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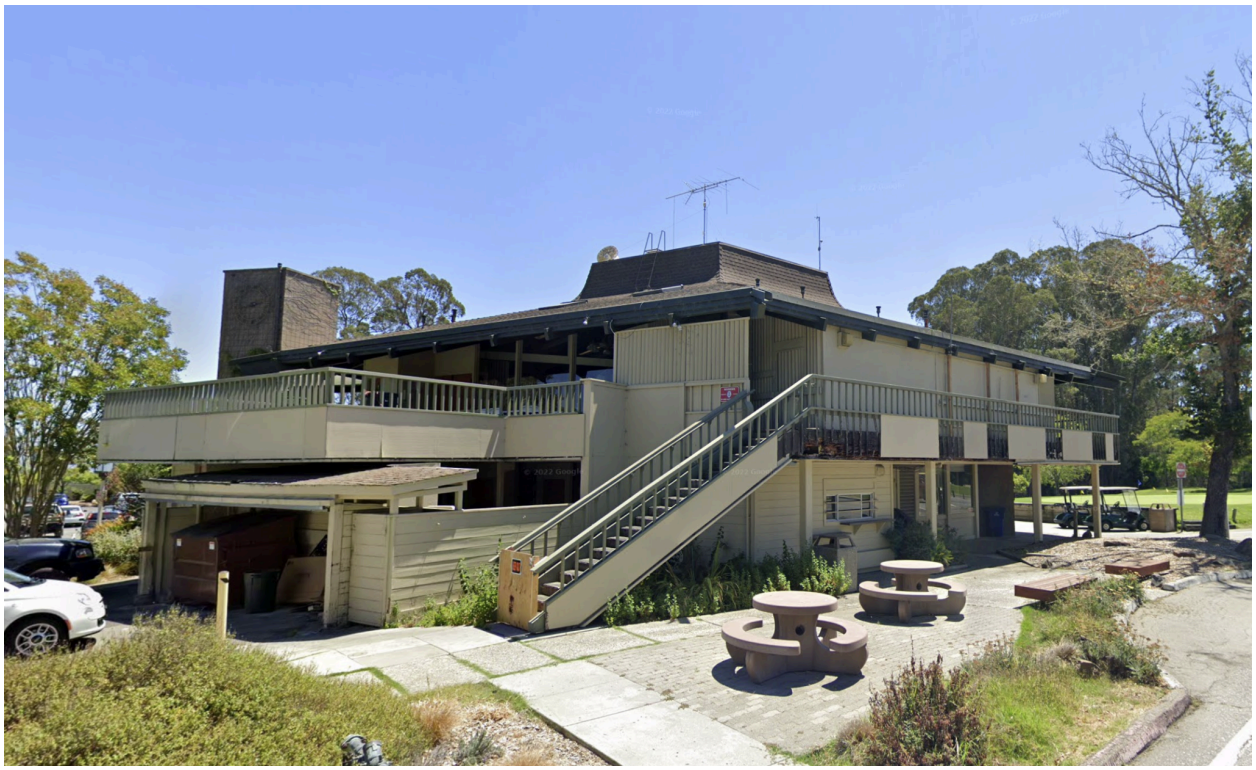
TECHNICAL SPECIFICATIONS

DeLaveaga Roofing Repairs

401 Upper Park Rd., Santa Cruz, 95060



Section 01 10 00

Summary of Work

Part 1 – General

1.01 Section Includes

A. General Project Information
B. A general description of Work covered by the Contract Documents.
C. A description of work performed by the City.
D. Miscellaneous provisions and information regarding site access and coordination with occupants.

1.02 Project Information

A. The Work of this Contract includes the repair of roof structure and installation of new roofing at the De Laveaga Golf Clubhouse located at 401 Upper Park Rd., Santa Cruz, CA 95060

1.03 Work Covered By Contract Documents

A. The Work of the Project is defined by the Contract Documents.
B. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
C. Drawings Listed in these Specifications.
D. General Requirements of Work Covered in these Contract Documents. Section in Division 01 apply to the Work of all Section in the Specifications.

1.04 Type of Contract

A. The Project will be constructed under a single prime contract.
B. The Work is divided into bid items shown in the Bid Form included in the Contract Documents.

1.05 Phased Construction (Not Used)

1.06 Work By Contractor

A. General: Coordinate the Work of this Contract with work performed by City. Cooperate fully with City so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by City.
B. Not Used.
C. Not Used.

1.07 Work By City

A. General: Cooperate fully with City so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by City. Coordinate the Work of this Contract with work performed by City.

B. Maintaining Operations: The City will continue to operate the Civic Auditorium during the course of the Work. Coordination between City and Contractor will be required for the duration of the Work.
C. Inspection & Testing: City to provide inspection and 3rd party inspection for certain work performed under this Contract. Refer to plan sheet notes and Section 05 50 00 – Metal Fabrications for details.

1.08 Access to Site

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Work limits and as limited by permits, and specifications.
B. Use of site: Contractor may use project site for purposes of project construction only as allowed by the Contract documents and only during such times as allowed by Contract documents.
C. Limits: Limit use of project site to areas within the Work limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
D. Contractor shall be held responsible for any damage resulting from Contractor operations to areas on City property, including storm drains. Damage to such resources can result in monetary fines, requirements for restoration of or compensation for damage, additional training, and stoppage of Work. Any costs or fines shall be paid by the Contractor.
E. Driveways, Walkways and Entrances: Keep access roads, driveways, and entrances serving premises clear and available to City, City's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

1.09 Coordination With Occupants

A. Maintain access to existing facilities and properties. Do not obstruct access without prior permission from City and authorities having jurisdiction (Including Fire Departments and other emergency response).
B. Access to adjacent properties shall be maintained at all times and during active construction, work must be paused to provide such access as needed.
C. Provide not less than 5 working days' notice to City and obtain approval of activities prior to start that will affect City's normal operations and access.

1.10 Cooperation With Other Work Forces

A. Other contractors, other utilities and public agencies or their contractors, other City contractors, and/or City personnel may be working in the vicinity during the project construction period. These entities may include:
    1. PG&E

2. City of Santa Cruz
3. AT&T
4. Comcast

B. Any costs providing cooperation with other work forces shall be considered as included in the bid prove for the carious Contract items of work and no separate payment will be made therefore.

Part 2 – Products – Not Used

Part 3 – Execution – Not Used

END OF SECTION 01 10 00

Section 01 25 00

Substitution Procedures

1.01 Summary

A. Section includes
   1. The procedure for requesting the approval of substitution of a product that is not equivalent to a product which is specified by descriptive or performance criteria or defined by reference to one or more of the following:
      a. Name of manufacturer.
      b. Name of vendor.
      c. Trade name.
      d. Catalog number.

B. Substitutions are not “or-equals.”
   1. This specification Section does not address substitutions for major equipment.

C. Related Specification Sections include but are not limited to:
   1. Contract Documents
   2. Division 01 – General Specifications

D. Request for Substitution – General:
   1. Base all bids on materials, equipment, and procedures specified.
   2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers.
      a. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer’s or vendor’s names, trade names, or catalog numbers, provided said products are “or-equals,” as determined by the engineer, architect, or City.
   3. Other types of equipment and kinds of material may be acceptable substitutions under the following conditions:
      a. Or-equals are unavailable due to strike, discontinued production of products meeting specified requirements, or other factors beyond control of Contractor; or,
      b. Contractor proposes a cost and/or time reduction incentive to the City.

1.02 Quality Assurance

A. In making a request for substitution or in using an approved product, Contractor represents they:
    1. Have investigated proposed product and have determined that it is adequate or superior in all respects to that specified, and that it will perform function for which it is intended.
    2. Will provide the same guarantee for substitute item as for product specified.
    3. Will coordinate installation of accepted substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete in all respects.
    4. Waives all claims for additional costs related to substitution which subsequently arise.

1.03 Definitions

A. Product: Manufactured material or equipment.

1.04 Procedure For Requesting Substitution During Bidding Period

A. See Contract Document Section Instructions to Bidders.

1.05 Procedure For Requesting Substitution After Award of Contract

A. Substitution will only be considered under the conditions stated herein.
B. Written request through Contractor only.
C. Transmittal Mechanics:
    1. Follow the transmittal mechanics prescribed in Section 01 33 00 – Submittal Procedures.
        a. Product substitution will be treated in a manner similar to “deviations,” as described in 01 33 00 Submittal Procedures.
        b. List the letter describing the deviation and justifications on the transmittal form.
            1) Include in the transmittal letter the items listed in Paragraph D below. Include either directly or as a clearly marked attachment.
D. Transmittal Contents:
    1. Product identification:
        a. Manufacturer’s name.
        b. Telephone number and representative contact name.
        c. Specification Section or Drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
    2. Manufacturer’s literature clearly marked to show compliance of proposed product with Contract Documents. The Architect/Engineer

will not consider proposals for substitutions when such proposals are not accompanied by fill and complete technical data.

a. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
    1) Size.
    2) Composition or materials of construction.
    3) Weight.
    4) Electrical or mechanical requirements.

3. Product experience:
    a. Location of past projects utilizing product.
    b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
    c. Available field data and reports associated with proposed product.
4. Data relating to changes in construction schedule.
5. Data relating to changes in cost.
6. Samples:
    a. At request of Architect/Engineer.
    b. Full size if requested by Architect/Engineer.
    c. Held until substantial completion.
    d. Engineer not responsible for loss or damage to samples.

1.06 Approval or Rejection

A. Written approval or rejection of substitution given by the Architect/Engineer.
B. Architect/Engineer reserved the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.
C. In the event the substitution is approved, the resulting cost and/or time reduction will be document by Change Order in accordance with the General Conditions.
D. Substitution will be rejected it:
    1. Submittal is not through the Contractor with his stamp of approval.
    2. Request is not made in accordance with this Specification Section.
    3. In the Architect/Engineer’s opinion, acceptance will require substantial revision of the original design.
    4. In the Architect/Engineer’s opinion, substitution will not perform adequately the function consistent with the design intent.

E. Reimburse City for the cost of Architect/Engineer's evaluation whether or not substitution is approved.
F. Substitutions not specifically requested, although accepted through oversight, may be rejected at and stage of the Work. The Contractor will, at his own expense, reconstruct all Work affected by the later rejection of a substitution that was not specifically requested.

Part 2 – Products – (Not Used)

Part 3 – Execution – (Not Used)

END OF SECTION 01 25 00

01 26 00

REQUESTS FOR INFORMATION (RFI) PROCEDURES

Part 1.DESCRIPTION

A. This Section contains the procedures to be followed by Contractor upon discovery of any apparent conflicts, omissions, or errors in the Contract Documents or upon having any question concerning interpretation.

2. PROCEDURES

A. Notification by Contractor:

B. Submit all requests for clarification or additional information in writing via electronic file, in PDF OCR format to Owner's Representative using the Request for Information (RFI) form provided by Owner's Representative or a similar form approved by Owner's Representative.

C. Number RFIs sequentially. Follow RFI number with sequential alphabetical suffix as necessary for each resubmission. For example, the first RFI would be “001.” The second RFI would be “002.” The first resubmittal of RFI “002” would be “002a.”

D. Limit each RFI to one subject.

E. Submit a RFI if one of the following conditions occur:

1. Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.
2. Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or is not reasonably inferred from the intent of the Contract Documents.
3. Contractor discovers what appears to be an omission from the Contract Documents that cannot be reasonably inferred from the intent of the Contract Documents.

F. Contractor shall not:

1. Submit an RFI as a request for substitution.
2. Submit an RFI as a submittal.
3. Submit an RFI under the pretense of a Contract Documents discrepancy or omission without thorough review of the Documents.
4. Submit an RFI in a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.
5. Submit an RFI in an untimely manner without proper coordination and scheduling of Work of related trades.

G. If Contractor submits an RFI contrary to the above, Contractor shall pay the cost of any review, which cost shall be deducted from the Contract Sum.

H. Contractor shall submit a request for information or clarification immediately upon discovery. Contractor shall submit RFIs within a time frame so as not to delay the Contract Schedule while allowing the full response time described below.

3. RESPONSE TIME

A. Owner's Representative, whose decision will be final and conclusive, shall resolve such questions and issue instructions to Contractor within a reasonable time frame. In most cases, RFIs will receive a response within 14 days. If in the opinion of Owner’s Representative more than 14 days is required to prepare a response to an RFI, Contractor will be notified in writing.

B. Should Contractor proceed with the Work affected before receipt of a response from Owner's Representative, within the response time described above, any portion of the Work which is not done in accordance with Owner's Representative's interpretations, clarifications, instructions, or decisions is

subject to removal or replacement and Contractor shall be responsible for all resultant losses.

C. Failure to Agree: In the event of failure to agree as to the scope of the Contract requirements, Contractor shall follow procedures set forth in Article 4 of the General Conditions.

END OF SECTION 01 26 00

Section 01 31 19

Project Meetings

1.01 Section Includes

A. Contractor participation in preconstruction meeting.
B. Contractor responsibilities regarding progress and special meetings.

1.02 Preconstruction Conference

A. Upon receipt of the Notice to Proceed, or at an earlier time in mutually agreeable, the Construction Manager (CM) will arrange a preconstruction conference to be attended by the Contractor's project representative authorized to commit on the behalf of the Contractor and to direct the performance of the Work by others as well as the Contractor's superintendent, the CM, the Engineer, City representatives, major subcontractors, and others involved in the execution of the Work. This pre-construction conference shall be held at the City of Santa Cruz Parks and Recreation Building unless otherwise indicated by the City.
B. The purpose of this conference will be to establish a working relationship and understanding between the parties and to discuss project organization, job communications, the Construction Schedule, shop drawing submittals and processing, cost breakdown payment applications and their processing, extra work procedures, safety requirements, permits and inspections, and such other subjects as may be pertinent for the execution of the Work. Suggested Agenda:
    1. Distribution and discussion of:
        a. List of major subcontractors and suppliers;
        b. Projected Construction Schedules;
        c. Critical path for materials availability, backorders, and estimated delivery length of time.
    2. Major equipment deliveries and priorities;
    3. Project coordination & design of responsible personnel;
    4. Distribution procedures and processing of;
        a. Proposal requests;
        b. Submittals;
        c. Change Orders;
        d. Applications for Payment;
        e. Requests for Information (RFIs); and
        f. Field Orders.
    5. Procedures for maintaining Project Record Documents;

6. Use of premises:
    a. Offices, work and storage areas; and
    b. City's CM's and Architect's/Engineer's requirements.
7. Construction Facilities, controls and construction aids;
8. Environmental requirements;
9. Characterization of solid wastes, and liquid wastes.
10. Procedures for Emergency Action Plan, Construction and Demolition Wate Disposal Plan, Spill Contingency and Containment Plan, Dust Control and Monitoring Plan, Fire Plan;
11. Temporary utilities and facilities;
12. Safety program and first-aid procedures including special requirements for underwater, confined space, blasting and other work;
13. Planning for community impacts due to construction, for example traffic and noise, and process for responding to complaints from the community;
14. Funding Agency requirements;
15. Security requirements and procedures;
16. Housekeeping procedures.

1.03 Weekly Progress Meetings

A. The Construction Manager will arrange and conduct weekly progress meetings with Contractor and City staff. The Construction Manager will prepare and circulate an agenda for each meeting.
B. Progress meetings will be conducted at a time that is mutually agreed upon by the Construction Manager, the Contractor, and City Staff. Progress meetings shall be attended by the Cm, Architect/Engineer (as necessary), City personnel, Contractor's project representative and superintendent, and representatives of all subcontractors required by the Contractor or requested by the CM.
C. Progress meetings will be held at a location as determined by the CM. These meetings will require a virtual platform for those that cannot attend in-person.
D. The purpose of the meetings will be to facilitate the work of the Contractor and any subcontractor or other organization that is not progressing to schedule, resolve conflicts, identify and resolve any potential delays and in general, coordinate and facilitate the execution of the Work.
E. The agenda of progress meetings shall include review of the work progress and the latest Construction Progress Schedule, potential project delays,

submittal reviews, review neighborhood/community concerns, information requests, safety concerns and extra work items. Suggested agenda:

1. Review and approval of minutes of previous meeting;
2. Review project safety, including upcoming potential hazards;
3. Field observations, quality issues, potential conflicts;
4. Maintenance of quality standards;
5. Anticipated impacts on neighbors/community/City operations during the current week and one forthcoming week, with a focus on visual/view, noise, and odor problems;
6. Review submittal schedules; expedite as required;
7. Review critical path equipment and discuss any expected delays or changes;
8. Review of RFI's; expedite as required;
9. Review of off-site fabrication, delivery schedule
10. Review work progress since previous meeting and expected progress and schedule during the current week and the two forthcoming weeks;
11. Review proposed contract modifications and discuss;
12. Coordination of schedules;
13. Problems which impede Construction Schedule;
14. Revisions to Construction Schedule and proposed corrective measures and procedures to regain project schedule;
15. Pending changes and substitutions. Identify impacts on cost and schedule;
16. Environmental items and sediment control compliance;
17. Existing or potential neighborhood/community concerns;
18. Any unresolved issues; and
19. Other business.

F. The Construction Progress Schedule will be reviewed to verify at a minimum:

1. Actual start and finish dates of completed activities since the last progress meeting;
2. Durations, progress, and productivity rates of all activities not completed;
3. Critical submittals/materials delivery problems;
4. Potential project delays;
5. Any activity behind schedule and the Contractor's plan to bring it back on schedule;
6. Coordination of system outage requests or access restrictions;
7. Labor and equipment availability;

8. Contractor readiness to implement contingency plans necessary to keep the project on schedule; and
9. Potential impacts from City's operation and maintenance activities.

G. If the logic of the submitted Look-Ahead Schedule deviates significantly from the current schedule, a reconciliation of the two schedules is required to be resubmitted with the next reporting requirements.
H. The Construction Manager will prepare and distribute minutes of the meetings.

