001- 50,000 Purchasing Agent; \$50,001+ Board
of Supervisors

Exception to Bid Process Required/Completed ☐ _____

Mendocino County Business License: Valid ☐

Exempt Pursuant to MCC Section: _____

HARCO NATIONAL INSURANCE COMPANY

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That we,

Solano County Roofing, Inc.

as Principal, and Harco National Insurance Company a corporation organized under the laws of the State of Illinois, and authorized to transact a general surety business in the State of California as Surety, are held and firmly bound unto

The COUNTY OF MENDOCINO

(hereinafter called the Oblige) in the full and just sum of

Ten Percent (10%) of the Total Amount of Bid -----

Dollars, (\$ -----) for the payment whereof in lawful money of the United States, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

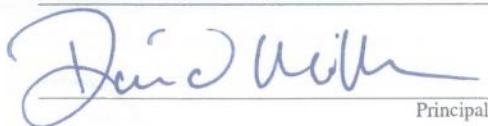
WHEREAS, the said PRINCIPAL has submitted the accompanying bid for

Willits Library Roof Replacement Project

NOW, THEREFORE, if the Oblige shall accept the bid of the Principal and the Principal shall enter into a Contract with the Oblige in accordance with the terms of such bid, or in the event of the failure of the Principal to enter such Contract, If the Principal shall pay to the Oblige the difference not to exceed the penalty hereof between the amount specified in the said bid and such larger amount for which the Oblige may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and Sealed this 14th day of July, 2025.

Solano County Roofing, Inc.


Principal

Harco National Insurance Company
Surety

By: 
Christina Parsons, /Attorney-in-Fact

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 Solano

On 7-16-2025 before me, Sierra Jane Solbrack

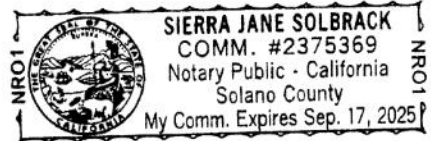
personally appeared David Miller
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature 

(Seal)



CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

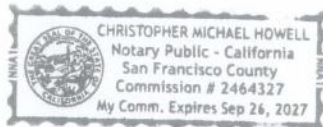
A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
 County of Contra Costa)
 On 07/14/2025 before me, Christopher Michael Howell, Notary Public
 Date Here Insert Name and Title of the Officer
 personally appeared Christina Parsons
 Name(s) of Signer(s)

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 _____
 Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____
 Number of Pages: _____ Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: Christina Parsons
☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General
☐ Individual ☒ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
 Signer Is Representing: _____

~~Signer's Name: _____
☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
 Signer Is Representing: _____~~

POWER OF ATTORNEY
HARCO NATIONAL INSURANCE COMPANY
INTERNATIONAL FIDELITY INSURANCE COMPANY

Bond # N/A

Member companies of IAT Insurance Group, Headquartered: 4200 Six Forks Rd, Suite 1400, Raleigh, NC 27609

KNOW ALL MEN BY THESE PRESENTS: That **HARCO NATIONAL INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of Illinois, and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

VALERIE TAKEUCHI, CHRISTINA PARSONS, KAREN RHODES, ROSSIO POLIO, CHRISTOPHER M. HOWELL, LUCY M. DUNHAM, NATHALIA P. SHOLL, KATHLEEN EARLE, KELLY HOLTEMANN, CHARLES R. SHOEMAKER, ZACHARY OVERBAY, MARK M. MUNEKAWA, NERISSA S. BARTOLOME, ANDREW S. HOLLOWAY, PATRICK R. DIEBEL, YVONNE RONCAGLIOLO

San Francisco, CA

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** and is granted under and by authority of the following resolution adopted by the Board of Directors of **INTERNATIONAL FIDELITY INSURANCE COMPANY** at a meeting duly held on the 13th day of December, 2018 and by the Board of Directors of **HARCO NATIONAL INSURANCE COMPANY** at a meeting held on the 13th day of December, 2018.

"RESOLVED, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** have each executed and attested these presents on this 31st day of December, 2023



STATE OF NEW JERSEY
County of Essex

Michael F. Zurcher
Executive Vice President, Harco National Insurance Company
and International Fidelity Insurance Company

STATE OF ILLINOIS
County of Cook



On this 31st day of December, 2023, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.



IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Cathy Cruz a Notary Public of New Jersey
My Commission Expires April 16, 2029

CERTIFICATION

I, the undersigned officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand on this day, July 14, 2025

A00467

Irene Martins, Assistant Secretary
MC Page 7

PROJECT: Willits Library Roof Replacement Project
390 East Commercial Street
Willits, CA 95490

OWNER: County of Mendocino
841 Low Gap Road
Ukiah, CA 95482
(707) 234-6050

AGENT: County of Mendocino
Executive Offices
Facilities and Fleet Division
841 Low Gap Road
Ukiah, CA 95482
Office: (707) 234-6058
Mobile: (707) 380-3223
viera@mendocinocounty.gov
Kirk Viera, Facility Project Specialist I

ARCHITECT: Nichols, Melburg, & Rossetto
Architects & Engineers
300 Knollcrest Drive
Redding, CA 96002
Chuck Sanger – Project Architect
Office: (707) 536-2121 x314
Mobile: (707) 484-7290
sanger@nrmrdesign.com

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06/2025

County of Mendocino
Willits Library Re-Roof
NMR Project No. 25-6471

00 00 50 - 1

ARCHITECT:

Kyle Matti

License Number: C27504

NICHOLS, MELBURG & ROSSETTO

300 Knollcrest Drive

Redding, CA 96002

T: (530) 222-3300

matti@nmrdesign.com



**SECTION 00 02 00
NOTICE INVITING BIDS**

Notice is hereby given that sealed bids will be received at the Mendocino County Facilities Conference Room, 841 Low Gap Road, Ukiah, California 95482 until the hour of 2:00 p.m., as determined by the clock on the wall in the Conference Room, **on Thursday July 17, 2025** and then publicly opened and read aloud in the Conference Room, 841 Low Gap Road, Ukiah, California, for the following project:

Willits Library Roof Replacement Project BID# 020-25

Electronic Plans and Documents may be seen or downloaded from the Mendocino County Web Page for Open RFP, Quotes & Bids: <https://www.mendocinocounty.org/departments/general-services/central-services/open-rfp-quotes-bids>. Additionally, plans and documents have been distributed to builders' exchange plan rooms throughout Northern California.

Bids shall be made on the form provided in this Manual and accompanied by a form of bid security as provided in Section 001000, Instructions to Bidders.

The successful Bidder will be required to furnish a Labor and Material Bond and a Performance Bond as required in Section 001000 Instructions to Bidders.

For complete directions and information on bidding and other requirements, bidders are called to the Instruction to Bidders and other related documents in this Manual.

PRE-BID CONFERENCE

A non-mandatory pre-bid conference and site inspection will be held on:

Wednesday, July 9, 2025 @ 10:00 AM at 390 East Commercial Street, Willits, CA 95490

PAYMENT OF PREVAILING WAGES

Pursuant to the provisions of the Labor Code of the State of California, the Department of Industrial Relations has made a determination of the rate of per diem wages to be paid on the prevailing rate of pay for regular, holiday and overtime work in the locality in which the public work is to be performed, for each craft, classification, or type of workman needed to execute the contract. All County of Mendocino projects greater than \$1,000 require that contractors adhere to Prevailing Wage requirements (California Labor Code, Sections 1770 through 1775). The rates can be found online here:

<https://www.dir.ca.gov/OPRL/DPreWageDetermination.htm>.

CONTRACTOR REGISTRATION

Per Labor Code Section 1771.1(a) A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

CERTIFIED PAYROLL RECORDS

Per Labor Code Section 1776 each contractor and subcontractor shall keep accurate payroll records. A certified copy of all payroll records for work performed under this contract shall be furnished upon request to a representative of the awarding body. Per SB 854 contractors and subcontractors are required to furnish certified payroll reports directly to the Department of Industrial Relations.

EMPLOYMENT OF APPRENTICES

Each contractor and subcontractor performing work in an apprenticeable craft or trade shall comply with Section 1777.5 relating to Apprentices on public works projects.

MENDOCINO COUNTY BUSINESS LICENSE

Pursuant to Mendocino County Code Chapter 6.04—Business Licenses, the contractor shall supply a copy of their current County of Mendocino business license at the time of contract award.

LAWS AND GOVERNANCES

In the performance of the work contemplated by this contract, the contractor shall conform to and abide by all labor requirements and provisions of State and Federal Laws and City and County Ordinances and Regulations which may in any manner affect those engaged or employed on the work project, including but not limited to the overtime provisions of the Labor Code section 1813 and 1815 of the State of California.

Federal Laws, including the Davis-Bacon Act and the Americans with Disabilities Act of 1990, are applicable to the project.

END OF SECTION

PART 1 – GENERAL

1.1 BIDS RECEIVED

- A. Sealed bids for the **Willits Library Roof Replacement Project (BID# 020-25)** will be received at the Mendocino County Facilities Conference Room, 841 Low Gap Road, Ukiah, California, until 2:00 p.m. as determined by the clock on the wall of the Conference Room, on **Thursday July 17, 2025**, and then publicly opened and read aloud in the Conference Room, 841 Low Gap Road, Ukiah, California.
- B. Late bids will not be accepted. It is Bidder's responsibility to ensure that its bid is delivered and received at the location noted above or before the date and hour set for the bid opening.

1.2 LICENSE REQUIREMENT

The license required for this Project is a General B and/or C39

1.3 BIDS AND BID SECURITY

Bids, to be considered, must be in accordance with the following instructions:

- A. Bids must be submitted on the bid form provided in this Manual, properly and completely filled out with numbers stated both in writing and in figures and with signatures of all persons signing in longhand/cursive.
- B. The completed form shall be without erasures or interlineation and shall not contain recapitulations of the work to be done.
- C. A Bidder's Bond, Certified Check or Cashier's Check made payable to the County of Mendocino for an amount equal to at least ten percent (10%) of the bid amount shall accompany each bid. The above-mentioned bid security shall be given as a guarantee that the Bidder shall execute the contract if it be awarded to it in conformity with the contract documents and shall provide the surety bond or bonds required, sign the contract and commence work as set forth in the contract documents. Such guaranty to be forfeited should the Bidder to whom the contract is awarded fail to enter into the contract.
- D. Responsive Bids shall include completed and executed copies of the following sections if included in the project Manual:
 - a. 001200 Qualification Application
 - b. 003070 Non-Collusion Affidavit
 - c. 003100 Bid Form
 - d. 004300 Subcontractor Listing Form

1.4 SUBCONTRACTORS LISTED

- A. In accordance with California Public Contract Code Sections 4100 et seq., inclusive, each bidder shall provide a list of subcontractors (Section 00430), giving the name and location of place of business and contractor's license number of each subcontractor who will perform a portion of the contract work in an amount in excess of one-half of one percent (0.5%) of the total contract price. In each instance, the nature and portion of the work to be subcontracted shall be described.
- B. Failure of Bidder to specify a subcontractor for any portion of the work in an amount in excess of one-half of one percent (0.5%) of the total contract price constitutes an agreement for Bidder to perform that portion of the work itself. After bids are opened, no subcontractor may be designated or substituted except as provided for in Sections 4107 et seq. of the Public Contract Code.
- C. All Bidders must supply with their Bids the required information on all subcontractors who will perform any portion of the work including labor, rendering of service or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one-half of one percent (0.5%) of total bid. Violation of this requirement may result in Bid being deemed non-responsive and not being considered.

1.5 AWARD OR REJECTION OF BIDS

The contract shall be awarded to the lowest responsible bidder complying with these instructions, provided the bid is deemed reasonable and in the best interest of the County of Mendocino. County reserves the right to reject any and all bids, and to waive any informality on bids received whenever the rejection or waiver is in the best interest of County. The competency and dependability of the bidders will be considered when making the award.

- A. Additive and Deductive Items: Method of Determining Lowest Bid. Pursuant to Public Contract Code section 20103.8, if this bid solicitation includes additive and/or deductive items, the checked [X] method shall be used to determine the lowest bid: [check one].
 - ☒ 1. The lowest bid shall be the lowest bid price on the base bid contract without consideration of the prices on allowance, additive or deductive items.
 - 2. The lowest bid shall be the lowest total of the bid prices on the base contract and those additive or deductive items that were specifically identified in the bid solicitation or Bid Form as being used for the purpose of determining the lowest bid price.
 - 3. The lowest bid shall be the lowest total of the bid prices on the base contract and those additive or deductive items taken in order from a specifically identified list of those items that, when in the solicitation, and added to, or subtracted from, the base contract, are less than, or equal to, a funding amount publicly disclosed by the County before the first bid is opened.
 - 4. The lowest bid shall be determined in a manner that prevents any information that would identify any of the bidders or the proposed Subcontractors or suppliers from being revealed to the public entity before the ranking of all bidders from lowest to highest has been determined.

If no method is checked, sub-paragraph 1. shall be used to determine the lowest bid.

- B. Notwithstanding the method used by the County to determine the lowest responsible bidder, the County retains the right to add to or deduct from the contract any of the additive or deductive items included in the bid solicitation.
- C. The award of the contract, if awarded, is expected to be made within thirty (30) days and in no event later than eighty (80) days after the bid opening. After the award, the County shall notify the successful Bidder in writing and forward with the notification the original contracts for the Bidder's execution. Within eight (8) working days after such notification, the successful Bidder shall return the signed contracts to County, accompanied by all required Surety Bonds, insurance policies and endorsements.

1.6 TIME OF COMPLETION

Bidder agrees to commence work on or before a date to be specified in the written "Notice to Proceed" from County and to fully complete the project within sixty (60) calendar days from date of the written "Notice to Proceed".

1.7 ADDENDUM

Any addendum issued during the time of bidding and before bid opening shall be included in the bid. The addendum issued by the County shall become part of the agreement. Questions to be considered for inclusion in an addendum must be in writing and in the hands of the County not less than seven (7) days prior to the bid opening date.

1.8 INTERPRETATION OF DRAWINGS AND DOCUMENTS

Should a Bidder find discrepancies in, or omissions from, the drawings or documents, or should it be in doubt as to their intent, it should at once notify the County, which will then send responsive written instructions in the form of addenda to all Bidders. The county will not be responsible for any oral instructions. Any verbal conversations with County during the bidding period are not to be construed as instructions. Any changes in the Contract documents will be issued by written addendum only.

1.9 WITHDRAWAL OF BID

Bids may be withdrawn prior to, but not later than, the time of bid opening.

1.10 BONDS

The Successful Bidder is required to furnish a Labor and Material Payment Bond and a Performance Bond each in the amount equal to one hundred percent (100%) of the contract price. Said Bonds shall be obtained from a surety company satisfactory to the County.

1.11 SUBSTITUTIONS

Any substitution shall be made in accordance with instructions contained in Section 00700 – General Conditions included herein. Questions concerning substitutions will not be entertained during the bidding period.

1.12 SUBSTITUTION OF SECURITY

Pursuant to California Public Contract Code Section 22300, the Contractor may substitute securities for retention money withheld by the County to insure performance under the Contract. Said securities shall be in a form and of a type acceptable to the County.

1.13 LIQUIDATED DAMAGES

In case of failure on the part of Contractor to complete the work within the time stipulated plus any duly authorized extension of time granted in writing by County, Contractor shall pay to County the sum of \$250.00 per calendar day for each day's delay beyond the time prescribed as liquidated damages, but not as a penalty. The language in the paragraph of the General Conditions entitled "Time of Completion and Liquidated Damages" is incorporated herein.

1.14 BIDDER'S QUALIFICATIONS

- A. All Bidders, Contractors and Subcontractors bidding under joint venture agreements shall be duly licensed as provided for under Sections 7000 et seq. of the Business and Professions Code.
- B. A corporation which is awarded the Contract will be required to furnish certification attesting to its corporate existence, as well as evidence that the Officer signing the contract is duly authorized to do so.
- C. Bidders and their subcontractors may be required to furnish evidence satisfactory to the County that they have sufficient means and have had experience in the class of work called for to enable them to complete the contract in a satisfactory manner.
- D. No person, firm, or corporation shall make or file or be interested in more than one bid for the same work, except insofar as alternate bids may be called for. No person, firm or corporation shall submit a collusive or sham bid or seek directly or indirectly to induce any other bidder to submit a collusive or sham bid or to refrain from submitting a bid or to seek in any way to control or fix the price of the bid or any portion of the bid price in order to secure an advantage against County or any other person interested in the proposed contract. However, a person, firm or corporation submitting a sub-proposal to a bidder or quoting prices on materials to a bidder is not hereby disqualified from submitting sub-proposals or quoting prices to other bidders.
- E. A licensed contractor shall not submit a bid to a public agency unless (1) its contractor's license number appears clearly on the bid, (2) the license expiration date is stated, and (3) the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information, or a bid containing information that is subsequently proven false, shall be considered non-responsive and shall be rejected by the County.
- F. The work to be performed under this contract is of a very specialized nature. It is the desire of the County to secure the best work attainable and to maintain a very critical and condensed schedule. Bidders considered for award will be limited to those firms that can show to the satisfaction of the County that they have the facilities and experience necessary to perform the required construction in accordance with the specifications proposed for this project. The terms under which bidders will be evaluated and the rules that will be applied are attached to this Manual as section 001200 Qualification Application.

1.15 EXAMINATION OF SITE AND DOCUMENTS

By submitting a bid, Bidder agrees and warrants that (1) it has examined the site and all documents, drawings and specifications; (2) it is satisfied that the same are adequate to produce the required results; and (3) its bid covers the cost of all items required in the agreement. The work to be performed includes all of the items mentioned in these specifications and/or as shown on the plans and other documents included as a part of the project.

1.16 ENVIRONMENTAL AND PLANNING CONDITIONS OF APPROVAL

Bidder agrees to perform its work in conformance with all environmental and planning conditions of approval applicable to the project. Bidders' attention is directed to the specification section 008010 Supplementary General Conditions and the source documents for specific conditions of approval

1.17 AGREEMENT

Contract documents include the Agreement which the successful Bidder, as Contractor, will be required to execute.

1.18 PRE-CONSTRUCTION CONFERENCE

The successful bidder shall be available for a pre-construction conference with the County at a mutually convenient time.

END OF SECTION

QUALIFICATION APPLICATION

The information contained in this Application is confidential and is for the sole use of the County in evaluating the qualifications of the Bidder. Only the information below ("Contact Information") is considered public information.

CONTACT INFORMATION

Firm Name (as it appears on license): Solano County Roofing, Inc.

Check one: ☒ Corporation ☐ Partnership ☐ Sole Proprietor

Contact Person: David Miller

Address: 4349 Cordelia Rd. Fairfield, CA 94534

Phone: 707.864.6000 ext. 13 Fax: _____

If the firm is a sole proprietor or partnership:

Owner(s) of Company: Wolfgang Folk

Contractor's License Number(s):

License No.	Classifications	Expiration	Qualifying Individual
<u>495355</u>	<u>B, C-39</u>	<u>7/31/2026</u>	<u>Wolfgang Folk</u>
_____	_____	_____	_____
_____	_____	_____	_____

DIR Registration Number: 1000000777

Mendocino County Business License No: X Forthcoming

PART I. ESSENTIAL REQUIREMENTS FOR QUALIFICATION

The Contractor will be immediately disqualified if the answer to any of questions 1 through 3 is "no".

The Contractor will be immediately disqualified if the answer to any of questions 4 through 7 is "yes"¹.

1. Contractor possesses a valid and current California Contractor's license for the project or projects for which it intends to submit a bid.
☐ Yes ☐ No
2. Contractor has a liability insurance policy with a policy limit of at least one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) aggregate.
☐ Yes ☐ No
3. Contractor has a current workers' compensation insurance policy as required by the Labor Code or is legally self-insured pursuant to Labor Code Section 3700 *et seq.*
☐ Yes ☐ No ☐ Contractor is exempt from this requirement because it has no employees
4. Has Contractor's license been revoked at any time in the last five (5) years?
☐ Yes ☐ No
5. Has a surety firm completed a contract on Contractor's behalf, or paid for completion because Contractor's firm was default terminated by the project owner within the last five (5) years?
☐ Yes ☐ No
6. At the time of submitting this qualification form, is Contractor's firm ineligible to bid on or be awarded a public works contract, or perform as a subcontractor on a public works contract, pursuant to either Labor Code Section 1777.1 or Labor Code Section 1777.7?
☐ Yes ☐ No

If the answer is "yes", state the beginning and ending dates of the period of debarment:

7. At any time during the last five (5) years, has Contractor's firm, or any of its owners or officers, been convicted of a crime involving the awarding of a contract of a government construction project, or the bidding or performance of a government contract?
☐ Yes ☐ No

PART II. ORGANIZATION, HISTORY, ORGANIZATIONAL PERFORMANCE,
COMPLIANCE WITH CIVIL AND CRIMINAL LAWS

A. Current Organization and Structure of the Business

For firms that are corporations:

1a. Date incorporated: _____

¹ A contractor disqualified solely because of a "yes" answer given to questions 4, 5, or 7 may appeal the disqualification and provide an explanation of the relevant circumstances during the appeal procedure.

**SECTION 00 12 00
QUALIFICATION APPLICATION**

- 1b. Under the laws of the State of: _____
- 1c. Provide all the following information for each person who is either (a) an officer of the corporation (president, vice president, secretary, treasurer), or (b) the owner of at least ten percent (10%) of the corporation's stock:

Name	Position	Years with Co.	% Ownership	Social Security #

For firms that are partnerships:

- 1a. Date of formation: _____
- 1b. Under the laws of the State of: _____
- 1c. Provide all of the following information for each partner who owns ten percent (10%) or more of the firm:

Name	Position	Years with Co.	% Ownership	Social Security #

For firms that are sole proprietorships:

- 1a. Date of commencement of business: _____
- 1b. Social security number of company owner: _____

B. History of the Business and Organizational Performance

2. Has there been any change in ownership of the firm at any time during the last three (3) years?

NOTE: A corporation whose shares are publicly traded is not required to answer this question.

☐ Yes ☐ No

If "yes", explain on a separate signed page.

3. Is the firm a subsidiary, parent, holding company, or affiliate of another construction firm?

NOTE: Include information about other firms if one firm owns fifty percent (50%) or more of another, or if an owner, partner, or officer of Contractor's firm holds a similar position in another firm.

☐ Yes ☐ No

If "yes", explain on a separate signed page.

SECTION 00 12 00
QUALIFICATION APPLICATION

4. Are any corporate officers, partners, or owners connected to any other construction firms?
NOTE: Include information about other firms if an owner, partner, or officer of Contractor's firm holds a similar position in another firm.
☐ Yes ☐ No

If "yes", explain on a separate signed page.

5. Financial Statements: Does the Contractor have reviewed or audited financial statements for each of the last three years?
☐ Yes ☐ No

6. State Contractor's firm's gross revenues for each of the last three (3) years:

Year	Gross Revenue

7. How many years has Contractor's organization been in business in California as a contractor under its present business name and license number? _____ years.
8. Is Contractor's firm currently the debtor in a bankruptcy case?
☐ Yes ☐ No

If "yes", please attach a copy of the bankruptcy petition, showing the case number, and the date on which the petition was filed.

Disputes

9. At any time in the last five (5) years, has Contractor's firm been assessed and paid liquidated damages after completion of a project under a construction contract with either a public or private owner?
☐ Yes ☐ No

If "yes", explain on a separate signed page, identifying all such projects by owner, owner's address, the date of completion of the project, amount of liquidated damages assessed, and all other information necessary to fully explain the assessment of liquidated damages.

10. In the last five (5) years, has Contractor's firm, or any firm with which any of Contractor's company's owners, officers or partners was associated, been debarred, disqualified, removed or otherwise prevented from bidding on, or completing, any government agency or public works project for any reason?
NOTE: "Associated with" refers to another construction firm in which an owner, partner or officer of Contractor's firm held a similar position.
☐ Yes ☐ No

If "yes", explain on a separate signed page. State whether the firm involved was the firm applying for qualification here or another firm. Identify by name of the company, the name of the person within Contractor's firm who was associated with that company, the year of the event, the owner of the project, the project, and the basis for the action.

11. In the last five (5) years, has Contractor's firm been denied an award of a public works contract based on a finding by a public agency that Contractor's company was not a responsible bidder?

☐ Yes ☐ No

If "yes", explain on a separate signed page. Identify the year of the event, the owner, the project, and the basis for the finding by the public agency.

NOTE: The following two questions refer only to disputes between Contractor's firm and the owner of a project. Contractor need not include information about disputes between its firm and a supplier, another contractor, or subcontractor. Contractor need not include information about "pass-through" disputes in which the actual dispute is between a subcontractor and a project owner. Also, Contractor may omit reference to all disputes about amounts less than \$50,000.

12. In the last five (5) years, has any claim *against* Contractor's firm concerning the firm's work on a construction project been *filed in court or arbitration*?

☐ Yes ☐ No

If "yes", on separate signed sheets of paper identify the claim(s) by providing the project name, date of the claim, name of the claimant, a brief description of the nature of the claim, the court in which the case was filed, and a brief description of the status of the claim (pending or, if resolved, a brief description of the resolution).

13. In the last five (5) years, has Contractor's firm made any claim against a project owner concerning work on a project or payment for a contract and *filed that claim in court or arbitration*?

☐ Yes ☐ No

If "yes", on separate signed sheets of paper identify the claim by providing the project name, date of the claim, name of the entity (or entities) against whom the claim was filed, a brief description of the nature of the claim, the court in which the case was filed, and a brief description of the status of the claim (pending or, if resolved, a brief description of the resolution).

Criminal Matters and Related Civil Suits

14. Has Contractor's firm or any of its owners, officers or partners ever been found liable in a civil suit or found guilty in a criminal action for making any false claim or material misrepresentation to any public agency or entity?

☐ Yes ☐ No

If "yes", explain on a separate signed page, including who was involved, the name of the public agency, the date of the investigation and the grounds for the finding.

15. Has Contractor's firm or any of its owners, officers or partners ever been convicted of a crime involving federal, state, or local law related to construction?

☐ Yes ☐ No

If "yes", explain on a separate signed page, including who was involved, the name of the public agency, the date of the conviction and the grounds for the conviction.

**SECTION 00 12 00
QUALIFICATION APPLICATION**

16. Has Contractor's firm or any of its owners, officers or partners ever been convicted of a federal or state crime of fraud, theft, or any other act of dishonesty?
☐ Yes ☐ No

If "yes", identify on a separate signed page the person(s) convicted, the court (the county if a state court, the district or location if a federal court), the year, and the criminal conduct.

