

Santa Ana Court of Appeals Re-Roofing

Project Manual/Specifications

100% CD

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Architectural
Resources Group

TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01 11 00	SUMMARY OF WORK
01 20 00	PAYMENT PROCEDURES
01 25 00	SUBSTITUTION PROCEDURES
01 31 19	PROJECT MEETINGS
01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
01 33 00	SUBMITTAL PROCEDURES
01 40 00	QUALITY REQUIREMENTS
01 73 29	CUTTING AND PATCHING
01 77 00	CLOSEOUT PROCEDURES

DIVISION 02 - EXISTING CONDITIONS

NOT USED

DIVISION 03 - CONCRETE

NOT USED

DIVISION 05 - METALS

NOT USED

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

NOT USED

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 01 50	PREPARATION FOR RE-ROOFING
07 54 19	POLYVINYL-CHLORIDE (PVC) ROOFING
07 71 00	ROOF SPECIALTIES

DIVISION 08 - OPENINGS

NOT USED

DIVISION 09 - FINISHES

NOT USED

DIVISION 22 – PLUMBING

SEE GENERAL NOTES ON SHEET P.01

DIVISION 23 – HEATING, VENTILATION AND AIR CONDITIONING

SEE GENERAL NOTES ON SHEET P.01

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project consists of reroofing of the Santa Ana Court of Appeals building.
 - 1. Project Location: Santa Ana Court of Appeals, 601 W Santa Ana Blvd, Santa Ana, CA
 - 2. Client: Judicial Council of California
- B. Architect Identification: The Contract Documents were prepared for Project by Architectural Resources Group.

1.3 CONTRACT

- A. Project will be constructed under a general construction contract.

1.4 USE OF PREMISES

- A. Owner will continue operations in the Courthouse during Construction. Contractor shall have full access to the site during the construction period. Contractor's use of premises is limited only by Owner's right to perform work or retain other contractors on portions of Project. Coordination for site work will be require notice to Owner for coordination with on-site employees.

1.5 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the CSI/CSC's "MasterFormat" numbering system.
 - 1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for

clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

- a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 11 00

SECTION 01 20 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 - h. Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.
6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - 1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
 - a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. Schedule of Values.
 - 3. Contractor's Construction Schedule (preliminary if not final).
 - 4. Products list.
 - 5. Schedule of unit prices.
 - 6. Submittals Schedule (preliminary if not final).
 - 7. List of Contractor's staff assignments.
 - 8. List of Contractor's principal consultants.
 - 9. Copies of building permits.
 - 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 11. Initial progress report.
 - 12. Report of preconstruction conference.
 - 13. Certificates of insurance and insurance policies.

14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
 16. Initial settlement survey and damage report if required.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 20 00

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittal Procedures" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.

1.3 DEFINITIONS

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to the Contract Documents requested by the Owner or Architect.
 - 3. Specified options of products and construction methods included in the Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

- A. Substitution Request Submittal: The Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
 - 1. Submit requests in the form and according to procedures required for change-order proposals.
 - 2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
 - 3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.

- b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.
- a. Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.
- 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 - 3. The request is timely, fully documented, and properly submitted.
 - 4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 - 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
 - 6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 - 7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 - 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 EXECUTION (Not Used)

END OF SECTION 01 25 00

**SECTION 01 31 19
PROJECT MEETINGS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
 - 1. Preconstruction conferences.
 - 2. Progress meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittal Procedures" for submitting the Contractor's Construction Schedule.

1.3 PRECONSTRUCTION CONFERENCE

- A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and the Architect, but no later than 15 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress, including the following:
 - 1. Tentative construction schedule.
 - 2. Critical work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change Orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, Product Data, and Samples.
 - 8. Preparation of record documents.
 - 9. Use of the premises.
 - 10. Parking availability.
 - 11. Office, work, and storage areas.
 - 12. Equipment deliveries and priorities.
 - 13. Safety procedures.
 - 14. First aid.
 - 15. Security.
 - 16. Housekeeping.
 - 17. Working hours.

1.4 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project Site at weekly intervals. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.
 - 1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.
 - 2. Review the present and future needs of each entity present, including the following:
 - a. Interface requirements.
 - b. Time.
 - c. Sequences.
 - d. Status of submittals.
 - e. Deliveries.
 - f. Off-site fabrication problems.
 - g. Access.
 - h. Site utilization.
 - i. Temporary facilities and services.
 - j. Hours of work.
 - k. Hazards and risks.
 - l. Housekeeping.
 - m. Quality and work standards.
 - n. Change Orders.
 - o. Documentation of information for payment requests.
- D. Reporting: No later than 3 days after each meeting, distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - 1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION 01 31 19

**SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
3. Submittals Schedule.
4. Field condition reports.
5. Special reports.

- B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
2. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
3. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor activity is an activity that must be completed before a given activity can be started.

- B. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

- C. Event: The starting or ending point of an activity.

- D. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

- E. Major Area: A significant construction element.
- F. Milestone: A key or critical point in time for reference or measurement.

1.4 SUBMITTALS

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Construction Schedule: Submit two printed copies large enough to show entire schedule for entire construction period.
- C. Contractor's Construction Schedule: Submit two printed copies of initial schedule, large enough to show entire schedule for entire construction period.
- D. Field Condition Reports: Submit two copies at time of discovery of differing conditions.
- E. Special Reports: Submit two copies at time of unusual event.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to

maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Final Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Mock-ups: Include preparation and review time for required submittals.
 4. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 5. Startup and Testing Time: Include days for startup and testing.
 6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 3. Work Restrictions: Show the effect of the following items on the schedule:
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, interim milestones as appropriate, Substantial Completion, and Final Completion.
- F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.

- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.5 REPORTS

- A. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At semi-monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.

- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment.
 - 2. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 3. Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals and for erecting mockups.
 - 4. Division 1 Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow 21 days for initial review of each submittal.
 3. Allow 15 days for processing each resubmittal.
 4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- E. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor or supplier.
 - f. Unique identifier, including revision number.
 - g. Number and title of appropriate Specification Section.
 - h. Drawing number and detail references, as appropriate.
 - i. Other necessary identification.
- F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
 2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
 2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 3. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).

- d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Submittal and transmittal distribution record.
 - i. Remarks.
 - j. Signature of transmitter.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
 - J. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Submit each submittal, as follows, unless otherwise indicated:
 - a. Initial Submittal: Submit a preliminary submittal where selection of options, color, pattern, texture, or similar characteristics is required. Architect will return submittal with options selected.
 - b. Final Submittal: Submit to Architect and retain copies where required for operation and maintenance manuals. Retain returned copy as a Project Record Document.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operating and maintenance manuals.
 - k. Compliance with recognized trade association standards.
 - l. Compliance with recognized testing agency standards.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.

- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
- D. Samples: Prepare physical units of materials or products, including the following:
1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
 2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:
 - a. Generic description of Sample.
 - b. Product name or name of manufacturer.
 - c. Sample source.
 5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
 - a. Size limitations.
 - b. Compliance with recognized standards.
 - c. Availability.
 - d. Delivery time.

6. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
 - a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations.
 - b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 7. Number of Samples for Initial Selection: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 8. Number of Samples for Verification: Submit two sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
 - a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 9. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- E. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.
 3. Location within room or space.
- F. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."
- G. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- H. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."
- I. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."
- J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 2. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."
- B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- J. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.
- K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

- L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.
- M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."
- P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.

6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- T. Construction Photographs: Comply with requirements in Division 1 Section "Construction Progress Documentation."

PART 3 EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 1. No Exception Taken
 2. Make Corrections Noted
 3. Rejected
 4. Revise and Resubmit
 5. Submit Specified Item
- C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00

**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2. Divisions 2 through 26 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.
- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Ambient conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and re-inspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- D. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- E. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 - 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.6 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
 - 2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
 - 3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

1. Testing agency will notify Architect, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect, with copy to Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and re-inspect corrected work.
- D. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- E. **Testing Agency Responsibilities:** Cooperate with Architect, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- F. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
 - 2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

**SECTION 01 73 29
CUTTING AND PATCHING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for cutting and patching.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 2 Section "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 2. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 22, 23, and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Owner requires approval of these procedures before proceeding. Request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
 - 2. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 - 4. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and cutting.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
4. Patch, or repair, existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed.

END OF SECTION 01 73 29

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

- B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
3. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.

- c. Name of Architect.
- d. Name of Contractor.
- e. Page number.

1.6 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.
- B. Record Drawings: Maintain and submit either a digital set or scan of set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
 - 2. Mark record sets with erasable, red-colored pencil or mark digital set in red. Use other colors to distinguish between changes for different categories of the Work at the same location.
 - 3. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 - 5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Note related Change Orders, Record Drawings, and Product Data, where applicable.
- D. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Record Specifications, where applicable.

E. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Operation Data:

- a. Emergency instructions and procedures.
- b. System, subsystem, and equipment descriptions, including operating standards.
- c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
- d. Description of controls and sequence of operations.
- e. Piping diagrams.

2. Maintenance Data:

- a. Manufacturer's information, including list of spare parts.
- b. Name, address, and telephone number of Installer or supplier.
- c. Maintenance procedures.
- d. Maintenance and service schedules for preventive and routine maintenance.
- e. Maintenance record forms.
- f. Sources of spare parts and maintenance materials.
- g. Copies of maintenance service agreements.
- h. Copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Provide instructors experienced in operation and maintenance procedures.
 - 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
 - 3. Schedule training with Owner with at least seven days' advance notice.
 - 4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

3.2 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

- c. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.
 - e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - f. Sweep concrete floors broom clean in unoccupied spaces.
 - g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - h. Remove labels that are not permanent.
 - i. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - i. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - j. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - k. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - l. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - m. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - o. Leave Project clean and ready for occupancy.
- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

**SECTION 07 01 50
PREPARATION FOR RE-ROOFING**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof tear-off.
2. Temporary roofing membrane.
3. Temporary roof drainage.

1.2 MATERIALS OWNERSHIP

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

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Roofing system including roofing membrane, roof insulation, surfacing, and components and accessories between deck and roofing membrane.
- C. Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.
- F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Temporary Roofing: Include Product Data and description of temporary roofing system. If temporary roof will remain in place, submit surface preparation requirements needed to

receive permanent roof, and submit a letter from roofing membrane manufacturer stating acceptance of the temporary membrane and that its inclusion will not adversely affect the roofing system's resistance to fire and wind.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer
- B. Digital Images or Videos: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- D. Schedule of Re-Roofing Preparation Activities: Indicate the following:
 - 1. Detailed sequence of re-roofing preparation work, with starting and ending dates for each activity. Ensure occupants' on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Reroofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner; roofing system manufacturer's representative; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
 - a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
 - b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
 - c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
 - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - e. Existing deck removal procedures and Owner notifications.
 - f. Condition and acceptance of existing roof deck and base flashing substrate for reuse.

- g. Structural loading limitations of deck during reroofing.
- h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
- i. HVAC shutdown and sealing of air intakes.
- j. Existing conditions that may require notification of Owner before proceeding.