1.04 Special Meetings

A. Other meetings as necessary to address construction progress issues, change proposals and closeout. The location and time of this meeting is to be determined by the CM.
B. Facility Outage Plan Meetings
C. Starting subcontracted work
    1. Jointly with the City Representative, Contractor shall convene a pre-construction meeting at least 5 days but no more than 30 dats prior to the commencement of any CM specified phase of Work to introduce any new subcontractors and to discuss the following items:
        a. Scope of work to be performed;
        b. Quality Control Plan (prior to each phase of major work);
        c. Any outstanding submittal issues;
        d. Methods and constraints;
        e. Construction sequencing and coordination with other work;
        f. Equipment operating parameters;
        g. Safety procedures;
        h. Instrumentation and monitoring;
        i. Reporting requirements;
        j. Other issues as may be raised by either party.

Article 2 – Products – (Not Used)

Article 2 – Execution – (Not Used)

END OF SECTION 01 31 19

Section 01 33 00

Submittal Procedures

Part 1 – General

1.01 Section Includes

A. Requirements for Inspection and Testing Schedule, Schedule of Submittals.
B. Requirements for Shop Drawings, Product Data, Samples.
C. General procedure and responsibilities for Contractor's Submittals.
D. Procedure for CM's review of Submittals.

1.02 General Provisions

A. Prepare and process Submittals in accordance with this Section and the specific requirements for the various items of work contained elsewhere in these Contract Documents.
B. Submit samples, drawings, and data for the Engineer's approval which demonstrate fully that the construction, and the materials and equipment to be furnished will comply with the provisions and intent of this Specification.
C. When requested by the Construction Manager (CM) and/or Architect/Engineer to substantiate data on Submittals, additional engineering calculations, performance data, certified test reports, and other material shall be submitted in the manner provided for Submittals.
D. All information on submittals shall be in the English language. U.S. Standard units of measure (foot-pounds) and other terms and nomenclature customarily in use in the U.S. shall be used in presenting data.
E. Work included:
    1. Specific items to be covered by the submittals will include, as a minimum, the following:
        a. For bracing and shoring of operations, submit all shop drawings, manufacturer requirements, and calculations completed by a professional civil or geotechnical engineer in compliance with the State of California Construction Safety Orders of the Division of Industrial Safety, and OSHA excavation standards 29 CFR 1926, Subpart P, Trenching and Excavations;
        b. For structures, submit all shop, setting, equipment, miscellaneous iron and reinforcement drawings and schedules necessary;

c. For pipelines, submit a detailed layout of the pipeline with details of bends and fabricated specials and furnish any other details necessary. Show location of shop and field welds;
d. For equipment which requires electrical service, submit detailed information to show power supply requirements, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and manufacturer's recommendation of the interface/interlock among the equipment;
e. For mechanical equipment, submit all data pertinent to the installation and maintenance of the equipment including shop drawings, manufacturer's recommended installation procedure, detailed installation drawings, test data and curves, maintenance manuals, and other details necessary.

2. Additional submittals required: See pertinent section of the specification.
3. Submit a Schedule of Submittals that includes a critical path for materials, based on availability, backorders, and estimated delivery length of time.

1.03 Submittals

A. Submit Submittal Schedule including a detailed listing of all Submittals required in the various sections of the Specifications together with the scheduled date for submission of each.
    1. Schedule the Submittals in such a sequence as will cause no delay in the Work or in the work of any other contractor, supplier or manufacturer and will be compatible with the schedule for other events and constraints stated in the Contract Documents.
    2. Show dates Contractor will require information for specified City-furnished equipment and/or services.
    3. Update the form monthly to reflect all Submittals made during the preceding month. Update the scheduled dates to reflect Contractor's current schedule for submitting all remaining required Submittals.
    4. The contractor initiates each submittal by providing an electronic copy to Owner Representative via email.

1.04 Preparation of Shop Drawings, Product Data, and Samples

A. Coordination of Submittals

1. Prior to submittal for CM and/or Architect's/Engineer's review, use all means necessary to fully coordinate all material, including the following procedures:
    a. Determine and verify all field dimensions and conditions, materials, catalog numbers, and similar data; and
    b. Coordinate as required with all trades involved.
2. Secure all necessary approvals from agencies having jurisdiction and signify with agency stamp, or other means, that approvals have been secured.
3. Unless otherwise specifically permitted by the CM and/or Architect/Engineer, make all submittals in groups containing all associated items; the CM and/or Architect/Engineer may reject partial submittals as not complying with the provisions of the Contract Documents.

B. Shop Drawings:
1. Present Shop Drawings in a clear and thorough manner. Identify details by reference to locations, to details shown on Contract Drawings, or to applicable Specifications sections.
2. Each drawing and each page of calculation sin a submittal shall bear the name of the firm under which the work was accomplished and shall have been checked. The person(s) who prepared the drawing or calculation and the person(s) who scheduled the work shall sign or initial each such drawing and page. The preparer and checker shall not be the same person.
3. Submittals received by CM and/or Architect/Engineer without the foregoing evidence of checking will be considered incomplete and will not be reviewed and will be returned to the Contractor to have the work completed. Contractor shall bear full responsibility for any delay resulting from such actions.
4. Submittals shall contain:
    a. The Contract Number and Project title.
    b. The names of Contractor and Supplier/Manufacturer as appropriate.
    c. The current date of the submitted item and an indication of previous versions by a numbered revision symbol and a notation with dates.

d. Identification of the work or product, with the specification section number and referenced to the equipment designations or device numbers used in the Drawings and Specifications.
e. Field dimensions, clearly identified as such.
f. Relation to adjacent or critical features of the Work or materials.
g. Applicable standards, such as ASTM or ANSI numbers.
h. Identification of deviations for Contract Documents
i. An 8 inch by 3 inch blank space for Contractor's or Contractor's Engineer stamps (Minimum sheet size: 8 ½ inches by 11 inches).
j. Contractor's stamp, initialed or signed, certifying to review of Submittal in conformance with the Contract Document requirements. Stamp shall be included on the submittal cover letter or in the following form:

CONTRACTOR'S NAME
This certifies that this Submittal has been reviewed and that the information presented conforms to all requirements of the Contract Documents.

Comments:_____
By:_____
Date:_____

C. Product Data:
1. Preparation: Clearly mark each copy to identify pertinent products or models.
    a. Show performance characteristics and capacities.
    b. Show dimensions and clearances requires.
    c. Show wiring and piping diagrams and controls.
    d. Show other information required by the Specifications and necessary for an effective review by Architect/Engineer.
2. Manufacturer's standard data sheets, schematic drawings and diagrams:
    a. Modify drawings and diagrams to delete all information not applicable to the Work.

b. Supplement standard information to provide information specifically applicable to the Work.

3. Samples: Samples will be of sufficient size and quantity to clearly illustrate:
    a. Functional characteristics of the product, with integrally related parts and attachment devices.
    b. Full range of colors, textures and patterns, where applicable.
    c. Provide samples for testing as required by applicable sections of the Specifications.

1.05 Revision of Shop Drawings, Product Data, and Samples

A. Make changes in the Submittals, in required as a result of the Construction Manager and/or Architect/Engineer and Contractor's reviews, and resubmit.
B. For resubmittals, comply with all requirements for Submittals. Apply Contractor's certifying stamp on resubmittals.
C. For drawings, identify newly revised areas on the Submittal by a "cloud" outline with the numbered revision symbol.
D. Indicate all changes which have been made in addition to those requested by the Construction Manager and/or Architect/Engineer.
E. Samples: Submit new samples as required for initial Submittal.
F. Revise the originals of Shop Drawings and Product Data to reflect the completed, as-constructed conditions.
    1. Show all information entered on the marked-up Project Record copies during the course of construction.
    2. Show all changes and data developed during installation, adjusting, and startup of equipment.

1.06 Submission and Distribution of Shop Drawings, Product Data, and Samples

A. Make submissions promptly in accordance with the Schedule of Submittals accepted by the Architect/Engineer/Owner's Representative allowing sufficient review time by Architect/Engineer/Owner's Representative and for incorporation of review comments. Unless stated otherwise in specific specification sections, submit a minimum of 30 days in advance of when the work of the Submittal is scheduled to commence.
B. Provide with each submission, a transmittal letter in the form provided by Construction Manager and/or Engineer/Architect/Owner's Representative.
C. All items submitted under a transmittal will be of the same or related category of work.
D. Number of copies required:
    1. Shop Drawings and Product Data: Submit electronically.

2. Samples: Submit the quantity stated in each Specification Section, but not less than the number needed to allow two to be retained by CM and/or Architect/Engineer.
3. Color Samples: Where choice of color is not specified, submit accurate color samples or charts, labeled to show proposed use and location, for CM review and selection.

E. Distribute copies of accepted Shor Drawings and copies of accepted Product Data which carry the Engineer's review stamp to:
   1. Contractor's jobsite file.
   2. Record Documents file.
   3. Subcontractors.
   4. Other affected parties.
   5. Maintain at place of fabrication or manufacture, and make available to City's inspectors, copies of all Submittals, including Shop Drawings and Product Data, certificates of compliance, and shop test reports pertaining to that fabrication or manufacture.

F. Distribute samples, together with evidence of Engineer's review, as directed by the Engineer.

G. Copies of certain Shop Drawings and Product Data revised to reflect the as-constructed conditions are required documentation for the Operation and Maintenance Manual.

H. The City requires one full-size bon reproducible copy and two prints of Certain Shop Drawings along with the AutoCAD electronic file after they are revised to reflect the as-constructed conditions. When all construction is complete, Contractor shall submit the list of all Shop Drawings prepared by and for Contractor for the Work. CM and or Architect/Engineer will identify those Shop Drawings required for City's permanent record and will inform Contractor.

1.07 Substitutions

A. Substitution requirements are described in 01 25 00 Substitutions Procedures.

B. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet. All such deviations are subject to review and approval by the CM.

C. Any deviation from plans or specification not depicted in the submittal or included by not clearly noted by the Contractor may not have been reviewed. Review by the Architect/Engineer/Owner Representative shall not serve to

relieve the Contractor of the contractual responsibility for any error or deviation from Contract requirements.

1.08 Other Submittals

A. Submit laboratory test information and reports as required.
B. Submit Quality Control Plan and quality control documentation as required.
C. Submit the following in accordance with Section 01 77 00 Closeout Procedures.
    1. Test reports
    2. Project Record Documents
    3. Operation and maintenance
    4. Special bonds, warranties, guarantees, and associated documentation
    5. Spare parts, tools and maintenance materials
    6. Other documents and data as specified.
D. Submit electronic copy of progress photographs showing worn on all key construction activities taken during the preceding period with each application for progress payment.

1.09 CM and Architect's/Engineer's Review

A. CM and/or Architect/Engineer will review Submittals with reasonable promptness and in accordance with the accepted schedule. In scheduling the work, assume that CM and/or Architect's/Engineer's review process will be completed and the material dispatched within 21 days from the date received for each submittal and re-submittal.
B. CM and/or Architect/Engineer will provide comments on a submittal review form and/or annotate Submittals with comments, if needed, from the review and will affix the review stamp, with an initial or signature, indicating the status of the Submittal.
    1. CM and/or Architect/Engineer will return to Contractor one signed cop of the review form or annotated and stamped copy of Shop Drawings/other Submittals.
        a. NO EXCEPTIONS TAKEN: Revision of the Submittal is not required. Contractor is authorized to proceed with the work covered by the Submittal.
        b. EXCEPTIONS TAKEN AS NOTED:
            1) If contractor agrees with CM and/or Architect/Engineer comments, Contractor shall revise the Submittal, incorporating CM and/or Architect/Engineer's comments, and submit for CM and/or Architect/Engineer's reference

and record. Contractor is authorized to proceed with the work covered by the Submittal.

2) If the Contractor does not agree with the CM and/or Architect/Engineer's comments, Contractor is not authorized to proceed and shall immediately inform the CM and/or Architect/Engineer.

c. SUBMIT SPECIFIED ITEM: Acceptance of the Submittal is contingent upon acceptance and approval of other items not submitted. Contractor is not authorized to proceed with the work covered by the Submittal.
   1) Contractor shall submit additional date containing the required information as a separate Submittal. The initial Submittal need not be resubmitted unless revisions have been made.
   2) Upon acceptance by CM and/or Architect/Engineer of the Submittal of the specified item, Contractor is authorized to proceed with all work covered by the Submittal.
d. REVISE AND RESUBMIT: Contractor shall revise the Submittal and resubmit for CM and/or Architect/Engineer's review; Contractor is not authorized to proceed with the work covered by the Submittal.
   1) The contractor shall include a Comment and Response sheet with the resubmittal. The Comment and Response sheet shall be the first item after the submittal transmittal form. The Comment and Response sheet shall include each review comment (word for word) from the previous submittal cycle, followed by the Contractor's response clarifying how the comment has been addressed in the resubmittal. Al responses shall at a minimum have a general description of what new information in the resubmittal addresses the review comment; and where in the resubmittal this new information can be located (tab number, page number, etc.).
   2) Resubmittals that do not comply with the requirements set forth in sub paragraph C.1 will be returned to the Contractor without review.
e. REJECTED: The Submittal is inadequate. CM and/or Architect/Engineerwill not review but will comment, in

general, to explain the reason for rejection. Contractor shall correct the deficiency and submit a new original Submittal. Contractor is not authorized to proceed with the work covered by the Submittal.

C. Authorization for Contractor to proceed with the work covered by a Submittal is subject to other controls on the commencement of work imposed by the Contract Documents, as applicable.

1.10 Changes To Approved Submittals

A. A resubmittal is required for any proposed change to a submittal that has been “Approved” or “Approved as Noted”. Changes which require resubmittal include, but are not limited to, drawing revisions, changes in materials and equipment, changes to installation procedures and test data. All resubmittals shall include an explanation of the necessity for the change.

Part 2 – Products – (Not Used)

Part 3 – Execution – (Not Used)

End of Section 01 33 00

SECTION 01 42 10

ABBREVIATIONS, SYMBOLS AND DEFINITIONS

1.DEFINITIONS

A. The following terms, when used on the Drawings or in the Specifications, shall have the following meanings:

1. ADDENDUM (ADDENDA):Clarification of, or revisions, additions or deletions to the Contract Documents, issued during the Bidding Period.
2. APPROVAL:The approval of the Owner's Representative.
3. AS DIRECTED:As directed by Owner's Representative.
4. AS REQUIRED:As required by Applicable Code Requirements; by good building practice; by the condition prevailing; by the Contract Documents; by Owner; or by Owner's Representative.
5. AS SELECTED:As selected by Owner's Representative.
6. BY OTHERS:Work on the Project that is outside the scope of Work to be performed by Contractor under the Contract, but that will be performed by Owner, separate contractors, or other means.
7. CHANGE ORDER:A written document prepared by the Owner's Representative authorizing additions, omissions, or changes in the work. A Change Order is prepared on the Owner's standard form.
8. DAYS:The word "days" used herein or in other Contract Documents shall mean calendar days unless specifically noted otherwise.
9. EQUAL:Of same quality, appearance, and utility to that specified, as determined by Owner's Representative. Contractor bears the burden of proof of equality.
10. FURNISH:Supply only, not install.
11. INSPECTOR:Representative of the Owner who will perform inspections of the work for code compliance and quality assurance reporting in addition to those observations reported by the Owner's Representative. The Inspector may be

the Owner's Representative or may be another representative of the Owner. If the Inspector and the Owner's Representative are not the same, the Inspector will have only that authority as specifically stated herein.

12. INSTALL:Install or apply only, not furnish.
13. Owner:The term "Owner" refers to "The Regents of the Owner of California."
14. Owner-FURNISHED,
    CONTRACTOR-INSTALLED:To be furnished by Owner at its cost and installed by Contractor as part of the Work.
15. PROJECT:The specific facility to be constructed under these Contract Documents.
16. PROJECT SITE:Geographical location of the Project.
17. PROVIDE:The term "provide" as used herein shall mean "furnish and install, including provision of all related work."
18. REASONABLY REQUIRED:The term "reasonably required" shall include those items which may not specifically be indicated or noted in these documents, but which can reasonably be assumed to be necessary to complete the work of a particular system.
19. SHOWN:As indicated on the Drawings."
20. SPECIFIED:As written in the Contract Documents.
21. SUBMIT:Submit to Owner's Representative.
22. SUBMITTALS:Detailed fabrication and setting drawings, samples, material lists, and manufacturer's equipment brochures setting forth in detail the work as it is to be performed by Contractor.

B. Items marked "by Owner" or "N.I.C." on the Drawings are not to be furnished or installed as part of this Contract.

2. INTERPRETATION OF TERMS

"As directed", "as required", "as permitted", "equal", "acceptable", "satisfactory", means by or to the Owner's Representative.

3. ABBREVIATIONS

A. Wherever the following terms are used, the intent and meaning shall be as follows:

AASHTOAmerican Association of State Highway and Transportation Officials

ABMAAmerican Boiler Manufacturers Association

AGMAAmerican Gear Manufacturers Association

AIAAmerican Insurance Association (formerly National Board of Fire Underwriters)

AISIAmerican Iron and Steel Institute

AISCAmerican Institute of Steel Construction

APIAmerican Petroleum Institute

AREAAmerican Railway Engineering Association

ANSIAmerican National Standards Institute (formerly United States of America Standards Institute)

ASCEAmerican Society of Civil Engineers

ASHRAEAmerican Society of Heating, Refrigerating and Air Conditioning Engineers

ASMEAmerican Society of Mechanical Engineers

ASTMAmerican Society of Testing and Materials

AWSAmerican Welding Society

AWPAAmerican Wood Preservers' Association

AWWAAmerican Water Works Association

CBMCertified Ballast Manufacturers

CBRCalifornia Bearing Ratio

CTICooling Tower Institute

DFPADouglas Fir Plywood Association

ETLElectrical Testing Laboratory

FPSFluid Power Society

FSFederal Specifications

IEEEInstitute of Electrical and Electronic Engineers

IESIlluminating Engineering Society

ISAInstrument Society of America

LEEDLeadership in Energy and Environmental Design (USGBC)

MSSManufacturer's Standardization Society

NEMANational Electrical Manufacturers Association

OSHAOccupational Safety and Health Act

SMACNASheet Metal and Air Conditioning Contractors National Association

SSPCStructural Steel Painting Council

UBCUniform Building Code

ULUnderwriter's Laboratories, Inc.