Bonding

17. If Issued a Notice of Award, can the contractor secure payment and performance bonds within ten (10) calendar days?
☐ Yes ☐ No

Name of Bonding Company: _____

Name, Address, Telephone# for Surety Agent: _____

- C. Compliance with Occupational Safety and Health Laws and with Other Labor Legislation Safety

18. Has Cal-OSHA cited and assessed penalties against Contractor's firm for any "serious", "willful", or "repeat" violations of its safety or health regulations in the last five (5) years?
NOTE: If Contractor has filed an appeal of a citation, and the Occupational Safety and Health Appeals Board has not yet ruled on your appeal, Contractor need not include information about it.
☐ Yes ☐ No

If "yes", attach a separate signed page describing the citations, including information about the dates of the citations, the nature of the violation, the project on which the citation(s) was/were issued, and the amount of the penalty paid (if any). If the citation was appealed to the Occupational Safety and Health Appeals Board and a decision has been issued, state the case number and the date of the decision.

19. Has the Federal Occupational Safety and Health Administration cited and assessed penalties against Contractor's firm in the last five (5) years?
NOTE: If Contractor has filed an appeal of a citation and the Appeals Board has not yet ruled on the appeal, or if there is a court appeal pending, Contractor need not include information about the citation.
☐ Yes ☐ No

If "yes", attach a separate signed page describing each citation.

20. Has the EPA or any Air Quality Management District or any Regional Water Quality Control Board cited and assessed penalties against either Contractor's firm or the owner of a project contracted to Contractor in the last five (5) years?
NOTE: If Contractor has filed an appeal of a citation and the Appeals Board has not yet ruled on the appeal, or if there is a court appeal pending, Contractor need not include information about the citation.
☐ Yes ☐ No

SECTION 00 12 00
QUALIFICATION APPLICATION

If "yes", attach a separate signed page describing each citation.

21. How often does Contractor require documented safety meetings to be held for construction employees and field supervisors during the course of a project?
-

**SECTION 00 12 00
QUALIFICATION APPLICATION**

22. List Contractor's Experience Modification Rate (EMR) (California's Workers' Compensation insurance) for each of the past three (3) premium years:
NOTE: An Experience Modification Rate is issued to Contractor annually by its workers' compensation insurance carrier.

Current year: _____

Previous year: _____

Year previous to previous year: _____

If Contractor's EMR for any of these three (3) years is or was 1.20 or higher, Contractor may, at its discretion, attach a letter of explanation.

Prevailing Wage and Apprenticeship Compliance Record

23. Provide the name, address and telephone number of the apprenticeship program (approved by the California Apprenticeship Council) from whom Contractor intends to request the dispatch of apprentices to Contractor for use on any public work project for which it is awarded a contract by the County of Mendocino:

Pursuant to California Labor Code Section 7103.5, the following certification is hereby set forth and made a part of these specifications:

In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 167000) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties.

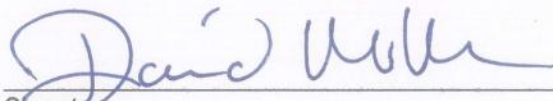
SECTION 00 30 70
NON-COLLUSION AFFIDAVIT

In accordance with California Public Contract Code Section 7106, the following affidavit must be completed by the Bidder:

Non-Collusion Affidavit to be executed by Bidder
and submitted with bid

State of California
County of Mendocino

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


Signature

Willits Library Roof Replacement Project

FOR MENDOCINO COUNTY

RECEIVED

JUL 17 2025

County of Mendocino
General Services Agency
Facilities and Fleet Division



TO: Honorable Board of Supervisors

It is understood that this bid is based upon completion of the work within the time of completion requirements contained in the Instructions to Bidders.

It is agreed that this bid may not be withdrawn for a period of eighty (80) days from the opening hereof.

The undersigned has carefully checked all its figures and understands that the County will not be responsible for any error or omissions on the part of the undersigned in making up this bid.

If awarded the Contract, the undersigned agrees to complete the Work, one hundred fifty (60) calendar days from the date of Notice to Proceed.

The undersigned, having become completely familiar with all conditions affecting the cost of the work at the place where the work is to be done, and with the drawings, specifications and other contract documents prepared and issued thereof and now on file at the General Services Agency Office, hereby proposes and agrees to perform everything required to be performed, and to provide and furnish any and all required labor, materials, equipment, transportation and services necessary to erect and complete in the best workmanlike manner, all as shown and specified.

The following bid amounts are as defined and clarified in the Bids Required portion of these specifications:

BASE BID:	Dollars (\$ <u>271,945</u>)
ALLOWANCE:	Dollars (\$ <u>10,000.00</u>)
TOTAL BASE BID & ALLOWANCE:	Dollars (\$ <u>281,945</u>)

SALES TAX

All bids shall include the required California State Sales Tax, cost of all bonds and insurance as required, and all other items of expense incidental to the contract. The County of Mendocino is exempt from Federal Excise Tax.

A licensed Contractor shall not submit a bid to a public agency unless its Contractor's License number appears clearly on the bid, the license expiration date is stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information, or a bid containing information which has subsequently proven false, shall be considered nonresponsive and shall be rejected by the public agency.

Name of Organization Solano County Roofing, Inc.

Name of Organization Solano County Roofing, Inc.

Type of Organization Corporation
(Corporation, Partnership, etc.)

Address 4349 Cordelia Rd. Fairfield, CA 94534

Name of State where incorporated California

CONTRACTORS LICENSE NO. 495355 EXPIRATION DATE 7/31/2026

☒ The contractor has registered with the State of California's DIR (Department of Industrial Relations) website.

☒ DIR Registration #: 1000000777

☐ The contractor is currently licensed to do business in the County of Mendocino.

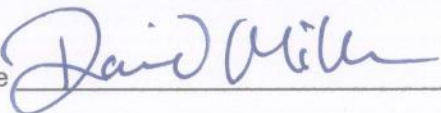
☐ Mendocino County Business License #: Forthcoming

ADDENDA: CONTRACTOR TO ACKNOWLEDGE RECEIPT

I have received the following Addenda pertaining to this project, and they have been included as part of my bid.

Numbers: ADD #1 - 7/14/2025

The undersigned hereby certifies under penalty of perjury that this bid is genuine and not collusive, that all the information is correct and that he/she has carefully checked all of the above figures and understands that the County will not be responsible for any errors or omissions on the part of the undersigned on making up this bid.

Signature 

SECTION 00 50 10
WORKERS' COMPENSATION CERTIFICATION

Pursuant to California Labor Code Section 1861, the Contractor hereby certifies the following:

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. I will comply with these provisions before commencing the performance of the work under this contract.

Dated: 7/17/2025

Contractor Signature 

Willits Library Roof Replacement Project

Contractor hereby guarantees that the labor and materials furnished for this project are in accordance with the drawings, specifications, and applicable building codes. Contractor agrees to repair or replace any or all of the work, together with any other adjacent work which may be displaced in so doing, that may prove to be defective in its workmanship or material within a period of ONE (1) YEAR from date of acceptance of the above-named project by County without any expense whatsoever to County, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of Contractor's failure to comply with the above-mentioned conditions within fifteen (15) calendar days after being notified in writing by County, Contractor authorizes County to proceed to have said defects repaired and made good at Contractor's expense. Contractor shall honor and pay the costs and charges therefore upon demand.

SIGNED _____

COUNTERSIGNED _____

CONTRACTOR _____

DATED _____

DATE OF BUILDING ACCEPTANCE _____

1. DEFINITIONS

Whenever in the Specifications and other Contract Documents the following abbreviations and terms are used, the intent and meaning shall be interpreted as follows:

- A. "Owner" - Board of Supervisors, County of Mendocino, or its authorized agents or assignees.
- B. "Agent" - The Agent acting for the County, which shall be either the County General Services Agency Director or his/her designee, or the County Executive Officer or his/her designee.
- C. "Contractor" - The person or persons, partnership, corporation, or combination thereof, private or municipal, who have entered into a contract with the County, as party or parties of the second part or his/her or their legal representatives.
- D. "Specifications" - The directions, provisions and requirements contained in these Specifications as supplemented by the Supplementary Conditions. Whenever the term "These Specifications" is used in this book, it means the provisions as set forth in this book.
- E. "Paragraph" - The particular section of subdivision herein designated by a number.
- F. "Laboratory" - The designated laboratory authorized by the County to test materials and work involved in the Contract.
- G. In the case of conflict between the Standard Specification and these Specifications, these Specifications shall take precedence over and be used in lieu of such conflicting portions:
 - A.W.S. American Welding Society
 - A.S.T.M. American Society for Testing Materials
 - A.S.A. American Standard Association
 - N.B.F.U. National Board of Fire Underwriters
 - N.B.S. National Bureau of Standards
 - A.S.M.E. American Society of Mechanical Engineers
 - A.R.I. American Refrigeration Institute
 - N.E.M.A. National Electrical Manufacturers Association
 - U.L. Underwriter's Laboratories
 - E.T.L. Electrical Testing Laboratories
 - A.C.I. American Concrete Institute
 - F.A. Federal Specifications
 - A.I.S.C. American Institute of Steel Construction
- H. The County and the Contractor are those named as such in the Agreement. They are treated throughout the Contract Documents as if each were of the singular number and the masculine gender.
- I. When the words "Approved", "Satisfactory", or "Equal", "As Directed", etc. are used, approval by the County is understood.

- J. All Federal, State laws and local laws shall govern the construction of the Contract, and all rules, ordinances and requirements of authorized officials shall be complied with.
- K. It is understood that any reference to the Specifications or designation of the American Society for Testing Materials, Federal Specifications or other standard, code, or order, refers to the most recent or latest amended specification or designation.

2. EXAMINATION OF PLANS AND SPECIFICATIONS

The Bidder shall examine carefully the site of the work contemplated and the proposal, plans, specifications, and Contract forms thereof. It will be assumed that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and material to be furnished, and as to the requirements of these Specifications.

3. DRAWINGS AND SPECIFICATIONS

- A. Figured dimensions on the drawings shall govern, but work not dimensioned shall be as directed. Work indicated but not particularly detailed or specified shall be equal to similar parts that are detailed or specified, or as directed. Full-size, detailed shall take precedence over scale drawings as to shape and details of construction. It is intended that scale drawings, full-size details and specifications should agree but should any discrepancy or apparent error occur in plans and specifications, or should any work of others affect this work, the Contractor shall notify the County at once, if the Contractor proceeds with the work affected without instruction from the County he shall make good any resultant damage or defect.
- B. All misunderstandings of drawings or specifications shall be clarified by the County, whose decision shall be final.
- C. Any work called for by the drawings and not mentioned in the Specifications, or vice versa, is to be furnished as though fully set forth by both. Where not specifically stated otherwise, all work and materials necessary for each unit of construction, including special construction for any specific brand or shape of material called for even though only briefly mentioned or indicated, shall be furnished and installed fully and completely as a part of the Contract.
- D. Lists, rules and regulations referred to are recognized printed standard and shall be considered as one and a part of these Specifications within the limits specified.
- E. "General Conditions" apply with equal force to all of the work, including extra work authorized.
- F. For convenience, the Technical Specifications are arranged in Divisions and further divided into various sections. It is to be understood; this separation is for convenience of all parties involved and is not to be considered as the limits of the work required of any separate trade. The terms and conditions of such limitations are wholly between the County and the Contractors during bidding and construction phases, i.e., all work shown, as well as for the proper completion of the project as a whole, shall be coordinated by the Contractor and his Subcontractors during bidding and construction and shall be provided in this Contract.

4. CONDUCT OF WORK

A. The County reserves the right to do other work in connection with the project by contract or otherwise. Contractor shall at all times conduct his work so as to impose no hardship on the County or others engaged in the work. Contractor shall adjust, correct, and coordinate his work with the work of others so that no discrepancies shall result in the whole work.

B. The Contractor shall provide at his own cost and risk all labor, material, water, power tools, machinery, scaffolding, and framework for the execution of the work. Equipment shall be adequate and as approved.

The Contractor shall obtain all necessary measurements from the work and shall check dimensions, levels, and construction and layout and supervise the construction, for correctness of all of which he shall be responsible.

C. Where work of one trade joins or is on other work, there shall be no discrepancy when same is completed. In engaging work with other materials, marring or damaging same shall not be permitted. Should improper work of any trade be covered by another which results in damage or defects, the whole work affected shall be made good without expense to the County.

D. The Contractor must anticipate relation of all parts of the work and at the proper time furnish and set anchorage, blocking or bonding as required. Anchorage and blocking necessary for each trade shall be a part of same, except where stated otherwise.

E. Assistance required by the County in obtaining measurements or information on the work shall be furnished accurately and fully without cost to the County.

5. OWNERSHIP OF DRAWINGS

All plans and specifications shall remain the property of the County and shall be returned to the office of the County Facilities and Fleet Division Manager or shall be accounted for by the Contractor before the final certificate will be issued.

6. PUBLIC AND COUNTY CONVENIENCE AND SAFETY

The Contractor shall furnish, erect, and maintain such fences, barriers, lights and signs as are necessary to give adequate warning to the public at all times and of any dangerous conditions until final acceptance of the work by the County.

7. ACCIDENT PREVENTION

A. It shall be the Contractor's responsibility to keep himself fully informed of all existing and future safety regulations, Codes, OSHA requirements, and other laws and regulations governing the work which may in any manner affect anyone in and around the project or engaged or employed in the work, or materials, equipment, etc. used in the work or which in any way affect the conduct of the work.

B. The Contractor shall appoint a Safety Officer for the project and submit his name to the County.

- C. The Contractor shall supply the County with a Material Safety Data Sheet (MSDS) on each hazardous substance to be used by the Contractor on the project.
- D. The Contractor and his Safety Officer shall be solely responsible for ensuring compliance with those Codes, regulations, OSHA requirements, and for discovering and correcting any code violations or unsafe conditions.
- E. Reports of all lost-time accidents shall be promptly submitted to the Owner, giving all pertinent information.

8. RESPONSIBILITY FOR DAMAGE

The County shall not be answerable or accountable in any manner for: (1) any loss or damage that may happen to the work or any part thereof, for any loss or damage to any of the materials or other things used or employed in performing the work; (2) injury to or death of any person or persons, either workers or the public; (3) damage to property from any cause which might have been prevented by the Contractor or his workers or anyone employed by him. The Contractor shall be responsible for any liability imposed by law for injuries to or death of any person including, but not limited to, workers and the public or damage to property resulting from defects or obstructions or from any cause whatsoever during the progress of the work or at any time before its completion and final acceptance. The Contractor shall indemnify, save harmless and defend the County of Mendocino, its elected or appointed officers, agents, employees or volunteers connected with the work, from all claims or actions for injuries or death of any person, or damage to property, resulting from the Contractor's performance of the Contract. With respect to third party claims against the Contractor, the Contractor waives any and all rights to any type of express or implied indemnity against the County of Mendocino, its elected or appointed officers, agents, employees or volunteers.

In addition to any remedy authorized by law, so much of the money due the Contractor under and by virtue of the Contract as shall be considered necessary by the County may be retained by the County until disposition has been made of such suits or claims for damages as aforesaid.

9. LAWS TO BE OBSERVED

The Contractor shall keep himself fully informed of all existing and future State, Federal and local laws, codes and regulations which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies and tribunals having any jurisdiction or authority over the same and shall be solely responsible for insuring compliance with those laws, codes and regulations.

A partial, though not necessarily complete listing of laws to be observed by the Contractor is as follows:

- A. Federal Americans with Disabilities Act of 1990.
- B. Federal Labor Standards Act.
- C. The Anti Kick-Back regulations found in 29 CFR Part 3.
- D. All contract clauses required by 29 CFR 5.5 (a) and (c), 20 U.S.C. 1232b ; 40 U.S. C. 276a, 276c, 327-332; 29 CFR Parts, (926).

- E. Nondiscrimination clause and Certification of Non-Segregated Facilities prescribed by Executive Order No. 11246; September 24, 1965 as amended by Executive Order 11375.
- F. Executive Order No. 11288 of July 7, 1966 (31 FR 9261) "Prevention, Control and Abatement of Water Pollution".
- G. Executive Order 11988, relating to evaluation of flood hazards.
- H. Compliance with all Federal, State, and local requirements for handicapped access, fire safety, and seismic resistance.

10. BONDS REQUIRED

The successful bidder shall furnish bonds as required in the document entitled "Instructions to Bidders" which is part of these Contract documents.

11. INSURANCE

The Contractor, at his expense, shall secure and maintain at all times during the entire period of performance under this Contract, insurance as set forth below with insurance companies acceptable to the County of Mendocino.

The Contractor shall provide to the County of Mendocino certificates of insurance with endorsements properly executed by an officer or authorized agent of the issuing insurance company, evidencing coverage and provisions as stated below:

A. **INSURED**

Name the County of Mendocino, its elected or appointed officials, employees, agents and volunteers as additional insured with regard to damages and defense of claims arising from: (a) activities performed by or on behalf of the Named Insured, (b) products and completed operations of the Named Insured, (c) Premises owned, leased or used by the Named Insured, or (d) Ownership, operation, maintenance, use, loading or unloading of any vehicle owned, leased, hired or borrowed by the Named Insured, regardless of whether liability is attributable to the Named Insured or a combination of the Named Insured and the County of Mendocino, its elected or appointed officials, employees, agents and volunteers.

B. **SEVERABILITY OF INTEREST**

Provide that the inclusion of more than one named insured shall not operate to impair the rights of one insured against another insured, and the coverages afforded shall apply as though separate policies had been issued to each insured.

C. **CONTRIBUTION NOT REQUIRED**

Provide that as respects: (a) work performed by the Named Insured on behalf of the County of Mendocino; or (b) products sold by the Named Insured to the County of Mendocino; or (c) premises leased by the Named Insured from the County of Mendocino; or (d) ownership,

operation, maintenance, use, loading or unloading of any vehicle owned, leased, hired or borrowed by the Named Insured, the insurance afforded by this policy shall be primary insurance as respects the County of Mendocino, its elected or appointed officials, employees, agents and volunteers; or stand in an unbroken chain of coverage excess of the Named Insured's scheduled underlying primary coverage. In either event, any other insurance maintained by the County of Mendocino, its elected or appointed officials, employees, agents and volunteers shall be excess of this insurance and shall not contribute with it.

D. COVERAGE BELOW MINIMUM REQUIRED NOTICE

Provide that the limits of insurance afforded by this policy shall not fall below the minimum requirements of the County of Mendocino without notice to the County of Mendocino by certified mail return receipt requested. Such notice shall be addressed to: County of Mendocino, 501 Low Gap Road, Ukiah, Calif. 95482, Attn: Risk Management.

E. CANCELLATION NOTICE

Provide that the insurance afforded by this policy shall not be suspended, voided, canceled, non-renewed or reduced in coverage or in limits except after thirty (30) day's prior written notice, delivered in person or by First Class U.S. Mail, has been given to the County of Mendocino. Such notice shall be addressed to: County of Mendocino, 841 Low Gap Road, Ukiah, Calif. 95482, Attn: Risk Management.

Contractor shall furnish to the County of Mendocino certificate(s) of insurance evidencing Workers Compensation Insurance coverage to cover its employees. The Contractor shall require all subcontractors similarly to provide Workers Compensation Insurance as required by the Labor Code of the State of California for all of the Contractor's and subcontractors' employees.

The Contractor shall not commence work, nor shall he allow his employees or subcontractors or anyone to commence work until all insurance required and provisions contained herein have been submitted to and accepted by the County of Mendocino. Failure to submit proof of insurance as required herein may result in awarding said Contract to another bidder. Failure to comply with the insurance requirements set forth herein shall constitute a material breach of contract and, at County of Mendocino's option, shall subject this Contract to termination.

Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve the Contractor for liability in excess of such coverage, nor shall it preclude the County of Mendocino from taking such other action as is available to it under any other provisions of this Contract or otherwise in law.

SCOPE OF LIABILITY COVERAGES

Contractor shall furnish to the County of Mendocino certificates of insurance evidencing at the minimum the following:

1. Public Liability-Bodily Injury (not auto) \$500,000 each person; \$1,000,000 each accident,
and
Public Liability-Property Damage (not auto) \$500,000 each occurrence; \$1,000,000 aggregate.

---or---

Combined Single Limit Bodily Injury Liability and Property Damage Liability (not auto) \$1,000,000 each occurrence.

2. Vehicle-Bodily Injury \$500,000 each person, \$1,000,000 each occurrence,
and
Vehicle-Property Damage \$1,000,000 each occurrence.

---or---

Combined Single Limit Vehicle Bodily Injury and Property Damage Liability \$1,000,000 each occurrence.

12. WORKERS COMPENSATION CERTIFICATION

Contractor certifies as follows:

"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". (Labor Code Section 1861)

13. CONTRACTOR'S RESPONSIBILITY FOR WORK

Until the formal acceptance of the work by the County, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof or to materials or thing employed in doing the work or stored on the site by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, replace, and make good all injuries or damages to any portion of the work occasioned by any of the above caused before final acceptance and shall bear the expense thereof, except such injuries or damages occasioned by acts of the Federal Government or the public enemy. The Contractor's responsibility also extends to adjoining property as related to the construction operation.

14. RESPONSIBILITY OF COUNTY

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

15. COOPERATION BETWEEN CONTRACTORS

Where two or more contractors are employed on related or adjacent work, each shall conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each contractor shall be responsible to the other for all damage to work, to person or property, or for loss caused by failure to furnish the work within the time specified for completion.

Should the Contractor, through acts of neglect on the part of any Contractor, suffer loss or damage to the Work, the Contractor agrees to settle with such other Contractor by agreement. If such other Contractor should file claim against the County on account of alleged damages to be sustained, the County shall notify the Contractor who shall, at his expense, indemnify and save harmless the County against any such claim.

16. SUBCONTRACTING AND ASSIGNMENT

The Contractor shall give his personal attention to the fulfillment of the Contract and shall keep the work under his control. Should the Contractor subcontract any part of his Contract, the Contractor shall be fully responsible to the County for the acts and omissions of his subcontractor and of the persons either directly or indirectly employed by the subcontractor as he is for the acts and omissions of persons directly employed by himself.

No subcontractor will be recognized as such, and all persons engaged in the work on construction shall be considered as employees of the Contractor.

17. PERMITS AND LICENSES

The Contractor shall procure all permits and licenses, pay all charges and fees, and file all notices necessary and incidental to the due and lawful prosecution of the work.

18. PATENTS

The Contractor shall assume all responsibilities arising from the use of patented materials, equipment, devices or processes used on or incorporated in the work.

19. LIENS

Liens shall be enforced as provided by California State Law pertaining to Public Works.

20. CHANGES IN THE WORK

- A. The County may order changes in the work, in which event the Contract sum shall be adjusted by one or more, or a combination of, the following methods:
1. Unit bid prices previously approved or as may be agreed upon.
 2. An agreed lump sum substantiated by Contractor, itemizing labor, material, equipment, overhead, profit, bond, etc.
 3. By ordering Contractor to proceed with work and keep correct account with vouchers the actual cost of:
 - a. Labor, including foreman;
 - b. Materials entering permanently into the work;
 - c. The ownership or rental cost of construction plant and equipment during the time of use on the extra work;

- d. Power and consumable supplies for the operation of power equipment;
 - e. Insurance;
 - f. Social Security and old age and employment contribution.
- B. To the cost under (2) and (3), there may be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) for the estimated cost of the work. The fee shall be compensation to cover the cost of administrative overhead, and profit.
- C. On changes which involve credit to the County, no allowances for overhead need be figured.
- D. All such change orders and adjustments shall be in writing. Claims by Contractor for extra cost shall be made in writing before executing the work involved.
- E. All change orders shall be reviewed and approved by the County.

21. COUNTY'S RIGHT TO TERMINATE CONTRACT

If the Contractor should refuse or neglect to properly perform or prosecute the work or if he should substantially violate any provision of the Contract, then the County may, without prejudice to any other right or remedy upon seven (7) days written notice to the Contractor, terminate the services of the Contractor and take possession of the premises, and all materials, tools, and equipment thereon and complete the work. The expense thereof shall be deducted from the balance otherwise due the Contractor. If such expense should exceed such unpaid balance, then the Contractor shall pay the difference to the County.

22. CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work is stopped for a period of thirty (30) days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the work under a contract with the Contractor, or if the work should be stopped for a period of thirty (30) days by the Contractor because no certificate for payment has issued as provided in Paragraph 25 or because the County has not made payment thereon as provided in Paragraph 25, then the Contractor may, upon seven (7) additional days' written notice to the County, terminate the Contract and recover from the County payment for all work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery, including reasonable profit and damages.

23. TIME OF COMPLETION AND LIQUIDATED DAMAGES

- A. In case all the work called for under the Contract is not completed before or upon the expiration of the time limit as set forth in these specifications, damage will be sustained by the County, and it is impracticable to determine the actual damage which the County will sustain in the event of and by reason of such delay. It is therefore agreed that the Contractor will pay to the County the sum of money per calendar day for each day's delay beyond the time prescribed as required in the document entitled "Instructions to Bidders", which is a part of these Contract Documents. The Contractor agrees to pay such liquidated damages as herein provided, and in case the same are not paid, agrees that the County may deduct the amount thereof from any money due or that may become due the Contractor under the Contract.

- B. In case the work called for under the Contract is not finished and completed in all parts and requirements within the time specified, the County shall have the right to extend the time for completion or not, as may best serve the interest of the County. If the County decides to extend the time limit for the completion of the Contract, the County shall further have the right to charge the Contractor, his heirs, assigns or sureties, and to deduct from the final payment for the work, all or any part, as it may deem proper, of the actual cost of County, including inspections, superintendence, and other overhead expenses directly chargeable to the Contract, and which accrue during the period of such extension. The cost of final inspections shall not be included in such charges.
- C. The Contractor shall not be assessed with liquidated damages nor the cost of County's services and inspection during any delay in the completion of the work caused by acts of God or the public enemy, acts of the County, fire, flood, earthquake, epidemics, quarantine restrictions, strikes, freight embargoes, shortages of materials, labor, fixtures or equipment (provided the Contractor furnishes satisfactory and acceptable proof that he has made diligent attempts to obtain same) and unusually severe weather or delays of subcontractors due to such causes, provided the Contractor shall within ten (10) days from the beginning of such delay notify the County in writing of the delay. County's findings of fact thereon shall be final and conclusive.
- D. The County agrees that changes in work ordered pursuant to Paragraph 20 and extensions of completion time made necessary by reasons thereof, shall in no way release any guarantee given by the Contractor or the Contract let hereunder, nor shall such changes in the work relieve or release the sureties on bonds executed pursuant to these specifications. Sureties shall be deemed to have expressly agreed to any change in the work and to any extension of time made by reason thereof.

24. ACCEPTANCE

- A. The Contract will be accepted as completed only when the whole and entire Contract shall have been completed satisfactorily to the County. In judging the work, no allowance for deviations from the original plans and specifications will be made unless already approved in writing at proper times and in a manner as called for herein.
- B. Should it become necessary to occupy a portion of the work before the Contract is fully completed, such occupancy shall not constitute acceptance.