1.7 PROJECT CONDITIONS

- A. Owner will occupy building interior spaces immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 48 hours' notice of activities that may affect Owner's operations.
 - 1. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
 - 2.
 - 3. Activities that may affect Owner's operations include but are not limited to activities that generate:
 - a. Audible noise in occupied building interiors.
 - b. Emissions and/or odors.
 - c. Impacts and/or vibration perceptible in occupied building interiors.
 - d. Interruption of any building MEP service.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Limit construction loads on roof to rooftop equipment wheel loads and uniformly distributed loads not exceeding recommendations of Contractor's professional engineer based upon site inspection and analysis.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- F. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

PART 2 - PRODUCTS

2.1 TEMPORARY ROOFING MATERIALS

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

2.2 TEMPORARY ROOF DRAINAGE

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

PART 3 - EXECUTION

3.1 PREPARATION, GENERAL

- A. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
 - 1. Remove and transport debris in a manner to prevent spillage on adjacent surfaces and areas.
 - 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade level.
- B. Air Intake Shutdown: Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- C. Temporary Weather Protection: During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- D. Roof Drain Protection: Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
 - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.2 ROOF TEAR-OFF

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.
- B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components, flashings, and insulation down to the deck.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. Verify that deck is sound and dry.
- C. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.
- D. Unsuitable Deck: If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.

3.4 DECK REPAIR/REPLACEMENT

- A. Repair existing deck to provide smooth working surface for installation of roof system.
 - 1. Replace deck that cannot be repaired to sound condition.

3.5 TEMPORARY ROOFING MEMBRANE

- A. Install approved temporary roofing membrane over area to be reroofed.
- B. Remove temporary roofing membrane before installing new roofing membrane.

3.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

3.7 CLEANING

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

END OF SECTION 07 01 50

SECTION 07 54 19
POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered and mechanically fastened polyvinyl-chloride (PVC) feltback membrane roofing system.
2. Substrate board.
3. Vapor retarder.
4. Roof insulation.
5. Cover board.
6. Metal flashing (PVC membrane terminations).
7. Walkways.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation meeting requirements are specified in Section 01 31 19.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For insulation, cover board, and roof system component fasteners, include copy of FM Approvals' RoofNav listing.

B. Shop Drawings: Prior to fabrication/installation, submit plans, sections, details, and diagrammatic drawings as needed to describe all salient aspects of the following:

1. Layout and thickness of insulation and cover board.
2. Base flashings, cants, and membrane terminations.
3. Flashing details at penetrations.
4. Crickets, saddles, and tapered edge strips, including slopes.
5. Tapered insulation thickness and slopes.
6. Roof plan showing orientation of structural roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
7. Insulation/cover board fastening patterns for corner, perimeter, and field-of-roof locations (as applicable for mechanical and adhered attachment).
8. Tie-in with air barrier (as applicable).
9. Attachments to other work (as applicable).

10. Any item not detailed in the Contractor's scope of work.
 11. Any proposed change to the items listed above.
- C. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates

1. Submit a letter from the primary roofing materials manufacturer stating that the Roofing Contractor is a certified applicator of the roofing material submitted.
 2. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - A. Submit evidence of compliance with performance requirements.
 3. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
 4. Submit manufacturer's product specifications, installation instructions and general recommendations for each principal roofing system product required.
 5. Submit material manufacturer product data and MSDS sheets for each product to be used.
 6. Submit copy of letter from primary roofing manufacturer stating acceptance of any proposed products not manufactured or supplied by them, for use in their guaranteed roof assembly, including insulation products, etc.
 7. Written approval by the insulation manufacturer (as applicable) for use and performance of the product in the proposed system.
 8. Submit letter from primary roofing manufacturer stating acceptance of the specification and project conditions if manufacturer representative is not able to attend pre-roofing conference.
 9. Submit FM Global 1-90 system including FM Global 1-28 fastening patterns and documentation of ASTM-E108 Class A exterior fire rating and Class 1 internal rating for project design wind rating for roof system(s). Include applicable supplemental material such as membrane layout, special requirements, and instructions.
- B. Product Test Reports: For roof membrane, insulation and cover board, tests performed by independent qualified testing agency indicating compliance with specified requirements.
- C. Research Reports.
- D. Field Test Reports:
1. Concrete internal relative humidity test reports.
 2. Faster-pullout test results and manufacturer's revised requirements for fastener

patterns (as applicable for Mechanically-Attached Membrane roof systems only).

E. Field quality-control reports.

F. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Roof Maintenance and Cleaning Requirements.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference and Inspection: After approval of submittals, but prior to beginning roof system installation, the Roof Consultant and Owner's Representative(s) shall hold a meeting at the site attended by the Applicator, All Subcontractors, and the Roofing Material Manufacturer to describe in detail the roof system to be installed and to establish agreement, coordination, and responsibilities among the involved trades.

B. Installer Qualifications: Qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive the specified manufacturer's guarantee.

1. Manufacturer Qualifications: Qualified manufacturer that has UL listing for roofing system identical to that used for this Project.

2. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

3. Test Reports:

A. Roof drain and leader test or submit plumber's verification.

B. Core cut (if requested).

C. Roof deck fastener pullout test (if applicable).

4. Source Limitations: Obtain all components from the single source roofing manufacturer guaranteeing the roofing system. All products used in the system must be labeled by the single source roofing manufacturer issuing the guarantee.

5. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

A. Exterior Fire-Test Exposure: Class A ASTM E 108, for application and roof slopes indicated.

B. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

C. Unreinforced or polyester reinforced membranes will not be accepted.

D. Third-party repackaged, relabeled (private label) materials will not be accepted.

E. The Roofing Manufacturer shall have a Sustainable Product Certification conforming to the requirements of NSF/ANSI 347 – Sustainability Assessment for Single Ply Roofing Membranes.

1. Minimum certification level established for this project is: Platinum.
- F. The Roofing Manufacturer's Technical Representative shall notify the Roof Consultant's Quality Assurance Observer at least 24 hours in advance of any in-progress site inspections and/or the Final Inspection for issuance of Warranty.
- G. Regulatory Requirements:
1. FM Global: Comply with FM 1-90 Approval, including increased securement at corners and perimeters to comply with FM Global Loss Prevention Data Sheet 1-28 Wind Design.
 2. ASTM E108 – Class A external Fire Rated Assembly.
 3. Class 1 internal fire rating.
 4. 90 mph sustained wind rating.
 5. Title 24 compliance.
 6. Cool Roof compliance in accordance with CalGreen requirements.
- H. Submit State data confirming Contractor has been licensed under same name for no less than 10 years.

1.7 WARRANTY

A. Roof System Manufacturer's 30 Year System Warranty:

Upon successful completion of all the work to the Roof System Manufacturer's and the Owner's Representative's satisfaction, the 30 Year System warranty shall be issued directly to the Owner. The System warranty shall provide Non-Penal Sum (replacement cost) coverage for the roof membrane, cover board, insulation, all associated accessories that comprise the roof system, and all contractor labor. The warranty shall be non-prorated, shall not exclude ponding/standing water at any time, shall not exclude "foot traffic" and shall not obligate the Owner to perform annual inspections in accordance with a pre-described Maintenance program as a condition for continued warranty coverage.

B. Roofing Applicator Five (5) Year Warranty

The Applicator shall supply the Owner with a separate five year workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost. The owner has the right, in the case of emergency at any time during this period and without invalidating this guarantee, to make any temporary repairs that are required in order to protect the building and the contents of the building from damage due to the roof leaking. New work will not compromise or jeopardize existing roof contractor's guarantee.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Accelerated Weathering: Roof membrane shall withstand 10,000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

- C. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D 3746, ASTM D 4272/D 4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- D. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- E. The Applicator shall submit evidence that the proposed roof system meets local building code requirements and has been tested and approved or listed by the following test organizations. Design wind speed shall be per Los Angeles special wind region or per ASCE 7-10, whichever is greater.
 - 1. ASCE/SEI 7 and SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems".
 - A. Field-of-Roof Uplift Pressure: As determined by roof system manufacturer.
 - B. Perimeter Uplift Pressure: As determined by roof system manufacturer.
 - C. Corner Uplift Pressure: As determined by roof system manufacturer.
 - D. Safety Factor: 1.5
 - 2. Underwriters Laboratories, Inc.: Class A assembly.
- F. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system and shall be listed in FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
 - 1. Fire/Windstorm Classification: Class 1A-90, including increased securement at corners and perimeters to comply with FM Global Loss Prevention Data Sheet 1-28 Wind Design.
 - 2. Hail-Resistance Rating: Class 1, MH
- G. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low slope roof products.
- H. Energy Performance: Provide roof system with an initial Solar Reflectance Index (SRI) of not less than 104 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency. Roof membrane (not post installation applied finish) shall comply with current California Title 24 Part 6 minimum 3-year aged solar reflectance of 0.63 and a minimum thermal emittance of 0.75 requirements. Roofing system shall have an initial solar reflectance of not less than 0.83 and an emissivity of not less than 0.90 when tested according to CRRC-1.
- I. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- J. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 POLYVINYL CHLORIDE (PVC) ROOFING

- A. PVC Sheet: ASTM D 4434/D 4434M, Type II, Grade 1 glass mat reinforced, felt backed.
 - 1. Manufacturers:
 - A. Sika Sarnafil
 - B. Johns Mansville
 - C. Tremco
 - D. Other manufacturer if pre-approved by Owner
 - 2. Guaranteed Minimum Polymer Thickness: 80 mils (2.0 mm).
 - A. Nominal membrane thickness will not be accepted.
 - B. ASTM minus 10 percent allowance for membrane thickness will not be accepted.
 - 3. Polymer Thickness (Above Reinforcement Layer): Minimum 40 mils.
 - 4. Felt Backing: Minimum 11 ounce per square yard (11-Oz./Yd²) stitchbond polyester fleece. Felt backing must be applied inline during manufacturing process such that it is an integral part of the membrane.
 - A. Felt backing applied (glued) offline will not be accepted.
 - B. Weight per square yard for felt backing stated above is a non-negotiable minimum design standard. Lightweight polyester felt backing will not be accepted.
 - 5. Exposed Face Color: EnergySmart White (Minimum SRI: 104).

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 - 1. Adhesives and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Membrane Adhesive: Manufacturer's standard VOC compliant, water-based feltback membrane adhesive.
- E. Low-Rise, Urethane, Feltback Membrane Adhesive: Roof system manufacturer's standard bead or spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with feltback membrane roofing.
- F. Slip Sheet: Manufacturer's standard of thickness required for application.
- G. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

- H. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to structural deck or approved vertical surface in accordance with roofing system manufacturer's requirements.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.
- J. Perimeter Warning Tape: Provide a minimum of 4" wide adhesive backed vinyl warning tape to indicate roof perimeter and potential hazards.

2.4 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, DensDeck Prime or approved equal, glass-mat, water-resistant gypsum board manufactured to meet the following requirements:
 1. Smoke Developed (ASTM E-84): 0 (Zero).
 2. Flame Spread (ASTM E-84): 0 (Zero).
 3. Mold Resistance (ASTM D3273): 10 (highest level of performance for mold resistance).
 4. Compressive Strength (ASTM C 473): 900 psi, nominal.
 5. Weight (nominal): 2.0 Lbs./Ft² (1/2") / 2.5 Lbs./Ft² (5/8").
 6. Board Size: 1/2" X 4' X 8' / 5/8" X 4' X 8'
- B. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.5 ROOF INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289-11A, Type II, Class 1, Grade 2 (20 PSI), Rigid, cellular thermal insulation with felt or glass-fiber mat facer on both major surfaces. Manufactured to meet the following requirements:
 1. Zero Ozone Depletion Potential (ODP) from blowing agent (HCFC-free).
 2. Long-Term Thermal Resistance (LTTR) R-Value based on ASTM 1303-11 and/or CAN/ULCS770-09: Regardless of published values.
 3. Facer Type: Black Mat Felt
 4. Board Size: 2.0" X 4' X 8' or as necessary to match existing conditions
 5. Thermal Resistance: R-value minimum 5.6 per inch.
 6. Thickness as shown on Drawings.