USGBC United States Green Building Council

USS United States Steel

END OF SECTION 01 42 00

Temporary Facilities and Controls

Part 1 – General

1.01 Section Includes

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:
   1. Water service and distribution.
   2. Temporary electric power and light.
   3. Temporary heat.
   4. Ventilation.
   5. Telephone service.
   6. Sanitary facilities, including drinking water.
   7. Storm and sanitary sewer.

C. Support Facilities include, but are not limited to, the following:
   1. Field offices and storage sheds.
   2. Temporary paving.
   3. Dewatering facilities and drains.
   4. Temporary enclosures.
   5. Hoists and temporary elevator use.
   6. Temporary project identification signs and bulletin boards.
   7. Waste disposal services.
   8. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:
   1. Temporary fire protection.
   2. Barricades, warning signs, and lights.
   3. Sidewalk bridge or enclosure fence for the site.
   4. Environmental protection.
   5. Security.

1.02 Submittals

A. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.03 Quality Assurance

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including but not limited to, the following:
    1. Building code requirements.
    2. Health and safety regulations.
    3. Utility company regulations.
    4. Police, fire department, and rescue squad rules.
    5. Environmental protection regulations.
    6. Secretary of Interior's Standards for Rehabilitation.
B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."
    1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.04 Project Conditions

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.
B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

Part 2 – Products

2.01 Products

A. General: Provide new materials. If acceptable to the Architect/Engineer/Owner Representative, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.
B. Lumber and Plywood

1. For fences and vision barriers, provide minimum 3/8-inch-thick exterior plywood.
2. For Safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch-thick exterior plywood. Where barriers are provided at areas adjacent to the public way, provide continuous glide board to eliminate abrupt changes in direction that could present tripping hazards. Comply with Department of Public Works accessibility requirements.

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.
D. Water: Provide potable water approved by the Water Department and local health authorities.
E. Open-Mesh Fencing: Provide 0.120-inch-thick, galvanized 2-inch chain link fabric fencing with support posts sufficient for loading required. Where chain link is provided at areas adjacent to the public way, provide embedment in ground or otherwise affix in place in compliance with accessibility requirements – provide continuous glide board to eliminate abrupt changes in direction that could present tripping hazards.

2.02 Equipment

A. General: Provide used, undamages or new equipment. Provide equipment suitable for use intended.
B. Water Hoses: Provide heavy-duty, abrasion-resistant, flexible rubber hoses, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.
C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110-to-120 Volt plug into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
D. Electrival Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords is single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
E. Lamps and light fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or

temered-glass enclosures where exposed to breakage. Provide exterior fixtures where they are exposed to moisture.

F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
G. Temporary Toilet Units: Provide self-contained, single occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar space. In other locations, provide hand-carried, portable, UL-rated, Class ABD, dry-chemical extinguishers or a combination of extinguishers of NEFA-recommended classes for the exposures.
    1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

Part 3 – Execution

3.01 Installation

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 Temporary Utility Installation

A. General: Engage the appropriate local utility agency to install temporary services. Where agency provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
    1. Arrange with agency and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
    2. Provide adequate capacity at each stage of construction.
    3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner. The Owner will not accept cost or use charges as a basis of claims for Change Orders.

B. Water Service: Install temporary water service and distribution piping of sizes and pressures adequate for areas under construction until permanent water service is re-established. Continue water services to occupied portions of neighboring buildings, except for temporary shutdowns as negotiated with Owner.
    1. Sterilization: Sterilize temporary water piping and portion of re-established permanent water piping prior to re-establishment.
C. Temporary Electric Power Service: Where existing power cannot be used, provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.
    1. Install electric power service underground, except where overhead service is permissible.
    2. Power distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
D. Temporary Lighting: provide temporary lighting with local switching throughout areas of construction.
    1. Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
E. Temporary Heat: Provide temporary heat required by construction activities for curing or drying of completed installation or for protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
F. Heating facilities: Except where the Owner authorizes the use of the permanent system, provide vented, self-contained, LP-gas or fuel-oil heaters with individual space thermostatic control.
    1. Use of gasoline-burning space heaters, open-flame, or salamander heating units is prohibited.

G. Temporary Telephones: Provide cellular telephone service throughout the construction period for all personnel engaged in construction activities. At construction office, post a list of important telephone numbers.
H. Sanitary facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
    1. Toilets: Provide self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
    2. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
I. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
    1. Provide safety showers, eyewash fountains, and similar facilities for convenience, safety, and sanitation of personnel.
J. Drinking-Water Facilities: Provide containerized, tap-dispenser, bottled-water drinking-water units, including paper supply.
K. Sewers and Drainage: provide temporary connections to remove effluent that can be discharged lawfully. If sewers cannot be used for discharge of effluent, provide containers to remove and dispose of effluent of off-site in a lawful manner.
    1. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
    2. Connect temporary sewers to the municipal system, as directed by sewer department officials.
    3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

3.03 Support Facilities Installation

A. Locate field offices, storage containers, and other temporary construction and support facilities for easy access. Contractor may use existing building areas for field offices and storage, pending agreement with the Owner. Contractor may use areas within the construction area for field office, so long as sufficient area is available for construction activities. Where phases of construction and

building occupancy do not allow sufficient space for Contractor use of areas, provide temporary field office at location agreed-upon by Owner. Contractor shall pay for temporary field office, including fees required for street occupancy.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Provide non-combustible construction for offices, shops, and sheds located within the construction or within 30 feet of building lines. Comply with requirements of NFPA 241.
C. Field Offices: Where existing building spaces are not utilized for field office, provide insulated, weather tight temporary offices of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for use for small progress meetings. Contractor shall pay any required City fees for use of street spaces for temporary Field Offices.
D. Storage and Fabrication Sheds: Provide storage and fabrication sheds or containers sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be fully enclosed spaces within the building or elsewhere on- or off-site. Contractor shall pay any required City fees for use of street spaces for temporary storage or fabrication sheds.
E. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable sections. Where feasible, utilize the dame facilities. Maintain the site, excavations, and construction free of water.
F. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
    1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
    2. Install tarpaulins securely, with wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.

3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.
5. Provide emergency access hardware at doors to construction area where necessary to allow safe egress through the construction for building occupants.

G. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees where required by authorities having jurisdiction. Where providing temporary lifts, restore all disturbed building features and finished at completion of the work. Provide all necessary truck cranes and similar devices used for hoisting materials.
H. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg. F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.04 Security and Protection Facilities Installation

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, unless requested by the Owner.
B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 “Standard for Portable Fire Extinguishers” and NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations.”
    1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
    2. Store combustible materials in containers in fire-safe locations.
    3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazards fire-exposure areas.

4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protect against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Enclosure Fence: install an enclosure fence with lockable entrance gates where openings exist in building under construction. Enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering the site, except by the entrance gates.

E. Covered Walkway: Where required to protect the public and other site users from exterior construction activities, erect a structurally adequate, protective covered walkway for passage of persons along the adjacent public streets or within portions of the building. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Construct covered walkways using scaffold or shoring framing. Provide wood plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage. Extend the back wall beyond the structure to complete the enclosure fence. Paint and maintain in a manner acceptable to the Owner and the Architect/Engineer.

F. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

G. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of

noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

H. Security: Contractor shall be responsible for site security of areas under construction during the duration of construction. Contractor shall provide security guards or otherwise secure areas under construction during hours when workers are not on site performing construction activities.

3.05 Operation, Termination, and Removal

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
    1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
    2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
C. Termination and Removal: Unless the Architect/Engineer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later then Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
    1. Materials and facilities that constitute temporary facilities are the Contractor’s property. The Owner reserves the right to take possession of project identification signs.
    2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Remove materials contaminated with road oil, asphalt and other chemical compounds, and other substances. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, and as required by the governing authority.
    3. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:

a. Replace air filters and clean inside of ductwork and housings.
b. Replace significantly worn parts subject to unusual operating conditions.
c. Replace lamps burned out or noticeably dimmed by hours of use.

End of Section 01 50 00

SECTION 01 77 00

CONTRACT CLOSEOUT

1 .01 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
   2. Inspection procedures.
   3. Project record document submittal.
   4. Operation and maintenance manual submittal.
   5. Submittal of warranties.
   6. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections.

1 .02 SUBSTANTIAL COMPLETION

A. Request for Inspection: Notify Architect and Owner, in writing, when Project is ready for inspection to certify Substantial Completion. In event such written request pertains to selective portion(s) of Project, clearly identify such portion(s) by building and room number.
   1. Include in written request: statement that all casework, doors, windows, window shades and blinds, finish materials, mechanical and electrical equipment and cover plates, have been properly installed, that all debris has been removed from Project site, and that all interior and exterior conditions have been cleaned.
   2. Mock-up(s) not incorporated into final construction shall be maintained at Project site during inspection(s) to certify Substantial Completion.

B. Within 48 hours of written request for inspection to certify Substantial Completion, submit to Owner and Architect a written schedule for each of the following items, listing items by name and, for each item, the date by which it will be done or ready for processing.
   1. Advising Owner of pending insurance changeover requirements.
   2. Submitting of warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
   3. Obtaining and submitting of releases enabling Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

4. Submitting record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
5. Delivering tools, spare parts, extra stock, and similar items.
6. Changeover to permanent locks and transmitting of keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel.
8. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
9. Application for Payment showing 100 percent completion for the portion of the Work claimed to be substantially complete.
    a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

C. Inspection Procedures: Upon receipt of written request for inspection, the Owner Representative/Architect will either proceed with inspection as requested or, at Owner Representative/Architect's sole discretion, reply in writing that unfilled requirements render inspection premature. Following inspection, the Owner Representative/Architect will prepare the Certificate of Substantial Completion or report, in writing, of construction that must be completed or corrected before the Certificate of Substantial Completion will be issued.
    1. The Owner Representative/Architect/Engineer will repeat inspection as necessary, pending receipt of written request for inspection addressed to Architect and Owner, as described above.
    2. Results of the completed inspection will form the basis of requirements for final acceptance.

1 .03 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
    1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include

insurance certificates for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Owner Representative/Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Owner Representative/Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Owner Representative/Architect.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Owner Representative/Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.
    1. Upon completion of reinspection, the Owner Representative/Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
    2. If necessary, reinspection will be repeated.

1 .04 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.
B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark that drawing that is most capable of showing conditions

fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
3. Note related change-order numbers where applicable.
4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

C. Record Specifications: Maintain one complete copy of the Specifications, including addenda. Include with the Specifications one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
    1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
    2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
    3. Note related record drawing information and Product Data.
    4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
    1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
    2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
    3. Upon completion of markup, submit complete set of record Product Data to the Architect for the Owner's records.
E. Record Sample Submitted: Immediately prior to Substantial Completion, the Contractor shall meet with the Architect and the Owner's personnel at the

Project Site to determine which Samples are to be transmitted to the Owner for record purposes. Comply with the Owner's instructions regarding delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Architect for the Owner's records.

G. Operations and Maintenance Manuals: Contractor shall compile operations and maintenance manuals for all operating equipment and electrical systems. Comply with the following format and content requirements for compilation of operations and maintenance manuals.

1. Quantity: 1 reproducible master and 2 copies, with CD ROM or flash (thumb) drive.
2. Binders: 8-1/2 inch x 11 inch high quality loose-leaf type, black color, with plastic-covered fronts and backs, clearly labeled on front and spine. Use maximum 3-inch thick binders. Do not overload; use multiple binders for a manual, as required to hold all pages.
3. Format: Include tile page and table of contents (listing all contents and corresponding page numbers) in front of each binder. Include main tab (white color) for each Specification Section. Behind this tab, include sub-taps (yellow or “manila” color) for each piece of major equipment or group of equipment. Sub-tab shall indicate equipment ID. Behind each equipment ID tag, provide the following, in order specified below, divided by double-weight paper (pale yellow color), each such piece of paper indicating the section title, as specified below, typed in all upper case (Times New Roman font, 12 point):
    a. Contact Information: The section shall be immediately behind the equipment ID tab, and shall contain the name, address and telephone number of the manufacturer and installing contractor, and the 24-hour emergency service telephone number of al equipment in this section, listed by equipment.
    b. Submittal and Product Data: This section shall include all reviewed submittals. If Submittals were not required, provide manufacturer’s printed descriptive literature. Include copy of start-up report.

c. Operation and Maintenance Instructions: This section shall include manufacturer's printed data with the model and features of the actual installation clearly noted as such, and with information that is not applicable to the actual installation clearly noted as such. Include the following:
    i) Installation, startup, and break-in instructions.
    ii) All starting, normal shutdown, emergency shutdown, manual operation, seasonal changeover and normal operating procedures and data, including any special limitations.
    iii) Operations and Maintenance and installation instructions that were shipped with unit.
    iv) Routine preventative maintenance and service schedules and procedures.
    v) Annual maintenance and service schedules and procedures.
    vi) Troubleshooting procedures.
    vii) Manufacturer's repair manual.
    viii) Parts List, with items and information that are not applicable to the actual installation clearly noted as such.

4. Wiring diagrams.
5. Recommended "turn-around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.

H. All commissioning requirements of the contractor are complete before Substantial Completion, except for trend log monitoring, seasonal testing, near-warranty end activities and verification of later controls system training sessions. All commissioning issues will have been resolved except those with a resolution schedule accepted by the Owner.

I. Before Final Acceptance all commissioning requirements of contractor shall be complete, and, unless otherwise authorized by Owner in writing, all commissioning issues shall be resolved. Requests to Owner for Final Acceptance while specific issues stay unresolved shall be made in writing, and such requests shall clearly describe the issue(s) to stay unresolved, the reasons for lack of resolution, and include a written schedule indicating the date by when they will be resolved.

PART 2 - PRODUCTS - Not Used

PART 3-EXECUTION

3.01 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
    1. Maintenance manuals.
    2. Record documents.
    3. Spare parts and materials.
    4. Tools.
    5. Lubricants.
    6. Fuels.
    7. Identification systems.
    8. Control sequences.
    9. Hazards.
    10. Cleaning.
    11. Warranties and bonds.
    12. Maintenance agreements and similar continuing commitments.
B. As part of instruction for operating equipment, demonstrate the following procedures:
    1. Startup.
    2. Shutdown.
    3. Emergency operations.
    4. Noise and vibration adjustments.
    5. Safety procedures.
    6. Economy and efficiency adjustments.
    7. Effective energy utilization.

3.02 FINAL CLEANING

A. Cleaning Agents: Comply with Green Seal’s GS-37 and California Code of Regulations maximum allowable VOC levels.
B. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program.
C. Clean HVAC system in compliance with NADCA Standard 1992-01.

END OF SECTION 01 77 00

De Laveaga Clubhouse Reroof and Repair
401 Upper Park Rd., Santa Cruz, CA 95060

NS Proj. No. DLR 24-13

Date: 03/28/2025

NIELSEN
PLAN > DESIGN > BUILD
1509 Seabright Ave. 2B • Santa Cruz • CA • 95062
info@nielsen.team (831) 621-3926

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02.00. 00 Hazardous Materials Report (for reference only)

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06 Wood and Plastics

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MECHANICAL NONE

PLUMBING NONE

ELECTRICAL NONE

END – LIST OF DRAWINGS

SECTION 02 41 13

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Selectively demolish and completely remove and dispose of designated building elements and items, as shown on the drawings and specified herein. Provide unit prices as indicated on drawings and on bid form for preparation of surfaces to receive replacement items such as wood framing and siding, doors, finishes, etc.

B. Remove designated electrical and mechanical, plywood siding, gypsum board etc., as indicated on the drawings, specified herein, or necessary for the proper execution of the work. Refer to relevant specification sections for additional instructions for mechanical and electrical items.

C. Items not to be removed or disturbed without prior notification of Project Manager:

a. Ply wood substrate and sheathing.

b. Conduit, lights, mechanical, electrical, and plumbing systems, except as noted on drawings.

c. Existing data and communications wiring, fire alarm devices, except as noted on drawings.

d. Finishes and flooring , except as noted on drawings.

f. Gypsum board wall covering.

g. Structural bracing/ blocking, straps or nailing

1.02 JOB CONDITIONS

A. Contractor shall record all existing conditions before beginning demolition work to assure the rebuilding and reinstallation work will be identical to the original construction unless otherwise indicated on the drawings and specifications.

B. Notice: Contractor shall give Project Manager 48 hours written notice before beginning demolition work.

C. Items of salvable value to Contractor may be removed from the structure as work progresses. Salvaged items shall be transported from site as they are removed. Storage or sale of removed items will not be permitted on site.

D. Traffic: Conduct demolition operations and the removal of debris to ensure minimum interference with roads, walks and other adjacent occupied or used facilities.

1.03 PROTECTION

A. Refer to Division 1 requirements.

1. 01 50 00 Temporary Facilities and Controls

B. Protection of existing improvements: Protection shall be provided to prevent damage to existing improvements indicated to remain in place on the City's property and adjacent buildings, structures and other facilities. Damaged improvements shall be restored to their original condition, as acceptable to the Project Manager.

C. Wherever a cutting torch or other equipment that might cause a fire is used, provide and maintain fire extinguishers nearby ready for immediate use. All possible users shall be instructed in the use of fire extinguishers. Contractor shall obtain from the City’s representative a Hot Work Permit for all hot work and adhere to all requirements of the permit including protection, fire watch, etc.

D. Ensure the safe passage of persons around the area of demolition. Provide protection from falling debris during demolition and new construction and roofing installation. Maintain all protection during the course of the works duration.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Provide safeguards, including warning signs, barricades and similar items that are required for protection of all personnel during demolition and removal operations. Maintain all protection throughout the duration of the construction.

B. Pollution Controls: Care shall be taken to prevent spread of flying particles and dust. Use temporary covers or enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.

C. Clean adjacent finish surfaces and improvements of dust, dirt, and debris caused by demolition operations, as directed by the Project Manager. Return adjacent areas to conditions existing prior to the start of the work. Protect existing flooring and paint finishes materials from damage.