25. PARTIAL PAYMENTS

Prior to submitting and as a condition of approval of the first progress payment application, the Contractor shall submit a schedule of values acceptable to the County providing a breakdown of the contract value by trade division such that the County can accurately assess the percentage completion of the project.

On the twenty-fifth (25th) day of each month, the Contractor shall submit to the County an application for payment, on a form acceptable to the County, showing an itemized statement for work that has been performed on a percent complete basis based on the previously approved schedule of values. The County within thirty (30) days of receipt of application that meets the County's approval shall issue to the Contractor a certificate for ninety percent (95%) of the amount the County finds due for work that has been performed.

Contractor shall submit certified copy of payroll showing payment of Davis-Bacon Act wages with each request for payment submitted.

26. FINAL PAYMENT

Upon completion of the Contract, the County will cause to be made a final estimate of the amount of work done, and the value of such work. After approval by the County representative, the County shall pay the remainder due on the contract (with the exception of retainage) after deducting there from all previous payments. All amounts retained (retainage) under the provisions of the Contract shall be due and payable 30 days from the date of acceptance in writing of the completion of Contract and / or Notice of Completion issued by the County representative.

All prior partial estimates and payments shall be subject to correction in the final estimate and payments. Payment and the final estimate are due within thirty-five (35) days from the recorded date of the Notice of Completion, provided all as-built drawings, equipment manuals, instructions to the owner and guarantees have been received and accepted by the County.

27. PAYMENT WITHHELD

The County may withhold or, on account of subsequently discovered evidence, may nullify the whole or part of any certificates to such extent as may be necessary to protect the County from (1) defective work not remedied, (2) asserted claims against Contractor, (3) failure of the Contractor to make payments properly to employees or for material or labor, (4) any reasonable doubt that the Contract work can be completed for the balance then unpaid, or (5) damage to another contractor.

28. FAULTY WORK AND MATERIALS

The Contractor shall promptly remove from the premises all materials condemned by the County as failing to conform to the Contract, whether incorporated in the work or not. The Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the County. The Contractor shall bear the expense of making good all work of other contractors destroyed or damaged by such removal.

If the Contractor does not remove such condemned work and materials within reasonable time, fixed by written notice, the County may remove them and may store the materials at the expense of the Contractor. If the Contractor does not pay the expenses of such removal within ten (10) days thereafter, the County may upon ten (10) days written notice, sell such materials at auction or at private sales and shall account for the net proceeds thereof after deducting all costs and expenses that should have been borne by the Contractor.

29. TEMPORARY SUSPENSION OF WORK

The County shall have the authority to suspend the work wholly or in part, for such period as it may deem necessary, due to unsuitable weather or to such other conditions as are considered unfavorable for the suitable progression of the work, or for such time as it may deem necessary due to the failure of the Contractor to carry out orders given by County, or to perform any provision of the Contract. The Contractor shall immediately obey such order of the County and shall not resume work until ordered in writing by the County.

30. SAMPLES

When requested, the Contractor shall submit for the County's review samples of the various materials, together with the finish thereof, as specified for and intended for use in the work. Samples of bulk materials shall be selected by the lab. All materials and workmanship shall in all respects be equal to the samples so submitted and reviewed. Samples shall be sent or delivered to the County, samples and delivery charges paid by Contractor. Samples will be returned to the Contractor if requested, shipping or delivery charges collect.

31. CLEANING AND REMOVAL OF DEBRIS

The Contractor shall, as directed by the County during the progress of the work or as indicated elsewhere in these documents, remove and properly dispose of dirt and debris and shall keep the premises reasonably clean. Upon completion of the work, the Contractor shall remove all of his equipment and unused materials provided for the work and shall put the building and appurtenances in a neat and clean condition and shall do all cleaning and washing required by the specifications.

32. OBSTRUCTIONS

The Contractor may be required to work around public utility facilities and other improvements which are to remain in place within the construction area. The Contractor shall be held liable to the owners of such facilities and improvements for any damage or interference with service resulting from the Contractor's operation.

The exact location of underground facilities and improvements within the construction area, whether shown on the drawings or not, shall be ascertained by the Contractor before using equipment that may damage such facilities or interfere with their service.

33. SUPERINTENDENT IN CHARGE

The Contractor shall keep on the work at all times and until the acceptance certificate is issued a competent superintendent or foreman for the purpose of receiving and executing without delay any orders from County in keeping with the terms of the Contract. This foreman shall have charge of the plans and specifications kept on the job. He shall be instructed to familiarize himself closely with all provisions of the plans and specifications and to follow the same accurately.

34. STORAGE OF MATERIALS AND EQUIPMENT

Materials and equipment shall not be stockpiled or placed outside of the site property lines unless written permission is obtained by the appropriate owner or political subdivision having jurisdiction over the adjacent property, roads, streets, etc.

35. GENERAL GUARANTY

Neither the final payment nor any partial payment, nor partial or entire use of the premises by occupancy by the County shall constitute an acceptance of the work not completed in accordance with the Contract. Final Payment or partial payment or partial or entire use of the premises by occupancy shall not relieve the Contractor of liability with respect to any warranties or responsibilities for faulty materials or workmanship. The Contractor shall remedy any defect in the work and pay for any damage to other work resulting therefrom which shall appear within a period of one (1) year from the date of final acceptance of the work, unless a longer period is specified elsewhere in these specifications. The County shall notify the Contractor of observed defects with reasonable promptness.

36. MATERIALS SUBMITTALS AND SUBSTITUTIONS

Materials and substitutions shall be governed by the relevant sections elsewhere in these documents. If not specified, the following shall govern.

- A. Specific reference to materials, appliances, fixtures and equipment by trade name is intended to be used as standard, but this implies no right on the part of the Contractor to use other materials, fixtures, appliances, equipment, until reviewed by the County.

- B. The County alone shall determine what will be considered as equal, but the burden of proof as to quality, utility and function, etc. shall be upon the Contractor.

If the Contractor desires to substitute any item, he shall in writing state the cost of such item and the original item named in the specifications if requested and shall submit a substitution warranty in the format shown in the specifications.

- C. As soon as practicable and within twenty (20) days after official award of Contract and before any fixtures, materials or equipment are purchased, the Contractor shall submit to the County a complete list of materials, fixtures and equipment giving the manufacturers' names, catalog numbers, etc., and, when requested, the original and substitute item of each article which he proposes to install as a substitution.
- D. Requests for substitution will not be considered after the above period of time unless the item specified is not obtainable or, in the opinion of the County, such substitution would serve the County's interest.

37. CONSTRUCTION, MATERIAL AND LABOR COST SCHEDULES

- A. The successful Contractor shall submit the following schedules to the County within ten (10) days after commencing the work:
1. A construction schedule indicating the start and finish of each phase of the work.
 2. A detailed statement of the cost of material and labor included in the original estimate for each phase of the work so arranged that the value of the work as it progresses may be readily determined.

38. CONFERENCES

At any time during the progress of the work, the County may request the Contractor to attend a conference of any or all of the Contractors engaged on the work, and any notice of such conference shall be duly observed and complied with by the Contractor.

39. INSPECTION AND PAYMENTS - NOT ACCEPTABLE

The fact that the work and materials have been inspected by the County of Mendocino and payments on account have been made does not relieve the Contractor from the responsibility of replacing and making good any defective work or materials that may be discovered within one (1) year from the date of the completion of the work by the Contractor and its acceptance by the County. [Five (5) years for roof.]

40. RETURN OF DRAWINGS AND SPECIFICATIONS

All plans and specifications shall be returned to the Office of the County Director of General Services or shall be accounted for by the Contractor before the final certificate will be issued.

41. ARRANGEMENT OF SPECIFICATION SECTION

- A. For convenience, these specifications are arranged in several sections, but such separation shall not be considered as limiting any work required to a particular trade. The Contractor shall in cooperation with other contractors establish responsibility for any work required by the plans and specifications which may be improperly arranged or not included in the appropriate section.
- B. In areas where one trade meets another for joining, the Contractor is responsible to be certain that all work shown is included in his bid.

42. QUALITY OF MATERIALS AND LABOR

All materials used on this Contract shall be new and the best market quality, unless specified or shown otherwise. All labor used on this Contract shall be competent and skilled for the work. All work executed under this Contract shall be done in the best, most thorough, substantial and workmanlike manner.

All material and labor not meeting these standards shall be removed. The County may refuse to issue any certificate of payment until all defective materials or work have been removed, and other material of proper quality substituted therefor.

43. INCOMPETENT WORKERS

If at any time any foreman or worker who the Contractor shall employ shall be declared by the County to be incompetent or unfaithful in executing the work, the Contractor, on receiving written notice, shall forthwith initiate appropriate action to dismiss such person from the work.

44. COUNTY TO DECIDE

All matters of color, texture, design, and interpretation of plans and specifications shall be referred by the Contractor to the County, whose decision thereon shall be final.

45. CODES

All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal; the Safety Orders of the Division of Industrial Safety; the California Electric Code; the California Building Code; California Mechanical Code; the California Fire and Plumbing Codes; OSHA and other applicable State and local codes and laws. Nothing in these plans or specifications is to be construed to permit work not conforming to these Codes.

46. PAYMENT OF FEDERAL, STATE OR LOCAL TAXES

Any Federal, State or Local tax payable on articles furnished by the Contractor under the Contract shall be included in the Contract price and paid by the Contractor.

47. LIMITATIONS OF HOURS OF WORK

Eight (8) hours of labor constitutes a legal day's work. The Contractor shall forfeit as a penalty \$25.00 for each worker employed in the execution of the Contract by the Contractor for each calendar day which such worker is required or permitted to work more than eight (8) hours in one (1) calendar day and forty (40) hours in any one (1) calendar week in violation of the provisions of the California Labor Code, and in particular Sections 1810 and 1816. Work performed by employees of Contractors in excess of eight (8) hours per day and forty (40) hours during any one (1) week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1 & 1/2) times the basic rate of pay, as provided in Section 1815.]

48. PAYMENT OF NOT LESS THAN THE GENERAL PREVAILING RATE OF PER DIEM WAGES

- A. The Contractor shall pay his workers on all work included in this Contract not less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality. Such per diem wages shall not be less than the stipulated rates contained in a schedule thereof which has been ascertained and determined by the State Director of Industrial Relations to be the general prevailing rate of per diem wages for each craft or type of worker needed to execute this Contract.
- B. The Contractor shall comply with Labor Code Section 1775. In accordance with Section 1775, the Contractor shall forfeit as a penalty twenty-five dollars (\$25.00) for each calendar day or portion thereof, for each worker paid less than the stipulated prevailing rates for such work or craft in which such worker is employed for any work done under the Contract in violation of the provisions of the Labor Code in particular Labor Code Sections 1770 and 1780. In addition to said penalty, and pursuant to Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor.

49. LABOR CODE CLARIFICATION

It is to be understood that references to the California Labor Code shall mean the current Code or as may be amended during the period of the Contract.

50. NOTIFICATION OF READINESS FOR REQUIRED TESTS AND INSPECTIONS

The Contractor shall be responsible to notify all inspectors, testing agencies, and County representatives a minimum of seventy-two (72) hours before required tests and/or inspections.

51. RESPONSIBILITY FOR PROJECT SAFETY AND CONSTRUCTION TECHNIQUES

Specifically omitted from the services of the County are all design and construction review services relating to the Contractor's safety precautions or to means, methods, techniques, sequences, or procedures required for the Contractor to perform his work.

Omitted services include, but are not limited to, shoring, scaffolding, underpinning, temporary retainment of excavations and any erection methods and bracing.

52. RECORD DRAWINGS

- A. The Contractor shall furnish one complete set of clean "Record" drawings to the County prior to project acceptance, showing clearly any changes made during construction. Record drawings shall be in accordance with Section 017839 Project Record Documents.
- B. In addition to any changes, all mechanical, electrical and plumbing items concealed in the building and underground, actually installed and routed. Depth below surface to top of underground item shall be indicated.
- C. All underground items shall be dimensioned from permanent reference points in a manner that they can be easily found in the field at a later time.
- D. Each sheet of the "Record" drawings shall be identified with the following label to be signed by the Contractor:

These are record drawings which have been
prepared or supervised by the undersigned.

Contractor

Date

- E. The Contractor is solely responsible for the preparation, completeness, and accuracy of the "Record" drawings. The County and its representatives are not responsible to review the "Record" drawings.

53. OCCUPANCY OR USE BEFORE ACCEPTANCE OF COMPLETION

The County may occupy any building or portion thereof or use any improvement contemplated by the Contract prior to the completion of the entire work. A list of work to be completed and corrected by the Contractor, if any, shall be prepared and agreed to between the County and the Contractor before occupancy or use. Such occupancy or use shall not operate as an acceptance of any part of the work but shall start the guaranty-warranty period on the structure or portion thereof so occupied or improvement of equipment so used, provided, however, that such occupancy shall not start the guaranty-warranty period as to items appearing on the list of work to be completed and corrected. No such occupancy or use shall be deemed to have occurred unless and until the County has given the Contractor formal written notice of intention to occupy so or use, specifying the portion or portions of the structure, improvement or equipment which will be deemed so occupied or used.

54. COMPLIANCE WITH HANDICAPPED ACCESS LAWS

- A. It is the County's intent for all features on these plans and specifications to conform to applicable regulations for the accommodations of physically handicapped persons in buildings and facilities used by the public, whether or not said plans and specifications so conform.
- B. It shall be the responsibility of the manufacturers, suppliers, and distributors to ensure that all manufactured and fabricated products, devices, and items they supply for this project conform to applicable regulations of Title 24 of the California Code of Regulations.

- C. When shop drawings and/or manufacturers' product literature, and other matters subject to handicapped regulations are submitted to the County, the following shall be provided:
1. Statement that the item shown complies with the handicapped regulations of Title 24 of the California Code of Regulations.
 2. Show all required dimensions, heights, clearances, and locations that must be followed when items are installed on the project.

55. CONTRACT AMBIGUITY

This Contract shall be deemed to have been prepared jointly by the parties signing the Contract and if any inconsistencies or ambiguities exist, they shall not be interpreted or construed against any of the parties as the drafter.

56. FAIR EMPLOYMENT PRACTICES/NONDISCRIMINATION

The Contractor shall comply with Federal and State Fair Employment Practices provisions.

The Contractor, in connection with performance of work under this agreement, agrees to comply with the rules and regulations which deal with or relate to nondiscrimination set forth as follows:

- A. During the performance of this Contract, the Contractor and its subcontractors shall not deny the Contract's benefits to any person on the basis of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex or age, nor shall they discriminate unlawfully against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, age, or sex. Contractor shall ensure that the evaluation and treatment of employees and applicants for employment are free of such discrimination.
- B. The Contractor shall comply with the provisions of the California Fair Employment and Housing Act (Gov. Code, sections 12900 *et seq.*), the regulations promulgated thereunder (2 Cal. Code of Regulations sections 7285.0 *et seq.*), and Government Code Sections 11135 - 11139.5).
- C. The Contractor shall permit access by representatives of the Department of Fair Employment and Housing and the County upon reasonable notice at any time during the regular business hours, but in no case less than 24 hours' notice, to view such of its books, records, accounts, other sources of information and its facilities as said Department or County shall require ascertaining compliance with this clause.
- D. The Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.
- E. The Contractor shall include the above nondiscrimination and compliance provisions in above subparagraphs A and B in all subcontracts to perform work under the Contract.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

This Section includes special requirements for unforeseen hidden conditions, differing site conditions and underground facilities as required for California Public Works Contracts.

1.2 UNFORESEEN SITE CONDITIONS

- A. Pursuant to Section 7104 of the California Public Contract Code, if any of the following conditions, hereinafter called hidden conditions, are encountered at the site. Contractor shall promptly, before such conditions are disturbed and in no event later than three (3) days after discovery, notify County in writing using the "Hidden Conditions Report" attached to this Document:
1. Material that Contractor believes may be hazardous waste material, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or a Class III disposal site in accordance with provisions of existing law.
 2. Subsurface or latent physical conditions at the site or in the building differing materially from those represented in the Contract Documents.
 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 Documents or conditions that could be observed by examination of the site and the Reference Documents.
- B. Conditions that are not unforeseen, hidden, unknown or differing site and building conditions include but are not limited to the following.
1. All that is indicated in or reasonably interpreted from the Contract Documents.
 2. All that is indicated in or reasonably interpreted from the Reference Documents specified in Section 010100, "Summary of Work".
 3. All that could be seen on site and that could be observed.
 4. Conditions that are materially similar or characteristically the same.
 5. Conditions where the location of the building component is in the proximity where indicated in or reasonably interpreted from the Contract Documents or Reference Documents.
- C. The County will promptly investigate the conditions reported, which appear to be unforeseen conditions.
1. If County determines that the reported conditions are inherent in work of the character provided for in the Contract Documents or observed by examination of the site and Reference Documents, or that the condition is not hidden, unforeseen, or materially different, Contractor shall execute the Work at no additional cost to County.

SECTION 00 81 10
UNFORESEEN PHYSICAL CONDITIONS

2. If County determines that the conditions are hidden or differing conditions and that they will materially cause a decrease or increase in Contractor's cost of any portion of the work, Contract Modification will be issued for compensation of such portion of the work as provided in the General Conditions.
 3. If County determines that the conditions are hidden or differing conditions and that they will materially affect the performance time, Contractor, upon submitting a written request, will be granted an extension of time subject to the provisions of the General Conditions.
 - a. Time extensions or contract costs will not be granted for delays that could be or could have been avoided by the Contractor redirecting his forces and equipment to perform other work on the Contract.
- D. Should Contractor disagree with County's determination, Contractor shall submit a Request for Change (RFC) to County that the condition is not indicated in or reasonably interpreted from the Contract Documents, and that the condition is not similar in character to the material that could have been observed by examination of the site and Reference Drawings, but that the condition is materially different and the condition is unforeseen and unknown.
1. Contractor shall submit proof with written explanation, drawings, photographs, material and labor cost breakdowns, and other relevant data to show the condition.
 2. The County will review the Contractor's submission and make a determination. Contractor shall not file for a claim or RFC before the County makes the determination.
 3. In the event of continued disagreement, 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.
 4. Contractor shall retain any and all rights provided either by the Contract or by law which pertain to the resolution of RFC and protests between the contracting parties.

1.3 REMOVAL, RELOCATION, OR PROTECTION OF EXISTING UTILITIES

- A. In accordance with the provisions of Section 4215 of the California Government Code, the County will assume the responsibility for the removal, relocation, or protection of existing main or trunk-line utilities located on the site of the Contract work, if such utilities are not identified in the Contract Documents.
- B. Contractor shall immediately notify County and the public utility in writing of such utility facilities it discovers while performing the work which are not identified in the Contract Documents.
 1. Contractor shall negotiate with the owner of the utility, who shall have the sole discretion to perform repairs or relocation work or permit Contractor to do such repairs or relocation work at a reasonable price.

SECTION 00 81 10
UNFORESEEN PHYSICAL CONDITIONS

- C. Contractor shall not be assessed liquidated damages for delay in Substantial Completion if the delay was caused by such existing utilities in direct conflict with the work and not shown on the Drawings.
- D. Contractor will be compensated under the provisions of Article 7 for extra work involving existing utilities not shown on the Drawings or included in the Specifications but in direct physical conflict with Contractor's operations.
 - 1. This extra work shall include the following costs:
 - a. Locating, supporting, working around, and protecting or repairing damage not due to the failure of the Contractor to exercise reasonable care.
 - b. Removing and relocating, as directed by the County, existing main or trunk line utility facilities located on site but not indicated on the Drawings and Specifications with reasonable accuracy.
 - c. Equipment on the project is necessarily idled during such work.
- E. Contractor shall not be entitled to any adjustment in the Contract Sum or Time if the existence of such condition:
 - 1. Could have been reasonably discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Contract Documents to be conducted by or for Contractor prior to commencing such work, or
 - 2. Could have been inferred from the presence of other visible facilities, such as buildings, meters, and junction boxes, on or adjacent to the work site.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

Title: Willits Library Roof Replacement Project

Issue Date: June 24, 2025

G000	Cover Sheet
A020	Overall Site Plan
A220	Demo and New Roof Plans
A820	Roof Details

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. General Conditions and Division 1 - General Requirements apply to the Work of all Sections.
- B. Contractor is hereby specifically directed to notify and apprise all subcontractors and other parties engaged in the Work as to the Contents of the General Conditions and Division 1 - General Requirements.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work shall be performed at a Project site located in Mendocino County at 390 East Commercial Street, Willits, CA 95490.
- B. The scope of this Contract encompasses the reroofing of the Willits Library, along with all associated work in accordance with the plans and specifications.

Scope of Work shall include, but not be limited to:

- 1. Provide all labor, materials, and equipment to remove and replace the Library Roof and all Related Work indicated on the plans.
- 2. The contractor shall provide a proposed work schedule within two (2) weeks of receipt of the fully executed contract or Notice to Proceed.
- 3. Work shall be completed no more than sixty (60) calendar days after the Notice to Proceed date.
- 4. Provide all labor, material, and equipment to complete work as depicted in the drawings, as described in the project manual or as necessary for a complete and proper installation. The extent of the work as indicated on the Drawings and as described in the Specifications shall include all that may be reasonably inferred to be required for the proper execution or installation of work. Present to the County, at the close of the project, signed copies of all required permits indicating successful completion of all permit requirements.
- 5. Should the General Conditions or Contract Documents contradict themselves, Contractor shall provide the more stringent or higher quality or quantity unless otherwise approved by the County.
- 6. The Drawings shall be recognized as diagrammatic in nature and not completely descriptive of all requirements for construction. Whatever work may be specified, and not drawn, or drawn and not specified, is to be executed as fully as if described in both these ways; and should any workmanship or material be necessary which is not either directly or indirectly noted in these specifications, or shown on the Drawings, but is nevertheless necessary for the purpose of properly carrying out the obvious intention thereof, Contractor is to understand the same to be implied, and is to provide for the same in its bid, as fully as if it were particularly described or delineated.

1.3 TYPE OF CONTRACT

- A. Contractor shall construct the Work under a single fixed-price Contract.
 - 1. Where the term "Contractor" is used in the Specification, the General Contractor is referred to.
 - 2. Where the terms "Plumbing Contractor," "Electrical Contractor," etc., are used, it has been for convenience only and in no way affects the overall responsibility of the General Contractor.

1.4 PRECEDENCE OF DOCUMENTS

- A. In the case of discrepancy or ambiguity in the Contract Documents, the following order of precedence shall prevail:
 - 1. Modifications in inverse chronological order and alphanumeric order.
 - 2. Signed Agreement and terms and conditions referenced in the Signed Agreement.
 - 3. Supplemental Conditions.
 - 4. General Conditions.
 - 5. Division 1 specifications.
 - 6. Drawings and Division 2 through 16 specifications.
 - 7. Written numbers and figures, unless obviously incorrect.
 - 8. Figured dimensions over scaled dimensions.
 - 9. Large format drawings over small-scale drawings.
- B. Any conflict between the Drawings and Division 2 through 16 specifications will be resolved in favor of the document of the latest date (i.e., the most recent document), and if the dates are not the same or are not determinable, then in favor of the specifications.
- C. Any conflict between a bill or list of materials shown in the Contract Documents and the actual quantities required to complete the Work required, then the actual quantity shall take precedence.

1.5 USE OF PREMISES

- A. General: Comply with requirements in General Conditions and Section 01500.
- B. Area available for Contractor's use for work and storage, if any, is limited to the area designated by the County.
- C. The work is to be performed at a facility that is open to the public, and will be in use during the work. Contractor shall ensure that staff and public access and egress areas are open and protected from falling debris.

- D. Fire Department Access: Contractor's use of premises shall not limit required Fire Department access.

1.6 EXAMINATION

- A. General: As stipulated in Document 001000, Contractor is responsible for inspection of the existing site conditions and bidding documents prior to bidding and shall include in their bid any modifications of the Contract Documents required as a result of Contractor's inspection.
- B. Persons performing work shall examine conditions that affect their work and shall report in writing to the Contractor, with a copy to the County, conditions detrimental to work.
 - 1. Failure to examine and report makes the person responsible, at no increase in the Contract Sum, for corrections necessary for the proper installation of their work.
 - 2. Commencement of Work constitutes acceptance of the existing condition.
- C. Field Verification: The Contractor shall verify all existing conditions in the field prior to commencing the Work.

1.7 PERMITS FOR WORK

The Contractor is responsible for fulfilling all permit requirements for the completion of the work. Building permit fees if required will be paid directly by the County.

1.8 LISTING OF RELATED WORK

Listings of related work or sections in the various Sections are not necessarily complete listings. They are provided for information and convenience only and are intended to highlight related or similar work, which is specified in other Sections. Related work listings and omissions from such listings are not intended to control the Contractor in dividing the work among subcontractors or in establishing the extent of the work to be performed by any trade.

1.9 REQUEST FOR INFORMATION (RFI)

- A. Requirement: It is Contractor's responsibility to review Contract Documents a minimum of Fifteen (15) days in advance of the work to be executed, and to request information so that County will have sufficient time to respond to Requests for Information prior to the start of actual construction of that part of the Work to which the RFI relates. Contractor shall be responsible for all delays, disruptions, and other related impacts as a result of untimely RFI's submitted to the County.
- B. Contractor shall coordinate all requests for information to prevent duplication. Requests for information that are duplicative, uncoordinated with each other, or do not allow for a reasonable time for response will be returned to the Contractor.
 - 1. Contractor shall promptly notify the County in writing of any discrepancies and shall not proceed with the Work until such discrepancies have been resolved.
 - 2. Failure to notify the County shall not relieve the Contractor of its responsibility for resulting damage and/or defect, and for the cost of any corrective work that may be required due to the Contractor's failure to notify.

- C. Contractor shall prioritize RFI's and request a response based on its most current and accepted CPM schedule.
- D. Form:
1. When an interpretation or clarification of the Contract Documents is required from the County, the Contractor shall make the request on a copy of the RFI form included at the end of this section.
 2. Contractor shall fill in all applicable information on the form.
 3. Contractor shall limit the subject to one design discipline to expedite reply and attach supplementary information where necessary.
 4. County will reply or give summary of reply on the same form and include supplementary information where necessary.
 5. The completed form shall be the written record of each RFI.
 6. Contractor shall not use any other RFI form on this Project.
- E. Uses:
1. The RFI form shall be used for interpretation or clarification of the Contract Documents only.
 2. Contractor shall not use the RFI form for the following: County will not reply and will reject the RFI:
 - a. Product or material substitution.
 - b. Questions relating to construction means, methods, techniques, sequences, procedures or safety precautions. (These are the Contractor's responsibilities exclusively.)
 - c. Questions relating to construction schedule, coordination between trades, or division of work among subcontractors. (These are also Contractor's responsibilities exclusively.)
 - d. Questions on contract administration procedural matters, unless they require interpretation or clarification of the Contract Documents.
 - e. Dimensions or quantities which are shown on the Contract Documents, or which can be measured from the building, or calculated from the information contained in the Contract Documents.
 - f. Confirmation of interpretations or clarifications previously provided by County.
- F. Reply:
1. County will endeavor to reply to all RFI's promptly as work schedule of the consultants allows; generally, no later than fifteen (15) days from the day received.