- B. Tapered Polyisocyanurate Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match polyisocyanurate insulation requirements as indicated in Item A above.
 - 2. Minimum Thickness (Tapered): 1/4 inch (6.35 mm).
 - 3. Slope:
 - A. Roof Field: 1/4 inch per foot (1:48) unless otherwise indicated on Drawings.
 - B. Saddles and Crickets: 1/2 inch per foot (1:24) unless otherwise indicated on Drawings.

2.6 INSULATION ACCESSORIES

- A. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover board to structural roof deck and/or subsequent layers as approved by roofing system manufacturer.
- B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 - 1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
 - 2. Full-spread, spray-applied, low-rise, two-component urethane adhesive.
- C. Gypsum Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum board or ASTM C 1278/C 1278M fiber-reinforced gypsum board.
 - 1. Georgia-Pacific DensDeck Prime, USG Securock
 - 2. Thickness: 1/2 inch (13 mm)
- D. Protection Mat (Minimum 9-Oz/Yd²): Nonwoven polypropylene geotextile felt, water permeable and resistant to short-term UV exposure. Type as recommended by roofing system manufacturer for application.

2.7 WALKWAYS

- A. Flexible PVC Walkway Membrane: Minimum 96 mil, factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway membrane, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.
 - 1. Size: Nominal 36" x 50' roll.
 - 2. Color: Light Gray.

2.8 VAPOR RETARDER

- A. Self-adhered SBS modified bitumen vapor retarder/air barrier.
 - 1. Thickness minimum: 31 mil or as required by manufacturer for roof system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that concrete substrate is free of all loose dirt, debris, etc. and that it is visibly dry and free of surface moisture.
 - 2. Verify that all substances that could impair adhesion of roofing components to roof deck have been removed.

3.2 PREPARATION

- A. Perform fastener-pullout tests according to roof system manufacturer's written instructions (required for Mechanically-Attached Membrane System over metal or wood decks only).
 - 1. Submit test result within 24 hours of performing tests.
 - A. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

3.3 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- C. Install roof membrane and auxiliary materials to tie into existing roofing to maintain weathertightness of transition.

3.4 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches (610 mm) in adjacent rows.
 - 1. At steel roof decks, install substrate board at right angle to flutes of deck.
 - A. Locate end joints over crests of steel roof deck.
 - 2. Tightly butt substrate boards together.
 - 3. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 4. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.

5. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturers' written instructions.

3.5 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Metal Decking:
 1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.
 - A. Locate end joints over crests of decking.
 - B. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
 - C. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - D. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - E. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
 - 1) Trim insulation so that water flow is unrestricted.
 - F. Fill gaps exceeding 1/4 inch with insulation.
 - G. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - H. Loosely lay base layer of insulation units over substrate.
 - I. Mechanically attach base layer of insulation and substrate board using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
 - 1) Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm Resistance Classification.
 - 2) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
 - A. Staggered end joints within each layer not less than 24 (610 mm) inches in

adjacent rows.

- B. Install with long joints continuous and with end joints staggered not less than 12 inches (305 mm) in adjacent rows.
- C. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
- D. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
- E. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 (610 mm) inches.
- F. Trim insulation so that water flow is unrestricted.
- G. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
- H. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- I. Loosely lay each layer of insulation units over substrate.
- J. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

- 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

D. Installation Over Concrete Decks:

- 1. Install insulation with joints staggered not less than 24 inches (610 mm) in adjacent rows.
 - A. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - B. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
 - 1) Trim insulation so that water flow is unrestricted.
 - C. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - D. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - E. Adhere insulation to concrete roof deck and/or vapor retarder according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

- 1) Properly prepare concrete deck as required so as to produce a clean, smooth and dry surface as required.
 - 2) Apply urethane, low-rise foam adhesive at required coverage rate. Set insulation into adhesive and walk-in, ballast as needed to assure proper contact between insulation and concrete deck.
2. Install tapered insulation with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.
- A. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
 - B. Install with long joints continuous and with end joints staggered not less than 12 inches (305 mm) in adjacent rows.
 - C. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - D. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
 - E. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).
 - 1) Trim insulation so that water flow is unrestricted.
 - F. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - G. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 - H. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows: Follow same steps as indicated in Item E1, 2 above.

3.6 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction.
 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 2. At internal roof drains, conform to slope of drain sump.
 - A. Trim cover board so that water flow is unrestricted.
 3. Cut and fit cover board tight to nailers, projections, and penetrations.
 4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for

specified Windstorm Resistance Classification, as follows:

- A. Properly prepare concrete deck as required so as to produce a clean, smooth and dry surface as required.
- B. Apply urethane, low-rise foam adhesive at required coverage rate. Set insulation into adhesive and walk-in, ballast as needed to assure proper contact between insulation and concrete deck.

3.7 ADHERED ROOFING INSTALLATION

- A. Adhere 80 mil feltback roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Start installation of roofing in presence of Roof Consultant's QA Inspector.
- C. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Water-Based Membrane Adhesive: Apply to substrate only at rate required by manufacturer, set feltback membrane into wet adhesive using medium nap roller, work membrane into adhesive using both broom-technique and minimum 20 pound weighted steel roller. Do not apply to lap area of roof membrane.
- E. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing as required by Roofing Manufacturer.
- F. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roof membrane and sheet flashings to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity.
 - 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 - 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.8 MECHANICALLY FASTENED ROOFING INSTALLATION

- A. Mechanically fasten roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. For in-splice attachment, install roof membrane with long dimension perpendicular to steel roof deck flutes.
- D. Start installation of roofing in presence of roofing system manufacturer's technical personnel and Owner's testing and inspection agency.

- E. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- F. Mechanically fasten or adhere roof membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- H. In-Seam Attachment: Secure one edge of PVC sheet using fastening plates or metal battens centered within seam, and mechanically fasten PVC sheet to roof deck.
- I. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings to ensure a watertight seam installation.
 - 1) Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
 - 2) Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 - 3) Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.9 BASE FLASHING INSTALLATION

- A. Install PVC flashing membrane and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of flashing membrane at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with PVC membrane flashing as required.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.10 WALKWAY INSTALLATION

- A. Flexible PVC Walkway Membrane: Install walkway products according to manufacturer's written instructions.
 - 1. Install flexible walkways at the following locations:
 - A. Perimeter of each rooftop unit.
 - B. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - C. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.

- D. Top and bottom of each roof access ladder.
 - E. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - F. Locations indicated on Drawings.
 - G. As required by roof membrane manufacturer's warranty requirements.
2. Provide 6-inch (76-mm) clearance between adjoining sections of walkway membrane.
 3. Heat weld walkway products to substrate according to roofing system manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

- A. The contractor shall be responsible for ensuring positive drainage to drains and scuppers at all roof areas, fully coordinated with all curbs, roof openings, crickets, and any other potential barriers to drainage flow.
- B. Water Test:
 1. A 48-hr. water test of all completed roof systems, including low-slope and metal roofing, as well as adjacent building components, shall be coordinated with the Architect and Owner and conducted by the Contractor in the presence of Owner's representative. The water test shall include the following procedures:
 - A. At the direction of the Architect, apply simulated rain over all roof areas for at least 15 minutes per area, or as otherwise directed.
 - B. In addition to the simulated rain, direct water to all walls, windows, units, penetrations, etc. that occur adjacent to, or within each roof area, using a continuous, unforced hose stream.
 - C. Plug all roof drains in each drainage area and allow each to be filled to a depth of 3-4 inches measured at the drain areas. Allow to stand for a minimum of 48 hours.
 - D. Upon completion of water test, unplug primary drains only and ensure that water flows freely without restriction. Verify that no water comes through overflow drain outlets (to ensure that pipes are not cross-connected). Then unplug overflow drains and run hose stream directly into overflow drains to ensure that water flows freely without restriction through overflow lines.
 - E. Perform any necessary corrections to defects noted during or after the water test procedures. Perform additional testing as necessary to further define sources of any noted leakage.
 - F. Contractor shall provide and/or arrange for all necessary equipment, supplies, water, etc. as needed to perform these tests. This may include a water truck with fire hose, if necessary.
 - G. Water test shall be performed after completion of asphalt paving and must be completed and verified prior to filing for substantial completion.

2. A final audit punch list shall be made by the Architect and Roofing Manufacturer upon notice by the Contractor that roofing is complete. The roofing and related work must be 100% complete or additional inspections will be back charged.

3.12 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to the Roof Consultant and County Representative.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 19

**SECTION 07 71 00
ROOF SPECIALTIES**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copings.
2. Roof-edge specialties.
3. Roof-edge drainage systems.
4. Reglets and counterflashings.

B. Preinstallation Conference: Conduct conference at location specified in Section 01 31 19.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof specialties.

1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.

C. Samples: For each type of roof specialty and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For tests performed by a qualified testing agency.

B. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are FM Approvals listed for specified class.

1.6 WARRANTY

A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section 07 54 19 PVC Roofing.

- B. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. FM Approvals' Listing: Manufacture and install copings and other roof-edge specialties that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with FM Approvals' markings.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
 - 1. Metallic-Coated Steel Sheet Coping Caps: Zinc-coated (galvanized) steel, nominal 0.028-inch (0.71-mm) thickness.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Three-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
 - 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 3. Coping-Cap Attachment Method: face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
 - b. Face-Leg Cleats: Concealed, continuous galvanized-steel sheet.

2.3 ROOF-EDGE SPECIALTIES

- A. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet (3.6 m) and a continuous metal receiver with integral drip-edge cleat to engage fascia cover and secure single-ply roof membrane. Provide matching corner units.
1. Metallic-Coated Steel Sheet Fascia Covers: Zinc-coated (galvanized) steel, nominal 0.028-inch (0.71-mm) thickness.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Three-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 3. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
 4. Receiver: Galvanized-steel sheet, nominal 0.040-inch (1.02-mm) thickness.
 5. Fascia Accessories: Wall cap

2.4 ROOF-EDGE DRAINAGE SYSTEMS

- A. Parapet Scuppers: Manufactured with closure flange trim to exterior, 4-inch- (100-mm-) wide wall flanges to interior, and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof.
1. Stainless Steel: 0.019 inch (0.48 mm) thick.
- B. Shaft Enclosure Gutters and Leaders: Match existing.

2.5 REGLETS AND COUNTERFLASHINGS

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
1. Zinc-Coated Steel: Nominal 0.028-inch (0.71-mm) thickness.
 2. Corners: Factory mitered and mechanically clinched and sealed watertight.
 3. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 4. Stucco Type, Embedded: Provide reglets with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
 5. Concrete Type, Embedded: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
- B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding 12 feet (3.6 m) designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:
1. Zinc-Coated Steel: Nominal 0.028-inch (0.71-mm) thickness.
 2. Stainless Steel: 0.025 inch (0.64 mm) thick.

C. Accessories:

1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

D. Zinc-Coated Steel Finish: Three-coat fluoropolymer.

1. Color: As selected by Architect from manufacturer's full range.

2.6 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

1. Finish - Three-Coat Fluoropolymer: AAMA 621. Shop-applied fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

2.7 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970/D 1970M; stable after testing at 240 deg F (116 deg C).
2. Low-Temperature Flexibility: ASTM D 1970/D 1970M; passes after testing at minus 20 deg F (29 deg C).

2.8 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.

B. Sealant: ASTM C 920, elastomeric polymer sealant of type, grade, class, and use classifications as specified by roofing-specialty manufacturer for each application.

C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.
1. Apply continuously under copings, roof-edge specialties, and reglets and counterflashings.
 2. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials.