D. Erect and maintain weatherproof airtight closures for exterior openings where they are in a location which will be exposed to dust and debris.

E. Protect existing items which are not indicated to be removed.

3.02 DEMOLITION REQUIREMENTS

A. Execute the demolition in an orderly and careful manner with due consideration for adjacent occupants, and the public.

B. Conduct demolition to minimize interference with adjacent structures and activities.

C. Conduct operations with minimum interference to public accesses.

D. Maintain protected egress and access at all times. Do not close or obstruct roadways and sidewalks without authorization by Project Manager. Service and emergency access road must be kept clear at all times.

E. Coordinate particularly noisy or otherwise disruptive work with the Project Manager.

F. Workmanship: work shall be done by experienced persons in accordance with reference standards.

1. Edges: cut edges of existing surfaces to remain neatly to the lines shown and as directed. Control edges by saw-cutting, line drilling, etc.

G. Use proper precautions and protective gear as required by OSHA regulations.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Remove from the site debris, rubbish, and other materials resulting from demolition operations.

B. On-site Burning: Burning of removed materials from demolished structures will not be permitted on site.

C. Removal: Transport materials removed from demolished structures and dispose of, off City's property at a legal disposal site.

D. Contractor shall comply with all applicable laws and ordinances governing disposal of materials debris, rubbish and trash off the project site.

E. Contractor shall report all materials removed from the site on the City provided Recycling and Waste Management Report. Turn in report at the end of each week.

3.04 CLEAN UP

A. Remove demolished materials from site as work progresses.

B. On completion of work of this section and after removal of debris, site

shall be left in clean condition satisfactory

to Project Manager. Clean-up shall include off-the-site disposal of items and materials not required to be salvaged as well as debris and rubbish resulting from demolition operations.

END OF SECTION

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0330653

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP# 101926-0

Client:	M3 ENVIRONMENTAL CONS.	Job# / P.O. #:	25169.0
Address:	9821 BLUE LARKSPUR LN., STE 100	Date Received:	05/01/2025
	MONTEREY, CA 93940	Date Analyzed:	05/07/2025
Collected:	04/30/2025	Date Reported:	05/07/2025
Project Name:	CITY OF SANTA CRUZ 401 UPPER PARK ROOF RENO ACM/PB	Submitted By:	HUNTER BOWERSMITH
		Collected By:	
Address:		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0330653-001 1A	ROOF	LAYER 1 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Non-Fibrous Binder/Filler	15% 85%
		LAYER 2 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Non-Fibrous Binder/Filler	15% 85%
		LAYER 3 Roof Core, Black	No	None Detected	Cellulose Fiber Carbonates Gypsum Non-Fibrous Binder/Filler	40% 60%
		LAYER 4 Roof Core, Black	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Non-Fibrous Binder/Filler	5% 1% 94%

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		Collected By:	
Address:		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0330653-002 1B	ROOF	LAYER 1 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 2 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 3 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 4 Roof Core, Black	No	None Detected	Cellulose Fiber	40%
					Carbonates Gypsum Non-Fibrous Binder/Filler	60%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0330653-003 1C	ROOF	LAYER 1 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 2 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 3 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 4 Roof Core, Black	No	None Detected	Cellulose Fiber	40%
					Carbonates Gypsum Non-Fibrous Binder/Filler	60%
0330653-004 1D	ROOF	LAYER 1 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 2 Roof Core, Beige/ Tan/ Black	No	None Detected	Fibrous Glass	15%
					Carbonates Quartz Non-Fibrous Binder/Filler	85%
		LAYER 3 Roof Core, Black	No	None Detected	Cellulose Fiber	40%
					Carbonates Gypsum Non-Fibrous Binder/Filler	60%

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Address:		Collected By:	
		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents
0330653-005 2A	ROOF	Penetration Mastic, Black	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-006 2B	ROOF	Penetration Mastic, Black	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-007 2C	ROOF	Penetration Mastic, Black	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-008 2D	ROOF	Penetration Mastic, Black	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-009 3A	ROOF	Duct Caulk, Silver/ Lt Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-010 3B	ROOF	Duct Caulk, Silver/ Lt Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%

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Address:		Collected By:	
		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents
0330653-011 4A	ROOF	Roof Caulk, Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-012 4B	ROOF	Roof Caulk, Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-013 4D	ROOF	Roof Caulk, Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-014 5A	ROOF	Roof Caulk, Gray	No	None Detected	Carbonates Quartz Non-Fibrous Binder/Filler 100%
0330653-015 5B	ROOF	Flashing Mastic, Black	No	None Detected	Cellulose Fiber 5% Carbonates Quartz Non-Fibrous Binder/Filler 95%
0330653-016 6A	ROOF	Flashing Mastic, Black	No	None Detected	Cellulose Fiber 5% Carbonates Quartz Non-Fibrous Binder/Filler 95%

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		Collected By:	
Address:		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0330653-017 6B	ROOF	Vapor Barrier, Brown/ Black	No	None Detected	Cellulose Fiber	60%
					Carbonates Gypsum	
					Non-Fibrous Binder/Filler	40%
0330653-018 7A	ROOF	Vapor Barrier, Brown/ Black	No	None Detected	Cellulose Fiber	60%
					Carbonates Gypsum	
					Non-Fibrous Binder/Filler	40%
0330653-019 7B	ROOF	Paint/ Adhesive, Beige/ Brown	No	None Detected	Carbonates Quartz	
					Non-Fibrous Binder/Filler	100%
0330653-020	ROOF	Paint/ Adhesive, Beige/ Brown	No	None Detected	Carbonates Quartz	
					Non-Fibrous Binder/Filler	100%

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Address:		Collected By:	
		EPA Method:	App.E to Sub.E of 40 CFR Part 763 and EPA/600/R-93

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents

Analyst - Matt Kettler

Signatory - Lab Director - Kurt Kettler

Distinctly stratified, easily separable layers of samples are analyzed as subsamples of the whole and are reported separately for each discernible layer. All analyses are derived from calibrated visual estimate and measured in area percent unless otherwise noted. The report applies to the standards or procedures identified and to the sample(s) tested. The test results are not necessarily indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. This report is for the exclusive use of the addressed client and will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. The report shall not be reproduced except in full, without written approval by our laboratory. The samples not destroyed in testing are retained a maximum of sixty days. The laboratory measurement of uncertainty for the test method is approximately less than 1 by area percent. Accredited by the National Institute of Standards and Technology, Voluntary Laboratory Accreditation Program for selected test method(s) for asbestos. The Client/Customer supplies the following information for this report: The Project Name, Address, Collection Date/Time, Sample Collector, Job/PO Number, Client Sample Identification and Sample Location. The accreditation or any reports generated by this laboratory in no way constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Page 1 of 3

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 330653
TAT: 3 day
Rec'd: MAY 0 1 A.M.

COMPANY NAME: M3 Environmental Cons.
22 Lower Ragsdale Drive, Ste E
Monterey, CA 93940
CONTACT: Hunter Bowersmith
Phone/Cell: (831) 649-4623
Email: Hunter@M3Environmental.com

BILL TO: (If Different Location)

Now Accepting: VISA – MASTERCARD

Price Quoted: $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. **TURNAROUND TIME:** [4hr rush] [8hr rush] [1-Day] [2-Day] (3-Day) [5-Day] [6-10 Day]

****Prior confirmation of turnaround time is required
****Additional charges for rush analysis (please call marketing department for pricing details)
****Laboratory analysis may be subject to delay if credit terms are not met

2. **TYPE OF ANALYSIS:** (Bulk-PLM) [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. **DISPOSAL INSTRUCTIONS:** [Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. **Project Name:** City of Santa Cruz 401 Upper Park roof reno ACM/Pb
P.O. Number: _____ **Project Number:** 25169.0

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
1		4/30/25	SEE ATTACHED SHEET	(Y) N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
20				Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) Hunter Bowersmith (Signature) _____

Relinquished by: _____ Date/Time: 4/30/25 1700 Received by: Doreen Celaya Date/Time: 05/1/25

Relinquished by: Doreen Celaya Date/Time: MAY 0 1 2025 Received by: _____ Date/Time: MAY 0 1 2025

Relinquished by: _____ Date/Time: _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

330653

Asbestos Bulk Sampling Log

M3 ENVIRONMENTAL CONSULTING LLC

Client: City of Santa Cruz
Project Name: 401 upper park roof reno Acm/Pb
Site Address:
Building: Roof
Project No.: 25169.0

Sample Date: 4/30/25
Inspector: Hunter
CAC No.
SST No.

	Sample No.	Building / Floor	Area No.	Area Name	Material Description	Estimated Quantity		Notes
1	1A			Roof	~~Comp B~~ Roof ~~Shingles~~ Comp Shingles core.		SF LF EA	
2	1B						SF LF EA	
3	1C						SF LF EA	
4	1D						SF LF EA	
5	2A				penetration mastic, Black		SF LF EA	
6	2B						SF LF EA	
7	2C						SF LF EA	
8	2D						SF LF EA	
9	3A				Silver duct ~~mastic~~ caulk, grey		SF LF EA	
10	3B				+/		SF LF EA	

02.00.00.2- Hazardous Materials Report

330653

M3 ENVIRONMENTAL CONSULTING LLC

Asbestos Bulk Sampling Log

Client: City of Santa Cruz
Project Name: 401 upper park roof reno ACM/Pb
Site Address:
Building: roof
Project No.: 25164.0

Sample Date: 4/30/25
Inspector: Hunter
CAC No.
SST No.

	Sample No.	Building / Floor	Area No.	Area Name	Material Description	Estimated Quantity		Notes
1	4A			Roof	Roof Caulk, grey	SF LF EA		
2	4B					SF LF EA		
3	4C					SF LF EA		
4	4D					SF LF EA		
15	5A				Flashing Mastic, Black	SF LF EA		
6	5B					SF LF EA		
17	6A				Vapor Barrier, Black	SF LF EA		
18	6B					SF LF EA		
19	7A				Paint Adhesive, Black	SF LF EA		
20	7B					SF LF EA		

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CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51ST St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: L109761
TAT: 3 Day
Rec'd: 5/1/2025

COMPANY NAME:	M3 Environmental Cons.	BILL TO:	(If Different Location)
	22 Lower Ragsdale Drive, Ste E		
	Monterey, CA 93940		
CONTACT:	Hunter Bowersmith		
Phone/Cell:	(831) 649-4623		
Email:	Hunter@M3Environmental.com		

Now Accepting: VISA – MASTERCARD **Price Quoted:** $_____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: **(Failure to complete any items may cause a delay in processing or analyzing your samples)**

1. TURNAROUND TIME: [4hr rush} [8hr rush} [1-Day] [2-Day] [3-Day] [5-Day] [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. TYPE OF ANALYSIS: [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]

3. DISPOSAL INSTRUCTIONS: [Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. Project Name: City of Santa Cruz, 401 Upper Park Road Reno Asbs/Pb

P.O. Number: _____ **Project Number:** 25169.0

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No	AIR SAMPLE INFO / COMMENTS ON	OFF	FLOW RATE
1		4/30/25	SEE ATTACHED SHEET	(Y) N			
1				Y N			
1				Y N			
5				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			
				Y N			

SPECIAL INSTRUCTIONS: _____

Sample Collector: (Print) Hunter Bowersmith (Signature) _____

Relinquished by: _____ Date/Time: 4/30/25 1700 Received by: _____ Date/Time: 5/1/25

Relinquished by: _____ Date/Time: 5/1/25 Received by: _____ Date/Time: MAY 01 2025

Relinquished by: _____ Date/Time: _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

M3 ENVIRONMENTAL CONSULTING LLC

Lead Bulk Sampling Log

Client: City of Santa Cruz
Project Name: 401 upper pacific roof reno Acm/Pb
Site Address:
Building: Roof
Project No.: 25169.0

Sample Date: 4/30/25
Inspector: Hunter
CDPH No.

Sample No.	Color	Substrate	Building Component	Sample Location (interior/exterior)	Notes/Result
L1	Red	Metal	Roof Siding	Roof	
L2	Green	Metal	duct	Roof	
L3	Green	Wood	beam	Roof	
L4	Red	Metal	penetration on roof	Roof	
L5	Green	Metal	Beam	Roof	

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02.00.00.3- Hazardous Materials Report

EMC LABS, INC.

9830 South 51st Street, Suite B-109 / PHOENIX, ARIZONA 85044 / 480-940-5294 or 800-362-3373 / FAX 480-893-1726
emclab@emclabs.com

LEAD (Pb) IN PAINT CHIP SAMPLES

EMC SOP METHOD #L01/1 EPA SW-846 METHOD 7420

EMC LAB #:	L109761	**DATE RECEIVED:**	05/01/2025
CLIENT:	M3 Environmental Consultants	**REPORT DATE:**	05/06/2025
		DATE OF ANALYSIS:	05/02/2025
CLIENT ADDRESS:	9821 Blue Larkspur Ln, Ste 100 Monterey, CA 93940	**P.O. NO.:**	
PROJECT NAME:	City of Santa Cruz, 401 Upper Park Roof Reno ACM/Pb	**PROJECT NO.:**	25169.0

EMC # L109761-	SAMPLE DATE /25	CLIENT SAMPLE #	DESCRIPTION	REPORTING LIMIT (%Pb by weight)	%Pb BY WEIGHT
1	04/30	L1	Red-Metal-Roof Siding-Roof	0.018	BRL
2	04/30	L2	Green-Metal-Duct-Roof	0.102	BRL
3	04/30	L3	Green-Wood-Beam-Roof	0.010	BRL
4	04/30	L4	Red-Metal-Penetration on Roof-Roof	0.078	BRL
5	04/30	L5	Green-Metal-Beam-Roof	1.500	16.8 ^^

^ = Dilution Factor Changed ***** = Excessive Substrate May Bias Sample Results **BRL** = Below Reportable Limits **#** = Very Small Amount Of Sample Submitted, May Affect Result

This report applies to the standards or procedures identified and to the samples tested only. The test results are not necessarily indicative or representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products, nor do they represent an ongoing quality assurance program unless so noted. Unless otherwise noted, all quality control analyses for the samples noted above were within acceptable limits.

Where it is noted that a sample with excessive substrate was submitted for laboratory analysis, such analysis may be biased. The lead content of such sample may, in actuality, be greater than reported. EMC makes no warranty, express or implied, as to the accuracy of the analysis of samples noted to have been submitted with excessive substrate. Resampling is recommended in such situations to verify original laboratory results. EMC Labs, Inc. (ID 101586) is accredited by the AIHA Laboratory Accreditation Programs, LLC (AIHA-LAP, LLC) in the Environmental Lead accreditation program(s) for Paint, Settled Dust by Wipe, Soil and Airborne Dust Fields of Testing as documented by the Scope of Accreditation Certificate and associated Scope. AIHA-LAP, LLC accreditation complies with the ISO/IEC Standard 17025**:2017** requirements. The customer provides the Project number, name, address, sampling date, identification, and description. EMC Labs, Inc. is an EPA Recognized Testing Lab.

These reports are for the exclusive use of the addressed client and are rendered upon the condition that they will not be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special written permission. Samples not destroyed in testing are retained a maximum of sixty (60) days.

ANALYST: Jason Thompson

QA COORDINATOR: Kurt Kettler

Ver. 11/30/08 Revision 08/14/2021

SECTION 05 50 00

METAL FABRICATIONS

PART 1: GENERAL

1.1 SUMMARY

A. This section includes the following metal fabrications:

1. Metal fabricated brackets or connectors..
2. Metal railings and handrails

1.2 REFERENCES

A. Aluminum Association (AA).

B. American National Standards Institute (ANSI).

1. A14.3 - Safety Requirements for Fixed Ladders.

C. American Society of Testing and Materials (ASTM).

D. American Welding Society (AWS).

1. D1.1 - Structural Welding Code – Steel.
2. D1.3 - Structural Welding Code - Sheet Steel.

E. National Association of Architectural Metal Manufacturers (NAAMM).

1. AMP 500 Metal Finishes Manual.
2. AMP 510 Metal Stair Manual.
3. MBG 531 Metal Bar Grating Manual.
4. MBG 532 Heavy Duty Metal Bar Grating Manual and Pipe Railing Manual.

F. Steel Structures Painting Council (SSPC).

1.3 DEFINITIONS

A. Refer to ASTM E985 for railing-related terms that apply to this section.

B. Refer to the NAAMM publications listed in Article 1.02 "References" for definition of terms that apply to this section.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Section 01 33 00, "Submittal Procedures".

B. Product Data: Submit product data for products used in metal fabrications, including paint products, grout and fasteners.

C. Shop Drawings: Submit detailed shop and erection drawings of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

D. Welder certificates signed by the Contractor certify that welders comply with requirements specified in

1.05C.

E. Welding Procedures: Provide written welding procedure specification (WPS) document per AWS Code
requirements.
F. Qualification data for firm specified in 1.05B to demonstrate their capabilities and experience.

1.5 QUALITY ASSURANCE
A. Codes and Standards: Comply with provisions of the following, except as otherwise indicated. Where
conflicts occur, comply with the more stringent requirements.
1. ANSI 14.3.
2. AWS D1.1 and D1.3.
3. NFPA 101.
B. Fabricator Qualifications: Firm experienced in successfully producing metal fabrications similar to that
shown on the drawings, with sufficient production capacity to produce required units without causing delay
in the work.
C. Qualify welding processes and welding operators in accordance with AWS D1.1 and D1.3. Certify that
each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if
pertinent, has undergone recertification.
D. All materials used shall be free of lead and asbestos fibers.

PART 2: PRODUCTS
2.1 FERROUS METALS
A. Metal Surfaces, General: Form metal fabrications exposed to view upon completion of the work, provide
materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use
materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness,
and, for steel sheet, variations in flatness exceeding those permitted by referenced standards for stretcher
leveled sheet.
B. Steel Plates, Shapes, and Bars: ASTM A36.
C. Rolled Steel Floor Plates: ASTM A786.
D. Steel Bars for Gratings: ASTM A569 or ASTM A36.
E. Wire Rod for Grating Cross Bars: ASTM A510.
F. Steel Tubing: Cold-formed, ASTM A500, Grade B, unless otherwise indicated.