SECTION 01 01 00
SUMMARY OF WORK

2. When an RFI involves a complex subject, extensive research or development, or substantial input from other governmental agencies, the County will inform the Contractor and request additional time to prepare the reply. Contractor shall cooperate and agree to a reasonable time extension.
3. The reply shall be a clarification or an interpretation of the Contract Documents; the reply is not an authorization of change in the Contract Sum or Time.
4. Such written interpretation or clarification will be binding on the Contractor and the County. If County or Contractor believes that a written interpretation or clarification justifies an adjustment in the Contract Sum or Time, then County or Contractor may make a written request for change therefor as provided in the General Conditions, Article 1.07.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION
NOT USED

END OF SECTION

REQUEST FOR INFORMATION (RFI)
Willits Library Roof Replacement Project

RFI No. _____

Submitted By: _____ Date: _____

	<i>Ctr to PM</i>	<i>PM to Arch</i>	<i>Arch to PM</i>	<i>PM to Ctr</i>
Date Sent:	_____	_____	_____	_____

Date Received:	_____	_____	_____	_____
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Type of Information Requested:

<input type="checkbox"/> Site Work	<input type="checkbox"/> Structural	<input type="checkbox"/> Architectural	<input type="checkbox"/> HVAC
<input type="checkbox"/> Plumbing	<input type="checkbox"/> Fire Protection	<input type="checkbox"/> Electrical	<input type="checkbox"/> Other

Spec. Section: _____ Paragraph(s): _____

Drawing Sheet: _____ Detail(s): _____

Information Requested: _____

μ Mark this circle if the RFI can be answered by Contractor's review of the documents. Reply with location(s) where the information can be obtained.

Reply: _____

By: _____ Firm: _____ Date: _____

The reply is a clarification or an interpretation of the Contract Documents. No change in the Contract Sum or Time is authorized. The Contractor shall notify the County in the event the Contractor believes the response to the RFI will result in additional costs. The Contractor shall comply with the requirements of Article 2.06 and 2.07 of the General Conditions regarding notice and submittal of an RFC. See Specification Section 01010 for the timeliness of reply.

06/2025

County of Mendocino
Willits Library Re-Roof
NMR Project No. 25-6471

01 01 00 - 6

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements to permit evaluation of existing conditions before defining the required scope for each allowance item and final direction that will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Force account allowances.
- C. Related Requirements:
 - 1. Section 007000 "General Conditions" for Changes in Work
 - 2. Section 008110 "Unforeseen Physical Conditions" for the definition of hidden conditions.

1.3 SURVEY AND ASSESSMENT

- A. The base bid includes all labor, materials, and equipment necessary to remove and replace the roof, as well as all related work as indicated on the plans, required to complete the job. Before dry rot removal, the Contractor shall coordinate with the architect and the county to inspect the condition of plywood sheeting, fascia and other wood members.
- B. In consultation with the Contractor and the Architect, the County will determine the extent of dry rot removal to be completed and provide direction to the contractor. Should dry rot removal be required, the County will provide the Contractor with a Request for Proposal. The Contractor shall promptly provide a Lump Sum or Unit Cost Proposal in accordance with Section 007000 General Conditions, Chapter 20 – Changes in the Work.
- C. In the event other unforeseen conditions are encountered, the Contractor shall promptly notify the County and Architect and proceed according to paragraph 1.3 B. above to survey and assess such conditions.

1.4 ACTION SUBMITTALS

- A. Submit proposals for the work noted above.
- B. Upon completion of identified repairs, submit revised Schedule of Values noting allowance amounts used.

1.5 INFORMATIONAL SUBMITTALS

- A. Submit timecards, invoices, or delivery slips to show actual labor time and quantities of materials delivered to the site for use in completing allowance work authorized under the force account.
- B. Coordinate and process submittals for allowance work items in the same manner as for other portions of the Work.

1.6 COORDINATION

- A. Coordinate allowance items with other portions of the Work.

1.7 ALLOWANCE ITEMS

- A. Provide for each allowance item on the schedule of Values.
- B. Use the allowances only as directed by the County for labor, materials, and equipment to remove dry rot or provide work to resolve unforeseen conditions, by unit cost, lump sum price, or force account authorized in writing by the owner.
- C. At Project closeout, credit unused amounts remaining in the contingency allowance to the Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between the authorized cost of all repairs completed and the allowance amount.
 - 1. If requested, include cost of lump sum proposals for the work performed.
 - 2. Submit substantiation of any force account work related to allowance work authorized in advance by the owner.
- B. Submit Contract Change Order to refund the balance of the Allowance to the County or claims for increased costs for work performed on authorized work items that exceed the allowance amount included in the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing conditions at the time work is to be performed to verify that the conditions are suitable for the work under the allowances. Immediately report all unsatisfactory conditions to the County.

3.2 PREPARATION

- A. Submit and secure approval for all labor, materials, and equipment related to additional dry rot removal costs before commencing work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No.1: Additional Dry Rot Removal or Unforeseen Conditions: Include the sum of \$10,000 for labor, materials, and equipment to remove dry rot or to resolve unforeseen conditions encountered during the project.
 - 1. This allowance includes labor, materials, equipment costs, contractor overhead, and profit, as documented for either lump sum or force account work, to complete authorized additional dry rot removal or to address other unforeseen conditions.

END OF SECTION.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide temporary facilities and controls needed for the Work included, but not necessarily limited to:
 - 1. Temporary utilities, including water, electricity, lighting, and telephone.
 - 2. Temporary building services such as electricity, gas, heating, cooling, or telephone and data, when interruption in services is required to complete the work.
 - 3. Sanitary facilities.
 - 4. Enclosures and temporary protection such as fencing, tarpaulins, barricades, and canopies.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, Project Plans, General Conditions, Supplementary conditions, and Sections in Division 1 of these Specifications.

1.2 JOB SAFETY

- A. Comply with all applicable laws and regulations pertaining to job safety, and be solely responsible for construction means, methods, techniques, sequences procedures and safety precautions and programs in connection with the Work. The owner or Architect will not be responsible for the Contractor's failure to employ proper safety procedures.
- B. All work, including the temporary construction, shall be in full accord with the latest orders, rules and regulations of the State of California Division of Industrial Safety and the California Occupational Safety and Health Act (CAL-OSHA).
- C. The Contractor shall at all times so conduct his work as to cause the least possible obstruction and inconvenience and insure the protection of persons and property in the vicinity of the Work.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS FACILITIES

- A. Construction Aids: Hoists, ramps and ladders, enclosures, pumps, barriers, fences, barricades necessary to adequately move materials and equipment and to protect workmen and public.
- B. All temporary construction and protection to comply with requirements of state and local authorities.
- C. Sanitary Facilities
 - 1. Provide and pay for temporary sanitary facilities in the quantity required for use by all personnel
 - 2. Shall be maintained in a sanitary condition at all times.

SECTION 01 50 00
TEMPORARY FACILITIES & BUILDING SERVICES

3. Facility shall remain locked when the Contractor is off-site.

PART 3 – EXECUTION

3.1 EXISTING BUILDING SERVICES

- A. Utilities: Coordinate the temporary shut-off of any utilities, including water, electricity, gas, and sanitary sewer, with the County. No utility will be made unavailable to buildings for more than 2 hours without written approval from the County.
- B. Provide a minimum of 48 hours' written notice to the County prior to any activities that may result in loss of water, fire water, sewer, gas, electrical, or data connectivity. Coordinate all changeover activities closely with the County.
- C. The library shall remain open during construction, unless other arrangements are made in advance. The contractor will coordinate with the library to maintain the working schedule that has the least impact on the public and library functions.
- D. Work in the Mendocino County Willits Library:
 - 1. The Library operates as a public facility and is expected to experience foot traffic during its standard operating hours. Safety measures will be implemented to protect the library patrons during construction.
 - 2. Provide a minimum of 7-day notice before beginning work.
 - 3. Provide clear delineation and appropriate barriers and signage to protect the public and county employees for the entirety of the project.
 - 4. Protect staff and public entrances from falling debris.
 - 5. Do not leave materials, tools equipment or debris unattended in any areas that are accessible to the public or county employees.
 - 6. Remove all equipment, temporary facilities, debris and thoroughly clean all affected surfaces before removing barriers.
 - 7. Normal Library Schedule:

<u>Day</u>	<u>From</u>	<u>To</u>
<u>Monday</u>	<u>Closed</u>	<u>Closed</u>
<u>Tuesday</u>	<u>10 AM</u>	<u>7 PM</u>
<u>Wednesday</u>	<u>10 AM</u>	<u>7 PM</u>
<u>Thursday</u>	<u>10 AM</u>	<u>7 PM</u>
<u>Friday</u>	<u>10 AM</u>	<u>6 PM</u>
<u>Saturday</u>	<u>10 AM</u>	<u>5 PM</u>
<u>Sunday</u>	<u>Closed</u>	<u>Closed</u>

SECTION 01 50 00
TEMPORARY FACILITIES & BUILDING SERVICES

3.2 SECURITY

- A. Contractor shall be responsible for securing the project Site and work areas within the park, including:
 - 1. Secure and maintain access points to the Work
 - 2. Secure equipment and temporary facilities until the time of acceptance.
 - 3. Security and protection may be provided by any legal method or methods acceptable to the County.

3.3 MAINTENANCE AND REMOVAL

- A. The Contractor shall be responsible for ensuring the effectiveness of erosion and sediment control devices and for repairing or replacing them as necessary throughout the project.
- B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit or as directed by the County.

END OF SECTION

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Remove existing mechanical equipment where indicated.
- B. Remove existing tarp construction as indicated.
- C. Coordinate hazardous materials investigation.
- D. Remove existing roofing materials
- E. Protect existing building from weather damage.

1.2 EXISTING CONDITIONS

- A. Conduct demolition to minimize interference with adjacent building areas. Maintain protected egress and access to the building at all times.
- B. Provide, erect, and maintain temporary barriers and security devices.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Erect and maintain weatherproof closures for exterior openings and roof decks.
- B. Protect existing items which are not indicated to be altered.
- C. Disconnect, remove, and cap designated utility services within demolition areas.
- D. Mark location of disconnected utilities. Identify and indicate capping locations on Project Record Documents.

3.2 HAZARDOUS MATERIALS

- A. Regulatory Requirements
 - 1. The contractor and all subcontractors involved in this project shall have current knowledge of the United States Asbestos Hazard Emergency Response Act of 1987.
 - 2. The contractor and all subcontractors involved in this project shall have current knowledge of Title 8, California Code of Regulations, Section 1532.1 Construction Lead Standards.
- B. Reports: It is not expected that hazardous materials will be encountered in the Work.
 - 1. A partial hazardous materials inspection report has been made available to the bidders for a portion of the roof.

06/2025

County of Mendocino
Willits Library Re-Roof
NMR Project No.25-6471

02 41 14 - 1

SECTION 02 41 14
DEMOLITION FOR REMODELING

2. Upon receipt of the notice to proceed, the contractor shall remove the tarp to permit a hazardous materials inspection to be conducted for the remainder of the roof. Coordinate with the County to schedule the hazardous materials inspection and report prior to roof tear off.
3. If suspected hazardous materials are identified in the report, hazardous materials will be removed by the County under a separate contract.
4. Notify architect and owner immediately upon encountering any asbestos construction materials. hazardous materials will be removed by the County under a separate contract.

3.3 EXECUTION

- A. Demolish in an orderly and careful manner. Protect existing supporting structural members, utility runs and landscaping. Assume existing components not specifically noted to be removed will remain. Protect to maintain original condition.
- B. Except where noted otherwise, immediately remove demolished materials from site.
- C. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect under provisions of Section 01 60 00.
- D. Remove, store, and protect for re-installation materials and equipment hindering improvements.
- E. Remove material and equipment to be retained by Owner with care to avoid unnecessary damage.
- F. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- G. Report any encounter with asbestos bearing materials to the Architect or Owner immediately and stop work in the area.
- H. Do not burn or bury materials on site.
- I. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
- J. Repair areas to remain that are damaged by the Demolition.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes:
 - 1. Structural and non-structural framing and sheathing.
 - 2. Miscellaneous concealed and exterior lumber and sheet materials as shown or required.
 - 3. Roof curbs and cants.
 - 4. Blocking in wall and roof openings.
 - 5. Concealed wood blocking for support of washroom accessories and wall cabinets.
 - 6. Wood Blocking.
 - 7. Treatment of wood members where required.
- B. References:
 - 1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 - 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 - 3. American Wood Council (AWC):
 - a. National Design Specification for Wood Construction.
 - 4. West Coast Lumber Inspection Bureau (WCLIB):
 - a. Standard Grading Rules for West Coast Lumber.
 - 5. Western Wood Products Association (WWPA):
 - a. Western Lumber Grading Rules 2017.
 - 6. American Wood Preservers Association (AWPA):
 - a. 2020 AWPA Book of Standards.
 - b. U1-20 User specification for Treated Wood.
 - 7. American Wood Preservers Bureau (AWPB):
 - a. Quality Control Standards.
 - 8. Redwood Inspection Service (RIS):
 - a. Standard Specifications for Grades of California Redwood Lumber.
 - 9. American Society of Testing Materials (ASTM):
 - a. ASTM A36 / A36M - 19 Standard Specification for Carbon Structural Steel.
 - b. ASTM A307 - 14e1 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
 - c. ASTM A653 / A653M - 20 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - d. ASTM E84 - 20 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 10. Federal Specifications (FS):
 - a. FS TT-W-571 - Wood Preservation: Treating Practices.
 - b. FS FF-N-105B - Common Wire Nails.
 - 11. California Building Code Title 24, Chapter 23.
 - 12. American Forest and Paper Association (AF and PA).

1.2 QUALITY ASSURANCE

- A. All pieces of lumber to have visible grade stamp of an agency certified by AF and PA.
 - 1. Grade and quality marks shall not be apparent on surfaces exposed in the finished work.
- B. Provide written certification stating that materials provided meet specified requirements,

including but not limited to their compliance with referenced standards relative to:

1. Grade mark for the use intended
2. Preservative treatment
3. Fire retardant treatment

1.3 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from weather while in transit. Place under cover and protect from weather immediately upon delivery.
- B. Store flat, off the floor, in well ventilated area where there will be no great variations in heat and humidity.

1.4 WARRANTY

- A. Warrant the Work specified herein for two (2) years against becoming unserviceable or causing an objectionable appearance resulting from defects in materials and workmanship.
- B. Warrant that products comply with the Contract Documents and local use restrictions, and are compatible with adjoining materials, substrates and other conditions of installation.
- C. Defects shall include, but not be limited to:
 1. Buckling or warping of surfaces
 2. Loose or missing parts
 3. Faulty installation, attachment or alignment
 4. Deterioration due to lack or loss of preservative treatment

PART 2 PRODUCTS

2.1 LUMBER

- A. Provide locally sourced materials when possible.
- B. Lumber: PS 20, graded in accordance with NDS Grading Rules; Rule No. 17 of the West Coast Lumber Inspection Bureau:
 1. Moisture content of 19% maximum for 2x thickness and less; 19% maximum for thickness greater than 2x and less than 4x; and 22% maximum for thickness greater than 4x.
 2. Non-Structural Light Framing: #1.
 3. Structural Framing: see structural drawings.
 4. Sill Plates (On Concrete): Construction Grade Light Framing, pressure treated as hereinafter specified; as noted on plans.
 5. Surfaced to "DRY" sizes. Sizes noted are nominal unless shown as net.
- C. All wood materials exposed in the finished work shall have resawn surfaces of clean natural color unless noted or specified otherwise. Concealed framing lumber shall be S4S.
- D. End jointed lumber shall not be used. All structural wood members with the least dimension 2 1/2" or greater shall be free of heart center. All sides surfaced.
- E. Preservative Treated Wood Materials: Pressure-treated in accordance with Standard Specifications of AWP for treating structural timbers and FS TT-W-571.

2.2 ACCESSORIES

- A. Furnish and install all connecting hardware indicated on Drawings, specified herein or required to complete the work.
- B. Materials:
1. Nails, Screws, Bolts and Fasteners: Hot-dipped galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.
 2. Nails for light gauge metal connectors: Common wire nails, sizes as indicated or as specified by metal connector manufacturer
 3. Screws: Standard domestic manufacturer, bright steel. Galvanized for exterior use. Brass, bronze, aluminum or stainless when used to fasten items made of those metals.
 4. Screws: For attaching interior trim and finish to drywall partitions, use Type S, self-drilling, self-tapping anodized steel drywall screws of indicated lengths
 5. Bolts: ASTM A307 Grade A machine bolts with standard hex nuts and steel plate or cut washers or carriage bolts with standard hex nuts and cut washers as indicated. Bolts, nuts and washers wholly or partially exposed on exterior shall be galvanized. Sill plate anchor bolts shall use 3 inch by 3 inch by 1/4 inch Plate Washers.
 6. Steel Plates and Angles: In accordance with ASTM A36.
 7. Lag Screws, Shear Plates, and Split Ring Connectors: As per American Forest & Paper Association "National Design Specifications for Wood construction".
 8. Lag Bolts: Fed. Spec. FF-B 561. Pre-drill per CBC.
 9. Framing Anchors, Joist Hangers, Etc.: As made by Simpson Company and indicated on drawings, or equivalent devices as approved by Architect. All framing connectors and joist hangers in contact with preservative-treated wood shall be coated to meet the requirements of CBC Section 2304.9.5.1. Connectors in contact with preservative-treated wood should have a minimum coating meeting the connector manufacturer's recommendations based upon the type of preservative treatment used. At outdoor installations, in the absence of manufacturer's recommendations, the connectors in contact with preservative-treated wood shall have a minimum coating meeting ASTM A653, type G185 per the CBC.
 10. Power Driven Inserts: Hilti, Ramset, or as approved by Architect; install as per manufacturer's directions.
 11. Miscellaneous Clips, Steel Assemblies: As per ASTM A36.
 12. Provide drilled anchors (i.e., Hilti Kwik Bolt TZ) as indicated on plan in concrete. Pull test as indicated on per table in General Structural Notes of construction drawing set.
- C. Pressure Treatment (Decay and Termite Prevention):
1. Pressure treat for decay and termite prevention, Douglas fir or larch wood materials which are embedded in or set against concrete.
 2. Treat in accordance with Reference Standard 1.02 E and quality mark as per Reference Standard 1.02 F.
 3. Treat with any of the following processes at Contractor option. Creosote type preservatives are not permitted:
 4. Penta in an LPG carrier ("Cellon") or Penta in Hydrocarbon Solvent-Type D (Dow Process) AWPB LP-4 quality marked).
 5. Ammoniacal copper arsenate (ACA) or chromated copper arsenate (CCA) in a water carrier (AWPB LP-2 quality marked).
 6. Disodium Octaborate Tetrahydrate (DOT) such as Advance Guard/Hi-bor by Osmose, Inc.
 7. Members treated with waterborne salts shall be dried to a moisture content not exceeding 19% after treatment.
 8. Where possible, precut material before treatment.

9. Holes and cutoffs and handling and storage shall be in accordance with AWPA M-4.
 10. Ensure that ferrous metal fastenings and items in contact with wood treated with waterborne salts are hot dip galvanized (1.25 oz. coating) where required by ICC reports.
- D. Building Paper and Felt: Two (2) layers Kraft waterproof building paper or 15# unperforated asphalt saturated rag felt per CBC Standard 14-1.
- E. Framing connectors: Simpson Strong Tie Corp., or Architect approved substitute.

PART 3 EXECUTION

3.1 SITE TREATMENT

- A. Field apply a compatible preservative or fire-retardant treatment, as applicable, to site-sawn ends of treated members in accordance with manufacturer's recommendations. Allow treatment to cure prior to placing members.
- B. Locations requiring preservative treatment:
1. Sill Plates for wood framing in contact with concrete or masonry.
 2. Blocking or grounds in contact with concrete or masonry.
 3. Blocking or grounds concealed in construction in such a manner as to prevent exposure to circulating air.
- C. Locations requiring fire retardant treatment:
1. Concealed backing and blocking within partition or ceiling construction.
 2. Other interior locations as shown or required by code.

3.2 SELECTION AND USE OF LUMBER

- A. Examine each piece of lumber separately. Select for strength, warp and appearance, using the best pieces for the most demanding purposes.
- B. Discard inferior portions of members where shorter pieces are required.

3.3 INSTALLATION

- A. Execute carpentry Work carefully with neat cuts and close joints. Fit members to give firm seating and bearing.
- B. Place members true to lines and levels. Secure rigidly in place.
- C. Construct continuous members with pieces of longest possible lengths.
- D. Install members where indicated or needed to provide proper nailing, furring or bracing. Provide all blocking as required to hold Work in proper position.
- E. Bore bolt holes only slightly larger than size of bolts. Provide washers for all bolts where heads or nuts bear on wood. Where required, countersink heads, nuts and washers.
- F. Plywood Sheathing: Install plywood roof sheathing and sub flooring with long dimension perpendicular to joints.

- G. Fire Blocking: Provide in accordance with CBC Section 708.

3.4 FRAMING

- A. General: Install all wood framing making proper provisions for work of other trades. Do all cutting of wood required to accommodate plumbing, heating and ventilating, electrical and other trades. Fit neatly around all exposed items such as outlet boxes, conduit, pipes and ducts.
- B. Exterior Base Plates or Bearing or Sheathed Wall Sills Resting on Concrete: Bed in cement mortar to obtain a continuous bearing. Mortar shall consist of one part cement to three parts sand. Mix mortar in small quantities so it can be used promptly. Size all plates or sills and set level true to line. Bolt down with bolts of size, length and spacing indicated, with a bolt not more than nine inches from the end of any piece. Each piece shall receive at least two bolts.
- C. Rough Framing: Fit closely; set accurately to required lines and levels and secure rigidly in place. Set horizontal and inclined members with crown edge up. Do not cut, notch, or bore structural members without specific approval. Reinforce cut members as directed. Bolt, nail and spike thoroughly with not less than sizes and quantities indicated. Structural members shall provide full contact at all bearing surfaces. Joists shall be spliced over bearings unless shown otherwise.
- D. Studs: Construct walls and partitions of nominal 2 by 4, 2 by 6, 4 by 6, 2 by 8, or 4 by 8 studs, 16 inches on center, unless otherwise indicated or required to be larger to accommodate mechanical or electrical equipment, piping, and fixtures or the fixtures or equipment of any other trade. Unless otherwise indicated, all panels, valve covers, cleanouts, devices, access doors, recessed cabinet boxes, etc. shall be mounted flush with the adjacent wall surface. When any such item is of a depth where it is not practical to use solid studding to the full thickness of the wall, the wall shall be furred. When furring is required, it shall extend the full width of the room on the wall in which it occurs and from floor to roof or ceiling joists. The studs comprising all interior partitions and the wall material affixed to them shall extend from floor to ceiling joist framing except as otherwise indicated. Staggered stud walls shall be constructed where indicated on drawings.
- E. Top Plates in Bearing Partitions: Shall be doubled and lapped at each intersection with walls or partitions. Stagger joints in upper and lower members of top plate not less than 4 feet and splice as shown.
- F. Provide blocking not less than 2 inches in thickness (nominal) of same width as studs as shown on drawings. Also install all fire stopping as required by Section 708 of the California Building Code.
- G. Frame corners solid where stud walls or partitions meet, or as indicated on drawings.
- H. Connections and Fastenings: Conform to CBC. Unless otherwise specified or shown on the Drawings, conform to minimum nailing requirements of CBC. For bolted connections, provide washers under heads and nuts bearing on wood, and draw nuts tight. Retighten before closing in framing. Exercise care in nailing through exposed sheathing and siding and ensure that fasteners penetrate into framing members

3.5 WOOD BACKING AND NAILING STRIPS

- A. Provide all wood backing, furring or blocking indicated or required for proper installation and attachment or work of other trades.

1. Form lumber, which has been cleaned and is in sound conditions, may be used, unless other material is indicated.
- B. Provide wood stripping where indicated for attachment of finish materials to wood or concrete surfaces

3.6 TOLERANCES

- A. Framing Members: 1/4 inch maximum from true position.
- B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum.

3.7 CLEANUP

- A. Upon completion of installation activity, remove all waste, sawdust, dirt, wrappings and excess materials, tools and equipment. Thoroughly clean all surfaces to the satisfaction of the Architect.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes but is not limited to:
 - 1. Wall sheathing.
 - 2. Roof and floor sheathing.
 - 3. Accessories necessary for a complete installation.
- B. References:
 - 1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 - 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 - 3. American Society of Testing Materials (ASTM):
 - a. ASTM A153/A153M-16a Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - b. ASTM B117 - 19 Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - c. ASTM C208-12(2017)e2 Standard Specification for Cellulosic Fiber Insulating Board
 - d. ASTM C209-15 Standard Test Methods for Cellulosic Fiber Insulating Board.
 - e. ASTM D2898-10(2017) Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
 - f. ASTM D3273-16 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - g. ASTM D3498-19a Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing.
 - h. ASTM D5516-18 Standard Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
 - i. ASTM D6305-08(2015)e1 Standard Practice for Calculating Bending Strength Design Adjustment Factors for Fire-Retardant-Treated Plywood Roof Sheathing.
 - j. ASTM E84-20 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - k. ASTM E119-19 Standard Test Methods for Fire Tests of Building Construction and Materials.
 - l. ASTM F1667-18a Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
 - 4. California Building Code, Title 24, Chapter 23
 - 5. American Plywood Association Product Standards (APA-PS):
 - a. PS-1 - Construction and Industrial Plywood
 - b. PS-2 – Performance Standard for Wood-Based Structural Panels
 - 6. Federal Specifications (FS):
 - a. FS FF-N-105B – Common Wire Nails
 - 7. Gypsum Association (GA):
 - a. GA-600-2018: Fire Resistance and Sound Control Design Manual.
 - 8. National Design Specification (NDS).

1.2 SUBMITTALS

- A. All submittals shall be submitted under the provisions of Section 01 33 00. Contractor initial

06/2025

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County of Mendocino
Willits Library Re-Roof
NMR Project No.25-6471

submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Contract Closeout.