3.2 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise indicated on Drawings.
 2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
- D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.3 COPING INSTALLATION

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
 - 1. Interlock face-leg drip edge into continuous cleat anchored to substrate at 16-inch (406-mm) centers. Anchor back leg of coping with screw fasteners and elastomeric washers at 16-inch (406-mm) centers.

3.4 ROOF-EDGE SPECIALITIES INSTALLATION

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.5 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

- A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
- B. Parapet Scuppers: Install scuppers through parapet where indicated. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

3.6 REGLET AND COUNTERFLASHING INSTALLATION

- A. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings.
- B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.7 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 07 71 00



SANTA ANA COURT OF APPEALS

FOURTH APPELLATE DISTRICT, DIVISION THREE

ROOF REPLACEMENT

601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

PROJECT TEAM

CLIENT
JUDICIAL COUNCIL OF CALIFORNIA
455 GOLDEN GATE AVE
SAN FRANCISCO, CA 94102-3688

CONTACT: ALISHA DUTTA
ALISHA.DUTTA@JUD.CA.GOV
(916) 755-1952

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ARCHITECTURAL RESOURCES GROUP, INC.
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CONTACT: ALICE VALANIA, AIA, LEED AP, ASSOC. DBIA
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BUILDING SOLUTIONS GROUP
1139 WESTMINSTER AVE, UNIT A
ALHAMBRA, CA 91803

CONTACT: ROGER M. NITE, PRINCIPAL
RNITE@BUILDINGSOLUTIONSGROUP.COM
(626) 281-6220 EXT. 23

SHEET INDEX

TITLE	
T0.00	COVER SHEET / PROJECT INFO
T0.01	GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS
T1.00	CALGREEN 1
T1.01	CALGREEN 2
T1.02	CALGREEN 3
ARCHITECTURAL	
AD1.00	ROOF DEMOLITION PLAN
A1.00	ROOF PLAN
A1.01	ROOF SLOPE PLAN
A8.00	ROOF DETAILS 1
A8.01	ROOF DETAILS 2
MEP	
P0.1	PLUMBING NOTES, LEGENDS, SYMBOLS, & DETAILS
P1.1	PLUMBING ROOF PLAN

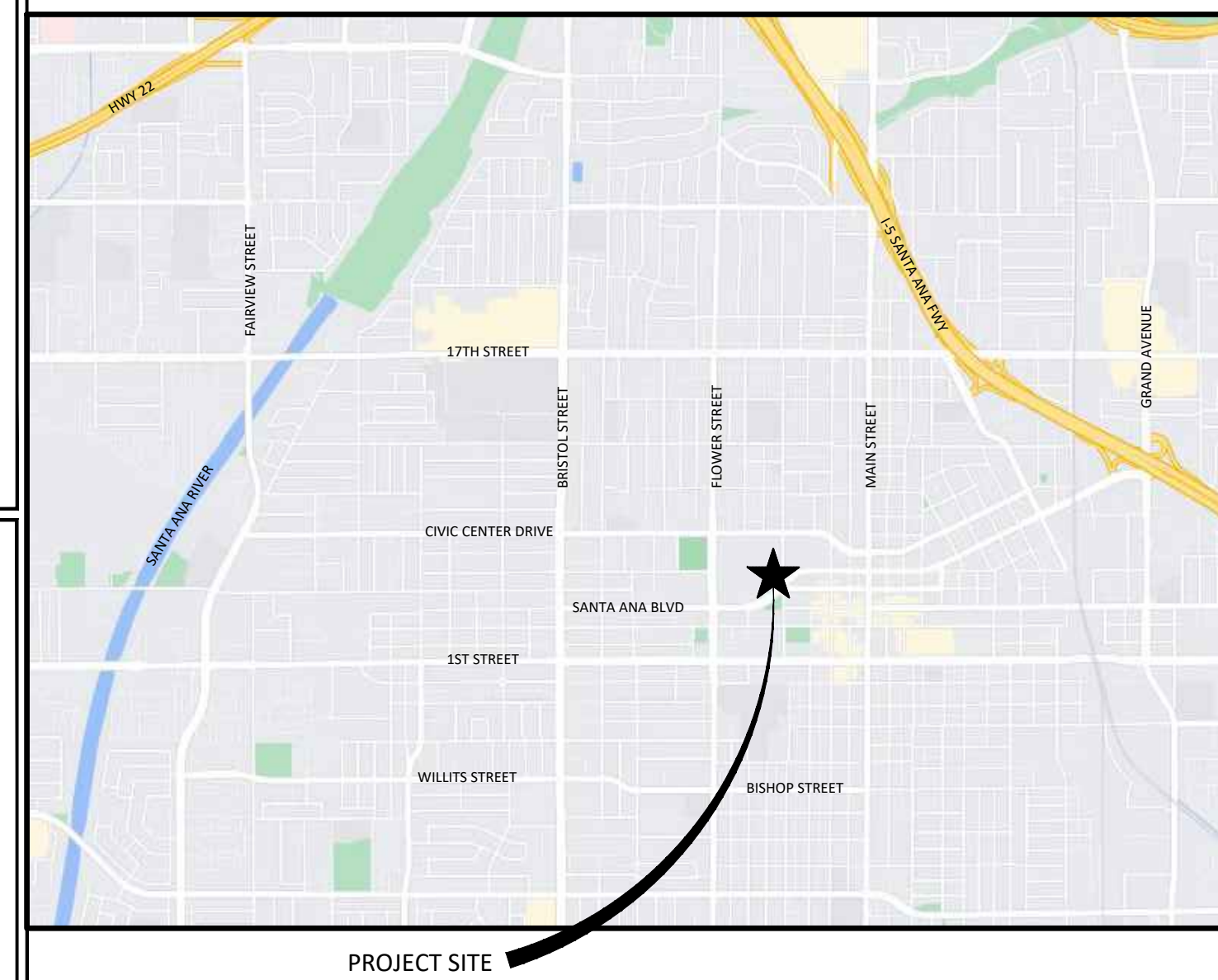
PROJECT DESCRIPTION

SCOPE OF WORK CONSISTS OF:

- COMPLETE TEAR-OFF OF EXISTING ROOFING ASSEMBLY TO DECK AT MAIN AND LOWER-LEVEL ROOFS, EXCEPTING TRANSITION ELEMENTS KEYS INTO ADJACENT CONSTRUCTION OR MECHANICAL SUPPORTS (FLASHING, SCUPPERS, DRAIN BODIES, ETC. AS INDICATED)
- INTERIM ROOF PROTECTION AND DRAINAGE
- NEW PVC MEMBRANE ROOFING ASSEMBLY TO MATCH SLOPES, PROFILES, AND R30 AVG INSULATION VALUE OF EXISTING CONDITION
- COORDINATION OF NEW ROOFING ASSEMBLY WITH LOCAL CONDITIONS AND ELEMENTS INCLUDING BUT NOT LIMITED TO ROOF EQUIPMENT, SUPPORTS, PADS, PENETRATIONS, TIEBACKS, HATCHES, CURBS, AND TRANSITION ELEMENTS RETAINED AS ABOVE.

NOTE: OWNER PLANS TO INSTALL A ROOFTOP PHOTOVOLTAIC SYSTEM, NOT IN THIS SCOPE.

PROJECT LOCATION



PROJECT DATA

INFORMATION BELOW DESCRIBES EXISTING CONDITIONS THAT WILL REMAIN UNCHANGED BY THIS SCOPE OF WORK

BUILDING DESCRIPTION: THE COURT OF APPEALS IS A FREESTANDING THREE-STORY STRUCTURE COMPLETED IN 2009. CONSTRUCTION IS STEEL FRAME WITH COMPOSITE DECKS. TYPICAL EXTERIOR WALLS ARE LGM FRAMING WITH STONE VENEER.

ADDRESS/LOCATION: 601 WEST SANTA ANA BOULEVARD
SANTA ANA, CALIFORNIA

LEGAL DESCRIPTION: REFER TO DEC. 2004 ALTA/ACSM LAND TITLE SURVEY (UPDATED ON 9/22/06)

ASSESSOR'S PARCEL NO.: 008-036-34, 008-067-27, 008-067-33, 008-067-40

ZONING: INS (INSTITUTIONAL)

TOTAL BUILDING AREA:
FIRST FLOOR: 18,322 SF
SECOND FLOOR: 16,819 SF
THIRD FLOOR: 16,819 SF
TOTAL: 51,960 SF

SITE AREA: 80,718 SF (1.853 ACRES)

CONSTRUCTION TYPE: TYPE III, 1 HOUR, FULLY SPRINKLERED

OCCUPANCY TYPE: "B", "A-3"

OCCUPANCY SEPARATION: "B" / "A-3" NO REQUIREMENT

AREA ANALYSIS:
ALLOWABLE AREA: "B"
(PER CBC TABLE 5-B)
BASIC ALLOWABLE AREA: 18,000 SF
X2 MULTI-STORY (CBC 504.2): 36,000 SF
X2 YARD 3 SIDES (CBC 505.1.2): 72,000 SF
TOTAL ALLOWABLE AREA: 72,000 SF

BUILDING HEIGHT: 3 STORIES (4 STORIES MAX. PER TABLE 5-B)
48" TOP OF PARAPET HEIGHT
58'-4" TOP OF STONE MECHANICAL SCREEN WALL
(65' MAX. PER TABLE 5-B)

FIRE-RESISTANCE:
EXTERIOR BEARING WALLS: 4 HOUR NC <5'
2 HOUR NC >5'
INTERIOR BEARING WALLS: 1 HOUR
EXTERIOR NON-BEARING WALLS: 4 HOUR NC <5'
2 HOUR NC >20'
1 HOUR NC <40'
NR NC >40'
STRUCTURAL FRAME: NR
PARTITIONS - PERMANENT: 1 HOUR
SHAFT ENCLOSURES: 1 HOUR
FLOORS AND FLOOR-CEILING: NR
ROOFS AND CEILING / ROOFS: NR
EXTERIOR OPENINGS: NOT PERMITTED <5'
PROT. <20'
STAIRWELL CONSTRUCTION: 1 HOUR

APPLICABLE CODES AND REGULATIONS

THE PERMIT FOR THE WORK DESCRIBED HEREIN WILL BE ISSUED THROUGH THE JUDICIAL COUNCIL OF CALIFORNIA.

ALL WORK SHALL COMPLY WITH CURRENT CALIFORNIA BUILDING STANDARDS CODE (CBC), THE AMERICANS WITH DISABILITIES ACT INCLUDING TITLE II (ADA), UNIFORM BUILDING CODE (UBC), STATE AND CITY FIRE MARSHAL REGULATIONS, LOCAL ZONING AND BUILDING CODES AND ORDINANCES, AND ALL OTHER APPLICABLE CODES AND REGULATIONS.

CALIFORNIA CODE OF REGULATIONS TITLE 24, 2019 CALIFORNIA BUILDING CODE, INCLUDING:
PART 2 CALIFORNIA BUILDING CODE, VOLUMES 1 & 2
PART 3 CALIFORNIA ELECTRICAL CODE
PART 4 CALIFORNIA MECHANICAL CODE
PART 5 CALIFORNIA PLUMBING CODE
PART 6 CALIFORNIA ENERGY CODE
PART 7 CALIFORNIA ELEVATOR SAFETY CONSTRUCTION CODE
PART 9 CALIFORNIA FIRE CODE
PART 10 CALIFORNIA EXISTING BUILDING CODE
PART 11 CALIFORNIA GREEN BUILDING STANDARDS

ACCESSIBILITY REQUIREMENTS ARE GOVERNED BY:
CALIFORNIA BUILDING CODE, CHAPTER 11B
UNITED STATES ACCESS BOARD, AMERICANS WITH DISABILITIES ACT AND
ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES, JULY 23, 2004

ELEVATORS ARE GOVERNED BY CALIFORNIA CODE OF REGULATIONS, TITLE 8, INDUSTRIAL RELATIONS, DIVISION 1, CHAPTER 4, SUBCHAPTER 6: ELEVATOR SAFETY ORDERS, ADOPTED BY REFERENCE IS THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS SAFETY CODE FOR ELEVATORS AND ESCALATORS, ASME A17.1-1996.