G. Uncoated Structural Steel Sheet: Hot-rolled, ASTM A570, Grade 30 unless otherwise indicated.
H. Uncoated Steel Sheet (Commercial quality): Cold-rolled, ASTM A366.
I. Galvanized Steel Sheet: Quality as follows:
1. Structural Quality: ASTM A446; Grade A, unless another grade required for design loading, and G90
coating designation unless otherwise indicated.

2. Commercial Quality: ASTM A526, G90 coating designation unless otherwise indicated.
J. Steel Pipe: ASTM A53, Type S, Grade B, standard weight (schedule 40), black finish, unless otherwise
indicated.
K. Gray Iron Castings: ASTM A48, Class 30.
L. Malleable Iron Castings: ASTM A47, Grade 32510.
M. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported
rails, unless otherwise indicated.
N. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47,
or cast steel, ASTM A27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM
A153.
O. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be
welded.

2.2 STAINLESS STEEL
A. Bar Stock: ASTM A276, Type 302 or 304.
B. Plate: ASTM A167, Type 302 or 304.
ALUMINUM
A. Extruded Bars and Shapes: ASTM B221, alloy 6061-T6 or 6063-T6 for bearing bars of gratings and shapes
and 6061-T6 for grating cross bars.
B. Aluminum-Alloy Rolled Tread Plate: ASTM B632, alloy 6061-T4 for treads and 6061-T6 for platforms.

GROUT
A. Non-shrink Nonmetallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, non-gaseous
grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior
and exterior applications of type specified in this section. Subject to compliance with requirements,

products that may be incorporated in the work include, but are not limited to the following:
1. Euco N-S Grout - Euclid Chemical Co.
2. Kemset - Chem-Masters Corp.
3. Crystex - L & M Construction Chemicals, Inc.
4. Sonogrout - Sonneborn Building Products Div., Rexnord Chemical Products, Inc.

FASTENERS
A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners
for the type, grade, and class required. Suspect/counterfeit bolts will not be accepted and will be replaced at
Contractor's expense.

PAINT
A. Shop Primer for Ferrous Metal: Red oxide, lead- and cadmium-free, corrosion- inhibiting primer complying
with performance requirements of FS TT-P-664.
B. Galvanizing Repair Paint: High zinc dust content paint for galvanizing welds in galvanized steel, with dry
film containing not less than 94% zinc dust by weight, and complying with SSPC-Paint-20.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint-12 except containing no
asbestos fibers.

D. Zinc Chromate Primer: FS TT-P-645.

2.7 CONCRETE FILL
A. Concrete Materials and Properties: Comply with requirements for Section 03 30 00, "Cast-in-Place Concrete" for normal weight, ready-mix concrete with minimum 28- day compressive strength of 3000 psi
(21 MPa), unless higher strength indicated.
B. Nonslip Aggregate Finish: Factory-graded, packaged material containing fused aluminum oxide grits or crushed emery as abrasive aggregate; rust-proof and non- glazing; unaffected by freezing, moisture, or cleaning materials.

2.8 FABRICATION - GENERAL
A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature
in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
Temperature change (Range): 100 °F (38 °C).
D. Shear and punch metals cleanly and accurately. Remove burrs.
E. Ease exposed edges to a radius of approximately 1/32" (0.794 mm), unless otherwise indicated. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
F. Remove sharp or rough areas on exposed traffic surfaces.
G. Weld corners and seams continuously to comply with AWS recommendations and the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matched those adjacent.
H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
K. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.9 ROUGH HARDWARE
A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required. Fabricate items to sizes, shapes, and dimensions required.

2.10 MISCELLANEOUS METAL ITEMS

A. Miscellaneous Framing and Supports: Provide steel framing and supports for applications indicated, which are not parts of structural steel framework, as required to complete work.
1. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other
construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel
bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to
receive hardware, hangers, and similar items.
2. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed. Except as otherwise indicated, space anchors
24” (61 cm) o.c. and provide minimum anchor units in the form of steel straps 1¼" wide x ¼" x 8" long (31.8 mm x 6.4 mm x 203 mm).
B. Miscellaneous Steel Trim: Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination for assembly and installation with other work.

2.11 STEEL PIPE GUARDRAILS AND HANDRAILS
A. General: Fabricate pipe guardrails and handrails to comply with requirements indicated for dimensions, details, finish, and member sizes, including wall thickness of pipe, post spacing’s, and anchorage.
B. Interconnect guardrails and handrail members by butt-welding or welding with internal connectors, at fabricator's option, unless otherwise indicated. At tee and cross intersections, cope ends of intersecting members to fit contour of pipe to which end is joined, weld all around and grind smooth.
C. Form changes in directions of railing members as follows:
1. By use of welded prefabricated steel elbow fittings.
2. By bending, of radius indicated.
3. By mitering at elbow bends.
D. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross- section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.
E. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated.
F. Close exposed ends of pipe by welding 3/16” (4.8 mm) thick steel plate in place or by use of prefabricated fittings, except where clearance of end of pipe and adjoining wall surface is ¼” (6.4 mm) or less.
G. Toe Boards: Where indicated, provide toe boards at railings around openings and at the edge of open-sided floors and platforms. Fabricate to dimensions and details indicated, or if not indicated, use 4” high x ¼” (102 mm x 6.4 mm) steel bar welded to each railing post.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnections of pipe and attachment of guardrails and handrails to other work. Furnish inserts and other anchorage devices for connecting guardrails and handrails to concrete or masonry work.
1. For railing posts set in concrete, fabricate sleeves from steel pipe not less than 6" (152 mm) long and
with an inside diameter not less than ½" (12.7 mm) greater than the outside diameter of post, with steel plate closure welded to bottom of sleeve.
2. For removable railing posts, fabricate slip-fit sockets from steel pipe whose inside diameter is sized for a close fit with posts and to limit deflection of post without lateral load, measured at top, to not more than 1/12" of post height. Provide socket covers designed and fabricated to resist accidental dislodgement.
I. Fillers: Provide steel sheet or plate fillers of thickness and size indicated or required to support structural loads of handrails where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses. Size fills to produce adequate bearing to prevent bracket rotation and overstressing of substrate.

2.12 STAIR GUARDRAILS AND HANDRAILS
F. Stair Guardrails and Handrails: Comply with applicable requirements specified elsewhere in this section for steel pipe guardrails and handrails, and as follows:
1. Fabricate newels of steel tubing and provide newel caps of gray-iron castings, as shown.
2. Railings may be bent at corners, rail returns, and wall returns, instead of using prefabricated fittings.
3. Connect railing posts to stair framing by direct welding, unless otherwise indicated.

2.13 PIPE BOLLARDS
A. Fabricate pipe bollards from 4" (102 mm) standard black steel pipe, Schedule 40, unless otherwise indicated. Cap bollards with ¼" (6.4 mm) minimum thickness steel base plate, or as otherwise indicated.

2.14 STEEL AND IRON FINISHES

A. General: Shop-paint uncoated surfaces of metal fabrications, except those to be embedded in concrete or masonry or to receive sprayed-on fireproofing, surfaces and edges to be welded, and galvanized surfaces, unless otherwise indicated. Comply with requirements of SSPC-PA 1 for shop painting.
B. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot- dip process in compliance with the following requirements:
1. ASTM A123 for galvanizing both fabricated and non-fabricated iron and steel products made of uncoated rolled, pressed, and forced shapes, plates, bars, and strip 0.0299" (0.7595 mm) thick and heavier.
2. ASTM A153 for galvanizing iron and steel hardware.

C. Surface Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below.
1. Remove oil, grease and similar contaminants in accordance with SP-1, "Solvent Cleaning".
2. Remove loose rust, scale, spatter, slag and other deleterious materials in accordance with SSPC.
D. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with
manufacturer's instructions and at a rate to provide dry film thickness of not less than 3.0 mils (0.076 mm). Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces. Apply 2 coats of paint to surfaces that are inaccessible after assembly or erection.
2.15 ALUMINUM FINISH
A. Mill (as fabricated) finish, unless otherwise indicated.

PART 3: EXECUTION
3.1 EXAMINATION
A. Installer shall examine the areas and conditions under which metal fabrication items are to be installed. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer and Architect.
3.2 PREPARATION
A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
B. Center nosing’s on tread widths with noses flush with riser faces and tread surfaces.
C. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.
3.3 INSTALLATION - GENERAL
A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, and through-bolts, lag bolts, wood screws and other connectors as required.
B. Cutting, Fitting and Placement: Perform cutting, drilling, and fitting required for installation of
miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been

hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
E. Field Welding: Comply with AWS Code for procedures of manual shielded metal- arch welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surfaces matches those adjacent.
F. Grout: Follow manufacturer's recommendations for substrate preparation and application.
G. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.
3.4 INSTALLATION OF METAL BAR GRATINGS
A. General: Install gratings to comply with requirements of NAAMM grating standard that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.
B. Secure removable units to supporting members with type and size of clips and fasteners indicated, or if not indicated, as recommended by grating manufacturer for type of installation conditions shown.
C. Secure non-removable units to supporting members by welding where both materials are the same; otherwise, fasten by bolting as indicated above.
D. Attach toe plates to gratings by welding, at locations indicated.

3.5 INSTALLATION OF STEEL PIPE GUARDRAILS AND HANDRAILS
A. Adjust railings prior to anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated, or if not indicated, as required by design loadings. Plumb posts in each direction. Secure posts and railing ends to building construction as follows:
1. Anchor posts in concrete by means of pipe sleeves preset and anchored into concrete. After posts have been inserted into sleeves, fill annular space between post and sleeve solid with non-shrink, non metallic grout, mixed and placed to comply with anchoring material manufacturer's directions.
2. Anchor posts and rail ends to steel with welded connections, unless otherwise indicated.
3. Anchor posts and rail ends into concrete and masonry with steel round flanges welded to post and rail ends, and anchored into wall construction with expansion shields and bolts.
4. Install removable railing sections where indicated in slip-fit metal sockets cast into concrete.
Accurately locate sockets to match post spacing.
B. Secure handrails to wall with wall brackets and end fittings. Provide bracket with not less than 1½” (38.1 mm) clearance from inside face of handrail and finished wall surface. Locate

brackets at spacing not less than 5'-0" (1.5 m) o.c., unless otherwise indicated. Secure wall brackets and wall return fittings to building construction as follows:
1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. For concrete and solid masonry anchorage, use drilled-in expansion shield and either concealed hanger bolt or exposed lag bolt, as applicable.
3. For hollow masonry anchorage, fasten brackets directly on masonry wall using toggle bolts.
4. For steel framed gypsum board assemblies, fasten brackets to wood blocking using lag bolts or to metal blocking using self-tapping screws, of size and type required to support structural loads.
C. Expansion Joints: Provide expansion joints at locations indicated, or if not indicated, at intervals not to
exceed 40’ (12.2 m). Provide slip joint with internal sleeve extending 2” (51 mm) beyond joint on either side; fasten internal sleeve securely to one side; locate joint within 6” (152 mm) of posts.
INSTALLATION OF PIPE BOLLARDS
A. General: Install bollards at locations shown on drawings. After installation, fill pipe with concrete and provide a smooth convex curve at the top of the pipe.
B. Backfill: The backfill in the annular space around bollards not embedded in poured footings shall be by the following methods:
1. Clean excess soil from hole. Do not leave loose soil at bottom of hole.
2. Backfill shall be of concrete with an ultimate strength of 3,000 pounds per square inch (210.92 kgs/sq.
cm) at 28 days. The hole shall not be less than 4” (101.6 mm) larger than the diagonal dimension of a round, square or rectangular bollard.

3.6 ADJUSTING AND CLEANING
A. Touch-Up Painting of Steel Items: Immediately after erection, clean field welds, bolted connections, abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch- up of field painted surfaces. Apply by brush or spray to provide a minimum dry film thickness of 3.0 mils (0.076 mm).
B. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION 05 50 00

06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. All labor, materials, equipment and services necessary for the completion of the carpentry work shown on the drawings, included but not limited to:

B. Removal and replacement of damaged framing and sheathing including all blocking, furring, nailers, miscellaneous wood, connectors and hardware.

1.2 SUBMITTALS FOR REVIEW

A. All submittals shall be reviewed and checked by the Contractor prior to submittal to the Owner. Contractor shall affix his signature to each submittal indicating the Contractor has reviewed, checked and approved the submittal for compliance with all the requirements of the plans and specifications. See Requirements of Division 01 33 00 Submittal Procedures.

B. Submit to the Owner product data for each product to be incorporated into the work.

1.3 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Structural observation by Owner Inspector at the following milestones:

1. Observation of existing structural framing after removal of wall and floor sheathing.

2. Upon encountering any dry-rot or structurally compromised framing members.

PART 2 PRODUCTS

2.1 MATERIALS

A. Dimension Lumber: surfaced 4 sides, 19% maximum moisture content, manufactured and graded per WWPA grading rules and all pieces grade stamped:

B. Pressure treated blocking: AWPB Preservative Treated DF No 2 or Foundation Grade Redwood

C. Blocking and furring: up to 4x DF No 2, 6x DF No 1

D. Studs: DF No 2

E. Exposed roof rafters and beams: DF No. 1DF Select Structural – Dry (15% Moisture content), unless noted otherwise on drawings.

F. Post and Double Top Plates: DF No 1

F. T&G Decking – DF Select Structural – Dry (15% Moisture content)

G. Miscellaneous Lumber; blocking, furring, nailers, sleepers, bucks, grounds and cant strips: DF No 3 or Stud, surface 4 sides, 19% maximum moisture content. Pressure preservative treat items in contact with flashing, waterproofing, etc.

H. Plywood: APA rated, Exterior Exposure, manufactured per US Product Standard PS 1-83 for Construction and Industrial Plywood. All plies shall be group 1 or 2 species, minimum five plies. Each sheet shall stamped with the PS and/or APA grade mark:

I. Floor Sheathing: 3/4” Structural I, species group 2 or better, identification index 32/16 or better.

J. Metal Framing Devices

K. Proprietary framing devices - Manufactured by Simpson Strong-Tie Company or approved equal, installed in conformance with the manufacturer's specifications. All specified fasteners must be installed. All such fasteners shall be of the largest size and quantity specified in the manufacturers published schedules, unless noted otherwise. All connectors and fasteners exposed to moisture shall be hot dip galvanized after fabrication.

PART 3 EXECUTION

3.1 INSTALLATION

A. Construction methods and project safety: the contract documents represent the finished structure and do not indicate methods, procedures or sequence of construction. Take necessary precautions to maintain and ensure the integrity of the structure during construction. Contractor shall design, construct and maintain all safety devices, including shoring and bracing, and solely responsible for conforming to all local, state and federal safety and health standards, laws and regulations.

B. Wood framing: Comply with recommendations of UBC Chapter 23, UBC Table 23-II-B-1 - Nailing Schedule, and NDS National Design Specifications for Wood Construction.

C. Plywood: Comply with recommendations of APA Design and Construction Guide - Residential and Commercial. Space panel ends and edges with 1/8” minimum gap. Where wet or humid conditions prevail, double this spacing.

D. Provide nailers, blocking and grounds where required. Set work plumb, level and accurately cut. Fire and draft blocks shall be as specified per UBC Section 708.

E. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.

F. Comply with manufacturer's requirements for cutting, handling, fastening and working with treated materials.

3.2 REMOVAL AND REPLACEMENT OF EXISTING LUMBER AND PLYWOOD

A. All lumber and plywood exposed during selective demolition shall be observed by the Owner Inspector prior to removal or application of obscuring finishes.

B. Damaged or deteriorated wood framing or sheathing shall be replaced in kind, unless noted otherwise on the plans. Repair of existing framing will be at the discretion of the Owner’s Representative.

C. Lumber and plywood shall be carefully removed in such a way as to not damage the adjacent framing to remain. Any beams, studs, plates, posts, plywood or other framing damaged during removal shall be replaced in like kind at the contractor’s expense.

D. Contractor is required to provide additional nailing or removal and replacement of damaged plywood in areas of overdriven nails as directed by Owner’s Representative.

E. Contractor is required to provide additional framing where existing framing does not match the expected framing as shown in details and plans directed by Owner’s

Representative.

F. Existing plywood nailing to be field verified and brought into conformance with nailing requirements of the plans.

G. Plywood shall be removed and replaced in sheets no smaller than 2’ X 4’.

H. Contractor is required to add additional studs and/or blocking at panel edges. All panel edges to have edge nailing (EN) at 4” center to center and field nailing at 12” center to center.

I. Restore damaged components. Protect work from damage.

END OF SECTION

SECTION 07 22 20

ROOF BOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Fiberglass-mat faced gypsum roof boards for application directly under roof membrane systems.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM C209 Standard Test Method for Cell. Fiber Insulating Board
2. ASTM C472 Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete.
3. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products.
4. ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
5. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
6. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
7. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.
8. ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings
9. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 C.

10. ASTM E661 Standard Test Method for Performance of Wood and WoodBased Floor and Roof Sheathing Under Concentrated Static and Impact Loads.

B. Underwriters Laboratories (UL): UL 790 Standard Test Methods for Fire Tests of Roof Coverings.

1.03 RELATED SECTIONS

A. Section 01 33 00 _ Submittal Procedures

B. Section 06 10 00– Rough Carpentry

C. Section 07 31 13 - Asphalt Shingles

D. Section 07 54 23 - T P O Thermoplastic Single-Ply Roofing.

E. Section 07 62 00 – Flashing and Sheet Metal.

1.04 SUBMITTALS

A. Product Data and Installation Instructions: Submit manufacturer’s product data including installation instructions and substrate preparation recommendations

B. Sample warranty: Submit a sample warranty identifying the terms and conditions of the warranty as herein specified.

1.05 QUALITY ASSURANCE

A. Inspection: Where applicable, allow for Owner’s inspection and moisture testing and reporting prior to installation of roof boards.

1.06 DELIVERY, STORAGE, AND HANDLING

A. All components used in roofing systems, including DensDeck® Prime Roof Boards, shall be protected from exposure to moisture before, during and after

installation.