- B. Submittal Item No. 06 16 00A – Product Data:
 - 1. Provide technical data for each type of process and factory fabricated product. Indicate component materials and dimensions and include construction and application details:
 - a. Include data for wood preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
 - b. Include data for fire retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
 - c. For fire retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.
 - d. For products receiving a waterborne treatment, include statement that moisture content of treated materials reduced to levels specified before shipment to Project site.
 - e. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.3 QUALITY ASSURANCE

- A. Plywood Grading Agency: Certified by APA.
 - 1. All pieces of sheathing shall be stamped with grade stamp.
- B. Fire Test Response Characteristics:
 - 1. For assemblies with fire resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction:
 - a. Fire Resistance Ratings: Indicated by design designations from UL *Fire Resistance Directory* or GA-600 *Fire Resistance Design Manual*.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.4 REGULATORY REQUIREMENTS

- A. Conform to the California Building Code, Chapter 23.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the job site in manufacturer's original packaging, containers, and bundles with manufacturer's brand name and identification intact and legible.
- B. Storage and handling: Store level and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage, and damage to edges.
 - 1. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings

PART 2 PRODUCTS

2.1 MATERIALS

- A. Plywood: APA PS 1.
- B. Oriented Strand Board: APA PS 2.
- C. Thickness: As necessary to comply with requirements specified, but not less than thickness indicated.
- D. Factory mark panels to indicate compliance with applicable standard.

2.2 STRUCTURAL SHEATHING

- A. Sheathing shall conform to the requirements of U.S. Product Standard PS 1 or PS 2. Each piece shall be clearly and legibly grade marked with established symbols of the American Plywood Association. Grades shall be as shown on the Drawings. Exterior glue required.

2.3 PRESERVATIVE TREATED PLYWOOD:

- A. [reserved]

2.4 FIRE RETARDANT TREATED PLYWOOD

- A. [reserved]

2.5 SUBFLOORING AND UNDERLAYMENT

- A. [reserved]

2.6 FASTENERS

- A. Furnish and install all connecting hardware indicated on Drawings, specified herein or required to complete the work.
- B. Provide fasteners of size and type indicated that comply with requirements specified for material and manufacture. Provide fasteners with hot dip zinc coating complying with ASTM A153/A153M.
- C. Nails, Brads, and Staples: ASTM F1667.
- D. Nails for wood-to-wood connections for attachment of sheathing: Common wire or box, galvanized for exterior work. 16d Green vinyl-coated sinkers are an acceptable substitution for 10d box nails.
- E. Power Driven Fasteners: NES NER-272.
- F. Wood Screws: ASME B18.6.1.
- G. Screws for Fastening Gypsum Sheathing to Cold Formed Metal Framing:
 - 1. Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic polymer or corrosion protective coating having salt spray resistance of more than 800 hours according to ASTM B117:

- a. For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C1002.

2.7 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Framing: Formulation complying with ASTM D3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General: Install all wood framing making proper provisions for work of other trades. Do all cutting of wood required to accommodate plumbing, heating and ventilating, electrical and other trades. Fit neatly around all exposed items such as outlet boxes, conduit, pipes and ducts.
- B. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- C. Securely attach to substrate by fastening as indicated, complying with Table 2304.10.1 Fastening Schedule in ICC *International Building Code*.
- D. Coordinate wall and roof sheathing installation with flashing and joint sealant installation so materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.
- G. Install roof sheathing and subflooring with long dimension perpendicular to joists. Install wall sheathing with long dimensions vertical. Sheathing shall have edges blocked and butted tightly and nailed for diaphragm or shear wall stresses as indicated on drawings. Sheathing panels in non-shear walls shall be spaced with a gap of 1/8" where installed under cement plaster finish. All sheathing shall be laid with the best face on exposed side. Stagger joints if more than one layer is indicated. Machine nailing is subject to satisfactory jobsite performance.
- H. Provide blocking not less than 2 inches (nominal) in thickness of same width as studs as shown on drawings. Also install all fire stopping as required by Section 708 of the California Building Code.

3.2 SHEATHING

- A. Secure wall sheathing horizontally parallel to wall studs, with ends staggered over firm bearing.

- B. Secure roof sheathing perpendicular to framing members with ends staggered. Secure sheet edges over firm bearing. Provide solid blocking between sheathing.
- C. Place building paper over wall sheathing.

3.3 TOLERANCES

- A. Framing Members: 1/4 inch maximum from true position
- B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes finish carpentry items, other than shop-prefabricated casework, with accessories as required for complete installation.
 - 1. Hardware and attachment accessories.
 - 2. Installation of doors and finish hardware.
 - 3. Window trims, sills, chair rails and other wood trims.
 - 4. Exterior fascias and trims.
- B. References:
 - 1. The publications listed below form a subsection of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Section 01 42 00 "References" for definitions, acronyms, and abbreviations.
 - 2. Unless otherwise noted, standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes as of the date of issue of this Project Manual.
 - 3. Codes and References:
 - A. 2019 California Building Code Section 11B-309.
 - B. American Disabilities Act Design Guidelines (ADADG)
 - 4. American National Standards Institute (ANSI):
 - a. ANSI A156.9 - Cabinet Hardware.
 - b. ANSI A161.1 - Woodwork Testing Standards.
 - c. ANSI A208.1 - Mat-Formed Wood Particleboard.
 - 5. Woodwork Institute:
 - a. WI – North American Architectural Woodwork Standards. (Min 2017 Ed.)
 - 6. National Electrical Manufacturers Association (NEMA):
 - a. NEMA LD 3 - High Pressure Decorative Laminates.

1.2 SUBMITTAL ITEMS

- A. All submittals shall be submitted under the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 06 20 00 A – Shop Drawings:
 - 1. Indicate materials and wood species, component profiles, fastening, joining details, finishes, and accessories to a minimum scale of 1-1/2 inch to one foot.
- C. Submittal Item No. 06 20 00 B – Product Data:
 - 1. Submit literature for manufactured items.
- D. Submittal Item No. 06 20 00 C – Samples:
 - 1. Furnish samples of each type or finish carpentry, 12 inches long minimum with grade-stamp included.

1.3 QUALITY ASSURANCE

- A. Standards: Perform finish carpentry in accordance with standards of Woodwork Institute (WI) (formerly Woodwork Institute of California) "Manual of Millwork", current edition.

1.4 REGULATORY REQUIREMENTS

- A. Conform to UL requirements to achieve fire resistance assembly rating indicated.

1.5 WARRANTY

- A. Guarantee the work specified herein for five (5) years against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and/or workmanship.
- B. Defects shall include, but not be limited to the following:
 - 1. Rough or difficult operation or loose or missing parts.
 - 2. Delamination of surfaces.
 - 3. Noticeable deterioration of finish.
 - 4. Warped or misaligned surfaces or telegraphing of subsurface imperfections.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver materials until site conditions are adequate to receive work; protect items from weather while in transit.
- B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and relative humidity between 20 percent to 55 percent.
- C. Do not begin installation of finish carpentry until space is fully enclosed and mechanical systems are fully operational.
 - 1. Maintain interior installation areas at 70 degrees F and 50 to 55 percent relative humidity.
- D. Immediately remove from site materials with visible mold and materials with mildew.
 - 1.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.
- C. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea-formaldehyde resin.
- D. Softwood Plywood: DOC PS 1.
- E. Lumber for Shimming, Blocking, and Backing: No. 2 Douglas Fir.
- F. Anchors, Nails and Screws: Select the material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors.
- G. Wood Filler: Color to match wood being filled.

- H. Exterior Trim:
 - 1. Painted: Custom Grade, kiln dried, Clear Western Red Cedar, mixed grain, S-4-S.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible; do not delay job progress, allow for trimming and fitting.
- B. Verify surfaces are ready to receive work and field measurements are as shown on shop drawings.
 - 1. Beginning installation signifies acceptance of conditions.
- C. Inspect each piece of finish carpentry and discard damaged and defective pieces.

3.2 COORDINATION

- A. Ensure mechanical and electrical items affecting work are placed properly, complete, and have been inspected by applicable authorities prior to commencement of installation.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes:
 - 1. Roof and deck insulation and cover board ready to receive roofing membrane.
- B. References:
 - 1. The publications listed below form a subsection of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Section 01 42 00 "References" for definitions, acronyms, and abbreviations.
 - 2. Unless otherwise noted, standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes as of the date of issue of this Project Manual.
 - 3. American Society of Heating, Refrigeration and Air Conditioning (ASHRAE):
 - a. 90.1-07 Energy Standard for Buildings Except Low-Rise Residential Buildings.
 - 4. American Society of Testing Materials (ASTM):
 - a. ASTM C578-22 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - b. ASTM C1289-22a Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - c. ASTM C1396/C1396M-17 Standard Specification for Gypsum Board.
 - d. ASTM D41/D41M-11(2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - e. ASTM D312/D312M-16a(2023) Standard Specification for Asphalt Used in Roofing.
 - f. ASTM D4586/D4586M-07(2018) Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - g. ASTM E84-23 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - h. ASTM F1667/F1667M-21a Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
 - 5. Factory Mutual (FM) Approvals: RoofNav Approved Roofing Assemblies and Products.
 - a. Class No. 4450 Approval Standard for Class 1 Insulated Steel Deck Roofs.
 - b. Class No. 4470 Examination Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction.
 - c. DS 1-28 Wind Design (Data Sheet).
 - d. DS 1-29 Roof Deck Securement and Above-Deck Roof Components.
 - e. DS 1-49 Perimeter Flashing.National Roofing Contractors Association: Roofing and Waterproofing Manual
 - 6. U.S. Department of Agriculture (USDA):
 - a. USDA BioPreferred Catalog, www.biopreferred.gov.
 - 7. Underwriters Laboratories, Inc. (UL):
 - a. Fire Resistance Directory (current edition).
 - 8. U.S. Department of Commerce National Institute of Standards and Technology (NIST):
 - a. DOC PS 1-09 Voluntary Product Standard for Structural Plywood.
 - b. DOC PS 2-04 Voluntary Product Standard for Wood-Based Structural-Use Panels.

1.2 PERFORMANCE REQUIREMENTS

- A. Thermal Performance: Provide roof insulation meeting minimum R-value of 38.
- B. FM Approvals: Provide roof insulation complying with requirements in FM Approvals 4450 and 4470 as part of specified roofing system, listed in FM Approvals "RoofNav" as part of

roofing system meeting Fire/Windstorm Classification in Division 07 roofing section.

1.3 QUALITY CONTROL

- A. Requirements of Division 07 roofing section for qualifications of roofing system insulation Installer. Work of this Section shall be performed by same Installer.
- B. Requirements of Division 07 roofing section for inspection of Work of this Section and qualifications of Inspector.
- C. Unless specified otherwise, comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to insulation for storage, handling, and application.
- D. Requirements of roofing system uplift pressure design for specified roofing system.
- E. Requirements of applicable FM Approval for specified roofing system insulation attachment.
- F. Bio-Based Materials: Where applicable, provide products designated by USDA and meeting or exceeding USDA recommendations for bio-based content, and products meeting Rapidly Renewable Materials and certified sustainable wood content definitions; refer to www.biopreferred.gov.

1.4 SUBMITTALS

- A. All submittals shall be submitted under the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 07 22 00A – Product Data:
 - 1. Roof insulation, each type.
 - 2. Substrate cover board.
 - 3. Fastening requirements.
- C. Submittal Item No. 07 22 00B – Shop Drawings:
 - 1. Plans, sections, details, and attachments including but not limited to:
 - a. Nailers, cants, and terminations.
 - b. Layout of insulation showing slopes, tapers, penetration, and edge conditions.
- D. Submittal Item No. 07 22 00C – Samples:
 - 1. Roof insulation, each type, 12-inch by 12-inch.
 - 2. Nails and fasteners, each type.

1.5 DELIVERY, STORAGE AND MARKING

- A. Comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to built-up roofing for storage, handling, and installation requirements.
- B. Deliver materials in manufacturer's original packaging.
- C. Store and protect products in accordance with manufacturer's instructions.
 - 1. Store in a dry indoors location.
 - 2. Protect insulation materials from moisture and soiling.

- D. Arrange storage of products to permit access for inspection.
 - 1. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- E. Do not install insulation that has been damaged or wet and remove from jobsite.

1.6 QUALITY ASSURANCE

- A. Roof insulation on combustible or steel decks shall have a flame spread rating not greater than 75 and a smoke developed rating not greater than 150, exclusive of covering, when tested in accordance with ASTM E84, or shall have successfully passed FM Approvals 4450.
 - 1. Insulation bearing the UL label and listed in the UL Building Materials Directory as meeting the flame spread and smoke developed ratings will be accepted in-lieu-of copies of test reports.
 - 2. Compliance with flame spread and smoke developed ratings will not be required when insulation has been tested as part of a roof construction assembly of the particular type used for this project and the construction is listed as fire-classified in the UL Building Materials Directory or listed as Class I roof deck construction in the FM Approvals "RoofNav."
 - 3. Insulation tested as part of a roof construction assembly shall bear UL or FM labels attesting to the ratings specified herein.

PART 2 PRODUCTS

2.1 ROOF AND DECK INSULATION

- A. Roof and Deck Insulation:
 - 1. Expanded polystyrene foam (EPS) board, nominal density 1.5pcf, Type II, closed cell, meeting ASTM C578.
 - 2. Insulation shall comply with California quality standards for insulating material. Maximum flame spread rating of 25 and maximum smoke density not to exceed 450.
 - 3. Apply liquid foam around openings and penetrations to provide a tight seal.
- B. Tapered Roof Insulation System:
 - 1. Expanded polystyrene foam (EPS) board. Use only one insulation material for tapered sections. Use only factory-tapered insulation.
 - 2. Cut to provide high and low points with crickets and slopes as shown.
 - 3. Minimum slope 1:48 (1/2-inch per 12-inches).

2.2 ASPHALT/ADHESIVE MATERIALS

- A. Asphalt: ASTM D312, Type III or IV for vapor retarders and insulation.
- B. Adhesive Materials, General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use, identical to materials utilized in approved listed roofing system, and compatible with roofing membrane.
 - 1. Liquid-type adhesive materials shall comply with VOC limits of authorities having jurisdiction.
 - 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Multipurpose Construction Adhesives: 70 g/L.
 - c. Fiberglass Adhesives: 80 g/L.

- d. Contact Adhesives: 80 g/L.
 - e. Other Adhesives: 250 g/L.
 - f. Nonmembrane Roof Sealants: 300 g/L.
 - g. Sealant Primers for Nonporous Substrates: 250 g/L.
 - h. Sealant Primers for Porous Substrates: 775 g/L.
- C. Primer: ASTM D41.
- D. Roof Cement: ASTM D4586, Type I or Type II.

2.3 FASTENERS

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

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which work of this section will be installed.
- B. Verify that adjacent materials are dry and ready to receive insulation.
- C. Verify mechanical and electrical services within walls have been tested and inspected.
- D. Provide written report listing conditions detrimental to performance of work in this section.
- 1. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 RIGID INSULATION INSTALLATION

- A. Insulation Installation, General:
- 1. Install roof insulation in accordance with roofing system manufacturer's written instructions.
 - 2. Install roof insulation in accordance with requirements of FM Approval's Listing for specified roofing system.
- B. Insulation Thickness:
- 1. Thickness of roof insulation shown on drawings is nominal. Actual thickness shall provide the average thermal resistance "R" value of not less than that specified in Performance Requirements Article.
 - 2. When thickness of insulation to be used is more or less than that shown on the drawings, adjust the alignment at roof drains, flashing, fascia's and similar items at no additional cost to the Owner.
 - 3. Where tapered insulation is used, the thickness of the insulation at high points and roof edges shall be as shown on the drawings. The thickness at the low point (drains) shall be not less than 1.1/2-inches.
 - 4. Use not less than two layers of insulation when insulation is 2.3/4-inches or more in thickness unless specified otherwise. Stagger joints minimum 6-inches.
- C. Lay insulating units with close joints, in regular courses and with cross joints broken. When laid in more than one layer, break joints of succeeding layers of roof insulation with those in preceding layer.

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ROOF AND DECK INSULATION

- D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing felt.
- E. Seal all cut edges at penetrations and at edges against blocking with bitumen or roof cement.
- F. Cut to fit tight against blocking and/or penetrations.
- G. Cover all insulation installed on the same day; comply with temporary protection requirements of Division 07 roofing section.
- H. Installation Method:
 - 1. Adhered Insulation:
 - a. Prime substrate as required.
 - b. Set each layer of insulation firmly in solid mopping of hot asphalt.
 - 2. Option:
 - a. Set each layer of insulation firmly in ribbons of bead-applied insulation adhesive.
 - b. Set each layer of insulation firmly in uniform application of full-spread insulation adhesive.

3.3 PROTECTION

- A. Protect installed insulation from damage due to weather and physical abuse until protected by permanent construction.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes:
1. Polyisocyanurate foam insulation sheathing and roof insulation board, tapered and flat.
 2. Flat polystyrene board Insulation.
 3. Tapered polystyrene Insulation.
 4. Roof underlayment.
 5. Metal roof Insulation.
 6. Flat Composite Insulation.
 7. Tapered Composite Insulation
- B. References
1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 3. American Society for Testing and Materials (ASTM).
 - a. ASTM C177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
 - b. ASTM C203 Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
 - c. ASTM C209 - 20 Standard Test Methods for Cellulosic Fiber Insulating Board.
 - d. ASTM C272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
 - e. ASTM C303 Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation.
 - f. ASTM C518 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - g. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - h. ASTM C1289 - 19 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - i. ASTM D312 Standard Specification for Asphalt Used in Roofing.
 - j. ASTM D828 Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus.
 - k. ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - l. ASTM D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
 - m. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - n. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.
 4. Factory Mutual (FM) Research Corporation Approval Guide (current edition). Contact manufacturer for approval standard and number.
 5. Underwriters Laboratories (UL):
 - a. UL 263 Fire Tests of Building Construction and Materials.
 - b. UL 580 Tests for Uplift Resistance of Roof Assemblies
 - c. UL 790 Tests for Fire Resistance of Roof Covering Materials.
 - d. UL 1256 Fire Test of Roof Deck Constructions.

6. US Green Building Council.

1.2 SYSTEM DESCRIPTION

- A. Materials of this Section shall provide a thermal and vapor barrier at building enclosure elements and provide positive drainage at all roof surfaces.
- B. Performance Requirements:
 - 1. UL Assemblies:
 - a. Component of Class A Roof System - UL 790.
 - b. Hourly Rated P series roof assemblies (UL 263 foam core only) P225, P230, P231, P235, P238, P246, P250, P251, P253, P254, P255, P259, P261, P262, P264, P269, P302, P404, P410, P411, P501, P503, P508, P509, P510, P511, P513, P514, P515, P519, P520, P521, P525, P527, P529, P 701, P708, P710, P713, P717, P719, P724, P731, P735, P739, P801, P803, P810, P814, P815, P825, P828, P902, P904, P905, P909, P910, P912, P913, P915, P916, P919, P920, P921, P922, P923, P925, P928, P929, P930, P936.
 - c. UL 580 Tests for Uplift Resistance of Roof Assemblies Rating.
 - 2. Factory Mutual:
 - a. FM Insulated Metal Decks - Single Ply Roof Cover and 1-60 and 1-90 windstorm classification.
 - b. FM Insulated Metal Decks - Bituminous Roof Cover and 1-60 and 1-90 windstorm classification.
 - c. FM Insulated Concrete or Gypsum Decks - Bituminous Roof Cover and 1-60 and 1-90 windstorm classification.

1.3 SUBMITTALS

- A. All submittals shall be under the provisions of Section 01 33 00. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 07 22 16A – Product Data:
 - 1. Provide manufacturer's data sheets on each product to be used, including:
 - a. Preparation instructions and recommendations.
 - b. Storage and handling requirements and recommendations.
 - c. Installation methods.
- C. Submittal Item No. 07 22 16B – Shop Drawings:
 - 1. Manufacturer's installation instructions showing fabrication and installation layouts of insulation panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of all integral panel components and their interface with adjacent materials.
 - 3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Submittal Item No. 07 22 16C – Verification Samples:
 - 1. For each finish product specified, two samples, minimum 6-inches square, representing actual product, color, and patterns.
- E. Submittal Item No. 07 22 16D – Manufacturer's Certificates:
 - 1. Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years' experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- C. Pre-installation Meeting:
 - 1. Conduct pre-installation meeting at the project site with the installer, Architect, Owner, the insulation manufacturer and the roof manufacturer and any other persons directly involved with the performance of the work to verify project requirements, structural system/substrate conditions, and the roofing manufacturer and insulation manufacturer's installation instructions. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging with identification labels or markings intact until ready for installation.
- B. Products shall be placed on pallets or raised platforms and fully supported in storage and prevented from contact with the ground until ready for installation.
- C. Store in a protected area and protect against exposure to rain, water, dirt, mud, and other residue that may affect performance. Cover stored products with breathable protective wraps.
- D. Loose insulation material should be weighted down to prevent wind blow-off or damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Insulfoam, a Carlisle Company, 19727 57th Ave. E., Puyallup, WA 98387; Ph: (800) 248-5995 or (253) 271-3056, Fax: (253) 271-3265, E-Mail: info@insulfoam.com, Web: www.insulfoam.com.
- B. Johns Manville, P. O. Box 5108, Denver, CO 80217-5108, Ph: (303) 978-2000 or (800) 644-4013, Web: <https://www.jm.com/>.
- C. Rmax, a Unit of Sika Corp., 13524 Welch Rd., Dallas, TX 75244-5227, Ph: (800) 527-0890, Fax: (972) 387-4673, Email: rmax@rmax.com, Web: <https://www.rmax.com/>.
- D. Owens Corning Foam Insulation, LLC, One Owens Corning Parkway, Toledo, OH 43659, Ph: (800) 438-7465, Web: www.owenscorning.com.
- E. Substitutions will be considered in accordance with the provisions of Section 01 62 00 Product Options.

2.2 ROOF AND DECK INSULATION

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ROOF BOARD INSULATION

- A. Flat Board Insulation Unfaced: Insulfoam flat, unfaced, rigid, closed cell, expanded polystyrene (EPS) boards, UL certified, complying with ASTM C578:
1. InsulFoam I, Unfaced, Nominal Density 1.0 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .240 @ 40 degrees.
 - 2) C .260 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.17 @ 40 degrees.
 - 2) R 3.85 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 10 psi.
 - d. Flexural Strength, ASTM C203: Minimum 25 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 5.0 perms.
 - g. Water Absorption, ASTM C272: Maximum 4 percent.
 - h. Capillarity: None.
 - i. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - j. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - k. Direct To Metal Deck in accordance with NER 631.
 - l. LEED Recycle Content: 15 Percent Allowable.
 2. InsulFoam VIII, Unfaced, Nominal Density 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177
 - 1) C .235 @ 40 degrees.
 - 2) C .255 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177
 - 1) R 4.25 @ 40 degrees.
 - 2) R 3.92 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 13 psi.
 - d. Flexural Strength, ASTM C203: Minimum 30 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
 3. InsulFoam II, Unfaced, Nominal Density 1.5 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177
 - 1) C .220 @ 40 degrees.
 - 2) C .240 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177
 - 1) R 4.55 @ 40 degrees.
 - 2) R 4.17 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 15 psi.
 - d. Flexural Strength, ASTM C203: Minimum 35 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.

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- f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
4. InsulFoam XV, Unfaced, Nominal Density 3.0 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .198@ 40 degrees.
 - 2) C .217@ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 5.05 @ 40 degrees.
 - 2) R 4.60 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 60 psi.
 - d. Flexural Strength, ASTM C203: Minimum 75 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 2.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
5. Size:
- a. 4-feet by 8-feet sheets.
6. Thickness:
- a. Thickness as indicated on the Drawings.
7. Special Treatments: Mold and insect resistant.
- B. Tapered Insulation Unfaced: Tapered Insulfoam, unfaced, rigid, closed cell, expanded polystyrene (EPS) board, UL Certified, complying with ASTM C578.
1. Tapered InsulFoam I, Unfaced, Nominal Density: 1.0 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.17 @ 40 degrees.
 - 2) R 3.85 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 10 psi.
 - d. Flexural Strength, ASTM C203: Minimum 25 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 5.0 perms.
 - g. Water Absorption, ASTM C272: Maximum 4.0 percent.
 - h. Capillarity: None.
 - i. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - j. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - k. Direct To Metal Deck in accordance with NER 631.
 - l. LEED Recycle Content: 15 Percent Allowable.
2. Tapered InsulFoam VIII, Unfaced, Nominal Density: 1.25 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance

- with ASTM C518 or ASTM C177.
- 1) C .235 @ 40 degrees.
 - 2) C .255 @ 75 degrees.
- b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.25 @ 40 degrees.
 - 2) R 3.92 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 13 psi.
 - d. Flexural Strength, ASTM C203: Minimum 30 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
3. Tapered InsulFoil II, Unfaced, Nominal Density: 1.5 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .220 @ 40 degrees.
 - 2) C .240 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.55 @ 40 degrees.
 - 2) R 4.17 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 15 psi.
 - d. Flexural Strength, ASTM C203: Minimum 35 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
4. Tapered InsulFoil IX, Unfaced, Nominal Density: 2.0 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .210 @ 40 degrees.
 - 2) C .230 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.76 @ 40 degrees.
 - 2) R 4.35 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 25 psi.
 - d. Flexural Strength, ASTM C203: Minimum 50 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 2.0 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.