GENERAL WORK NOTES:

- CONTRACTOR TO SUBMIT REQUESTS FOR INFORMATION (RFIS) IF PROJECT SCOPE OF WORK IS UNCLEAR. SEE PROJECT SPECIFICATIONS FOR PROCEDURES.
- CONTRACTOR TO PROVIDE SUBMITTALS AS INDICATED AND PER PROCEDURES DESCRIBED IN PROJECT SPECIFICATIONS.
- CONTRACTOR TO PROVIDE CLOSE-OUT MATERIALS AS INDICATED AND PER PROCEDURES DESCRIBED IN PROJECT SPECIFICATIONS.
- CONTRACTOR TO PROVIDE ALL EQUIPMENT, LABOR, AND MATERIALS TO COMPLETE THE SCOPE OF WORK U.O.I.
- CONTRACTOR TO PROPOSE DUST MITIGATION PROCEDURES FOR JCC REVIEW AND APPROVAL. CONTRACTOR TO PERFORM APPROVED PROCEDURES. IN THE EVENT APPROVED PROCEDURES AS ENACTED ARE NOT SUFFICIENT TO ALLOW OWNER'S FULL USE OF THE COURT BUILDING, CONTRACTOR TO REASSESS FOR FURTHER JCC REVIEW AND APPROVAL.
- CONTRACTOR SHALL HAUL OFF AND DISPOSE OF DEMOLITION AND CONSTRUCTION DEBRIS PER PROCEDURES DESCRIBED IN PROJECT SPECIFICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A CLEAN AND ORDERLY CONSTRUCTION SITE THROUGHOUT THE DURATION OF THE WORK. SEE PROJECT SPECIFICATIONS.
- CONTRACTOR IS RESPONSIBLE FOR FINAL CLEANING PRIOR TO HANDING OVER ANY WORK AREA TO THE OWNER. SEE PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL PARTICIPATE IN AN IN-PERSON PUNCH-WALK WITH THE JCC AND COURT REPRESENTATIVE(S) PRIOR TO PROJECT CLOSE-OUT. SEE PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL PROVIDE AND INSTALL FLOOR PROTECTION AT INTERIOR PATH OF TRAVEL FROM CONSTRUCTION ENTRANCE TO FIRST FLOOR ELEVATORS AND FROM THIRD FLOOR ELEVATORS UP TO ROOF STAIR LANDING. PROTECTION SHEET TO BE 45 MIL MIN, FIXED FIRMLY WITHOUT DAMAGE TO ANY FINISH SURFACES.
- CONTRACTOR SHALL PROVIDE OWN RESTROOM FACILITIES ON SITE THROUGHOUT THE DURATION OF THE WORK. CONTRACTOR'S PERSONNEL, SUBCONTRACTORS, VENDORS, AND CONSULTANTS MAY NOT USE THE BUILDING'S RESTROOM FACILITIES.
- CONTRACTOR SHALL PROVIDE ANY HEALTH AND HYGIENE FACILITIES REQUIRED BY LAW AND/OR AT THE OWNER'S DISCRETION, INCLUDING BUT NOT LIMITED TO COVID-19 RELATED FACILITIES.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONTRACTOR'S PERSONNEL, SUBCONTRACTORS, VENDORS, AND CONSULTANTS' COMPLIANCE WITH COVID-19 RELATED MEASURES, INCLUDING BOTH LEGAL REQUIREMENTS AND MEASURES INSTITUTED AT THE OWNER'S DISCRETION.

NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
COVER SHEET / PROJECT INFO

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ NO.
180218.02

DRAWN
GD

CHECKED
KF

DRAWING NO.

T0.00

SHEET 1 OF 12

ABBREVIATIONS

&	AND	EMER	EMERGENCY	MFR	MANUFACTURER		DRAWINGS
∠	ANGLE	ENCL	ENCLOSURE	MH	MANHOLE	SLR	SEALER
@	AT	EP	ELECTRICAL PANEL	MIN	MINIMUM	SMD	SEE MECHANICAL DRAWINGS
⊕	CENTERLINE	EQ	EQUAL	MIR	MIRROR	SND	SANITARY NAPKIN DISPENSER
⌀	DIAMETER/ROUND	EQPT	EQUIPMENT	MISC	MISCELLANEOUS	SNR	SANITARY NAPKIN RECEPTACLE
#	POUND OR NUMBER	EWC	ELECTRICAL WATER COOLER	MO	MASONRY OPENING	SPD	SEE PLUMBING DRAWINGS
⊥	PERPENDICULAR	EXIST	EXISTING	MUL	MULLION	SPEC	SPECIFICATION
ACOUS	ACOUSTICAL	EXP	EXPANSION	N	NORTH	SSK	SERVICE SINK
ACT	ACOUSTIC CEILING TILE	EXPO	EXPOSED	(N)	NEW	SSD	SEE STRUCTURAL DRAWINGS
AD	AREA DRAIN	EXT	EXTERIOR	NIC	NOT IN CONTRACT	SST	STAINLESS STEEL
ADJ	ADJUSTABLE/ADJACENT	FA	FIRE ALARM	NOM	NOMINAL	STA	STATION
AFF	ABOVE FINISHED FLOOR	FB	FUSE BOX	NTS	NOT TO SCALE	STD	STANDARD
AL	ALUMINUM	FBR BD	FIBER BOARD	OA	OVERALL	STL	STEEL
APPROX	APPROXIMATE	FD	FLOOR DRAIN	OB	OBSCURE	STRUC	STRUCTURAL
ARCH	ARCHITECTURAL	FDN	FOUNDATION	OBS	ON CENTER	SUSP	SUSPENDED
ASB	ASBESTOS	FE	FIRE EXTINGUISHER	OC	OCCUPANCY OR OCCUPANT(S)	SV	SHEET VINYL
ASPH	ASPHALT	FEC	FIRE EXTINGUISHER	OC	OCCUPANCY OR OCCUPANT(S)	SYM	SYMMETRICAL
ATT	ATTACH	FHC	FIRE HOSE CABINET	OD	OUTSIDE DIAMETER	T	TREAD
		FIN	FINISH	OFI	OWNER FURNISHED, CONTRACTOR INSTALLED	TB	TOWEL BAR
BD	BOARD	FLR	FLOOR	OFOI	OWNER FURNISHED, OWNER INSTALLED	TCA	TILE COUNCIL OF AMERICA
BITUM	BITUMINOUS	FLUOR	FLUORESCENT	OFOI	OWNER FURNISHED, OWNER INSTALLED	TEL	TELEPHONE
BLDG	BUILDING	FND	FOUNDATION	OFF	OFFICE	TER	TERRAZZO
BLK	BLOCK	FO	FACE OF	OPNG	OPENING	T&G	TONGUE & GROOVE
BM	BEAM	FOC	FACE OF CONCRETE	OPP	OPPOSITE	THK	THICK
BOT	BOTTOM	FOF	FACE OF FINISH	OSB	ORIENTED STRAND BOARD	TO	TOP OF
BUR	BUILT-UP ROOFING	FOM	FACE OF MASONRY	OSB	ORIENTED STRAND BOARD	TOC	TOP OF CURB
		FOS	FACE OF STUD	PARA	PARALLEL	TOP	TOP OF PAVING
CAB	CABINET	FOW	FACE OF WALL	PERP	PERPENDICULAR	TOW	TOP OF WALL
CB	CATCH BASIN	FP	FABRIC PANEL	PL	PLATE	TPD	TOILET PAPER
CEM	CEMENT	FPRF	FIREPROOF	PL	PLATE	TR	TRASH RECEPTACLE
CER	CERAMIC	FRP	FIBERGLASS REINFORCED PANEL	PLAM	PLASTIC LAMINATE	TRD	TREAD
CG	CORNER GUARD	FS	FULL SIZE	PLAS	PLASTER	TV	TELEVISION
CI	CAST IRON	FT	FOOT OR FEET	PLYWD	PLYWOOD	TY	TYPICAL
CJ	CONTROL JOINT	FTG	FOOTING	PR	PAIR	UNF	UNFINISHED
CLG	CEILING	FTG	FOOTING	PRCST	PRECAST	UON	UNLESS OTHERWISE NOTED
CLG	CAULKING	FURR	FURRING	PT	PAPER TOWEL	UR	URINAL
CLO	CLOSET	FUT	FUTURE	PTD	PAPER TOWEL RECEPTACLE	VCT	VINYL COMPOSITION TILE
CLR	CLEAR			PTDR	COMBINATION PAPER TOWEL DISPENSER/ RECEPTACLE	VERT	VERTICAL
CMU	CONCRETE MASONRY UNIT	GA	GAUGE	R	RISER	VEST	VESTIBULE
CONTR	COUNTER	GALV	GALVANIZED	(R)	REMOVE	VIF	VERIFY IN FIELD
CO	CLEANOUT OR CONTRACTING OFFICER	GB	GRAB BAR	RAD	RADIUS	VP	VENER PLASTER
		GL	GLASS	RB	RUBBER BASE	VTR	VENT THROUGH ROOF
COL	COLUMN	GLB	GLUE LAM BEAM	RD	ROOF DRAIN	VW	VINYL WALLCOVERING
COMP	COMPOSITION	GND	GROUND	REC	RECESSED	W	WEST
CONC	CONCRETE	GR	GRADE	REF	REFERENCE	W	WITH
COND	CONDITION	GSM	GALVANIZED SHEET	REFG	REFRIGERATOR	WC	WATER CLOSET
CONN	CONNECTION	INSUL	INSULATION	REHAB	REHABILITATE	WCV	WALLCOVERING
CONSTR	CONSTRUCTION	INT	INTERIOR	REQ	REQUIRED	WD	WOOD
CONTR	CONTRACTING OFFICER'S REPRESENTATIVE	HB	HOSE BIB	RES	RESILIENT	WO	WHERE OCCURS
CORR	CORRIDOR	HDR	HEADER	REF	REFERENCE	W/O	WITHOUT
CPT	CARPET	HC	HOLLOW CORE	REFG	REFRIGERATOR	WP	WATERPROOF
CT	CERAMIC TILE	HDR	HEADER	REIN	REINFORCED	WSCT	WAINSCOT
CTG	CENTER	HDWD	HARDWOOD	REP	REPAIR	WT	WEIGHT
CTSK	COUNTERSINK	HDWE	HARDWARE	REQ	REQUIRED		
		HGT	HEIGHT	RESIL	RESILIENT		
		HM	HOLLOW METAL	RES	RESTORE		
		HORIZ	HORIZONTAL	RF	REFINISH		
		HR	HOUR	RGTR	REGISTER		
		HGT	HEIGHT	FL	ROOF LEADER		
		ID	INSIDE DIAMETER	RM	ROOM		
		INSUL	INSULATION	RO	ROUGH OPENING		
		INT	INTERIOR	RWD	REDWOOD		
		JAN	JANITOR	RWL	RAIN WATER LEADER		
		JC	JANITOR CLOSET	S	SOUTH		
		JT	JOINT	SALV	SALVAGE		
		KIT	KITCHEN	SC	SOLID CORE		
		LAB	LABORATORY	SCD	SEAT COVER		
		LAM	LAMINATE	SCHED	SCHEDULE		
		LAV	LAVATORY	SCHD	SOAP DISPENSER		
		LB	POUND	SECT	SECTION		
		LKR	LOCKER	SED	SEE ELECTRICAL DRAWINGS		
		LN	LINOLEUM	SH	SHELF		
		LT	LIGHT	SHR	SHOWER		
		LT	LIGHT	SHT	SHEET		
		MAX	MAXIMUM	SHTHG	SHEATHING		
		MB	MACHINE BOLT	SIM	SIMILAR		
		MC	MEDICINE CABINET	SLD	SEE LANDSCAPE		
		MDF	MEDIUM DENSITY FIBERBOARD				
		MDO	MEDIUM DENSITY OVERLAY				
		MECH	MECHANICAL				
		MEMB	MEMBRANE				
		MET	METAL				