B. Remove any plastic packaging from roof boards immediately upon receipt of delivery. Failure to remove plastic packaging may result in entrapment of condensation or moisture, which may cause application problems that are not the responsibility of manufacturer

C. Any protective, plastic factory packaging that is used to wrap roof boards for shipment is intended to provide temporary protection from moisture exposure during transit only and is not intended to provide protection during storage after delivery.

D. Roof boards stored outside shall be stored level and off the ground and protected by a waterproof covering. Provide means for air circulation around and under stored bundles of DensDeck® Prime Roof Boards. Use adequate supports to keep the bundles flat, level and dry.

E. Care should also be taken during installation to avoid the accumulation of moisture in the system. Roof boards shall be covered the same day as installed. Avoid application of roof boards during rain, heavy fog and any other conditions that may deposit moisture on the surface, and avoid the overuse of non-vented, direct-fired heaters during winter months.

1.05 FIELD CONDITIONS

A. Application standards where applicable are in accordance with design assembly specifics, system manufacturer requirements and the DensDeck® Technical Guide.

B. Do not install DensDeck® Prime Roof Board that is moisture damaged. Indications that panels are moisture damaged include, but not limited to,

discoloration, sagging, or irregular shape.

C. Installed DensDeck® Prime Roof Boards shall be dry, with free moisture content of less than 1% using a moisture meter that has been set to the gypsum scale, before applying adhesive, asphalt or membrane.

D. All components used in roofing systems, including DensDeck® Roof Boards, shall be protected from exposure to moisture before, during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

A. Georgia-Pacific Gypsum, LLC, products as specified herein.

2.02 COATED PRIME FIBERGLASS-MAT FACED GYPSUM ROOF BOARDS:

A. Fiberglass Mat Faced Gypsum Roof Board:

1. Acceptable Product: GP Gypsum, DensDeck® Prime Roof Boards.
2. Thickness: 1/4 inch.
3. Width: 4 feet.
4. Length:8 feet.
5. Weight:1.2 lb/sq. ft.
6. Surfacing: Primed Fiberglass Mat.
7. Flexural Strength, Parallel (ASTM C473): 40 lbf, minimum.
8. Flute Span (ASTM E661): 2-5/8 inches.
9. Permeance (ASTM E96): Greater than 30 perms.
10. R-Value (ASTM C518): 0.28.
11. Water Absorption (ASTM C473): Less than 5 percent of weight.
12. Surface Water Absorption (ASTM C473): Nominal 1.0 grams.
13. Compressive Strength (Applicable Sections of ASTM C472): Nominal 900

pounds per square inch.

14. Flame Spread/ Smoke Development (ASTM E84): Not more than 0 Flame Spread, 0 Smoke Development

15. Combustibility (ASTM E136): Noncombustible

16. Fire resistance rating (UL 790 and ASTM E108): Class A

17. Mold Resistance (ASTM D3273): Scored a 10

B. Fiberglass Mat Faced Gypsum Roof Board:

1. Acceptable Product: GP Gypsum, DensDeck® Prime Roof Boards.

2. Thickness: 1/2 inch.

3. Width: 4 feet.

4. Length: 8 feet.

5. Weight: 2.0 lb/sq. ft.

6. Surfacing: Primed Fiberglass Mat.

7. Flexural Strength, Parallel (ASTM C473): 80 lbf, minimum.

8. Flute Span (ASTM E661): 5 inches.

9. Permeance (ASTM E96): Greater than 23 perms.

10. R-Value (ASTM C518): 0.56.

11. Water Absorption (ASTM C473): Less than 5 percent of weight.

12. Surface Water Absorption (ASTM C473): Nominal 1.0 grams.

13. Compressive Strength (Applicable Sections of ASTM C472): Nominal 900 pounds per square inch.

14. Flame Spread/ Smoke Development (ASTM E84): Not more than 0 Flame Spread, 0 Smoke Development

15. Combustibility (ASTM E136): Noncombustible

16. Fire resistance rating (UL 790 and ASTM E108): Class A

17. Mold Resistance (ASTM D3273): Scored a 10

Specifier Note: Below is 5/8” board, 8” flute span.

PART 3 EXECUTION

3.01 INSTALLATION

A. Apply only as many roof boards as can be covered by a roof membrane system in the same day.

B. Board edges and ends shall be butted tightly together; do not gap edges or Ends. Specifier Note: Select installation type from installation types below:

C. Adhesive Installation over Thermal Insulation, under Single-Ply Roofing Systems:

1. Stagger roof board end and edge joints minimum 12" over installed insulation layers.
2. Stagger roof board end and edge joints minimum 6".
3. Adhere roof boards over installed insulation using adhesive as recommended by roofing system manufacturer’s product data.
4. Apply overall pressure to ensure full adhesion. Do not slide into place.

3.02 PROTECTION

A. Protect roof board installations from damage and deterioration until the date of Substantial Completion.

END OF SECTION 07 22 20

SECTION 07 31 13

ASPHALT SHINGLES

PART 1 GENERAL

1.1 SECTION INCLUDES

PART 1 Granule surfaced asphalt shingle roofing.

A. Moisture shedding underlayment, eaves, valley and ridge protection

B. Associated metal flashing

1.2 RELATED SECTIONS

A. 01 50 00 Temporary Facilities and Controls

B. 01 31 19 Project Meetings

C. 06.10.00 Rough Carpentry

D. 07.22.20 Roof Boards

E. Section 07 60 00 – Flashing and Sheet Metal.

1.3 REFERENCES

A. ASTM A 653/A 653M – Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron-Alloy-Coated (Galvannealed) by the Hot-Dip Process

B. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

C. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.

D. ASTM D 225 – Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.

E. ASTM D 226 – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

F. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.

G. ASTM D 3018 – Standard Specification for Class A Shingles Surfaced with Mineral Granules.

H. ASTM D 3161 – Standard Test Method for Wind Resistance of Asphalt Shingles (Fan-Induced Method).

I. ASTM D 3462 – Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.

J. ASTM D 4586 – Standard Specification for Asphalt Roof Cement, Asbestos-Free.

K. ASTM D-4869 – Standard Specification for Asphalt-Saturated Organic Felt Shingle Underlayment Used in Roofing.

L. ASTM D 6757 – Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products.

M. ASTM D7158 – Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)

N. ASTM E 108 – Standaard Test Methods for Fire Test of Roof Coverings

O. ASTM G 21 – Determining Resistance of Synthetic Polymers to Fungi

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria and product limitations.

C. Manufacturer's Installation Instructions: Provide published instructions that indicate preparation required and installation procedures.

D. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations and installation details as required by project conditions indicated.

1.5 QUALITY ASSURANCE

A. Installer Minimum Qualifications: Installer shall be licensed or otherwise authorized by all federal, state and local authorities to install all products specified in this section. Installer shall perform work in accordance with NRCA Roofing and Waterproofing Manual. Work shall be acceptable to the asphalt shingle manufacturer.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by architect
2. Do not proceed with remaining work until workmanship, color and pattern are approved by Architect.
3. Rework Mock-Up area as required to produce acceptable work.

C. Pre-Installation Meeting – Conduct a pre-installation meeting at the site prior to commencing work of this section: Require attendance of entities directly concerned with roof installation. Agenda will include:

1. Installation methods and manufacturer's requirements and recommendations
2. Safety procedures
3. Coordination with installation of other work
4. Availability of roofing materials.
5. Extra Material – Furnish under provision of section 01 70 00
6. Provide 250 square feet of extra shingles of each color specified.
7. Preparation and approval of substrate and penetrations through roof.
8. Other items related to successful execution of work.
9. Product Compliance – Verify that products conform with all requirements specified by local Authority Having Jurisdiction (AHJ).

D. Maintain one copy of manufacturer's application instructions on the project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store Products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials and materials used with solvent based materials in accordance with requirements of Authorities Having Jurisdiction.

C. Deliver shingles to site in manufacturer's unopened labeled bundles. Promptly verify quantities and conditions. Immediately remove damaged products from site.

1.7 PROJECT ENVIRONMENTAL CONDITIONS

A. Anticipate and observe environmental conditions (temperature, humidity and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environment conditions outside manufacturer's limits.

1.8 WARRANTY

A. Manufacturer's Warranty: Furnish shingle manufacturer's warranty for the product listed below:

1. CertainTeed Landmark AR: Lifetime limited warranty.

B. Warranty Supplement: Provide manufacturer's supplemental warranty (CertainTeed's SureStart or SureStart PLUS) to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:

1. First Ten Years (Landmark AR Shingles)
2. No SureStart or SureStart PLUS for any shingle applied to inadequately ventilated roof deck.

C. Extended Warranty Protection shingles carry:

1. (20 years) material and labor costs for repair or replacement and tear off.
2. Additional Option for (30 years*) material and labor costs for repair or replacement, tear off and disposal costs, and workmanship defects (25 years).

*30 years for premises not used by individual homeowners

D. Refer to manufacturer's warranty for adjustments for commercial applications.

E. Provide Upgraded Wind Warranty from 110 to 130 mph on L AR shingles for first 15 years by complying with all manufacturers' conditions and instructions (see

section 2.2-B below).

PART 2 PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturer: (Basis of Design) Provide products manufactured by the CertainTeed Corporation. Contact Sales Support Group, P.O. Box 860, Valley Forge, PA 19482, Toll Free 800-233-8990

A. Substitutions: Must be approved by Owner's Representative after submittal of both specified and proposed products submittal data and are reviewed in accordance with provisions of Section 01 33 00

2.2 ASPHALT FIBERGLASS SHINGLES

A. CertainTeed Landmark AR (Basis of Design) : Conforming to ASTM D 3018 Type I – Self-Sealing, UL Certification of ASTM D 3462, ASTM D 3161/UL997 110-mph Wind Resistance and UL Class A Fire Resistance, glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle; algae-resistance; two piece laminate shingle.

B Wind warranty upgrade – These products are warranted to resist blow-off due to wind velocities, including gusts, up to a maximum of 130 miles per hour during the first fifteen (15) years, provided all of the following conditions are met:

1. CertainTeed shingles are not applied over existing roof shingles (roof-overs are not permitted).
2. CertainTeed specified corresponding hip and ridge accessory products are installed as cap shingles (Shadow Ridge™, Cedar Crest™, Mountain Ridge™ (& IR).

C Weight: 229 / 240 pounds per square (100 square feet).

2.3 SHEET MATERIALS

A. Eaves Protection: CertainTeed “WinterGuard”; ASTM D1970 sheet barrier of self-adhering rubberized asphalt membrane shingle underlayment having internal reinforcement and “split” back plastic release film; provide material warranty equal in duration to that of shingles being applied.

B. Underlayment: CertainTeed “Roofers’ Select”, ASTM D 6757; asphalt-impregnated fiberglass-reinforced organic felt designed for use on roof decks as a water-resistant layer beneath roofing shingles

C. Underlayment: CertainTeed “Diamond Deck”, ASTM D 226 and ASTM D 4869 synthetic polymer-based scrim reinforced underlayment designed for use on roof decks as a water-resistant layer beneath asphalt shingles, wood shingles, and shakes, metal shingles or slate.

D. Underlayment: ASTM D 4869, Asphalt saturated felt.

E. Underlayment: ASTM D 226, Asphalt saturated felt (non-perforated).

2.4 FLASHING MATERIALS

A. Sheet Flashing: ASTM A 361/A361M; 26 Gauge (0.45 mm) steel with minimum G115/Z350 galvanized coating

B. Sheet Flashing: ASTM B 209; 0.025 (0.63mm) thick aluminum, mill finish.

C. Sheet Flashing: ASTM B 370; cold rolled copper; 16 ounces per square foot (0.55mm), natural finish.

D. Bituminous Paint: Acid and alkali resistant type; black color.

E. Tinner's Paint: Color as selected by Architect to coordinate with shingle color.

2.5 ACCESSORIES

A. Nails: Standard round wire type roofing nails, corrosion resistant; hot

dipped zinc coated steel, aluminum or chromated steel; minimum 3.8 inch (9.5mm) head diameter; minimum 11 or 12 gage (2.5mm) shank diameter; shank to be sufficient length to penetrate through the roof sheathing or ¾ inch (19mm) into solid wood, plywood or non-veneer wood decking.

B. Asphalt Roofing Cement: ASTM D 4586, Type I or II

2.6 FLASHING FABRICATION

A. Form flashing to profiles indicated on Drawings and to protect roofing materials from physical damage and shed water.

C. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions under provisions of Section 01 70 00.

B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surfaces.

C. Verify deck surfaces are dry and free of ridges, warps or voids.

3.2 ROOF DECK PREPARATION

A. Follow shingle manufacturer's recommendations for acceptable roof deck material.

B. Broom clean deck surfaces under eave protection and underlayment prior to their application.

3.3 INSTALLATION – EAVE ICE DAM PROTECTION

A. Place eave edge and gable metal edge flashing tight with fascia boards. Weather-lap joints 2 inches (50mm). Secure flange with nails spaced 8 inches (200 mm) on center.

A. Apply CertainTeed "WinterGuard" Waterproofing Shingle Underlayment as eave protection in accordance with manufacturer's instructions.

B. Extend eave protection membrane minimum 24 inches (640 mm) up slope beyond interior face of exterior wall.

3.4 INSTALLATION – PROTECTIVE UNDERLAYMENT

A. Roof Slopes between 2:12 and 4:12 – Use of Diamond Deck Synthetic Roofing Underlayment. Follow manufacturer's printed instructions for low slope application of this product. Do not use staples on this product.

B. Roof Slopes 4:12 or Greater: Install one layer of asphalt felt shingle underlayment perpendicular to slope of roof and lap minimum 4 inches (100 mm) over eave protection.

C. Weather-lap and seal watertight with asphalt roofing cement items projecting through or mounted on roof. Avoid contact or solvent-based cements with WinterGuard and Diamond Deck

3.5 INSTALLATION – VALLEY PROTECTION

A. For “closed-cut,” “woven,” and “open” valleys, first place one ply of minimum 36 inches (910 mm) wide, centered over valleys. Lap joints minimum of 6 inches (152 mm) Follow instructions of shingle and waterproofing membrane manufacturer.

3.6 INSTALLATION – METAL FLASHING

A. Weather-lap joints minimum 2 inches (50 mm).

B. Seal work projecting through or mounted on roof with asphalt roofing cement and make weather tight.

3.7 INSTALLATION – ASPHALT SHINGLES

A. Install shingles in accordance with manufacturer's instructions for product type and application specified.

3.8 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Section 01 45 16.

B. Visual inspection of the work will be provided by Owner. If conditions are unacceptable, Owner will notify the Architect.

3.9 PROTECTION OF FINISHED WORK

A. Protect finished work under provisions of Section 01 76 00.

B. Do not permit traffic over finished roof surface.

END OF SECTION 07 31 13

SECTION 07 54 23

TPO THERMOPLASTIC SINGE-PLY ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. TPO Thermoplastic Single-Ply Roofing.

B. Membrane Flashings.

C. Metal Flashings.

1.2 RELATED SECTIONS

A. 01 50 00 Temporary Facilities and Controls

B. 01 31 19 Project Meetings

C. 06.10.00 Rough Carpentry

D. 07.22.20 Roof Boards

E. Section 07 60 00 – Flashing and Sheet Metal.

1.3 REFERENCES

B. ANSI/SPRI WD-1 "Wind Design Standard for Roofing Assemblies".

C. ASTM International (ASTM):

1. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.

2. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

3. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

4. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

5. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

6. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.

7. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

8. ASTM D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.

9. ASTM D 2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.

10. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

11. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

12. ASTM D 4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.

13. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.

14. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. Factory Mutual (FM Global):

1. Approval Guide.

a. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.

b. Loss Prevention Data Sheets 1-28, 1-29.

1. International Building Code (IBC).

F. National Roofing Contractors Association (NRCA) - Low Slope Roofing and Waterproofing Manual, Current Edition.

G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.

H. Underwriters Laboratories (UL):

1. TGFU R1306 - "Roofing Systems and Materials Guide".

2. UL-790 - Standard Test Method for Fire Tests of Roof Coverings.

I. ANSI/ASHRAE/IESNA Standard 9.1 (2007): Energy Standard for Buildings Except Low-Rise Residential Buildings.

1.4 DESIGN CRITERIA

A. Wind Uplift Performance:

1. Roof system is designed to withstand wind uplift forces as calculated using the current revision of ASCE-7.

2. Roof system is designed to achieve a FM 1-90 wind uplift rating.

3. Roof system is designed to achieve 110_psf of uplift testing.

4. Carlisle offers a standard 55 mph wind speed warranty. Contact Carlisle to provide a 90 MPH wind speed warranty desired.

B. Fire Resistance Performance:

1. Roof system will achieve a UL Class A rating when tested in accordance with UL-790.

D. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.

E. Building Codes:

1. Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Detail Drawings:

1. Submit approved plan, section, elevation or isometric drawings which detail the appropriate methods for all flashing conditions found on the project.

2. Coordinate approved drawings with locations found on the Contract Drawings.

D. Selection Samples: For each finish product specified, two complete sets of chips representing manufacturer's full range of available colors, membranes, and thicknesses.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty (20) years experience.

B. Installer Qualifications:

1. 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.

2. Installer must be capable of extending the Manufacturer's Labor and Materials guarantee.

3. Installer must be capable of extending the Manufacturer's No Dollar Limit guarantee.

3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

C. Safety Data Sheets (SDS) must be on location at all times during the transportation, storage and application of materials.

D. When loading materials onto the roof, the Carlisle Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

1.8 PROJECT CONDITIONS

A. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.

B. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.

C. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

D. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.

E. New roofing shall be complete and weather tight at the end of the work day.

F. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

1.9 WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's Total System warranty, outlining its terms, conditions, and exclusions from coverage.

- Adhered 60-mil TPO
- Mechanically Fastened 60-mil TPO
- Adhered 100-,TPO FleeceBACK

1. Duration: 10 Years. Mechanically Fastened 60-mil TPO
8. Coverage to be extended to include hail damage in accordance with terms stated in the Warranty document.

9. Coverage to be extended to include roof edge metal water tightness in accordance with terms stated in the Warranty document.