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5. Tapered InsulFoam XIV, Unfaced, Nominal Density: 2.50 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .206 @ 40 degrees.
 - 2) C .222 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.85 @ 40 degrees.
 - 2) R 4.50 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 40 psi.
 - d. Flexural Strength, ASTM C203: Minimum 60 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 2.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
 6. Tapered InsulFoam XV, Unfaced, Nominal Density: 3.0 Pcf as tested in accordance with ASTM C303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .198 @ 40 degrees.
 - 2) C .217 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 5.05 @ 40 degrees.
 - 2) R 4.60 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 60 psi.
 - d. Flexural Strength, ASTM C203: Minimum 75 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 2.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. Direct To Metal Deck in accordance with NER 631.
 - k. LEED Recycle Content: 15 Percent Allowable.
 7. Size:
 - a. 4-feet by 8-feet sheets.
 8. Thickness:
 - a. Thickness as indicated on the Drawings.
 9. Taper:
 - a. Minimum slope as indicated on the Drawings.
 - b. Crickets or saddles as indicated on the Drawings.
 - c. Minimum Tapered Slope:
 - 1) 1/2 inch Per Foot Slope.
 - d. Minimum Crickets or Saddles:
 - 1) 1/2 inch Per Foot Slope.
- C. Roof Underlayment: Insulfoam R-Tech Fanfold Roof Underlayment, expanded polystyrene (EPS) board, UL Certified, complying with ASTM C578 with factory laminated polymeric facers.
1. Insulfoam R-Tech Fanfold Roof Underlayment VIII, Nominal Density 1.25 Pcf as tested

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in accordance with ASTM C303. Physical properties as follows:

- a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .235 @ 40 degrees.
 - 2) C .255 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.25 @ 40 degrees.
 - 2) R 3.92 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 13 psi.
 - d. Flexural Strength, ASTM C203: Minimum 30 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 - j. LEED Recycle Content: 15 Percent Allowable.
2. Fanfold Size/Thickness:
 - a. Thickness of 3/8 inch 4 foot by 50-foot fanfold bundle. Covers 200 SF.
 - b. Thickness of 1/2 inch 4 foot by 50-foot fanfold bundle. Covers 200 SF.
 - c. Thickness of 3/4 inch 4 foot by 24-foot fanfold bundle. Covers 96 SF.
 3. Facing:
 - a. RS-Roofing Silver.
 - b. RW-Roofing White.
- D. Flat Board Faced: InsulFoam SP VIII rigid, closed cell, expanded polystyrene (EPS) boards, UL certified, complying with ASTM C578; one side of board with factory laminated fiberglass facer:
1. InsulFoam SP VIII; Nominal Density 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) C .235 @ 40 degrees.
 - 2) C .255 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C518 or ASTM C177.
 - 1) R 4.25 @ 40 degrees.
 - 2) R 3.92 @ 75 degrees.
 - c. Compressive Strength, ASTM D1621: Minimum 13 psi.
 - d. Flexural Strength, ASTM C203: Minimum 30 psi.
 - e. Dimensional Stability, ASTM D2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E84: 150 to 300.
 2. Size: 4-feet by 8-feet.
 3. Thickness:
 - a. Minimum thickness of _____ inch.
 - b. Thickness required to achieve an R value of _____.
 4. Provide 2-layer staggered system.
 5. Provide single layer system.
- E. Metal Roof Void Fill Insulation Unfaced: InsulFoam FL (Flute Fill) fits into the metal roof deck flutes. Rigid, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578.

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1. InsulFoam FL I. Nominal Density: 1.0 Pcf as tested in accordance with ASTM C 303.
Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.
 - 1) C .240 @ 40 degrees.
 - 2) C .260 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177
 - 1) R 4.17 @ 40 degrees.
 - 2) R 3.85 @ 75 degrees.
 - c. Compressive Strength, ASTM D 1621: Minimum 10 psi.
 - d. Flexural Strength, ASTM C 203: Minimum 25 psi.
 - e. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E 96: Maximum 5.0 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
 - j. LEED Recycle Content: 15 Percent allowable.
2. InsulFoam FL VIII. Nominal Density: 1.25 Pcf as tested in accordance with ASTM C 303.
Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177
 - 1) C .235 @ 40 degrees.
 - 2) C .255 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177
 - 1) R 4.25 @ 40 degrees.
 - 2) R 3.92 @ 75 degrees.
 - c. Compressive Strength, ASTM D 1621: Minimum 13 psi.
 - d. Flexural Strength, ASTM C 203: Minimum 30 psi.
 - e. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
 - j. LEED Recycle Content: 15 Percent allowable.
3. InsulFoam FL II. Nominal Density: 1.5 Pcf as tested in accordance with ASTM C 303.
Physical properties as follows:
 - a. C-Value (Conductance) BTU/(hr/ft²/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.
 - 1) C .220 @ 40 degrees.
 - 2) C .240 @ 75 degrees.
 - b. R-Value Thermal Resistance (hr/ft²/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.
 - 1) R 4.55 @ 40 degrees.
 - 2) R 4.17 @ 75 degrees.
 - c. Compressive Strength, ASTM D 1621: Minimum 15 psi.
 - d. Flexural Strength, ASTM C 203: Minimum 35 psi.
 - e. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
 - f. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
 - g. Capillarity: None.
 - h. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
 - i. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
 - j. LEED Recycle Content: 15 Percent allowable.

4. Shape/Size: Thickness as required to fill the flute.
 - a. Beveled/Taper Cut.
 - b. Square Cut.
 - c. Shape/size as indicated.
 - d. Provide in largest practical lengths for project.
- F. Composite Insulation, Flat: Insulfoam HD Composite, flat, rigid, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578 with factory laminated 1/2-inch HD board.
 1. Insulfoam HD. Nominal 1.0 Pcf as tested in accordance with ASTM C 303.
 2. Thickness:
 - a. Minimum thickness of 1.1/2-inches.
 3. Size:
 - a. 4-feet by 4-feet sheets.
 - b. 4-feet by 8-feet sheets.
- G. Composite Insulation tapered: Tapered Insulfoam HD Composite, tapered, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578 with factory laminated 1/2-inch HD board.
 1. Insulfoam HD. Nominal 1.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
 2. Size:
 - a. 4-feet by 4-feet sheets.
 - b. 4-feet by 8-feet sheets.
 3. Thickness:
 - a. Minimum thickness of _____ inches.
 - b. Thickness required to achieve an R value of _____.
 - c. Thickness as indicated on the Drawings.
 - d. Average R value of _____.
 4. Taper:
 - a. Minimum slope as indicated on the Drawings.
 - b. Crickets or saddles as indicated on the Drawings.
 - c. Minimum Tapered Slope:
 - 1) 1/16-inch Per Foot Slope
 - 2) 1/8-inch Per Foot Slope
 - 3) 3/16-inch Per Foot Slope
 - 4) 1/4-inch Per Foot Slope
 - 5) 1/2-inch Per Foot Slope
 - d. Minimum Crickets or Saddles:
 - 1) 1/8-inch Per Foot Slope
 - 2) 1/4-inch Per Foot Slope
 - 3) 1/2-inch Per Foot Slope

2.3 ACCESSORIES

- A. Insulation Adhesives: As approved roofing system manufacturer and Insulfoam.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and

free of foreign material that will damage insulation installation.

- C. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents, and other roof accessories are secured properly and installed in conformance with drawings and submittals.
- D. Verify that deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.
- C. Asphalt, coal tar base, oil base or plastic roof cements, and re-saturated roof products shall not be used in direct contact with unfaced EPS insulation.
- D. Concrete Deck:
 - 1. Concrete shall be cured, and prepared smooth with dust removed.
 - 2. Concrete shall be dry, flat, clean, smooth, free of sharp edges and suitable for acceptance of insulation.
- E. Plywood Deck:
 - 1. Plywood must be exterior grade with an A or B finish side up and with no joints gapped greater than 1/4-inch.
 - 2. Deck shall be dry, flat, clean, smooth, free of sharp edges and suitable for acceptance of approved fully adhered membrane.
- F. Reroofing Over Existing Roof:
 - 1. Condition of the existing roof must be appropriate to insulation and roof manufacturer's specifications for reroofing application. Significantly deteriorated decking must be repaired or replaced, as appropriate. Wet materials containing free moisture that would evaporate if exposed to atmosphere must be found and replaced.
 - 2. Surface shall be dry, smooth and even, blisters cut, and loose aggregate removed.
 - 3. Installation of approved insulation or cover board shall comply with manufacturer's standards.
 - 4. Appropriate fastener shall be used to anchor the membrane to the deck at perimeters and penetrations in accordance with building code and performance requirements.
- G. Apply vapor barrier and or retarder, as specified by the Architect or required by the local building code, to decking prior to installation of insulation.

3.3 INSTALLATION

- A. Install specified insulation in accordance with the insulation manufacturer's Insulfoam Roofing Manual, the roofing manufacturer's, latest printed instructions and as required by governing codes and Owner's insurance carrier requirements.
- B. Do not leave installed insulation exposed to weather. Cover and waterproof immediately

after installation.

- C. Seal exposed insulation joints at the end of each day. Remove seal when work resumes.
- D. Remove installed insulation that has become wet or damaged and replace with new solid and dry insulation material.
- E. Install multi-layer tapered insulation systems to provide slopes indicated on the Drawings. Provide crickets and saddles as indicated and required.
- F. Built-Up, Asphalt, Coal Tar and Modified Bitumen Systems:
 - 1. Secure each insulation panel to the roof deck with Factory Mutual approved fasteners and plates (appropriate to the deck type).
 - 2. Adhere maximum 4-foot by 4-foot panels of insulation to a prepared concrete deck with FM approved cold adhesive.
 - 3. Butt edges and stagger joints of adjacent panels.
 - 4. Multi-layer systems: Adhere subsequent layers with FM approved cold adhesive.
 - 5. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
 - 6. Secure separator sheet over entire surface of the insulation overlapping edges a minimum of 2 inches.
 - 7. Install the roof covering according to the roof manufacturer's specifications.
- G. Single-Ply Systems Ballasted Single-Ply Systems:
 - 1. Each insulation panel is loosely laid on the roof deck.
 - 2. Butt edges and stagger joints of adjacent panels.
 - 3. Install the roof covering according to the roof manufacturer's specifications.
- H. Mechanically Attached Single-Ply Systems:
 - 1. Each insulation panel must be secured to the roof deck with approved fasteners and plates (appropriate to the deck type).
 - 2. Butt edges and stagger joints of adjacent panels.
 - 3. Install the roof covering according to the roof manufacturer's specifications.
- I. Fully Adhered Single-Ply Systems:
 - 1. Secure each insulation panel to the roof deck with approved fasteners and plates (appropriate to the deck type).
 - 2. Adhere maximum 4-foot by 4-foot panels of insulation to a prepared deck with cold adhesive.
 - 3. Butt edges and stagger joints of adjacent panels.
 - 4. Multi-layer systems: Adhere subsequent layers with FM approved cold adhesive.
 - 5. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
 - 6. Install the roof covering according to the roof manufacturer's specifications.

3.4 CLEANING

- A. Remove trash and construction debris from insulation before application of roofing membrane.

3.5 PROTECTION

- A. Protect installed products until completion of project.

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- B. Protect installed insulation traffic by use of protective covering materials during and after installation.
- C. Cover the top and edges of unfinished roof panel work to protect it from the weather and to prevent accumulation of water in the cores of the panels. Only apply enough insulation per day that can be covered by roofing.
- D. Do not leave panels exposed to moisture. Wet panels shall be removed or allowed to completely dry prior to application of vapor barrier and/or roof covering.
- E. Repair or replace damaged products before Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes requirements for supplying labor, materials, tools, and equipment to complete the Work as shown on the Drawings as specified herein including, but not limited to the following:
 - 1. Adhesive/Primer.
 - 2. Self-Adhered Water Resistive Air Barrier.
 - 3. Air Barrier/Thru-wall Flashing.
 - 4. Sealant.
- B. References:
 - 1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 - 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 - 3. American Architectural Manufacturers Association (AAMA):
 - a. AAMA 711-13 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products
 - b. AAMA 2400-02 - Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction
 - 4. American Society for Testing and Materials (ASTM):
 - a. ASTM D882-18 Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
 - b. ASTM D903-98(2017) Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
 - c. ASTM E84-23c Standard Test Method for Surface Burning Characteristics of Building Materials.
 - d. ASTM E96/E96M-22ae1 Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
 - e. ASTM E283/E283M-19 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - f. ASTM E330/E330M-14(2021) Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - g. ASTM E331-00(2023) Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
 - h. ASTM E2178-21a Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials.
 - i. ASTM E2357-23a Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies.

1.2 ALTERNATES

- A. Substitutions will be considered in accordance with the provisions of Section 01 62 00 Product Options.
- B. Materials must meet the following criteria:

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1. Air leakage:
 - a. ASTM E2357: Pass.
 - b. CAN/ULC-S742-11: Classification A1.
 - c. CAN/ULC S741-08: Pass.
 2. Water resistance:
 - a. AATCC TM127: Pass.
 - a. ASTM E331: Pass.
 3. Nail Sealability:
 - a. AAMA 711-13, ASTM D1970: Pass.
- C. Alternate submission format to include:
1. Evidence that alternate materials meet or exceed performance characteristics of product requirements and documentation from an approved independent testing laboratory certifying that the performance of the system including auxiliary components exceed the requirements of the local building code.
 2. References clearly indicating that the Air Barrier Manufacturer has successfully completed projects of similar scope and nature on an annual basis for a minimum of ten (10) years.
 3. Air Barrier Manufacturer's guide specification.
 4. Air Barrier Manufacturer's complete set of technical data sheets for assembly.
 5. Air Barrier Manufacturer's complete set of details for assembly.
 6. Product certification confirming assembly components are supplied and warranted by a single source Air Barrier Manufacturer.
 7. Sample warranty as specified.
- D. Submit requests for alternates to this specification a minimum of ten (10) working days prior to bid date. Include a list of twenty-five (25) projects executed over the past five (5) years.
- E. Issued addendums confirm acceptable alternates. Do not submit substitute materials after tender closing.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation meetings:
1. When required, and with prior notice, an Air Barrier Manufacturer representative will meet with the necessary parties at the jobsite to review and discuss project conditions as it relates to the integrity of the assembly.

1.4 SUBMITTALS

- A. All submittals shall be made in accordance with the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 07 27 27A - Product Data:
1. Provide manufacturer's comprehensive literature for each product specified including, but not limited to:
 - a. Air Barrier Manufacturer's guide specification.
 - b. Air Barrier Manufacturer's complete set of technical data sheets for assembly
 - c. Air Barrier Manufacturer's complete set of guide details for assembly
- C. Submittal Item No. 07 27 27B - Certificates:
1. Product certification confirming assembly components are supplied and warranted by a single source Air Barrier Manufacturer

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- D. Submittal Item No. 07 27 27C - Warranty:
1. Sample warranty as specified.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
1. Obtain air barrier and auxiliary materials including adhesive/primer, air barrier, flashings, and sealants from a single Air Barrier Manufacturer regularly engaged in the manufacturing and supply of the specified products.
 2. Verify product compliance with federal, state, and local regulations.
- B. Manufacturer Qualifications:
1. Air Barrier Manufacturer shall demonstrate qualifications to supply materials of this Section by certifying the following:
 - a. Air Barrier Manufacturer must not issue warranties for terms longer than they have been manufacturing and supplying specified products for similar scope of Work.
- C. Fire Performance Characteristics: Provide water-resistive barrier meeting the following fire-test characteristics.
1. Surface-Burning Characteristics: ASTM E84.
 2. Flame spread index: 5 or less.
 3. Smoke developed index: 15 or less.
- D. Installer Qualifications:
1. Perform Work in accordance with the Air Barrier Manufacturer's published literature and as specified in this Section.
 2. Maintain one (1) copy of the Air Barrier Manufacturer's installation instructions on site.
 3. At all times during the execution of the Work allow access to site by the Air Barrier Manufacturer representative.
 4. If meeting with the Air Barrier Manufacturer during project construction, contact the Air Barrier Manufacturer a minimum of two weeks prior to schedule meeting.

1.6 MOCK-UPS

- A. Mock-ups: Construct mock-ups to verify selections made under submittals and to set quality standards for materials and execution:
1. Where directed by architect, construct typical exterior wall section, six (6'-0") feet by six (6'-0") feet, incorporating substrate materials, and adjacent materials including flashing, door frame, window frame, attachment of insulation, showing air barrier application details.
- B. Notify architect a minimum seven (7) days prior to mock-up construction.
- C. Review and acceptance of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless architect specifically notes such deviations in writing.
- D. Once reviewed by architect, acceptable mock-up can form a permanent part of the Work and will form the basis for acceptance for the remainder of the project.
- E. Remove and replace materials found unacceptable at no additional cost to Owner.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials:

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1. Deliver materials to the jobsite in undamaged and clearly marked containers indicating the name of the Air Barrier Manufacturer and product.
- B. Storage of Materials:
 1. Store materials as recommended by the Air Barrier Manufacturer and conform to applicable safety regulatory agencies. Refer to all applicable data including, but not limited to, Safety Data Sheet (SDS), Technical Data sheet (TDS), product labels, and specific instructions for personal protection.
 2. Keep solvents away from open flame or excessive heat.
 3. Store materials in original packaging.
 4. Protect rolls from direct sunlight until ready for use.
 5. Refer to Air Barrier Manufacturer's product TDS.
- C. Handling:
 1. Refer to Air Barrier Manufacturer's product TDS.

1.8 SITE CONDITIONS

- A. Environmental Requirements:
 1. Do not perform Work during rain or inclement weather.
 2. Do not perform Work on frost covered substrates or surfaces that are wet to touch.
- B. Protection:
 1. It is the responsibility of the installing Subcontractor to protect all surfaces not included in scope of Work from overspray including, but not limited to, windows, doors, adjacent areas, and vehicles.
 2. Cap and protect exposed back-up walls against wet weather conditions during and after application of air barrier assembly.
- C. Complete preparation Work prior to installing air barrier.
- D. Ground all equipment during operations.

1.9 WARRANTY

- A. Manufacturer's Single Source Warranty:
 1. Assembly Warranty:
 - a. Installer must warrant the assembly against product defect for a period of ten (10) years from the date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Air Barrier and auxiliary materials shall comply with the following system requirements:
 1. Obtain air barrier and auxiliary materials as a single-source from the Air Barrier Manufacturer to ensure total system compatibility and integrity.
 2. Air leakage:
 - a. ASTM E2357: Pass
 - b. CAN/ULC-S742-11: Classification A1
 - c. CAN/ULC S741-08
 3. Water resistance:
 - a. AATCC TM127: Pass

- b. ASTM E331: Pass
 - 4. Nail Sealability:
 - a. AAMA 711-13, ASTM D1970: Pass
- B. Acceptable Manufacturers:
 - 1. WrapShield SA® Self-Adhered Water-Resistive Vapor Permeable Air Barrier by VaproShield® LLC, Gig Harbor, WA, Ph: (866) 731-7663, www.vaproshield.com.
 - 2. 3M Air and Vapor Barrier 3015, self-adhered, vapor-impermeable 3M® Air Barrier Products, 3M Center Building 0230-B-E-16; St. Paul, MN 55144-1000; Ph: (866) 513-4026; Fax: (651) 737-1920; Web: www.3m.com.
 - 3. Henry® Blueskin® VP160 Self-Adhered Water Resistive Air Barrier; Henry® Company, 999 N. Sepulveda Blvd. Suite 800, El Segundo, CA 90245; Ph: (800) 486-1278, www.henry.com.

2.2 MATERIALS

- A. Primary Sheet-Applied, Vapor Permeable Water Resistive Air Barrier: Self-adhered vapor permeable, water resistive air barrier consisting of a reinforced, modified polyolefin tri-laminate film surface and patented permeable adhesive technology with split-back poly-release film; having the following typical physical properties:
 - 1. Basis of design: WrapShield SA® Self-Adhered Water-Resistive Vapor Permeable Air Barrier by VaproShield® LLC and related assembly components.
 - 2. Water Resistive Air Barrier
 - 3. Thickness: 23 mils.
 - 4. Water Vapor Permeance (ASTM E96): 29 perms.
 - 5. Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass.
 - 6. Air Permeance (ASTM E2178): Pass.
 - 7. Nail Sealability (ASTM D1970): Pass.
 - 8. Dry Tensile Strength (ASTM D882):
 - a. 41 lbf/182N MD.
 - b. 29 lbf/129N CD.
 - 9. Surface Burning Characteristics (ASTM E84):
 - a. Flame Spread: Class A.
 - b. Smoke Development: Class A.
 - 10. Low Application Temperature: 20 degrees F.
- B. Assembly Auxiliary Materials:
 - 1. Adhesives/Primers:
 - a. Standard VOC adhesive:
 - 1) Synthetic rubber based quick setting adhesive, having the following typical physical properties:
 - a) Maximum VOC: 450 g/L.
 - b) Drying time (initial set): 30 minutes.
 - c) Low Application Temperature: 10 degrees F.
 - b. Low VOC adhesive:
 - 1) Synthetic rubber based quick setting adhesive with low VOC content, having the following typical physical properties:
 - a) Maximum VOC: <240 g/L.
 - b) Drying time (initial set): 30 minutes.
 - c) Low Application Temperature: 10 degrees F.
 - 2) Polymer emulsion water based quick setting adhesive with low VOC content, having the following typical physical properties:
 - a) Maximum VOC: 50 g/L.
 - b) Drying time (initial set): 30 minutes.

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- c) Low Application Temperature: 25 degrees F.
 - c. Aerosol spray adhesive:
 - 1) Quick drying spray adhesive used to prepare construction surfaces for the application of flashings, having the following typical physical properties:
 - a) Solids by weight: 35 percent.
 - b) Drying time (initial set): 3 minutes.
 - c) Low Application Temperature: minus 10 degrees F.
 - d. Quick setting primers:
 - 1) Synthetic rubber based quick setting adhesive with low VOC content, having the following typical physical properties:
 - a) Maximum VOC: 250 g/L.
 - b) Dry time: 1-3 minutes.
 - c) Low Application Temperature: 40 degrees F.
- 2. Liquid-Applied Flashing:
 - a. Moisture-curing single component elastomeric liquid-applied flashing using a highly advanced Silyl-Terminated Polyether (STPE) polymer curing to a monolithic membrane; having the following typical physical properties:
 - 1) Air Permeance (ASTM E2178): Pass.
 - 2) Water Vapor Permeance (ASTM E96): 21.8 perms @ 25 mils.
 - 3) Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass.
 - 4) Water Resistance (AC212/ASTM D2247): Pass.
 - 5) Nail Sealability (AAMA 711): Pass.
 - 6) Surface Burning Characteristics (ASTM E84):
 - 7) Flame Spread: Class A.
 - 8) Smoke Development: Class A.
 - 9) Elongation (D412): 264 percent.
 - 10) Low Application Temperature: 20 degrees F.
- 3. Self-Adhered Flashing:
 - a. Non-Vapor Permeable Flashing:
 - 1) Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of a synthetic butyl compound integrally laminated to a white engineered polypropylene film surface, having the following typical physical properties:
 - a) Thickness: 14 mils.
 - b) Water Vapor Permeance (ASTM E96): 0.14 perms.
 - c) Nail Sealability (ASTM D1970): Pass.
 - d) Elongation (ASTM D412): 825 percent minimum.
 - e) Low Application Temperature: 25 degrees F.
 - 2) Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a high strength polyethylene with surface layer of metallic aluminum film, having the following typical physical properties:
 - a) Thickness: 45 mils.
 - b) Water Vapor Permeance (ASTM E96): 0.014 perms.
 - c) Nail Sealability (ASTM D1970): Pass.
 - d) Elongation (ASTM D412): 85 percent.
 - e) Low Application Temperature: 20 degrees F.
 - 3) Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a blue engineered thermoplastic film surface, having the following typical physical properties:
 - a) Thickness: 40 mils.
 - b) Water Vapor Permeance (ASTM E96): 0.86 perms.
 - c) Nail Sealability (ASTM D1970): Pass.

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- d) Elongation (ASTM D412-modified): 200 percent minimum.
 - e) Low Application Temperature: 41 degrees F.
 - 4) Low temperature non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a blue engineered thermoplastic film surface, having the following typical physical properties:
 - a) Thickness: 40 mils.
 - b) Water Vapor Permeance (ASTM E96): 0.86 perms.
 - c) Nail Sealability (ASTM D1970): Pass.
 - d) Elongation (ASTM D412-modified): 200 percent minimum.
 - e) Low Application Temperature: 10 degrees F.
 - b. Vapor Permeable Flashing:
 - 1) Self-adhered water resistive vapor permeable air barrier consisting of a reinforced modified polyolefin tri-laminate film surface and patented adhesive technology with split-back poly-release film; having the following typical physical properties:
 - a) Thickness: 23 mils.
 - b) Water Vapor Permeance (ASTM E96): 29 perms.
 - c) Nail Sealability (ASTM D1970): Pass.
 - d) Low Application Temperature: 20 degrees F.
- 4. Sealants:
 - a. Building Envelope Sealant:
 - 1) Moisture cure, medium modulus polymer modified sealing compound, having the following typical physical properties:
 - a) Elongation: 450 – 550 percent.
 - b. Termination Sealant:
 - 1) One-part high performance synthetic rubber sealant; having the following physical properties:
 - a) Elongation: 200 percent minimum.
- C. Additional Materials:
 - 1. Thru-Wall Flashing:
 - a. Non-vapor permeable self-adhered through-wall flashing consisting of an SBS rubberized asphalt compound integrally laminated to a yellow engineered thermoplastic film surface, having the following typical physical properties:
 - 1) Thickness: 40 mils.
 - 2) Water Vapor Permeance (ASTM E96): 0.03 perms.
 - 3) High Temperature Stability - Flow Resistance (ASTM D5147): Pass.
 - 4) Low Application Temperature: 40 degrees F.

PART 3 EXECUTION

3.1 EXAMINATION

- A. The installing contractor shall examine and determine that surfaces and conditions are ready to accept the Work of this Section in accordance with the Air Barrier Manufacturer's installation guide and as specified in this Section.
 - 1. Commencement of Work or any parts thereof shall mean installer's acceptance of the substrate.
- B. Notify Owner and/or Architect in writing of any conditions that are not acceptable prior to proceeding with work in that area.
- C. Verification of Conditions:

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1. Verify substrates to receive Work and surrounding adjacent surfaces are in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section prior to installation of self-adhered air barrier assembly.
 2. Continuous substrate:
 - a. Existing substrate must be continuous and secured prior to application of air barrier.
 - b. Securely fasten sheathing panels and install flush to ensure a continuous substrate in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.
 - c. Fastener penetrations must be set flush with sheathing and fastened into solid backing.
 - d. Refer to Air Barrier Manufacturer's details.
 3. Strike masonry joints flush.
 4. Concrete surfaces shall be smooth and without large voids, spalled areas or sharp protrusions. Refer to Air Barrier Manufacturer's details for substrate gap limitations.
 5. Remove concrete forms and allow new concrete to cure for a minimum of fourteen (14) days.
 6. Curing compounds or release agents used in concrete construction must be resin based without oil, wax, or pigments.
 7. Do not install air barrier over substrates that are wet to touch.
- D. Do not apply air barrier until substrate and environmental conditions are in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.

3.2 PREPARATION

- A. All surfaces must be sound, dry, clean, and free of oil, grease, dirt, excess mortar, frost, laitance, loose and flaking particles, or other contaminants.
- B. Protect adjacent surfaces not included in scope of Work to prevent spillage and overspray.
- C. Cap and protect exposed back-up walls against wet weather conditions during and after application of the air barrier assembly.