GENERAL NOTES

- CONTRACTOR SHALL VERIFY THAT (E) CONDITIONS ARE AS INDICATED ON THE DRAWINGS. NOTIFY THE ARCHITECT IMMEDIATELY OF VARIATIONS OR DISCREPENCIES. DO NOT PROCEED WITH AFFECTED WORK UNTIL THE VARIATIONS OR DISCREPENCIES ARE RESOLVED BY THE ARCHITECT.
- ALL CONSTRUCTION AND INSTALLATION WORK SHOWN ON DRAWINGS SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES. USE METHODS AS REQUIRED TO COMPLETE WORK WITHIN LIMITATIONS OF ALL PREVAILING LAWS AND CODES.
- DO NOT SCALE DRAWINGS: USE DIMENSIONS SHOWN. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD. DIMENSIONS SHOWN AT (E) CONDITIONS ARE TO FACE OF (E) FINISH. U.O.N. DIMENSIONS AT NEW WORK ARE TO FACE OF FRAMING. U.O.N. DIMENSIONS OF (E) CONDITIONS ARE FOR REFERENCE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD. WHERE NO DIMENSION IS PROVIDED CONSULT WITH THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH AFFECTED WORK.
- SAFETY MEASURES: AT ALL TIMES THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONDITIONS AT THE JOB SITE, INCLUDING SAFETY OF PEOPLE AND PROPERTY. ARCHITECT SITE VISITS ARE NOT INTENDED TO REVIEW THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES.
- INSTALL MANUFACTURED MATERIALS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS, UNLESS OTHERWISE INSTRUCTED.
- ALL WASTE AND REFUSE CAUSED IN CONNECTION WITH THE WORK SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF BY THE CONTRACTOR. THE PREMISES SHALL BE LEFT CLEAR AND CLEAN TO THE SATISFACTION OF THE ARCHITECT.
- APPLICATION OF FINISH: SURFACES PREVIOUSLY PREPARED OR INSTALLED BY ANOTHER TRADE SHALL BE INSPECTED CAREFULLY BY THE CONTRACTOR BEFORE APPLYING SUBSEQUENT MATERIALS OR FINISHES. IF SURFACES ARE NOT ACCEPTABLE, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY IN ORDER THAT CORRECTIONS MAY BE MADE. APPLICATIONS OF FINISHES WILL BE CONSTRUED AS ACCEPTANCE OF RESPONSIBILITY BY THE SUBCONTRACTOR FOR THE BASE UPON WHICH IT IS APPLIED.
- INSTALL ALL WORK PLUMB, LEVEL AND STRAIGHT, OR AS REQUIRED TO ALIGN WITH (E) ADJACENT SURFACES.
- CONTRACTOR SHALL DESIGN AND INSTALL SHORING AS REQUIRED TO PERFORM WORK. RESPONSIBILITY FOR ENGINEERING, CONSTRUCTION, AND SAFETY OF THE SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE COMPLEMENTARY. CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, SPECIFICATIONS, NOTES AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND RESOLVED BEFORE PROCEEDING WITH WORK.
- DETAILS SHOWN SHALL BE INCORPORATED INTO THE PROJECT AT ALL APPROPRIATE LOCATIONS WHETHER SPECIFICALLY CALLED OUT OR NOT.
- THE CONTRACTOR MUST SUBMIT IN WRITING ANY REQUESTS FOR MODIFICATIONS TO THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SUBMITTED TO THE ARCHITECT FOR REVIEW DO NOT CONSTITUTE "IN WRITING" UNLESS IT IS CLEARLY NOTED ON THE SUBMITTAL THAT SPECIFIC CHANGES ARE BEING REQUESTED WITH THE PHRASE "REQUESTED CHANGE".
- FINAL AS-BUILT RECORD DOCUMENTS SHOWING ALL REVISIONS INCORPORATED DURING CONSTRUCTION SHALL BE SUBMITTED TO THE OWNER PRIOR TO PROJECT CLOSE-OUT.
- THROUGHOUT THE CONSTRUCTION DOCUMENTS, ITEMS THAT ARE EXISTING ARE INDICATED AS "EXISTING" OR "(E)", ITEMS WITHOUT THIS INDICATION ARE NEW CONSTRUCTION. WHERE REQUIRED FOR PURPOSES OF CLARITY, SOME ITEMS MAY BE INDICATED AS "NEW OR "(N)".

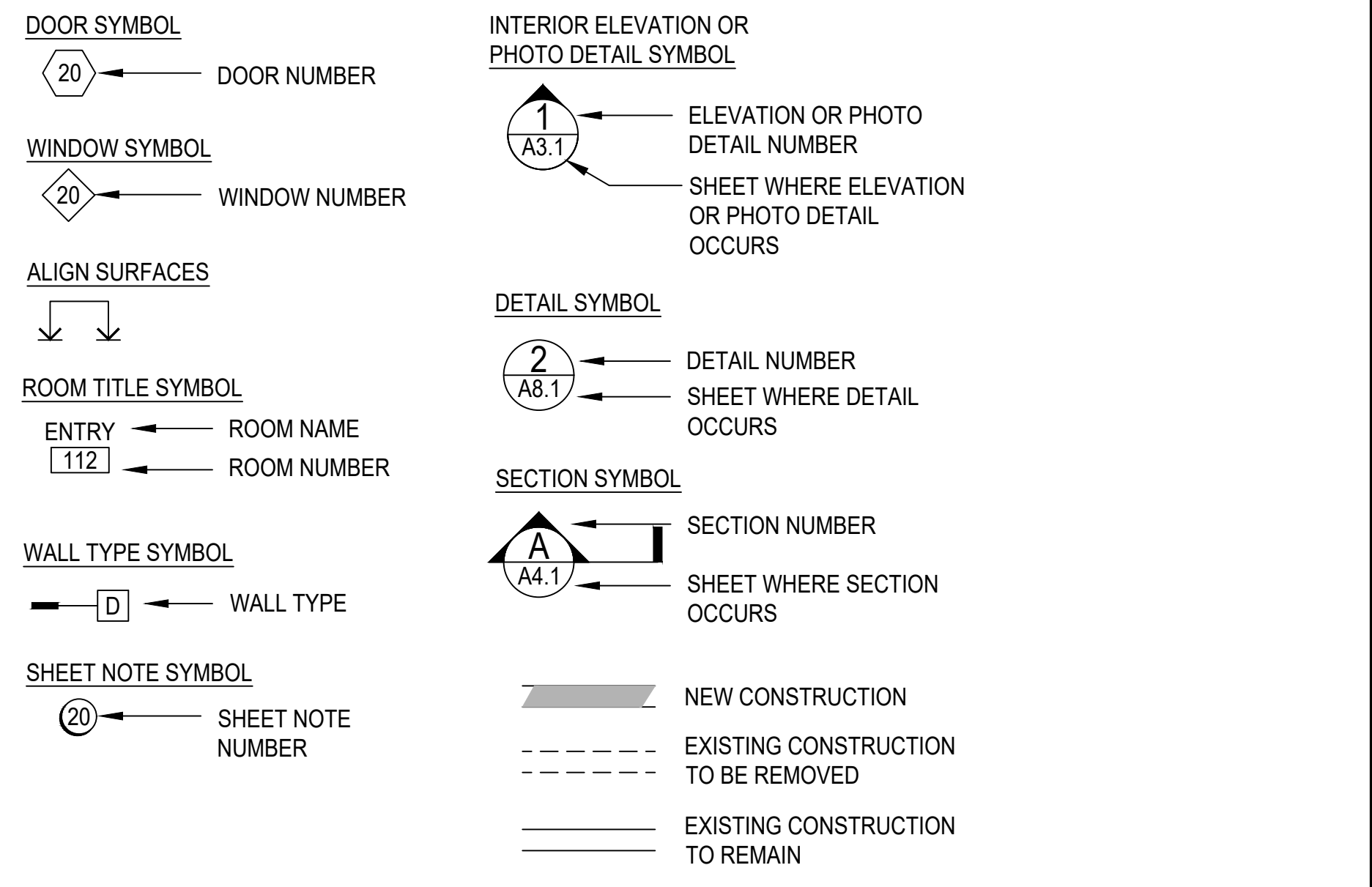
HAZARDOUS MATERIALS

- ARCHITECTURAL RESOURCES GROUP ASSUMES NO RESPONSIBILITY FOR THE MANAGEMENT OF HAZARDOUS MATERIALS THAT MAY BE ON THIS SITE.
- AN INVESTIGATION FOR HAZARDOUS MATERIALS HAS BEEN PERFORMED BY FORENSIC ANALYTICAL CONSULTING SERVICES, LONG BEACH, CA. THE RESULTING REPORT DATED JANUARY 27, 2021 IS AVAILABLE UPON REQUEST FROM THE OWNER.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT PERSONNEL WITHIN THE WORK AREA ARE PROTECTED FROM EXPOSURE TO ANY HAZARDOUS MATERIALS ENCOUNTERED. IF MATERIALS ARE DISCOVERED THAT MAY BE HAZARDOUS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND CEASE WORK UNTIL CONDITIONS CAN BE MAINTAINED IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

DETAIL NUMBERING



SYMBOL LEGEND



Architectural Resources Group

360 E. 2nd Street, Suite 225
 Los Angeles, California 90012
 626.583.1401

arg-ia.com

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
 DIVISION THREE

601 WEST SANTA ANA BOULEVARD
 SANTA ANA, CA 92701

SHEET TITLE

GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS

ISSUANCE

100% CONSTRUCTION DOCUMENTS

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SHEET 2 OF 12

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 (July 2021, Includes July 2021 Supplement)



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Los Angeles, California 90012
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Y NA RESPON. PARTY
: YES NOT APPLICABLE
: RESPONSIBLE PARTY (i.e. ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR, ETC.)