B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: (Basis of Design) Carlisle SynTec Systems, which is located at: P. O. Box 7000; Carlisle, PA 17013; ASD Toll Free Tel: 800-4-SYNTEC; Tel: 717-245-7000; Fax: 717-245-7053; Email:request info (info@carlislesyntec.com); Web:https://www.carlislesyntec.com.

B. Substitutions: Must be approved by Owner's Representative after submittal of both specified and proposed products submittal data and are reviewed in accordance with provisions of Section 01 33 00

2.2 SCOPE / APPLICATION

A. Roof System: Provide a waterproof roof system, capable of withstanding uplift forces as specified in the Design Criteria article of this section.

1. Membrane Attachment: Mechanically Attached.

2. Membrane Attachment: Fully Adhered.

3. Membrane Attachment: Asphalt Adhered.

B. Base Flashing: Provide a waterproof, fully adhered base flashing system at all penetrations, plane transitions and terminations.

2.3 MEMBRANE BASE SHEET

A. Carlisle FR Base Sheet 1S: A non-asphaltic, resin-bound, fiberglass-reinforced mat, coated on one side with a mineral-filled fire-resistant coating (42" wide and 200' long). Designed for use as a suitable substrate for direct application of Mechanically Fastened Roofing Systems over decks requiring a fastened base sheet.

B. Carlisle SureMB 70 SA Modified Base Sheet: 70-mil smooth surface, self-adhered base ply. Reinforced with a fiberglass mat that is saturated and coated with asphaltic bitumen and SBS elastomer and meets ASTM D6163 Type 1, Grade S. 70 SA is designed to be used as a base ply or interplay in Carlisle's multiple-ply system and can be used as an air and vapor barrier or temporary (up to 60 days) roof. Available in 39-3/8" wide and 61' long (200 square feet) weighing 0.39 lbs per square foot.

C. VapAir Seal 725TR Air/Vapor Barrier - a 40-mil composite consisting of 35-mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film.

D. VapAir Seal MD Air/Vapor Barrier - a reinforced composite aluminum foil with self-adhesive SBS backing and removable poly release film. Used for direct application over metal decks.

2.6 THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE

A. Sure-Weld Membrane:

I. TPO Molded Sealant Pockets:

1. A two-piece, interlocking injection molded, flexible pocket with a rigid polypropylene vertical wall and pre-formed deck flanges. Color to match membrane. Special colors not available.

2. Used with Thermoplastic One-Part Pourable Sealer as specified in this section for waterproofing pipe clusters or other odd shaped penetrations. The removable built-in extension legs allow the oval pocket to adjust from 7.5 inches to 11.5 inches (191mm - 292 mm) in length while maintaining a 6-inch width (152 mm).

J. Pre-Fabricated Sealant Pockets: A two-piece, pre-fabricated, custom sized, sealant pocket that utilizes reinforced TPO membrane and coated metal to form a rigid, oversized sealant pocket with a weldable horizontal deck flange. Color - White. Gray, tan and special colors require custom order fabrication.

K. Sealant Pocket Extension Legs: Designed for use with the TPO Molded Sealant Pocket and the Pre-Fabricated Sealant Pocket to extend the length in increments of 10 inches (254 mm). Fabricated from 45 mil thick reinforced TPO membrane and TPO coated metal. Can be used full length, cut to size for customized lengths or welded to each other for extra long applications. Color - White. Gray, tan and special colors require custom order fabrication.

L. Pressure-Sensitive Cover Strip: A nominal 6 inch (152 mm) wide by 40 mil thick non-reinforced TPO membrane laminated to nominal 35-mil thick cured synthetic rubber pressure-sensitive adhesive. Used in conjunction with TPO Primer to strip in flat metal flanges (i.e., drip edges or rows of fasteners and plates). Color to match membrane. Special colors not available.

M. TPO Pressure-Sensitive RUSS:

1. 6 inch (152 mm) RUSS: A nominal 6 inch (152 mm) wide, 45 mil thick reinforced TPO membrane with nominal 3 inch (76 mm) wide 35mil thick cured synthetic rubber pressure-sensitive adhesive laminated along one end. This product allows a continuous piece of membrane to be run up a parapet wall without fastener penetration through the field sheet at angle changes.

N. Sure-Weld Heat Weldable Walkway Rolls: Superior tear, puncture and weather resistance and designed to protect Sure-Weld membrane in those areas exposed to repetitive foot traffic or other hazards. Walkway material may be heat welded to Sure-Weld membrane using an automated heat welder or hand held heat welder. Walkway Rolls are 34 inches (864

mm) wide by 50 feet (15.2 m) long and are nominal 180 mils thick. Color - White, gray and tan.

O. Sure-Weld TPO Crossgrip Walkway Rolls: Manufactured from TPO and may be used in lieu of standard Sure-Weld TPO Walkway Rolls when a walkway is to be loose-laid and not secured to the membrane. Loose-laid Crossgrip TPO Walkway Rolls are effective for winds up to 55 mph. Rolls are 36" wide by 33' long, available in white, gray and yellow.

P. Non-Reinforced Flashing: Non-reinforced TPO flashing is a 60-mil thick non-reinforced TPO based membrane used for detail work where the use of pre-molded or pre-fabricated accessories are not feasible. Color - White, gray and tan. Special colors require lead time and 5,000 square foot minimum.

Q. Sure-Weld TPO Contour Rib Profile: Used to obtain the appearance of standing seam metal roofing with the performance of a TPO single-ply membrane. The Contour Rib Profile measures 1-1/4 inches tall and 2-1/8 inches wide, including the welding flanges, while the vertical profile is a substantial 3/8 inch thick. The profile has a continuous 1/8 inch diameter alignment hole, for use with fiberglass connecting pins, as well as a 1/8 inch fiberglass reinforcing cord for added strength. The Contour Rib Profile is available in white, gray and tan, 10 foot lengths and packaged 20 per carton.

2.8 CLEANERS, PRIMERS, ADHESIVES AND SEALANTS

A. Sure-Weld Bonding Adhesive: A high-strength solvent-based contact adhesive used for bonding Sure-Weld membrane to various porous and non-porous substrates.

1. Base: Synthetic Rubber.

2. Color: Yellow.

3. Solids: 20.0 percent.

4. VOC: 670 grams/liter.

B. Low VOC Bonding Adhesive: A high strength, solvent-based contact adhesive that allows bonding of Sure-Weld membrane to various porous and non-porous substrates. It is specially formulated using a blend of VOC exempt and non-exempt solvents to be in compliance with the state of California Clean Air Act of 1988 (updated in 1997) and as further regulated by California's Air Quality Control Districts listing VOC grams per liter limitations.

1. Base: Synthetic Rubber.

2. Color: Yellow.

3. Solids: 20.3 percent.

4. VOC: 250 grams/liter.

C. Flexible FAST Adhesive: A spray or extruded applied, two-component, polyurethane, low-rise expanding foam adhesive used to securely bond FleeceBACK membranes to a variety of substrates.

D. Flexible FAST Dual Cartridge Adhesive: A two-component, polyurethane construction grade, low-rise expanding adhesive used to securely bond FleeceBACK membranes to a variety of substrates. The adhesive is extrusion applied 4 inch (102 mm), 6 inch (152 mm) or 12 inch (305 mm) on center (depending on project conditions) using a portable applicator.

E. Flexible FAST Dual Tank Adhesive: A spray applied, two-component, polyurethane construction grade, low-rise expanding adhesive used to securely bond FleeceBACK membranes to a variety of substrates.

F. Flexible FAST 5-gallon Jug Adhesive: A two-component, polyurethane construction grade, low-rise expanding adhesive designed for bonding insulation to various substrates, packaged for use with the spray application rigs.

G. Aqua Base 120 Bonding Adhesive: A semi pressure-sensitive water based adhesive. Used as a one-sided, wet lay-in adhesive with Sure-Weld FleeceBACK 100 or 115 mil membranes or as a two-sided contact adhesive with non-fleece backed Sure-Weld TPO membranes.

H. CAV-GRIP III Low-VOC Aerosol Contact Adhesive/Primer: A low-VOC, methylene chloride-free adhesive that can be used for a variety of applications including: Bonding Sure-Weld membrane to various surfaces, priming unexposed asphalt prior to applying Flexible FAST Adhesive, adhering Sure-Weld TPO membrane, horizontally, for the field of the roof, and for adhering Sure-Weld FleeceBACK and Sure-Weld TPO membrane to vertical walls. Coverage rate is approximately 2,000-2,500 sq. ft. per 40 lb cylinder and 4,000-5,000 sq. ft. per 85 lb cylinder as a primer, in a single-sided application; 750 sq. ft. per 40 lb cylinder and 1,500 sq. ft. per 85 lb cylinder as an adhesive for vertical walls, in a double-sided application; 1,000 sq. ft. per 40 lb cylinder and 2,000 sq. ft. per 85 lb cylinder as an adhesive, horizontally, for the field of the roof, in a double-sided application.

I. Cut Edge Sealant: A medium solids content, free flowing polymeric material designed for sealing cut edges (exposed fabric) of Sure-Weld reinforced membrane.

J. Water Cut-Off Mastic: A one-component, low viscosity, self wetting, Butyl blend mastic used as a compression sealing agent between membrane and applicable substrates.

K. Low VOC Primer: Manufacturer's recommended low VOC primer.

L. TPO Primer: Solvent-based product designed to prepare TPO membrane for improved adhesion to TPO surfaces prior to the application of pressure-sensitive products and sealant pockets.

M. Universal Single-Ply Sealant: A 100 percent solids, solvent free, VOC free, one-part polyether sealant that provides a weather tight seal to a variety of building materials. It is used for general caulking such as above termination bars and metal counter flashings and at scupper details.. Available in white only.

N. Thermoplastic One-Part Sealant: Single component, moisture curing, elastomeric polyether sealant that is compatible with Carlisle's Thermoplastic membranes. Provides a flexible, durable and long lasting seal around hard-to-flash penetrations in Thermoplastic Roofing Systems.

O. Carlisle Weathered Membrane Cleaner: Clear, solvent-based cleaner used to loosen and remove contaminants from the surface of exposed membrane.

P. CCW 702 Primer and 702LV Primer (Low VOC) - A single component, solvent based, high-tack primer used to provide maximum adhesion between Carlisle 725TR Air and Vapor Barrier and an approved substrate. Applied by spray or long nap roller with a coverage rating ranging from approximately 300 to 350 square feet per gallon on smooth finishes (i.e., concrete) to 75 square feet per gallon on porous surfaces (i.e., Dens-Deck Prime gypsum board). Available in 5-gallon containers. CCW 702LV Primer contains less than 250g/L VOCs and meets South Coast Air Quality Management District (SCAQMD) and Leadership in Energy and Environmental Design (LEED) Requirements for Volatile Organic Compounds.

Q. CCW 702 WB - A high-tack, water-based contact adhesive for promoting adhesion of Carlisle air/vapor barrier membranes and an approved substrate (i.e., concrete, Dens-Deck Prime and Securock). Applied by roller, brush or spray with an application rate of approximately 200 sq. ft. per gallon. Available in 5-gallon containers. CCW 702 WB Primer contains 57g/L VOCs and meets South Coast Air Quality Management District (SCAQMD) and Leadership in Energy and Environmental Design (LEED) Requirements for Volatile Organic Compounds.

2.10 FASTENING COMPONENTS

A. HP Fastener: Threaded, coated (E-Coat) fastener for use with steel, wood plank or oriented strand board (OSB). For insulation fastening only on TPO Mechanically Fastened Roofing Systems.

B. HP-X Fasteners: Heavy-duty #15 threaded fastener with a Phillips head for standard TPO seam fastening (Mechanically Fastened Roofing Systems) and where increased pullout resistance is necessary for steel and wood decks (Fully Adhered Roofing Systems).

F. InsulFast Fasteners: Threaded, #12 fastener with a #3 Phillips head used with 3 inch (76 mm) diameter Insulation Plates. For insulation attachment into steel or wood decks.

K. Base Sheet Fasteners And Plates:

1. Carlisle Dual-Prong Fastener - A factory pre-assembled, 1.8 inch (46 mm) long fastener consisting of a precision tube formed from galvanized (G-90) coated steel, a 2.7 inch (69 mm) diameter disk formed from Galvalume (AX-55) coated steel and a locking staple of high tensile steel wire used to secure base sheets to fibrous cement, lightweight concrete and gypsum providing 70 lbs. of pullout resistance is achieved (40 lbs. Min.).

2. Carlisle Metal Cap: For use on projects limited in height 30 feet (9.14 M) or 40 feet (12.2 M) depending on base sheet used, 1 inch (25 mm) Carlisle Metal Cap in conjunction with a ring shank nail may be use to attach base sheets to wood plank, plywood or OSB decks per Carlisle's approved fastening pattern.

3. Base Sheet fasteners and plates by others must be FM approved and the respective manufacturers' published recommendations for proper installation must be followed.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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. Do not commence work until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment.

D. A vapor retarder / temporary roof (Carlisle VapAir Seal 725 TR Air and Vapor Barrier/Temporary Roof or Carlisle VapAir Seal MD Air and Vapor Barrier) may be applied to protect the inside of the structure prior to the roof system installation.

3.6 MEMBRANE PLACEMENT AND ATTACHMENT (Sure-Weld Fully Adhered)

A. Position Sure-Weld membrane over the acceptable substrate. Fold membrane sheet back lengthwise so half the underside of the membrane is exposed.

B. Apply approved Bonding Adhesive in accordance with the manufacturer's published instructions, to the exposed underside of the membrane and the corresponding substrate area. Do not apply Bonding Adhesive along the splice edge of the membrane to be hot air welded over the adjoining sheet. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.

1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded section of the membrane sheet immediately after rolling the membrane into the adhesive with a soft bristle push broom to achieve maximum contact.

2. Fold back the unbonded half of the sheet lengthwise and repeat the bonding procedures.

C. Position adjoining sheets to allow a minimum overlap of 2 inches.

D. APEEL Protective Film should be removed from within areas that are to be heat-welded together. In areas that do not require heat welding, the APEEL Protective Film can be left in place for up to 90 days.

E. Hot-air weld the Sure-Weld membrane sheets using the Automatic Hot Air Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's hot air welding procedures. Carlisle recommends a test weld sample be made from a piece of scrap TPO to eliminate the need to remove a section from a completed seam. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam.

F. Continue to install adjoining membrane sheets in the same manner, overlapping edges a minimum of 2 inches and complete the bonding procedures as stated previously.

3.9 MEMBRANE PLACEMENT AND ATTACHMENT (Mechanically Attached)

A. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour prior to attachment. Provide and secure both perimeter and field membrane sheets in accordance with the manufacturer's most current specifications and details.

B. Secure the membrane with the required Carlisle Fasteners and Plates centered over the pre-printed marks approximately 1-1/2 inches from the edge of the membrane sheet.

C. Install adjoining membrane sheets in the same manner in accordance with the manufacturer's current application requirements.

3.11 SEAM WELDING

** NOTE TO SPECIFIER ** Retain the following Paragraph only if Sure-Weld APEEL TPO is specified. Delete if not required.

A. APEEL Protective Film should be removed from within areas that are to be heat-welded together. In areas that do not require heat welding, the APEEL Protective Film can be left in place for up to 90 days.

B. Hot-air weld membrane using an Automatic Hot Air Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's current guidelines. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam.

C. When utilizing membrane greater than 45-mil thickness, overlay all splice intersections with Sure-Weld T-Joint Cover.

D. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).

E. Repair all seam deficiencies the same day they are discovered.

F. Apply Cut Edge Sealant on all cut edges of reinforced membrane (where the scrim reinforcement is exposed) after seam probing is complete. Cut Edge Sealant is not required on vertical splices.

3.12 FLASHING

A. Flashing of parapets, curbs, expansion joints and other parts of the roof must be performed using Sure-Weld reinforced membrane or prefabricated accessories. Sure-Weld non-reinforced membrane may be used for flashing pipe penetrations, Sealant Pockets, and scuppers, as well as inside and outside corners, when the use of pre-molded or prefabricated accessories is not feasible.

B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration

END OF SECTION 07 54 23

SECTION 07 62 00

SHEET METAL AND FLASHING TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:

1. Drawings and general provisions of the Subcontract apply to this Section.

2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:

1. 01 33 00 Submittal Procedures
2. 01 50 00 Temporary Facilities and Controls
3. 01 31 19 Project Meetings
4. 06.10.00 Rough Carpentry
5. 07.22.20 Roof Boards

1.2 REFERENCES

A. General:

1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.

2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.

3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. BAAQMD Regulation 8-51 - Adhesive and Sealant Products.

1.3 SUBMITTALS

A. Submit under provisions of 01 33 00 Submittal Procedures

B. Product Data:

1. Specifications, materials list and schedule for surface preparation procedures.

2. Material safety data sheets.

C. Shop Drawings: Details showing each condition separately and cross-referenced with applicable details on the Drawings.

D. Closeout Submittals:

1. Material Safety Data: Sealant and adhesive quantity use in accordance with requirements of BAAQMD Regulation 8-51.

2. Signed guaranty.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with requirements of Bay Area Air Quality Management District Regulation 8-51.

B. Comply with pertinent recommendations contained in "Architectural Sheet Metal Manual," latest edition, of the Sheet Metal and Air Conditioning Contractors National Association, Inc.

C. Take field measurements required for proper and adequate fabrication and installation of the work. Exact measurements are the Subcontractor's responsibility. Furnish templates for exact locations of items to be embedded.

1.5 GUARANTEE

A. Guarantee sheet metal and flashing work provided under this section to be watertight for 5 years after substantial completion. Guarantee shall include that other work and materials damaged by leaks shall be promptly repaired at no cost to University.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Furnish sheet metal in minimum 20-gauge, except 24-gauge for downspouts and gutters, or as otherwise indicated. Unless otherwise noted, all sheetmetal shall be galvanized, FS QQ-S-775d, Class d, ASTM A525 Class 1.25 commercial galvanizing.