3.3 INSTALLATION

- A. Ensure substrate is ready to receive air barrier in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.
- B. Temperature limitation:
 1. Primary air barrier:
 - a. Substrate temperature must be above 20 degrees F and rising.
 2. Auxiliary products:
 3. Temperature limitations may vary. Refer to Air Barrier Manufacturer's product TDS for product specific temperature limitations.
- C. Application of flashing:
 1. Self-adhered flashing:
 - a. Where required install adhesive/primer recommended by Air Barrier Manufacturer continuously at rate recommended ensuring complete substrate coverage of anticipated flashing installation area.
 - 1) Allow adhesive/primer to cure to a tacky film prior to application of flashing.
 - 2) Primed areas not covered by end of day must be re-primed prior to installation of flashing.
 - b. Measure and cut self-adhered flashing to ensure adequate length to achieve

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- continuous coverage of desired installation.
- c. Peel protective film from self-adhered flashing and align top of membrane verifying proper positioning prior to complete film removal and flashing placement.
- d. Press self-adhered flashing firmly into place by applying hand pressure to the middle of the membrane and working the pressure to the edges, eliminating wrinkles and air bubbles.
- e. Install self-adhered flashings in shingle fashion to eliminate reverse laps.
- f. Where required, prime laps at rate recommended by Air Barrier Manufacturer to ensure complete coverage of anticipated lap installation.
- g. Lap adjoining edges a minimum of two- (2) inches.
- h. Roll flashing and laps with countertop roller to obtain thorough adhesion.
- i. Seal reverse laps at self-adhered flashing with sealant. Sealant recommendations may vary due to product or sequence of construction. Refer to Air Barrier Manufacturer details for recommended sealant.
- 2. Liquid-applied flashing:
 - a. Apply a uniform film of aerosol spray adhesive to raw edges of gypsum sheathing at rate recommended by Air Barrier Manufacturer completely encapsulating loose gypsum core at the cut edge of gypsum sheathing.
 - b. Allow adhesive to cure to a tacky film prior to application of liquid-applied flashing.
 - c. Apply flashing in accordance with and at rate recommended by Air Barrier Manufacturer.
 - d. Spread flashing to achieve a monolithic membrane over substrate requiring flashing.
 - e. Allow flashing to cure prior to subsequent installations.
- D. Detailing/Flashing:
 - 1. Complete detailing and flashing installations per Air Barrier Manufacturer's installation guide, details, and this specification.
 - 2. Refer to Air Barrier Manufacturer details for further clarification and installation procedures including, but not limited to, the following:
 - a. Inside corners
 - b. Outside corners
 - c. Pipe penetrations
 - d. Shelf angles
 - e. Wall to foundation transitions
 - f. Reverse laps
 - g. Construction joints
 - h. Rough opening:
 - 1) Install rough opening details per Window Manufacturer's installation guide details and in accordance with ASTM E2112.
 - 2) Wall assemblies containing a vapor retarder on the interior wall assembly:
 - 3) Extend flashing into rough opening to ensure sufficient membrane for connection with vapor retarder and provide a continuous air barrier assembly.
 - 3. Transitions:
 - a. Contact Air Barrier Manufacturer to coordinate transition of self-adhered air barrier to adjacent areas including, but not limited to, the following:
 - 1) Roof to air barrier.
 - 2) Air barrier to vertical or horizontal waterproofing.
 - 3) Fastener penetrations.
- E. Thru-Wall Flashing:
 - 1. Coordinate with Section 07 62 00 Sheet Metal Flashing and Trim.
- F. Application of Primary Sheet-Applied Vapor Permeable Water Resistive Air Barrier:
 - 1. Where required, install adhesive/primer recommended by Air Barrier Manufacturer

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continuously and at rate recommended by Air Barrier Manufacturer to ensure complete substrate coverage of anticipated flashing installation area.

- a. Allow adhesive/primer to cure to a tacky film prior to application of air barrier.
 - b. Primed areas not covered by end of day must be re-primed prior to installation of air barrier.
2. Peel protective film from primary air barrier and align top of verifying proper positioning prior to complete film removal and placement.
 3. Press primary air barrier firmly into place by applying hand pressure to the middle of the membrane and working the pressure to the edges, eliminating wrinkles and air bubbles.
 4. Install primary air barrier in shingle fashion to eliminate reverse laps.
 5. For lap adhesion enhancements, install standard or low VOC adhesive continuously and at rate recommended by Air Barrier Manufacturer to ensure substrate coverage of anticipated flashing installation area.
 - a. Allow adhesive/primer to cure to a tacky film prior to subsequent primary air barrier installation.
 6. Horizontal applications:
 - a. Horizontal seams: two- (2) inch minimum.
 - b. Vertical seams: three- (3) inch minimum.
 7. Roll primary air barrier and laps with countertop roller to obtain thorough adhesion.
 8. Seal permanent reverse laps of primary air barrier with termination sealant.
- G. Special Considerations:
1. Contact Air Barrier Manufacturer to verify product and installation requirements.
 2. Wall assemblies identified as special conditions and requiring supplemental detailing may include, but are not limited to, any of the following:
 - a. Panelized wall assemblies.
 - b. Sloped wall assemblies.
 - c. Rainscreen cladding systems permitting permanent direct exposure to bulk water onto the primary air barrier within a completed wall assembly.
 - d. Claddings impeding drainage and/or promoting hydrostatic pressure:
 - 1) Horizontal Z-girts or furring strips installed directly onto air barrier in a manner to encourage water collection.
- H. Fastener Penetrations Through Primary Air Barrier:
1. It is the responsibility of the installer penetrating the air barrier assembly to install fasteners and components in accordance with the Air Barrier Manufacturer's installation guide and as specified in this Section.
 2. Installation requirements:
 - a. Drill fasteners and components with sufficient compression to maintain continuity in the air barrier assembly.
 - b. Refer to "Self-tapping fasteners" and/or "pre-drilled fasteners".
 3. Supplemental sealant:
 - a. Penetrations that do not meet installation requirements require the addition of termination sealant at point of insertion through the air barrier to maintain continuity in the air barrier assembly.
 4. Self-tapping fasteners:
 - a. Fastener head/assembly component must be larger in diameter than the fastener shank.
 - b. Install fastener head/assembly component to provide a continuous compression firmly against the air barrier creating a gasketing seal without damaging the membrane.
 - c. Do not install fastener components through the air barrier over unsupported areas of the substrate such as sheathing joints.
 - d. Remove overdriven fasteners, improperly installed fasteners, defective/broken

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fasteners, or fasteners not properly fastened into the building structure beyond the air barrier membrane and seal the vacated hole with termination sealant prior to the installation of the exterior cladding.

5. Pre-drilled fastening assemblies:
 - a. Fastening head/assembly component must be larger in diameter than predrilled hole.
 - b. Install fastening head/assembly component to provide a continuous compression firmly against the air barrier creating a gasketing seal without damaging the membrane.
 - c. Do not install fastening components through air barrier over unsupported areas of the substrate such as sheathing joints.
 - d. Seal improperly drilled and/or vacated holes with termination sealant prior to the installation of the exterior cladding.

3.4 FIELD QUALITY CONTROL

- A. Final Observation and Verification:
 1. Owner's representative, General Contractor, or Air Barrier Manufacturer shall complete the final inspection of the air barrier assembly as required by warranty.
 - a. Contact Air Barrier Manufacturer for warranty issuance requirements.
- B. Install cladding as soon as practical after application. Air barrier assembly not designed for permanent UV exposure. Refer to Air Barrier Manufacturer's product TDS for product limitations.

3.5 CLEANING

- A. As the Work proceeds, and upon completion, promptly clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.
- B. Clean soiled surfaces, spatters, and damage caused by Work of this Section.
- C. Check area to ensure cleanliness and remove debris, equipment, and excess material from the site.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. The work of this section includes but is not necessarily limited to, furnishing and installation of all preformed metal roofing, and accessories as indicated on the drawings and specified herein.
- B. References:
 - 1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 - 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 - a. American Society of Testing Materials (ASTM):
 - 1) ASTM A792/A792M-23 Standard Specification for Steel Sheet, 55-percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 2) ASTM A924/A924M-22a Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - 3) ASTM D523-14(2018) Standard Test Method for Specular Gloss.

1.2 PERFORMANCE REQUIREMENTS

- A. Testing and Certification:
 - 1. Wind Uplift: UL 580 test, Class 90 rated:
 - a. Construction #397, minimum 24-gauge panels, when installed over minimum 5/8-inch plywood decking, with roof panel fastener clips spaced 18-inches on center maximum (wide batten only), or Construction #397A with clips at 24-inches on center maximum (narrow batten only).

1.3 SUBMITTALS

- A. All submittals shall be in accordance with the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Contract Closeout.
- B. Submittal Item No. 07 41 13A - Product Data:
 - 1. Submit manufacturer's technical product data, installation instructions and recommendations for each type of roofing required. Include data substantiating that materials comply with requirements.
- C. Submittal Item No. 07 41 13B - Samples:
 - 1. Prior to ordering products, submit Manufacturer's standard color Samples for Architect's/Engineer's selections.
 - 2. Prior to starting work, submit three (3) 12-inch-long panel samples showing shape, and a representative color chip for Architect's/Engineer's acceptance.
- D. Submittal Item No. 07 41 13C - Shop Drawings:
 - 1. Submit complete shop drawings detailing all perimeter flashings and joints in accordance with the manufacturer's standard recommendations.

2. Describe all proposed details that deviate from what is shown on the plans.
 3. Details shall allow for expansion and contraction.
- E. Submittal Item No. 07 41 13D - Site Conditions:
1. Provide completed site condition form for environmental conditions excluded in the standard warranty.

1.4 QUALITY ASSURANCE

- A. Installer's Qualifications:
1. Installer must be approved by the Panel Manufacturer in writing prior to work commencing.
 2. Installer shall meet the following:
 - a. Successfully applied five metal roofs of comparable size and complexity which reflect a quality weathertight installation in the region where the work will be performed.
 - b. Have been in business for a minimum period of five years in the region where the work will be performed.
- B. Manufacturer's Qualifications:
1. Manufacturer shall have a minimum of 10 years' experience supplying metal roofing to the region where the work is to be done.
 2. Comply with current independent testing and certification as specified.
 3. Manufacturer shall provide proof of \$2,000,000 liability insurance for their metal roof system.
 4. The roof panel manufacturer must also subscribe to Underwriters Laboratories' "Follow Up Service" assuring continuing product compliance with UL requirements. Shipment packaging of panels and attachment clips must bear UL classification markings.
 5. Panel manufacturers without full supporting product literature, Flashing & Details Guides, Guide Specifications, and Technical Support shall not be considered equal to the specified product.
- C. Regulatory Agency Requirements:
1. Comply with current edition CBC and local Building Code requirements if more restrictive than those specified herein.
 2. Compliance with certification must be submitted with bid.
- D. Design Criteria:
1. Wind Uplift: The roof system manufacturer shall provide an attachment schedule or supporting calculations to demonstrate adequate attachment for the following uplift loads:
 - a. Uplift loads as calculated using the current edition of the CBC with a 95 MPH basic wind speed (3-second gust), Exposure Category C, Seismic Design Category D.
 - 1) Roof Snow loads: Minimum design snow load and roof live load shall be 20 pounds per square foot below elevation of 1,800 feet and thirty (30) pounds per square foot at 1,800 feet and elevations above.
 - b. Drag Loading: The roof panel manufacturer shall provide an attachment schedule or calculations to resist drag loads induced by a snow load of 30 psf.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Protect against damage and discoloration.
- B. Handle panels with non-marring slings.
- C. Do not bend panels.

- D. Store panels above ground, with one end elevated for drainage.
- E. Protect panels against standing water and condensation between adjacent surfaces.
- F. If panels become wet, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Painted panels shall be shipped with a protective plastic sheeting or a strippable film coating between all panels.

1.6 PROJECT CONDITIONS

- A. Examine the conditions and substrates in which metal roofing work is to be installed. Substrate shall be installed level, flat and true to avoid panel stresses and distortion.
- B. Field measurements shall be taken prior to fabrication of panels.
- C. Proceed with roofing installation only after satisfactory conditions are met.

1.7 WARRANTY

- A. Manufacturer's Product Warranty:
 - 1. Manufacturer's standard coating performance warranty, as available for specified installation and environmental conditions.
- B. Contractor's Warranty:
 - 1. Warrant panels, flashings, sealants, fasteners and accessories against defective materials and/or workmanship, to remain watertight and weatherproof with normal usage for two (2) years following Project Substantial Completion date.
- C. Manufacturer's Weathertightness Warranty:
 - 1. Contact Manufacturer's sales department for watertightness warranty information.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design:
 - 1. AEP Span, A Division of ASC Profiles Inc., Main Office, 2110 Enterprise Boulevard, West Sacramento, CA 95691; Ph: (800) 733-4955
 - 2. Fontana location: 10905 Beech Avenue, Fontana, CA 92337.
 - 3. Tacoma location: 2141 Milwaukee Way, Tacoma, WA 98421.
 - 4. Or equal
- B. Panel Designation:
 - 1. Select Seam® Wide Batten.

2.2 MATERIALS

- A. Panels:
 - 1. Base Metal:
 - a. Material:
 - 1) For primers thicker than 0.5 mil, steel conforming to ASTM A924, G-90

**SECTION 07 41 13
METAL ROOF PANELS**

- Galvanized, minimum yield 50,000 psi, thickness 24-gauge standard.
- b. Protective Coating:
 - 1) For primers thicker than 0.5 mil, conform to ASTM A924, G-90 Galvanized.
 - 2. Finish:
 - a. DuraTech® 5000 (Polyvinylidene Fluoride), full 70 percent Kynar® 500/Hylar 5000® consisting of baked-on 0.15-0.20 mil corrosion resistant primer and baked-on 0.70-0.80 mil finish coat with a specular gloss of 10-30 percent when tested in accordance with ASTM D523 at 60 degrees.
 - 3. Color:
 - a. Architect shall select from manufacturer's standard selection of not less than 22 colors.
 - 4. Interior Finish:
 - a. Primer Coat Material: Corrosion-resistant primer; primer coat dry film thickness: 0.15 mils; finish coat material: polyester paint, finish coat dry film thickness: 0.35 mils.
 - b. Total Interior Dry Film Thickness: 0.50 mils.
 - c. Color: Off-White.
 - 5. Configuration:
 - a. Wide Batten: Roof panels shall consist of snap-on batten caps 1.7/8-inches wide and 1.7/8-inches high spaced 22.1/2-inches on center and a nominal panel width of the same. Panels shall be factory correctively leveled.
- B. Accessories:
- 1. Fastener Clip: UL-90 assembly rated clip; 24-gauge coated with minimum AZ-50 Zinc-Aluminum coating per ASTM A792.
 - 2. Fasteners: Per manufacturer's recommendation including attachment schedule.
 - 3. Sealant:
 - a. Gunnable Grade Caulking: Single component Urethane Caulk.
 - b. Tape Sealant: Butyl.
- C. Flashing:
- 1. Protective metallic coating, material, gauge and finish to match panels. Do not use lead or copper. Remove any strippable film prior to installation.
- D. Fabrication:
- 1. Unless otherwise shown on drawings or specified herein, panels shall be full length. Fabricate flashings and accessories in longest practical lengths.
 - 2. Roofing panels shall be factory formed. Field formed panels are not acceptable.
 - 3. Roofing panels and/or battens shall be field curved, as required, to dimensions shown on drawings (Applicable for curved roof applications only.)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Existing Conditions:
- 1. Verify that members and/or substrate to receive panels are complete, accurately sized and located, in true plane, secure and otherwise properly prepared.
 - 2. Prior to starting work, notify General Contractor about defects requiring correction.
 - 3. Do not start work until conditions are satisfactory.

3.2 PREPARATION

- A. Field Measurements:
- 1. Verify prior to fabrication.

2. If field measurements differ from drawing dimensions, notify Architect/Engineer prior to fabrication.
- B. Protection:
 1. Treat, or isolate with protective material, and contacting surfaces of dissimilar materials to prevent electrolytic corrosion.
 2. Require workmen who will be walking on Roofing panels to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material which could cause damage or discoloration.
 3. Protect Work of other Trades against damage and discoloration.
- C. Surface Preparation:
 1. Clean and dry surfaces prior to applying sealant

3.3 INSTALLATION

- A. Panels:
 1. Follow roof panel manufacturer's directions.
 2. Install panel seams vertically.
 3. Secure panels without warp or deflection.
 4. Fully engage battens.
 5. Remove strippable protective film, if used, immediately preceding panel installation.
- B. Allowable Erection Tolerance:
 1. Maximum Alignment Variation: 1/4-inch in 40 feet.
- C. Flashing:
 1. Follow manufacturer's directions and architect approved Shop Drawings. Install flashings to allow for thermal movement.
- D. Cutting and Fitting:
 1. Neat, square and true.
 2. Torch cutting is prohibited.

3.4 CLEAN UP AND CLOSEOUT

- A. Panel Damage and Finish Scratches:
 1. Do not apply touch-up paint to damaged paint areas that involve minor scratches.
 2. Panels or flashings that have severe paint and/or substrate damage shall be replaced as directed by the Architect's or Owner's representative.
- B. Cleaning and Repairing:
 1. At completion of each day's work and at work completion, sweep Panels, Flashings and Gutters clean.
 2. Do not allow fasteners, cuttings, filings or scraps to accumulate.
 3. Remove debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

POLYVINYL-CHLORIDE (PVC) ROOFING

SECTION 07 54 19

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. PVC thermoplastic membrane, felt backed, fully adhered system.
- B. Fiberglass-faced primed roof board, attached with mechanical fasteners.
- C. Prefabricated flashings, corners, parapets, stacks, vents, and related details.
- D. Fasteners, adhesives, and other accessories required for a complete roofing installation.
- E. Traffic Protection.

1.2 REFERENCES

- A. NRCA - The NRCA Roofing and Waterproofing Manual.
- B. ASCE 7 - Minimum Design Loads For Buildings And Other Structures.
- C. UL – Roofing Materials and Systems Directory, Roofing Systems (TGFU.R10128).
- D. ASTM C 1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- E. ASTM D 751 – Standard Test Methods for Coated Fabrics.
- F. ASTM D 4434 – Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
- G. ASTM 108 – Standard Test Methods for Fire Tests of Roof Coverings.
- H. ASTM E 119 – Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 SYSTEM DESCRIPTION

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Physical Properties:
 - 1. Roof product must meet the requirements of Type III PVC sheet roofing as defined by ASTM D 4434 and must meet or exceed the following physical properties.

2. Thickness: In accordance with ASTM D 751.
 3. Thickness Over Scrim: ≥ 28 mil in accordance with ASTM D 751.
 4. Breaking Strengths: ≥ 390 lbf. (MD) and ≥ 438 lbf. (XMD) in accordance with ASTM D 751, Grab Method.
 5. Elongation at Break: $\geq 31\%$ (MD) and $\geq 31\%$ (XMD) in accordance with ASTM D 751, Grab Method.
 6. Heat Aging in accordance with ASTM D 3045: 176 °F for 56 days. No sign of cracking, chipping or crazing. (In accordance with ASTM D 4434).
 7. Factory Seam Strength: ≥ 431 lbf. in accordance with ASTM D 751, Grab Method.
 8. Tearing Strength: ≥ 132 lbf. (MD) and ≥ 163 lbf. (XMD) in accordance with ASTM D 751, Procedure B.
 9. Low Temperature Bend (Flexibility): Pass at -40 °F in accordance with ASTM D 2136.
 10. Accelerated Weathering: No cracking, checking, crazing, erosion or chalking after 5,000 hours in accordance with ASTM G 154.
 11. Linear Dimensional Change: $< 0.5\%$ in accordance with ASTM D 1204 at 176 ± 2 °F for 6 hours.
 12. Water Absorption: $< 2.6\%$ in accordance with ASTM D 570 at 158 °F for 166 hours.
 13. Static Puncture Resistance: ≥ 56 lbs. in accordance with ASTM D 5602.
 14. Dynamic Puncture Resistance: ≥ 14.7 ft-lbf. in accordance with ASTM D 5635.
- D. Cool Roof Rating Council (CRRC):
1. Membrane must be listed on CRRC website.
 - a. Initial Solar Reflectance: $\geq 88\%$
 - b. Initial Thermal Emittance: $\geq 87\%$
 - c. Initial Solar Reflective Index (SRI): ≥ 111
 - d. 3-Year Aged Solar Reflectance: $\geq 68\%$
 - e. 3-Year Aged Thermal Emittance: $\geq 84\%$
 - f. 3-Year Aged Solar Reflective Index (SRI): ≥ 82

1.4 SUBMITTALS

- A. Product Data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
 4. Maintenance requirements.
- B. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.
- C. Verification Samples: For each product specified, two samples, representing actual product, color, and finish.
1. 4 inch by 6 inch sample of roofing membrane, of color specified.
 2. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.
 3. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.
- D. Installer Certificate: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer's warranties

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with manufacturer's installation instructions.
- B. Manufacturer Qualifications: A manufacturer specializing in the production of PVC membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.
- C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.
- D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.
- E. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.
- B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire – Test Exposure:
 - 2. Class A: ASTM E 108, for application and roof slopes indicated.
 - 3. Fire-Resistance Ratings: Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.
 - 4. Conform to applicable code for roof assembly fire hazard requirements.
- C. Wind Uplift:
 - 1. Roofing System Design: Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*.

1.7 PRE-INSTALLATION MEETING

- A. Convene meeting not less than one week before starting work of this section.
- B. Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 4. Review structural loading limitations of roof deck during and after roofing.
 - 5. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 - 6. Review governing regulations and requirements for insurance and certificates if applicable.
 - 7. Review temporary protection requirements for roofing system during and after installation.
 - 8. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Store roof materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 WARRANTY

- A. Contractor's Warranty: The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.
- B. Manufacturer's Warranty: Must be no-dollar limit type and provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition the warranty must meet the following criteria:
 - 1. Warranty Period: 20 years from date issued by the manufacturer.
 - 2. No exclusion for damage caused by ponding water.
 - 3. No exclusion for damage caused by biological growth.
 - 4. Issued direct from and serviced by the roof membrane manufacturer.
 - 5. Transferable for the full term of the warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. All roofing system components to be provided or approved by roof system manufacturer.
- B. Acceptable Manufacturers:
 - 1. Sarnafil G410 Feltback 80mil
 - 2. GAF, Everguard PVC X K
 - 3. John Mansville, JM PVC with Elvaloy Kee Polymer
 - 4. Carlisle, PVC Sure Flex Kee HP
 - 5. Duro-Last, EV Membrane
 - 6. Versico PVC – Versiflex Kee HP
 - 7. Or accepted equal.

2.2 ROOFING SYSTEM COMPONENTS

- A. Roofing Membrane: PVC-KEE thermoplastic membrane, type III, fabric-reinforced, PVC.

Membrane properties as follows:

1. Thickness:
 - a. 80 mil. minimum
 2. Exposed Face Color:
 - b. White
- B. Accessory Materials: Provide accessory materials supplied by or approved for use by roof system manufacturer.
1. Sheet Flashing: Manufacturer's standard reinforced PVC sheet flashing.
 2. Factory Prefabricated Flashings: manufactured using Manufacturer's PVC membrane.
 - a. Stack Flashings.
 - b. Curb Flashings.
 - c. Inside and Outside, Corners.
 3. Sealants and Adhesives: Compatible with roofing system and supplied by roof system manufacturer.
 - a. Caulk.
 - b. Strip Mastic.
 4. Slip Sheet: Compatible with roofing system and supplied by roof system manufacturer.
 5. Fasteners and Plates: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane and insulation to substrate. Supplied by roof system manufacturer.
 - a. #14 Heavy Duty Fasteners.
 - b. Steel Membrane Plates.
 - c. 3 inch Metal Plates.
 6. Termination and Edge Details: Supplied by roof system manufacturer.
 - a. Termination Bar.
 - b. 2-Piece Edge Metal System
 7. Vinyl Coated Metal: 24 gauge, hot-dipped galvanized, grade 90 metal with a minimum of 17 mil of PVC roofing membrane laminated to one side.
- C. Substrate Board:
1. Glass-mat-faced, water-resistant gypsum substrate conforming to ASTM C 1177/C
 - a. 1/4 inch thick.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of standing water, ice or snow.
- E. Verify that all roof openings or penetrations through the roof are solidly set.
- F. If substrate preparation is the responsibility of another contractor, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.
- C. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

3.3 INSTALLATION

- A. Install insulation in accordance with the roof manufacturer's requirements.
- B. Separation Board: Fiberglass-faced primed roof board.
 - 1. Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
 - a. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected.
 - b. Attach boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than 1/4 inch.
- C. Roof Membrane: PVC thermoplastic membrane.
 - 1. Adhere membrane using manufacturer's adhesive per the roof manufacturer.
 - 2. Heat-weld seams and test all welds.
 - 3. Install membrane continuously with minimal wrinkles.
 - 4. Cut membrane to fit neatly around all penetrations and roof projections.
 - 5. Unroll roofing membrane and positioned with a minimum 6 inch overlap.
- D. Seaming:
 - 1. Weld overlapping sheets together using hot air. Minimum weld width is 1-1/2 inches.
 - 2. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.
- E. Membrane Termination/ Securement: All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.
 - 1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
 - 2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.
- F. Flashings: Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.
 - 1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
 - a. Do not apply flashing over existing thru-wall flashings or weep holes.
 - b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
 - c. Extend flashing membrane a minimum of 6 inches (152 mm) onto the main roof sheet beyond the mechanical securement.
 - d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).
 - 2. Penetrations:
 - a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing through

- the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.
- b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
 - c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.
3. Pipe Clusters and Unusual Shapes:
- a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl-coated metal pitch pan and sealant supplied by the membrane manufacturer.
 - b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
 - c. Pitch pans shall not be used where prefabricated or field fabricated flashings are possible.
4. Roof Drains:
- a. Provide a smooth clean surface on the mating surface between the clamping ring and the drain base.
5. Edge Details:
- a. Provide edge details as indicated on the Drawings. Install in accordance with the membrane manufacturer's requirements.
 - b. Join individual sections in accordance with the membrane manufacturer's requirements.
 - c. Coordinate installation of metal flashing and counter flashing specified.
 - d. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, and roof expansion assemblies.
6. Water Cut-Offs:
- a. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
 - b. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
 - c. Remove water cut-offs prior to the resumption of work.
 - d. The integrity of the water cut-off is the sole responsibility of the roofing contractor.
 - e. Any membrane contaminated by the cut-off material shall be cleaned or removed.

3.4 FINISHING AND WALKWAY INSTALLATION

- A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.
- B. Walkway Pads: Adhere to the roofing membrane, spacing each pad at minimum of 1-inch and maximum of 3-inches from each other to allow for drainage.
 - 1. If installation of walkway pads over field fabricated splices or within 6-inches of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6-inches on either side.
 - 2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

3.5 FIELD QUALITY CONTROL

- A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

3.6 PROTECTION

- A. Protect installed roofing products from construction operations until completion of project.

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- B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.
- C. Repair or replace damaged products after work is completed.

END OF SECTION 07 54 19

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes, but is not limited to:
1. Provide galvanized steel flashing and sheet metal including accessories as required for complete weather tight installation, including the following.
 - a. Fascia, parapet coping, and wall cap flashings.
 - b. Wall flashings.
 - c. Roof penetration flashings.
 - d. Roof termination flashings and counterflashing.
 - e. Edge termination flashings.
 - f. Head and sill flashings.
 - g. Gutters and Scuppers.
 - h. Miscellaneous sheet metal fabrications.
 2. Manufactured reglets with removable counterflashing.
 3. Sealants associated with shop fabrication of sheet metal work.
- B. References:
1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - a. Architectural Sheet Metal Manual, Fifth Edition.
 4. American Society of Testing Materials (ASTM):
 - a. ASTM B32-20 Standard Specification for Solder Metal.
 - b. ASTM A653/A653M-19a Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - c. ASTM B32-08(2014) Standard Specification for Solder Metal
 - d. ASTM B209 - 14 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - e. ASTM B370 - 12(2019) Standard Specification for Copper Sheet and Strip for Building Construction
 - f. ASTM B749 - 14 Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
 - g. ASTM D1187 / D1187M - 97(2018) Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal
 - h. ASTM E241-09(2014)e1 Standard Guide for Limiting Water-Induced Damage to Buildings.
 5. American Architectural Manufacturers Association (AAMA):
 - a. AAMA 620 Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Aluminum.
 - b. AAMA 621 Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
 6. Federal Standards (FS):
 - a. FS O-F-506 - Flux, Soldering, Paste and Liquid.
 - b. FS QQ-S-571 - Solder, Tin Alloy.
 - c. FS SS-C-153 - Cement, Bituminous, Plastic.
 7. Factory Mutual (FM):

- a. Global Loss Prevention Guide, current edition.
- 8. National Association of Metal Manufacturers (NAAMM):
 - a. Metal Finishes Handbook.
- 9. National Roofing Contractors Association (NRCA):
 - a. Roofing Manual.

1.2 SUBMITTALS

- A. All submittals shall be submitted under the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 07 62 00A – Product Data
 - 1. Submit manufacturer's product data for each specified item.
 - 2. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- C. Submittal Item No. 07 62 00B – Shop Drawings
 - 1. For manufactured and shop fabricated gravel stops, fascia, scuppers, and all other sheet metal fabrications.
 - 2. Indicate type, gauge, and finish of metal.
 - 3. Clearly indicate dimensioning, layout, general construction details including closures, flashings, locations, and types of sealants, anchorages, and method of anchorage.
- D. Submittal Item No. 07 62 00C– Samples for Verification
 - 1. Provide full sized sample of metal flashing illustrating typical:
 - a. Seam.
 - b. Typical external corner.
 - c. Typical internal corner.
 - d. Valley.
 - e. Junction to vertical dissimilar surface.
 - f. Material and finish.
- E. Submittal Item No. 07 62 00D – Installation Instructions
 - 1. Submit manufacturer's installation instructions.
- F. Submittal Item No. 07 62 00E – Mockups: Build sheet metal mockups to demonstrate qualities of materials and execution and aesthetic effects of the following conditions. Include fasteners, cleats, clips, closures, and other attachments.
 - 1. Parapet coping flashings.
 - 2. Roof penetration flashings.
 - 3. Roof edge termination flashings.
 - 4. Door and window head and sill flashings.
 - 5. Gutters.
 - 6. Exposed trim and fascia.
 - 7. Verify with Architect, which, if any, mockups may remain as a permanent part of the work.
- G. Submittal Item No. 07 62 00F – Certification
 - 1. Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.
 - 2. Submit roof manufacturer's certification that metal furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Fabricate and install roof edge flashing and copings capable of resisting the following forces according to recommendations in FM Global Loss Prevention Data Sheet 1-49:
 - 1. Wind Zone 1: For velocity pressures of 21 to 30 lbf/sq. ft.: 60 lbf/sq. ft. perimeter uplift force, 90 lbf/sq. ft. corner uplift force, and 30 lbf/sq. ft. outward force.
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg. F, ambient; 180 deg. F, material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that does not allow water infiltration to building interior.

1.4 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual". Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- B. Qualifications of Fabricator and Installer: Company specializing in sheet metal flashing work with 5 years' experience.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section for project management and coordination.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, installer and installer's whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
 - 2. Review methods and procedures related to sheet metal flashing and trim.
 - 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 - 4. Document proceedings, including corrective measures and action required, and furnish copy of record to each participant.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.
 - 1. Damaged materials are to be replaced subsequent to examination and at no cost to the Owner.
- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated

covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.6 WARRANTY

- A. Prefinished metal material requires a written 20-year non-prorated warranty covering fade, chalking, and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D2244 or chalking excess of 8 units per ASTM D659. If either occurs, material shall be replaced per warranty, at no cost to the Owner.
- B. The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of five years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and repair and/or replace any damage to other work or equipment caused by such leaks or the repairs thereof.
- C. Special Warranty: Provide for correcting failure of metal flashing system to resist penetration of water and damage from wind.
 - 1. Special Warranty Period: Two years.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Galvanized Steel: Zinc-coated (galvanized) steel sheet, Class A250 coating, 24 gauge unless noted otherwise on drawings.
 - 1. Scuppers: Meets Federal Specification QQ-L-201, Grade B, four pounds per square foot
 - 2. Curb caps and pitch pockets: Zinc Alloy Sheet: standard (soft) temper, factory finished in Kynar 500.
- B. Gutters, metal edge, counterflashing, collector heads, coping and skirt flashing: 22 gauge, Galfan steel, GF-90. Kynar coated. Supplied by the roofing system manufacturer.
- C. Gutter straps: 16 gauge at 18-inches o.c.
- D. Gutter brackets: 16 gauge by 2-inches wide at 24-inches on center.
- E. Leader pipe: G90 galvanized schedule 40 steel pipe, 4-inches in diameter.
- F. Aluminum: ASTM B209 minimum thickness 0.0603 inch.
- G. Lead Sheet: ASTM B749, Type L51121, copper bearing, 4 lbs. per square foot.
 - 1. Meets Federal Specification QQ-L-201, Grade B

2.2 ACCESSORIES

- A. Flashing and Sheet Metal:
 - 1. Provide heavier gauge metal where recommended by SMACNA Manual for size of component.
 - 2. Mill phosphatized where indicated to be field painted.
- B. Solder and Fasteners: As recommended by SMACNA and complying with applicable codes and regulations; hot dipped galvanized minimum coating comparable to G90.

- C. Concealed Sealant: Butyl type for use in conjunction with sheet metal; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior concealed applications.
- D. Separation Coating: Tremco TREMproof 201/60R.
- E. Sealing Compound: Tremco Vulkem® 445SSL or Architect approved substitute.
- F. Underlayment:
 - 1. Waterproof: GCP Applied Technologies "Ice and Water Shield".
 - 2. Slip Sheet: Rosin sized paper – 3 lbs./10 sq. ft.
- G. Fastener: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
 - 1. Exposed Fasteners: Stainless Steel or with heads matching color of sheet metal by means of plastic caps or factory-applied coating.
 - 2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
 - 3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
 - 4. Spikes and Ferrules: Same material as gutter; with spike and ferrule matching internal gutter width.
- H. Vandal proof vent caps. Zurn Industries, model Z-193 or Architect-approved substitute.
- I. Drawbands: Stainless-steel hose clamp; worm drive.

2.3 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated, with factory-mitered and –welded corners and junctions.
 - 1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Fry Reglet Corporation:
 - 1) Surface-Mounted Type: Model SM.
 - 2) Stucco Type: Model ST.
 - 3) Concrete Type: Model CO.
 - 4) Masonry type: Model MA.
 - 2. Material: Stainless Steel, 0.0188-inch thick (26 gauge).
 - 3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - 4. Stucco Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
 - 5. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 - 6. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
 - 7. Flexible Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where drawings show reglet without metal counterflashing.
 - 8. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counter flashing lower edge.

2.4 FABRICATION

- A. Fabricate sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.
- B. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
 - 1. Fabricate corners and intersections in shop with solder joints; watertight fabrication.
- C. Form sections in longest practical lengths; make allowance for expansion at joints.
- D. Hem exposed edges on underside 1/2-inch; miter and seam corners.
- E. Back-paint flashings with heavy bodied bituminous paint to a minimum dry film thickness of 15 mil where in contact with cementitious materials or dissimilar metals.
- F. Form pitch pans watertight, with minimum 4-inch upstand and 4-inch flanges; form pans minimum 6-inches wider than item passing through roof membrane.
- G. Form umbrella flashings with minimum 2-inch overhang to shed water away from pitch pans.
- H. Form material with standing seam. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- I. Fabricate vertical faces with bottom edge formed outward 1/4-inch and hemmed to form drip.

2.5 ROOF DRAINAGE SHEET METAL FABRICATIONS

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing and Fascia Caps: Fabricate in minimum 96-inches long, but not exceeding 10-foot long sections. Furnish with 6-inch wide joint cover plates.
 - 1. Material: Galvanized steel.
 - a. Thickness: 0.0299-inch (22 gauge).
- B. Copings: Fabricate minimum of 96-inches long, but not exceeding 10-foot long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight.
 - 1. Material: Galvanized steel.
 - a. Thickness: 0.0359-inch (20 gauge), except where indicated otherwise.
 - b. Joint Style: Butt, with 12-inch wide concealed backup plate.
- C. Base Flashings, Flashing Receivers, and Counterflashing:
 - 1. Material: Galvanized steel.
 - a. Thickness: 0.0299-inch (22 gauge).
- D. Roof Drain Flashing:
 - 1. Material: Lead.
 - a. Weight: 4.0 lbs./sq. ft.
- E. Vent Stack Roof Penetration:
 - 1. Material: Lead.
 - a. Weight: 4.0 lbs./sq. ft.

- F. Splash Pans:
 - 1. Material: Stainless steel.
 - a. Thickness: 0.0312-inch (22 gauge).

2.7 WALL FABRICATIONS

- A. Openings Flashing in Frame Construction: Fabricate head, sill, and similar flashings to extend 4-inches beyond wall openings. Form head and sill flashing with 2-inch high end dams.
 - 1. Material: Galvanized steel.
 - a. Thickness: 0.0336-inch (22 gauge).

2.8 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within 1/2 of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions with installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.
 - 1. Field measure site conditions prior to fabricating work.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 3. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 5. Beginning of installation means acceptance of existing conditions

3.2 INSTALLATION, GENERAL

- A. General:
 - 1. Anchor sheet metal flashing and trim and other components of the work securely in place, with provisions for thermal and structural movement.
 - 2. Install work watertight, without waves, warps, buckles, fastening stress, or distortion, allowing for expansion and contraction.
 - 3. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 4. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with separation coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar

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SHEET METAL FLASHING AND TRIM

metals.

1. Coat sides of uncoated aluminum, stainless-steel, and lead sheet metal flashing and trim with separation coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
 3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.
- C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.
- E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
1. Space cleats not more than 12 inches apart, except where indicated as continuous. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10-feet with no joints allowed within 24-inches of corner of intersection. Where lapped or bayonet-type expansion, provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed with joints.
- G. Fasteners: Use fasteners of sizes that will penetrate not less than 1-1/4 inches for nails and not less than 3/4-inch for wood screws.
1. Galvanized or Pre-painted, Metallic-Coated Steel: Use stainless steel fasteners.
 2. Aluminum: Use aluminum or stainless steel fasteners.
 3. Stainless Steel: Use stainless steel fasteners.
- H. Seal joints with elastomeric sealant as required for watertight construction.
1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 degrees F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg. F.
 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 Joint Sealants.
- I. Solder Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches except where pre-tinned surface would show in finished work.
1. Do not solder pre-painted, metallic-coated steel and aluminum sheet.
 2. Pre-tinning is not required for lead.
 3. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 MANUFACTURED SHEET METAL SYSTEMS

- A. Installing Contractor shall be responsible for determining if the sheet metal systems are in
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general conformance with roof manufacturer's recommendations.

- B. Furnish and install manufactured sheet metal systems in strict accordance with manufacturer's printed instructions.
- C. Provide all factory-fabricated accessories including, but not limited to, fascia extenders, miters, scuppers, joint covers, etc.

3.4 SHOP FABRICATED SHEET METAL

- A. Installing Contractor shall be responsible for determining if the sheet metal systems are in general conformance with roof manufacturer's recommendations.
- B. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.
- C. Hem exposed edges.
- D. Angle bottom edges of exposed vertical surfaces to form drip.
- E. All corners for sheet metal shall be lapped with adjoining pieces fastened and set in sealant.
- F. Joints for gravel stop fascia system, cap flashing, and surface-mount counterflashing shall be formed with a 1/4-inch opening between sections. The opening shall be covered by a cover plate or backed by an internal drainage plate formed to the profile of fascia piece. The cover plate shall be embedded in mastic, fastened through the opening between the sections and loose locked to the drip edges.
- G. Install sheet metal to comply with Architectural Sheet Metal manual, Sheet Metal and Air Conditioning Contractor's National Associations, Inc.

3.5 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

3.6 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual". Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone as indicated.
 - 1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 24-inch centers.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
 - 1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at

- 24-inch centers.
2. Anchor interior leg of coping with screw fasteners and washers at 24-inch centers.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless steel drawband and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4-inches over base flashing. Lap counterflashing joints a minimum of 4-inches and bed with elastomeric sealant.
1. Secure in waterproof manner by means of interlocking folded seam and sealant.
- F. Roof Penetration Flashing: Coordinate installation of roof penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
1. Turn lead flashing down tightly inside vent piping, as required to provide clear, unobstructed airflow.
2. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.7 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall opening components such as windows, doors, and louvers.
- B. Reglets: Install reglets in accordance with manufacturer's written instructions for applicable wall construction.
- C. Openings Flashing in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

3.8 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.9 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar repair procedures.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes:
1. Painting and finishing of exposed items and surfaces.
 - a. Specified surface preparation, priming and coats of paint are in addition to shop-priming and surface treatment specified under other sections of work.
 - b. Painting and finishing includes field finishing of exterior and interior items not listed as "Surfaces not to be Painted" unless clearly indicated otherwise.
 - c. Painting and finishing includes field finishing of select shop finished items where indicated as required to match adjacent surfaces, such as mechanical grilles and registers.
 - d. Field paint exposed bare and covered pipes, ducts, and hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work in occupied spaces.
- B. Related Sections: Shop priming of ferrous metal items is included under various Specification sections.
1. Division 23 - Mechanical Identification.
 2. Division 26 - Electrical Identification.
- C. Surfaces Not to be Painted:
1. Finished items including finished metal surfaces.
 2. Walls and ceilings in concealed areas and generally inaccessible areas.
 3. Moving parts of operating mechanical and electrical units.
 4. Labels: Keep equipment identification and fire rating labels free of paint.
 5. Plastic smoke stops and weather-stripping at doors.
- D. References:
1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
 2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
 3. American Society for Testing and Materials (ASTM):
 - a. ASTM D16-24 Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - b. ASTM D662-93(2019) Standard Test Method for Evaluating Degree of Erosion of Exterior Paints.
 - c. ASTM D2486-17 Standard Test Methods for Scrub Resistance of Wall Paints.
 - d. ASTM D2805-11(2023) Standard Test Method for Hiding Power of Paints by Reflectometry.
 - e. ASTM D3450-15(2020) Standard Test Method for Washability Properties of Interior Architectural Coatings.
 - f. ASTM D4214-23 Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
 - g. ASTM D4828-94(2020) Standard Test Methods for Practical Washability of Organic Coatings.
 4. Steel Structures Painting Council (SSPC):
 - a. SP6 - Commercial Blast Cleaning Procedures.
 - b. SP10 - Near White Blast Cleaning Procedure.

1.2 SUBMITTALS

- A. All submittals shall be made in accordance with the provisions of Section 01 33 00 Submittal Procedures. Contractor initial submittal shall include all 'Submittal Items' requested below. 'Closeout Submittal Items' shall be provided as required by Section 01 77 00 Closeout Procedures.
- B. Submittal Item No. 09 90 00A - Product Data:
 - 1. Submit product data on all finishing products.
- C. Submittal Item No. 09 90 00B - Samples for Verification:
 - 1. Submit two samples 8.1/2 by 11-inches in size illustrating range of colors, textures and level of gloss finish for each surface-finishing product scheduled.
 - 2. Submit manufacturer's application instructions.
 - 3. Submit two copies of color charts for all paints, stains, and special coatings.
- D. Submittal Item No. 09 90 00C - Field Mock-Up:
 - 1. Before proceeding with paint application, provide field sample panel, 96 inches long by 96 inches wide, illustrating color, texture, and finish of each surface type to be painted.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Furnish materials approved for use by applicable air quality management district for limitations of volatile organic compounds for architectural or special coatings as applicable.
- B. Products shall meet or exceed the following Federal Specifications:
 - 1. Alkyd Enamel: .TT-E-489 QPL.
 - 2. Zinc Oxide Primer: TT-P-641.
- C. Provide manufacturers 5-year written performance guarantee for elastomeric paint and application error (materials and labor).
- D. Inspector to test and verify dry film thickness of elastomeric coatings.

1.4 REGULATORY REQUIREMENTS

- A. Conform to code for flame/fuel/smoke rating requirements for finishes.
- B. Conform to requirements of the Environmental Protection Agency and applicable requirements of local air pollution control district.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, with:
 - 1. Name of material, color and sheen.
 - 2. Manufacturer's name, stock number and date of manufacture.
 - 3. Contents by volume, for major pigment and vehicle constituents.
 - 4. Thinning and application instructions.

1.6 SITE CONDITIONS

- A. Apply water-based paints when temperature of surfaces and surrounding air are between 50-

and 90-degrees F.

- B. Apply solvent-thinned paints when temperature of surfaces and surrounding air are between 45- and 95-degrees F.
- C. Do not apply paint in rain, fog or mist; or when relative humidity exceeds 85 percent; or to damp or wet surfaces.
- D. Painting may be continued during inclement weather if areas to be painted are enclosed and heated within temperature limits specified.
- E. Provide additional temporary ventilation during interior application of paints to eliminate volatile organic compound (VOC) emissions from interior spaces as quickly as possible.
- F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.7 EXTRA STOCK

- A. Provide a one-gallon container of each color and surface texture to Owner.
- B. Label each container with color, texture, and room locations, in addition to the manufacturer's label.

1.8 FIELD MOCK-UP

- A. Before proceeding with paint application, provide field sample panel, 96 inches long by 96 inches wide, illustrating color, gypsum board texture, and finish of each surface type to be painted.
- B. Locate where directed.
- C. Accepted sample may remain as part of the Work.
- D. Colors to be selected and verified by the Architect prior to the commencement of Work. Where color is not indicated, colors to be selected by Architect.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. The Sherwin-Williams Company, 101 Prospect Avenue NW, Cleveland, OH 44115; Ph: (800) 321-8194, Web: www.sherwin-williams.com.
- B. Benjamin Moore and Company, 101 Paragon Dr., Montvale, NJ 07645; Ph: (866) 708-9181, Email: info@benjaminmoore.com, Web: www.benjaminmoore.com.
- C. Dunn-Edwards Corporation, 4885 E. 52nd Place, Los Angeles, CA 90058; Ph: (888) 337-2468, Web: <https://www.dunnedwards.com/>.
- D. Substitutions will be considered in accordance with the provisions of Section 01 62 00 Product Options.

2.2 MATERIALS

- A. Definitions:
1. Paint: as used herein means coating systems including primers, emulsions, enamels, stains, sealers and fillers, whether used as prime, intermediate or finish coats.
 2. DTM: Direct to Metal paint is a protective coating that can be applied directly to metal surfaces without using a primer, for both interior and exterior applications.
- B. Material Quality: Provide top line quality commercial grade (professional painter) paints; materials not bearing manufacturer's identification as a best-grade product shall not be acceptable.
1. Primers: Provide premium grade primers recommended by paint manufacturer for substrates indicated and for finish systems specified.
 2. Undercoats and Barrier Coats: Provide undercoat paints produced by same manufacturer as finish coats; use only thinners approved by paint manufacturer and use only within recommended limits.
 3. Finish Coats: Provide finish coats capable of being washed with mild detergent without loss of color, sheen, or pigments.
 - a. Color pigments: Pure, non-fading, applicable types to suit substrates and service indicated; no lead content permitted.
 4. Finish Coat Coordination: Provide finish coats that are compatible with prime paints, undercoats, and barrier coats used.
 - a. Review other Specification sections in which prime paints are provided; ensure compatibility of total coatings systems.
 - b. Upon request from other trades furnish information on characteristics of finish materials proposed for use.
 - c. Provide barrier coats over incompatible primers or remove and prime as required.
 - d. Notify Architect in writing of any anticipated problems in use of specified coating systems with substrates primed by others.
- C. Colors and Finishes: Prior to commencement of painting work, Architect will furnish color chips for surfaces to be painted.
1. Use of proprietary names in color selection is not intended to imply exclusion of comparable products of other manufacturers.
 2. Final acceptance of colors will be from samples applied on site.
- D. Volatile Organic Compound (VOC) Emissions: Select materials that generate least amount of pollution; consider pollution and volatile organic compound (VOC) emissions generated during manufacturing, transport, installation, use, and disposal.
1. Avoid materials that contain ozone depleting chemicals and that emit potentially harmful volatile organic compound (VOC) emissions.
 2. Avoid materials that can leach harmful chemicals into ground water; do not allow potentially harmful chemicals to enter sewers nor storm drains.
 3. Select materials that can be reused or recycled and materials with significant percentage of recycled content; set specific recycled content percentages for individual materials; avoid materials difficult to recycle.

PART 3 EXECUTION

3.1 PREPARATION

- A. Examine areas and conditions under which painting work is to be applied.
1. Start of painting work indicates acceptance of surfaces and conditions of surfaces and conditions within any particular area.
 2. Where exposed items or surfaces are not specifically mentioned in Schedules, paint same as adjacent similar materials or areas.

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3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to a durable paint film.
- B. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as specified for substrate condition.
- C. Correct minor defects and clean surfaces which affect work of this Section.
- D. Remove hardware, accessories, and items in place and not to be painted, or provide protection prior to surface preparation and painting; after painting reinstall removed items.
- E. Clean surfaces before applying paint; remove oil and grease prior to mechanical cleaning; program cleaning so contaminants from cleaning process do not fall onto wet, newly painted surfaces.
- F. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
- G. Cementitious Materials: Prepare by removing efflorescence, chalk, dirt, grease, oils, and by roughening as required to remove glaze.
 1. Determine alkalinity and moisture content of surfaces to be painted.
 2. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, neutralize before application of paint.
 3. Do not paint over surfaces where moisture content exceeds manufacturer's printed directions.
- H. Wood: Clean wood surfaces of dirt, oil, and other foreign substances; sandpaper smooth surfaces exposed to view and dust off.
 1. Scrape and clean seasoned knots and apply thin coat of recommended knot sealer, before application of priming coat.
 2. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job, prime edges, ends, faces, undersides, and backsides of wood.
 3. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler, sandpaper smooth when dry.
- I. Ferrous Metals: Touch up shop-applied prime coats wherever damaged using same type of primer as applied in shop or barrier coat compatible with finish paint.
 1. Bare Surfaces: Clean surfaces that are not galvanized or shop-coated, of oil, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
 2. Galvanized Surfaces: Clean free of oil and surface contaminants, using non-petroleum-based solvent; primer and touch-up primer to be zinc-rich primer.
- J. Mix painting materials in accordance with manufacturer's directions.
- K. Store materials in tightly covered containers; maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- L. Stir materials before application to produce mixture of uniform density and stir as required during application; do not stir surface film into material, if necessary, strain material before using.

3.2 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.

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- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.
- E. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and remove daily from site.

3.3 APPLICATION

- A. Apply paint in accordance with manufacturer's directions; use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Apply additional coats when stains or blemishes show through final coat, until paint is a uniform finish, color and appearance.
 - 2. Provide extra attention to assure dry film thickness at corners and crevices is equivalent to that of flat surfaces.
 - 3. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces; paint surfaces behind permanently-fixed equipment and furniture with prime coat only.
 - 4. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
 - 5. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 - 6. Finish doors on tops, bottoms and side edges same as faces.
 - 7. Sand lightly between each succeeding enamel coat and each varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated or prepared for painting as soon as practicable after preparation.
 - 1. Allow time between successive coatings to permit proper drying.
 - 2. Do not recoat until paint feels firm and does not deform or feel sticky under moderate thumb pressure.
- C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as recommended by coating manufacturer.
- D. Prime Coats: Apply to items not previously primed; recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat.
- E. Finish Coats: Provide even texture; leave no laps, irregularity in texture, skid marks, or other surface imperfections.
 - 1. Opaque Finishes: Provide opaque, uniform finish, color and coverage; cloudiness, spotting, holidays, brush marks, runs, sags, rope-I-ness, and other surface imperfections are not acceptable.
 - 2. Transparent and Stained Finishes: Produce glass smooth surface film of even luster; provide with no cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, and other surface imperfections.
- F. Completed Work: Match approved samples for color, texture and coverage; remove, refinish or repaint work not accepted.

3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

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- A. Paint all exposed equipment. Roof mounted equipment is to be painted to match roof color and exposed equipment at interior of building is to be painted to match ceiling color. Note pre-finished equipment is still to be painted.
- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and accessories. Paint over prefinished equipment when exposed.
- D. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- E. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one (1) coat of flat back paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- G. Paint exposed conduit and electrical equipment occurring in finished areas.
- H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- I. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.5 PAINTING SYSTEMS

- A. Exterior Work: Provide the following paint systems:
 - 1. General Metal: Semi-gloss sheen.
 - a. One Coat: One coat rust inhibitive DTM primer-white.
 - b. Two Coats: 100 percent acrylic Industrial DTM enamel.
 - a. Two Coats: 100 percent acrylic DTM Industrial enamel.
 - 2. Wood, natural finish: Flat sheen.
 - a. Two Coats: Exterior tinted latex wood stain.
 - a. Finish Coat: Exterior clear wood sealer.
- B. Sheens: Comply with ASTM D523, reflectance of paint.
 - 1. Flat:1-10.
 - 2. Satin:15-30.
 - 3. Eggshell:30-45.
 - 4. Semi-gloss:45-75.
 - 5. Gloss:75-100.

3.6 CLEAN-UP, PROTECTION, AND REPAIR

- A. Clean-Up: During progress of work, remove discarded paint materials, rubbish, cans and rags from site at end of each work day.
 - 1. Clean glass and paint-spattered surfaces immediately by proper methods of washing and scraping, using care not to scratch or damage finished surfaces.

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- B. Protection: Protect work of other trades, whether to be painted or not; correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
 - 1. Provide "Wet Paint" signs to protect newly-painted finishes.
 - 2. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
- C. Repair: At completion of work of other trades, touch-up and restore damaged surfaces or defaced painted surfaces.

END OF SECTION