1. Pre-manufactured Reglets: Snap-on type, for two piece flashing, metal to match flashing and sheet metal, factory formed and sealed corners. Fry Reglet Corp./Springlok System, MM Systems Corp./Snap-Tite System, Morrison & Co./Cushion-lok, or equal.

2. Pre-manufactured Roof Curbs: Box section design, custom heights, minimum 16 gage galvanized steel, continuous mitered and welded corner seams, integral base plate, single and compound roof pitch requirements, combustible materials and wood of any kind are not permitted. Custom Curb, Inc. (800-251-3001), Roof Products & Systems Corp. (708-595-7320), or equal.

B. Lead: ASTM B749, Type L51121, minimum 4 lbs./sq. ft. (0.0625 inches thick).

C. Solder: For use with steel or copper, Class A, Grade I, half-and-half, pig lead and block tin, ASTM B32, Type 50-50, with rosin flux.

1. For use with stainless steel, 60-40 tin/lead solder, ASTM B32, with acid-chloride flux, except use rosin flux over tinned surfaces.

D. Mastic: FS SS-S-153, Type 1, black plastic cement.

E. Nails and Screws: Same metal as flashing/sheet metal, or other non-corrosive metal as recommended by sheet manufacturer, Stronghold type, with large flat heads and sharp points. Use length sufficient to penetrate wood framing a minimum of 7/8-inch (22 mm). Use lead or neoprene washers where indicated. Use sheet metal screws or self-tapping screws to fasten sheet metal to other metal. Match finish of exposed heads with finish of material being fastened.

F. Lap Joint Sealer: Polyisobutylene non-hardening, non-skinning, non-drying, non-migrating sealant.

G. Coating for Dissimilar Metals: Bitumastic paint or as required to be compatible with adjacent materials and finishes. Coordinate requirements with paint systems and coatings furnished under Division 09 Section "Painting".

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

I. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weatherproof seaming and adhesive application of flashing sheet.

J. Paper Slip-Sheet: 5-lb (2.27 kg) rosin-sized building paper.

K. Polyethylene Underlayment: Minimum 6-mil carbonated polyethylene film.

L. Metal Accessories: Sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gage as required for performance.

M. Gutter and Conductor-Head Guards: 20-gauge bronze or nonmagnetic stainless steel mesh or fabricated units, with selvaged edges and noncorrosive fasteners. Use materials compatible with gutters and downspouts.

N. Roofing Cement: As specified under [Division 07 Section "Modified Bituminous Membrane Roofing"] [ ].

O. Other materials are described under Part 3, Execution.

PART 3 - EXECUTION

3.1 COORDINATION

A. Review drawings for sheet metal work. Coordinate to achieve proper incorporation of this work within membrane waterproofing work.

3.2 FABRICATION AND INSTALLATION

A. Perform work in accordance with Drawings and Specifications.

B. Fabricate shapes as detailed and approved.

C. Accurately fabricate and fit parts, with surfaces free from warp, wave, buckle, dent or other defects, and with square corners and angles, unless otherwise shown.

D. Install water and weather tight where exposed to the weather, with the provision for free expansion and contraction without causing leaks.

E. Clean soldered surfaces prior to soldering. Fully flow soldered joints fully. Scrape and finish exposed solder smooth. Remove traces of flux or acid.

F. Provide locked-butt joints. Where impractical and unless otherwise detailed, provide joints with full backup strips, riveted to one end and soldered; lap other end and seal with lap joint sealer. Turn lock joints, where exposed, in direction of flow.

1. Solder joints and miters.

2. Make ample provisions for expansion and contraction in sheet metal assemblies, and provide by slip joints. In long runs, provide slip joints every 20 feet (6 m) minimum, unless otherwise shown on Drawings. In runs less than 20 feet (6 m), provide one slip joint.

3. Provide reinforcements as required.

4. Shop fabricate corners at parapet wall copings with miters and all joints soldered.

G. Exposed fasteners are not permitted .

H. Provide heavy coating of bitumastic paint to insulate dissimilar metals from each other.

I. Fold, bead, hem or return exposed edges of fabricated sheetmetal; no raw edges will be permitted.

J. Close all ends.

K. Etch sheet metal surfaces which will be concealed in the finish work with an approved acid wash, and then shop paint with one coat of approved galvanized primer. Sheet metal surfaces which will be exposed in the finished work are specified to be treated and prime-painted under Division 09 Section "Painting".

1. Confirm compatibility of shop primers and surface preparation used on concealed surfaces with paints and coatings provided in Division 09 Section "Painting".

L. Underlayment: Where stainless steel is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

M. Install continuous gutter guards on gutters, arranged as hinged units to swing open for cleaning gutters. Install "beehive"-type strainer guards at conductor heads, removable for cleaning downspouts.

3.3 CLEANING

A. Immediately upon completion of this work, remove from site all debris and scrap material and clean up all dust and dirt resulting from this work.

END OF SECTION 07 62 00

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Fiber-cement board.
2. Steel.
3. Galvanized metal.
4. Aluminum (not anodized or otherwise coated).
5. Stainless-steel flashing.
6. Wood.
7. Plastic trim fabrications.
8. Exterior portland cement plaster (stucco).
9. Exterior gypsum board.

B. Related Requirements:

Primers in other Sections must be coordinated for compatibility with finish coats specified in this Section. Review other Sections for shop-primed exterior products, and insert references to this Section to establish primer requirements.

C. Related Sections:

1. 01 31 19 Project Meetings

2. 01 33 00 - Submittal Procedures
3. 05 50 00 Metal Fabrications
4. 06 10 00– Rough Carpentry
5. 07 62 00 Sheetmetal Flashing

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

Delete "Samples for Initial Selection" Paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain "Samples for Verification" Paragraph below with or without above.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

Color and gloss of Samples change as they age; seven-day old Samples appear different from freshly dried Samples.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Label each coat of each Sample.
3. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Indicate VOC content.

1.4 CLOSEOUT SUBMITTALS

"Coating Maintenance Manual" Paragraph describes paint manufacturers' "Custodian Project Color and Product Information" document provided to facility owners upon project completion.

A. Coating Maintenance Manual: Provide coating maintenance manual including area summary with finish schedule, area detail designating location where each product/color/finish was used, product data pages, material safety data sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    a. Vertical and Horizontal Surfaces: Provide samples of at least 3 sq. ft.
    b. Other Items: Architect will designate items or areas required.
2. Final approval of color selections will be based on mockups.
    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner's Representative

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacture’s label with the following information:

1. Product name and type (description).
2. Batch date.
3. Color number.
4. VOC content.
5. Environmental handling requirements.
6. Surface preparation requirements.
7. Application instructions.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

If necessary, insert special requirements for fire protection, heating, ventilation, and other conditions for storage areas on-site.

1.8 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

Retain one of two "Hazardous Materials" paragraphs below, or remove all references to hazardous materials. Coordinate statements with the General and Supplementary Conditions. See "Hazardous Materials" Article in the Evaluations.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner's Representative

D. Hazardous Materials: Hazardous materials including lead paint may be present in buildings and structures to be painted. A report on the presence of known hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified.

2. Perform preparation for painting of substrates known to include lead paint in accordance with EPA Renovation, Repair and Painting Rule and additional requirements of authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company (The); (Basis of Design) -bproducts indicated or comparable product from one of the following:

1. Dunn Edwards Paints, Benjamin Moore.

B. Substitutions: Must be approved by Owner's Representative after submittal of both specified and proposed products submittal data and after reviewed in accordance with provisions of Section 01 33 00

C. and the following:

1. Products are approved by manufacturer in writing for application specified.

2. Products meet performance and physical characteristics of basis of design product including published ratio of solids by volume, plus or minus two percent.

D. Source Limitations: Obtain paint materials from single source from single listed manufacturer.

1. Manufacturer's designations listed on a separate color schedule are for color reference only and do not indicate prior approval.

2.2 PAINT, GENERAL

A. Material Compatibility:

Systems could fail if paints used for individual coats are incompatible. MPI's paint systems match primers and topcoats and take compatibility into consideration.

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content: For field applications, provide paints and coatings that complies with VOC content limits of authorities having jurisdiction.

C. Colors: As selected by Architect from manufacturer's full range

2.3 SOURCE QUALITY CONTROL

Retain this article for large projects or critical coatings where additional control is needed. Delete if tests are not required.

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and

compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.

1. Report, in writing, conditions that may affect application, appearance, or performance of paint.

B. Substrate Conditions:

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

   a. Concrete: 12 percent.
   b. Fiber-Cement Board: 12 percent.
   c. Masonry (Clay and CMU): 12 percent.
   d. Wood: 15 percent.
   e. Portland Cement Plaster: 12 percent.
   f. Gypsum Board: 12 percent.

2. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

3. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

Coordination of shop-applied prime coats with topcoats is critical.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

Retain "Steel Substrates" Paragraph below if steel is not shop primed or if shop primer is removed in the field.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 3, "Power Tool Cleaning."

SSPC-SP 7/NACE No. 4 permits tight residues of rust, mill scale, and coatings to remain. Be aware that blast cleaning methods may not be practical for use at Project site and may not be allowed by authorities having jurisdiction.

2. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."

SSPC-SP 11 requires complete removal of rust, mill scale, and paint by power tools. SSPC-SP 11 uses nonabrasive methods and is more thorough than SSPC-SP 2, SSPC-SP 3, and SSPC-SP 7/NACE No. 4.

3. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

Galvanized-metal substrates should not be chromate passivated if primers are field applied. If galvanized metal is chromate passivated, consult manufacturers for appropriate surface preparation and primers.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:

If necessary, insert requirements for power or pressure washing.

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

If Project requires restricted application method (e.g., using only spray or rollers), revise first subparagraph below accordingly.

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

List below contains items that are often field painted. Revise list to suit Project.

a. Uninsulated metal piping.

b. Uninsulated plastic piping.

c. Pipe hangers and supports.

d. Metal conduit.

e. Plastic conduit.

f. All rain leader boxes and associated rainwater conveying items shown on drawings.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

Products listed in schedule in this Product MasterSpec section are products of the Sherwin-Williams Company, Cleveland, OH 44115; Phone: (800) 321-8194; Email: specifications@sherwin.com; Website: www.sherwin-williams.com.

A. [Concrete] [Clay Masonry] [Portland Cement Plaster (Stucco)] [Cementitious Siding], Nontraffic Surfaces:

1. Latex System:

a. Prime Coat: Primer sealer, latex.

1) S-W Loxon Concrete & Masonry Primer Sealer, A24W8300, at 8.0 mils (0.203 mm) wet, 3.2 mils (0.081 mm) dry.

b. Prime Coat: Latex, exterior, matching topcoat.

c. Intermediate Coat: Latex, exterior, matching topcoat.

Retain one of five "Topcoat" subparagraphs below based upon the gloss level(s) required for Project; copy and edit this paragraph and subparagraphs for each gloss level system and substrate required.

d. Topcoat: Latex, exterior, flat.

1) S-W A-100 Exterior Latex Flat, A6 Series, at 4.0 mils (0.102 mm) wet, 1.2 mils (0.030 mm) dry, per coat.

e. Topcoat: Latex, exterior, low sheen.

1) S-W A-100 Exterior Latex Low Sheen, A12 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

f. Topcoat: Latex, exterior, satin.

1) S-W A-100 Exterior Latex Satin, A82 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

g. Topcoat: Latex, exterior, semi-gloss.

1) S-W Solo Acrylic Semi-Gloss, A76 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

h. Topcoat: Latex, exterior, gloss.

1) S-W A-100 Exterior Latex Gloss, A8 Series, at 4.0 mils (0.102 mm) wet, 1.3 mils (0.033 mm) dry, per coat.

2. Latex over Latex Aggregate System:

a. Prime Coat: Block Filler, Latex, Interior/Exterior.

1) S-W Loxon Block Surfacer, A24W200, at 50 to 100 sq. ft. per gal. (1.23 to 2.45 sq. m per liter).

b. Topcoat: Latex, exterior flat, [fine] [medium] [coarse] texture.

1) S-W UltraCrete Textured Masonry Topcoat, A44-800 Series, 50 to 80 sq. ft. per gal. (1.23 to 1.96 sq. m per liter).

"Concrete Stain System:" S-W H&C Colortop Water-Based Solid Color Concrete Stain can be used on new concrete or previously painted concrete surfaces with proper preparation. It is resistant to acids, UV rays, oil, gas, and high alkali conditions, and provides a mildew resistant decorative finish.

3. Concrete Stain System (Water-based):

a. First Coat: Low-luster opaque finish matching topcoat.

b. Topcoat: Low-luster opaque finish:

1) S-W H&C Colortop Water-Based Solid Color Concrete Stain, at 50 to 250 sq. ft. per gal. (1.23 to 6.14 sq. m per liter).

B. Concrete Substrates, Pedestrian Traffic Surfaces:

1. Latex Floor Paint System:

a. First Coat: Floor paint, latex, slip-resistant, matching topcoat.

S-W ArmorSeal Tread-Plex is a one component, fast-drying, water clean-up product, with slip resistant and abrasion resistant properties for use over prepared new concrete floors, steps, stairwells, aisleways, and previously painted floor surfaces in sound condition. Common applications include laboratories, light assembly and production areas, hospitals, and industrial/commercial office areas. It meets ADA requirements for Slip Resistance for floors, and is suitable for use in USDA inspected facilities.

b. Topcoat: Floor paint, latex, slip-resistant, low gloss.

1) S-W ArmorSeal Tread-Plex, B90 Series, at 1.5 to 2.0 mils (0.038 to 0.051 mm) dry per coat.

"Concrete Stain System:" S-W H&C Colortop Water-Based Solid Color Concrete Stain can be used on new concrete or previously painted concrete surfaces with proper preparation. It is resistant to acids, UV rays, oil, gas, and high alkali conditions, and provides a mildew resistant decorative finish.

2. Concrete Stain System (Water-based) for Vertical Surfaces:

a. First Coat: Low-luster opaque finish matching top coat.

b. Topcoat: Low-luster opaque finish.

1) S-W H&C Colortop Water-Based Solid Color Concrete Stain, at 50 to 250 sq. ft. per gal. (1.23 to 6.14 sq. m per liter).

C. CMU Substrates:

1. Latex System:

a. Block Filler: Block filler, latex, interior/exterior:

1) S-W PrepRite Block Filler, B25W25, at 75 to 125 sq. ft. per gal. (1.84 to 3.07 sq. m per liter).

b. Intermediate Coat: Latex, exterior, matching topcoat.

Retain one of five "Topcoat" subparagraphs below below based upon the gloss level(s) required for Project; copy and edit this paragraph and subparagraphs for each gloss level system and substrate required.

c. Topcoat: Latex, exterior, flat.

1) S-W A-100 Exterior Latex Flat, A6 Series, at 4.0 mils (0.102 mm) wet, 1.2 mils (0.030 mm) dry, per coat.

d. Topcoat: Latex, exterior, low sheen.

1) S-W A-100 Exterior Latex Low Sheen, A12 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

e. Topcoat: Latex, exterior, satin.

1) S-W A-100 Exterior Latex Satin, A82 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

f. Topcoat: Latex, exterior, semi-gloss.

1) S-W Solo Acrylic Semi-Gloss, A76 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

g. Topcoat: Latex, exterior, gloss.

1) S-W A-100 Exterior Latex Gloss, A8 Series, at 4.0 mils (0.102 mm) wet, 1.3 mils (0.033 mm) dry, per coat.

2. CMU Stain System (Water-Based):

a. First Coat: Low-luster opaque finish matching topcoat.

b. Topcoat: Low-luster opaque finish.

1) S-W H&C Colortop Water-Based Solid Color Concrete Stain, at 50 to 250 sq. ft. per gal. (1.23 to 6.14 sq. m per liter).

D. Ferrous Metal, Galvanized-Metal, and Aluminum Substrates:

1. Water-Based Light Industrial Coating System:

a. Prime Coat: Primer, water based.

1) S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series, 5.0 to 10.0 mils (0.127 to 0.254 mm) wet, 2.0 to 4.0 mils (0.051 to 0.102 mm) dry.

b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

c. Topcoat: Light industrial coating, exterior, water based, semi-gloss.

1) S-W Pro Industrial Acrylic Semi-Gloss Coating, B66-650 Series, at 2.5 to 4.0 mils (0.064 to 0.102 mm) dry, per coat..

E. Wood Substrates: Including exposed wood items not indicated to receive shop-applied finish.

1. Latex System:

a. Prime Coat: Primer, latex for exterior wood.

1) S-W Exterior Latex Primer, B42, at 4.0 mils (0.102 mm) wet, 1.4 mils (0.036 mm) dry, per coat.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, semi-gloss:

1) S-W Solo Acrylic Semi-Gloss, A76 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

F. Wood Substrates, Pedestrian Traffic Surfaces:

G. Plastic Trim Fabrication Substrates: Including architectural PVC, plastic, and fiberglass items.

1. Latex System:

a. Prime Coat: Primer, bonding, water-based:

1) S-W PrepRite ProBlock Latex Primer/Sealer, B57-620 Series, at 4.0 mils (0.102 mm) wet, 1.4 mils (0.036 mm) dry.

b. Intermediate Coat: Latex, exterior, matching topcoat.

a. Topcoat: Latex, exterior, semi-gloss:

1) S-W Solo Acrylic Semi-Gloss, A76 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

B. Exterior Gypsum Board or Cement Plaster Substrates:

1. Latex System: (Select one of each below) Prime,Inter. Coat & Topcoat)

a. Prime Coat: Primer bonding, water-based.

1) S-W PrepRite ProBlock Latex Primer/Sealer, B57-620 Series, at 4.0 mils (0.102 mm) wet, 1.4 mils (0.036 mm) dry.

b. Intermediate Coat: Latex, exterior, matching topcoat.

1) S-W A-100 Exterior Latex Low Sheen, A12 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

c. Topcoat: Latex, exterior, satin:

1) S-W A-100 Exterior Latex Satin, A82 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

d. Topcoat: Latex, exterior, semi-gloss.

1) S-W Solo Acrylic Semi-Gloss, A76 Series, at 4.0 mils (0.102 mm) wet, 1.5 mils (0.038 mm) dry, per coat.

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