Y	NA	RESPON. PARTY																																																																																																																														
			<p>CHAPTER 3 GREEN BUILDING SECTION 301 GENERAL</p> <p>301.1 SCOPE. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section 101.7.</p> <p>301.3 NONRESIDENTIAL ADDITIONS AND ALTERATIONS [BSC-CG] The provisions of individual sections of Chapter 5 apply to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of \$200,000 or above (for occupancies within the authority of California Building Standards Commission). Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.</p> <p>A code section will be designated by a banner to indicate where the code section only applies to newly constructed buildings [N] or to additions and/or alterations [A]. When the code section applies to both, no banner will be used.</p> <p>301.3.1 Nonresidential additions and alterations that cause updates to plumbing fixtures only:</p> <p>Note: On and after January 1, 2014, certain commercial real property, as defined in Civil Code Section 1101.3, shall have its noncompliant plumbing fixtures replaced with appropriate water-conserving plumbing fixtures under specific circumstances. See Civil Code Section 1101.1 et seq. for definitions, types of commercial real property affected, effective dates, circumstances necessitating replacement of noncompliant plumbing fixtures, and duties and responsibilities for ensuring compliance.</p> <p>301.3.2 Waste Diversion. The requirements of Section 5.408 shall be required for additions and alterations whenever a permit is required for work.</p> <p>301.4 PUBLIC SCHOOLS AND COMMUNITY COLLEGES. (see GBSC) 301.5 HEALTH FACILITIES. (see GBSC)</p> <p>SECTION 302 MIXED OCCUPANCY BUILDINGS</p> <p>302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.</p> <p>SECTION 303 PHASED PROJECTS</p> <p>303.1 PHASED PROJECTS. For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply.</p> <p>303.1.1 Initial Tenant Improvements. The provisions of this code shall apply only to the initial tenant improvements to a project. Subsequent tenant improvements shall comply with the scoping provisions in Section 301.3 nonresidential additions and alterations.</p> <p>ABBREVIATION DEFINITIONS: HCD Department of Housing and Community Development BSC California Building Standards Commission DSA-SS Division of the State Architect, Structural Safety OSHDP Office of Statewide Health Planning and Development Low Rise LR High Rise HR High Rise AA Additions and Alterations N New</p> <p>CHAPTER 5 NONRESIDENTIAL MANDATORY MEASURES</p> <p>DIVISION 5.1 PLANNING AND DESIGN</p> <p>SECTION 5.101 GENERAL</p> <p>5.101.1 SCOPE The provisions of this chapter outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent properties.</p> <p>SECTION 5.102 DEFINITIONS</p> <p>5.102.1 DEFINITIONS The following terms are defined in Chapter 2 (and are included here for reference)</p> <p>CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir, and 100 (10 percent) at a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire.</p> <p>LOW-EMITTING AND FUEL EFFICIENT VEHICLES. Eligible vehicles are limited to the following:</p> <ol style="list-style-type: none"> Zero emission vehicle (ZEV), including neighborhood electric vehicles (NEV), partial zero emission vehicle (PZEV), advanced technology PZEV (AT ZEV) or CNG fueled (original equipment manufacturer only) regulated under Health and Safety Code section 43800 and CCR, Title 13, Sections 1961 and 1962. High-efficiency vehicles, regulated by U.S. EPA, bearing High-Occupancy Vehicle (HOV) car pool lane stickers issued by the Department of Motor Vehicles. <p>NEIGHBORHOOD ELECTRIC VEHICLE (NEV). A motor vehicle that meets the definition of "low-speed vehicle" either in Section 385.5 of the Vehicle Code or in 49CFR571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.</p> <p>TENANT-OCCUPANTS. Building occupants who inhabit a building during its normal hours of operation as permanent occupants, such as employees, as distinguished from customers and other transient visitors.</p> <p>VANPOOL VEHICLE. Eligible vehicles are limited to any motor vehicle, other than a motortruck or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purpose of ridesharing.</p> <p>Note: Source: Vehicle Code, Division 1, Section 668</p> <p>ZEV. Any vehicle certified to zero-emission standards.</p> <p>SECTION 5.106 SITE DEVELOPMENT</p> <p>5.106.1 STORM WATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB LESS THAN ONE ACRE OF LAND. Newly constructed projects and additions which disturb less than one acre of land, and are not part of a larger common plan of development or sale, shall prevent the pollution of storm water runoff from the construction activities through one or more of the following measures:</p> <p>5.106.1.1 Local ordinance. Comply with a lawfully enacted storm water management and/or erosion control ordinance.</p> <p>5.106.1.2 Best Management Practices (BMPs). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMPs.</p> <ol style="list-style-type: none"> Soil loss BMPs that should be considered for implementation as appropriate for each project include, but are not limited to, the following: <ol style="list-style-type: none"> Scheduling construction activity during dry weather, when possible. Preservation of natural features, vegetation, soil, and buffers around surface waters. Drainage swales or lined ditches to control stormwater flow. Mulching or hydrosowing to stabilize disturbed soils. Erosion control to protect slopes. Protection of storm drain inlets (gravel bags or catch basin inserts). Perimeter sediment control (perimeter silt fence, fiber rolls). Sediment trap or sediment basin to retain sediment on site. Stabilized construction exits. Wind erosion control. Other soil loss BMPs acceptable to the enforcing agency. Good housekeeping BMPs to manage construction equipment, materials, non-stormwater discharges and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following: <ol style="list-style-type: none"> Decontaminating activities. Material handling and waste management. Building materials stockpile management. Management of washout areas (concrete, paints, stucco, etc.). Control of vehicle/equipment fueling to contractor's staging area. Vehicle and equipment cleaning performed off site. Spill prevention and control. Other housekeeping BMPs acceptable to the enforcing agency. 																																																																																																																													
			<p>5.106.2 STORMWATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB ONE OR MORE ACRES OF LAND. Comply with all lawfully enacted stormwater discharge regulations for projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of a larger common plan of development sale.</p> <p>Note: Projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of the larger common plan of development or sale must comply with the post-construction requirements detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board or the Lahontan Regional Water Quality Control Board (for projects in the Lake Tahoe Hydrologic Unit).</p> <p>The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff (pre-project hydrology) with the installation of postconstruction stormwater management measures. The NPDES permits emphasize runoff reduction through on-site stormwater use, interception, evapotranspiration, and infiltration through nonstructural controls, such as Low Impact Development (LID) practices, and conservation design measures. Stormwater volume that cannot be addressed using nonstructural practices is required to be captured in structural practices and be approved by the enforcing agency.</p> <p>Refer to the current applicable permits on the State Water Resources Control Board website at: www.waterboards.ca.gov/constructionstormwater. Consideration to the stormwater runoff management measures should be given during the initial design process for appropriate integration into site development.</p> <p>5.106.4 BICYCLE PARKING. For buildings within the authority of California Building Standards Commission as specified in Section 103, comply with Section 5.106.4.1. For buildings within the authority of the Division of the State Architect pursuant to Section 105, comply with Section 5.106.4.2.</p> <p>5.106.4.1 Bicycle parking. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter.</p> <p>5.106.4.1.1 Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack. Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.</p> <p>5.106.4.1.2 Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.</p> <p>5.106.4.1.3 For additions or alterations that add 10 or more tenant-occupant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one bicycle parking facility.</p> <p>5.106.4.1.4 For new shell buildings in phased projects provide secure bicycle parking for 5 percent of the anticipated tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.</p> <p>5.106.4.1.5 Acceptable bicycle parking facility for Sections 5.106.4.1.2, 5.106.4.1.3, and 5.106.4.1.4 shall be convenient from the street and shall meet one of the following:</p> <ol style="list-style-type: none"> Covered, lockable enclosures with permanently anchored racks for bicycles; Lockable bicycle rooms with permanently anchored racks; or Lockable, permanently anchored bicycle lockers. <p>Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.</p> <p>5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2.</p> <p>5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.</p> <p>5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:</p> <ol style="list-style-type: none"> Covered, lockable enclosures with permanently anchored racks for bicycles; Lockable bicycle rooms with permanently anchored racks; or Lockable, permanently anchored bicycle lockers. <p>5.106.4.2.3 DESIGNATED PARKING FOR CLEAN AIR VEHICLES. In new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as follows:</p> <table border="1"> <thead> <tr> <th colspan="2">TABLE 5.106.5.2 - PARKING</th> </tr> <tr> <th>TOTAL NUMBER OF PARKING SPACES</th> <th>NUMBER OF REQUIRED SPACES</th> </tr> </thead> <tbody> <tr> <td>0-9</td> <td>0</td> </tr> <tr> <td>10-25</td> <td>3</td> </tr> <tr> <td>26-50</td> <td>6</td> </tr> <tr> <td>51-75</td> <td>9</td> </tr> <tr> <td>76-100</td> <td>12</td> </tr> <tr> <td>101-150</td> <td>18</td> </tr> <tr> <td>151-200</td> <td>21</td> </tr> <tr> <td>201 AND OVER</td> <td>AT LEAST 12% OF TOTAL¹</td> </tr> </tbody> </table> <p>¹ Calculation for spaces shall be rounded up to the nearest whole number.</p> <p>Note: Designated parking for clean air vehicles shall count towards the total parking spaces required by the local enforcing agencies.</p> <p>5.106.5.2.1 - Parking stall marking. Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle: CLEAN AIR / VAN POOL / EV</p> <p>Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.</p> <p>5.106.5.3 Electric vehicle (EV) charging. [N] Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) are installed, it shall be in accordance with the California Building Code, the California Electrical Code and as follows:</p> <p>5.106.5.3.1 Single charging space requirements. [N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:</p> <ol style="list-style-type: none"> The type and location of the EVSE. A listed raceway capable of accommodating a 208/240 -volt dedicated branch circuit. The raceway shall not be less than trade size 1". The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and listed suitable cabinet, box, enclosure or equivalent. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE. <p>5.106.5.3.2 Multiple charging space requirements. [N] When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the California Electrical Code. Construction plans and specifications shall include, but are not limited to, the following:</p> <ol style="list-style-type: none"> The type and location of the EVSE. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent. Pan design shall be based upon 40-ampere minimum branch circuits. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated ampereage. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE. <p>5.106.5.3.3 EV charging space calculations. [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.</p> <p>Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:</p>	TABLE 5.106.5.2 - PARKING		TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES	0-9	0	10-25	3	26-50	6	51-75	9	76-100	12	101-150	18	151-200	21	201 AND OVER	AT LEAST 12% OF TOTAL ¹																																																																																																									
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			<p>1. Where there is insufficient electrical supply.</p> <p>2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.</p> <table border="1"> <thead> <tr> <th colspan="2">TABLE 5.106.5.3.3</th> </tr> <tr> <th>TOTAL NUMBER OF PARKING SPACES</th> <th>NUMBER OF REQUIRED SPACES</th> </tr> </thead> <tbody> <tr> <td>0-9</td> <td>0</td> </tr> <tr> <td>10-25</td> <td>2</td> </tr> <tr> <td>26-50</td> <td>4</td> </tr> <tr> <td>51-75</td> <td>7</td> </tr> <tr> <td>76-100</td> <td>9</td> </tr> <tr> <td>101-150</td> <td>13</td> </tr> <tr> <td>151-200</td> <td>18</td> </tr> <tr> <td>201 AND OVER</td> <td>10% of total¹</td> </tr> </tbody> </table> <p>¹ Calculation for spaces shall be rounded up to the nearest whole number.</p> <p>5.106.5.3.4 [N] Identification. The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".</p> <p>5.106.5.3.5 [N] Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.</p> <p>Note: Future electric vehicle charging spaces shall count towards the total parking spaces required by the local enforcing agencies.</p> <p>5.106.8 LIGHT POLLUTION REDUCTION. [N] 1. Outdoor lighting systems shall be designed and installed to comply with the following:</p> <ol style="list-style-type: none"> The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8); Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8) and Allowable BUG ratings not exceeding those shown in Table 5.106.8. [N] or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent. <p>Exceptions: [N]</p> <ol style="list-style-type: none"> Luminaires that qualify as exceptions in Sections 130.2 (b) and 140.7 of the California Energy Code. Emergency lighting. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction. Luminaires with less than 6,200 initial luminaire lumens. <table border="1"> <thead> <tr> <th colspan="7">TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS ^{1,2}</th> </tr> <tr> <th>ALLOWABLE RATING</th> <th>LIGHTING ZONE LZ0</th> <th>LIGHTING ZONE LZ1</th> <th>LIGHTING ZONE LZ2</th> <th>LIGHTING ZONE LZ3</th> <th>LIGHTING ZONE LZ4</th> <th>LIGHTING ZONE LZ4</th> </tr> </thead> <tbody> <tr> <td>MAXIMUM ALLOWABLE BACKLIGHT RATING -</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Luminaire greater than 2 mounting heights (MH) from property line</td> <td>N/A</td> <td>No Limit</td> <td>No Limit</td> <td>No Limit</td> <td>No Limit</td> <td>No Limit</td> </tr> <tr> <td>Luminaire back hemisphere is 1-2 MH from property line</td> <td>N/A</td> <td>B2</td> <td>B3</td> <td>B4</td> <td>B4</td> <td>B4</td> </tr> <tr> <td>Luminaire back hemisphere is 0.5-1 MH from property line</td> <td>N/A</td> <td>B1</td> <td>B2</td> <td>B3</td> <td>B3</td> <td>B3</td> </tr> <tr> <td>Luminaire back hemisphere is less than 0.5 MH from property line</td> <td>N/A</td> <td>B0</td> <td>B0</td> <td>B1</td> <td>B2</td> <td>B2</td> </tr> <tr> <td>MAXIMUM ALLOWABLE UPLIGHT RATING (U)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>For area lighting</td> <td>N/A</td> <td>U0</td> <td>U0</td> <td>U0</td> <td>U0</td> <td>U0</td> </tr> <tr> <td>For all other outdoor lighting, including decorative luminaires</td> <td>N/A</td> <td>U1</td> <td>U2</td> <td>U3</td> <td>UR</td> <td>UR</td> </tr> <tr> <td>MAXIMUM ALLOWABLE GLARE RATING - (G)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Luminaire greater than 2 MH from property line</td> <td>N/A</td> <td>G1</td> <td>G2</td> <td>G3</td> <td>G4</td> <td>G4</td> </tr> <tr> <td>Luminaire front hemisphere is 1-2 MH from property line</td> <td>N/A</td> <td>G0</td> <td>G1</td> <td>G1</td> <td>G2</td> <td>G2</td> </tr> <tr> <td>Luminaire front hemisphere is 0.5-1 MH from property line</td> <td>N/A</td> <td>G0</td> <td>G0</td> <td>G1</td> <td>G1</td> <td>G1</td> </tr> <tr> <td>Luminaire back hemisphere is less than 0.5 MH from property line</td> <td>N/A</td> <td>G0</td> <td>G0</td> <td>G0</td> <td>G1</td> <td>G1</td> </tr> </tbody> </table> <p>¹ IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the California Energy Code and Chapter 10 of the California Administrative Code.</p> <p>² For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.</p> <p>³ General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet U-value limits for "all other outdoor lighting"</p> <p>5.106.8.1 Facing-Backlight Luminaires within 2MH of a property line shall be oriented so that the nearest property line is behind the fixture, and shall comply with the backlight rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point of that property line. Exception: Corners. If two property lines (or two segments of the same property line) have equidistant point to the luminaire, then the luminaire may be oriented so that the intersection of the two lines (the corner) is directly behind the luminaire. The luminaire shall still use the distance to the nearest point(s) on the property lines to determine the required backlight rating.</p> <p>5.106.8.2 Facing-Glare For luminaires covered by 5.106.8.1, if a property line also exists within or extends into the front hemisphere within 2MH of the luminaire then the luminaire shall comply with the more stringent glare rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point on the nearest property line within the front hemisphere.</p> <p>Note: [N] 1. See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways. 2. Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A-1, California Energy Code Tables 130.2-A and 130.2-B. 3. Refer to the California Building Code for requirements for additions and alterations.</p>	TABLE 5.106.5.3.3		TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES	0-9	0	10-25	2	26-50	4	51-75	7	76-100	9	101-150	13	151-200	18	201 AND OVER	10% of total ¹	TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS ^{1,2}							ALLOWABLE RATING	LIGHTING ZONE LZ0	LIGHTING ZONE LZ1	LIGHTING ZONE LZ2	LIGHTING ZONE LZ3	LIGHTING ZONE LZ4	LIGHTING ZONE LZ4	MAXIMUM ALLOWABLE BACKLIGHT RATING -							Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit	No Limit	Luminaire back hemisphere is 1-2 MH from property line	N/A	B2	B3	B4	B4	B4	Luminaire back hemisphere is 0.5-1 MH from property line	N/A	B1	B2	B3	B3	B3	Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2	B2	MAXIMUM ALLOWABLE UPLIGHT RATING (U)							For area lighting	N/A	U0	U0	U0	U0	U0	For all other outdoor lighting, including decorative luminaires	N/A	U1	U2	U3	UR	UR	MAXIMUM ALLOWABLE GLARE RATING - (G)							Luminaire greater than 2 MH from property line	N/A	G1	G2	G3	G4	G4	Luminaire front hemisphere is 1-2 MH from property line	N/A	G0	G1	G1	G2	G2	Luminaire front hemisphere is 0.5-1 MH from property line	N/A	G0	G0	G1	G1	G1	Luminaire back hemisphere is less than 0.5 MH from property line	N/A	G0	G0	G0	G1	G1
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Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit	No Limit																																																																																																																										
Luminaire back hemisphere is 1-2 MH from property line	N/A	B2	B3	B4	B4	B4																																																																																																																										
Luminaire back hemisphere is 0.5-1 MH from property line	N/A	B1	B2	B3	B3	B3																																																																																																																										
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2	B2																																																																																																																										
MAXIMUM ALLOWABLE UPLIGHT RATING (U)																																																																																																																																
For area lighting	N/A	U0	U0	U0	U0	U0																																																																																																																										
For all other outdoor lighting, including decorative luminaires	N/A	U1	U2	U3	UR	UR																																																																																																																										
MAXIMUM ALLOWABLE GLARE RATING - (G)																																																																																																																																
Luminaire greater than 2 MH from property line	N/A	G1	G2	G3	G4	G4																																																																																																																										
Luminaire front hemisphere is 1-2 MH from property line	N/A	G0	G1	G1	G2	G2																																																																																																																										
Luminaire front hemisphere is 0.5-1 MH from property line	N/A	G0	G0	G1	G1	G1																																																																																																																										
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	G0	G0	G0	G1	G1																																																																																																																										
			<p>5.106.10 GRADING AND PAVING. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:</p> <ol style="list-style-type: none"> Swales. Water collection and disposal systems. French drains. Water retention gardens. Other water measures which keep surface water away from buildings and aid in groundwater recharge. <p>Exception: Additions and alterations not altering the drainage path.</p> <p>5.106.12 SHADE TREES [DSA-SS]. Shade Trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6.</p> <p>5.106.12.1 Surface parking areas. Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years.</p> <p>Exceptions: The surface parking area covered by solar photovoltaic shade structures, or shade structures, with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculations.</p> <p>5.106.12.2 Landscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years.</p> <p>Exceptions: Playfields for organized sport activity are not included in the total area calculation.</p> <p>5.106.12.3. Hardscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years.</p> <p>Exceptions: Walks, hardscape areas covered by solar photovoltaic shade structures, and hardscape areas covered by shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5, are not included in the total area calculation.</p> <p>DIVISION 5.2 ENERGY EFFICIENCY</p> <p>SECTION 5.201 GENERAL</p> <p>5.201.1 Scope [BSC-CG]. California Energy Code [DSA-SS]. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.</p> <p>DIVISION 5.3 WATER EFFICIENCY AND CONSERVATION</p> <p>SECTION 5.301 GENERAL</p> <p>5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water use indoors, outdoors and in wastewater conveyance.</p> <p>SECTION 5.302 DEFINITIONS</p> <p>5.302.1 Definitions. The following terms are defined in Chapter 2 (and are included here for reference)</p> <p>EVAPOTRANSPIRATION ADJUSTMENT FACTOR (ETAF) [DSA-SS]. An adjustment factor when applied to reference evapotranspiration that adjusts for plant factors and irrigation efficiency, which are two major influences on the amount of water that needs to be applied to the landscape.</p> <p>FOOTPRINT AREA [DSA-SS]. The total area of the furthest exterior wall of the structure projected to natural grade, not including exterior areas such as stairs, covered walkways, patios and decks.</p> <p>METERING FAUCET. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable.</p> <p>GRAYWATER. Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs, but does not include waste water from kitchen sinks or dishwashers.</p> <p>MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area and climatological parameters.</p> <p>MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). [HCD] The California model ordinance (California Code of Regulations, Title 23, Division 2, Chapter 2.7), regulating landscape design, installation and maintenance practices. Local agencies are required to adopt the updated MWELO, or adopt a local ordinance at least as effective as the MWELO.</p> <p>POTABLE WATER. Water that is drinkable and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5.</p> <p>POTABLE WATER. [HCD] Water that is satisfactory for drinking, culinary, and domestic purposes, and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards and the requirements of the Health Authority Having Jurisdiction.</p> <p>RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur (Water Code Section 13050 (n)). Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again.</p> <p>SUBMETER. [HCD 1] A secondary device beyond a meter that measures water consumption of an individual rental unit within a multiunit residential structure or mixed-use residential and commercial structure. (See Civic Code Section 1954.202 (g) and Water code Section 517 for additional details.)</p> <p>WATER BUDGET. Is the estimated total landscape irrigation water use which shall not exceed the maximum applied water allowance calculated in accordance with the Department of Water Resources Model Efficient Landscape Ordinance (MWELO).</p> <p>SECTION 5.303 INDOOR WATER USE</p> <p>5.303.1 METERS. Separate submeters or metering devices shall be installed for the uses described in Sections 503.1.1 and 503.1.2.</p> <p>5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:</p> <ol style="list-style-type: none"> For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems: <ol style="list-style-type: none"> Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s). Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s). Steam and hot water boilers with energy input more than 500,000 Btu/h (147 kW). <p>5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.</p> <p>5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:</p> <p>5.303.3.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type toilets.</p> <p>Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.</p> <p>5.303.3.2 Urinals.</p> <p>5.303.3.2.1 Wall-mounted Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.</p> <p>5.303.3.2.2 Floor-mounted Urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.</p> <p>5.303.3.3 Showerheads. [BSC-CG]</p> <p>5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.</p> <p>5.303.3.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. Note: A hand-held shower shall be considered a showerhead.</p>																																																																																																																													

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.

NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE

CALGREEN 1

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ. NO.

180218.02

DRAWN

GD

CHECKED

KF

DRAWING NO.

T1.00

SHEET 3 OF 12

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 3 (July 2021, Includes July 2021 Supplement)



360 E. 2nd Street, Suite 225
Los Angeles, California 90012
626.583.1401
arg-la.com

Y = YES
NA = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (i.e. ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR, ETC.)

Y	NA	RESPON. PARTY	DESCRIPTION																																																														
			5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.																																																														
			5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below. 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.																																																														
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			5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply. 5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520, and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.																																																														

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			1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS 2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE. 3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD. 5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following: 1. Manufacturer's product specification 2. Field verification of on-site product containers																																																																																										
			5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specifications 01350). See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODD/EHLB/IAQ/Pages/VOC.aspx#material 5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specifications 01350). See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODD/EHLB/IAQ/Pages/VOC.aspx#material 5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1. 5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 OCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5. 5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following: 1. Product certifications and specifications. 2. Chain of custody certifications. 3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see OCR, Title 17, Section 93120, et seq.). 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards. 5. Other methods acceptable to the enforcing agency.																																																																																										

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			TABLE 5.504.4.5 - FORMALDEHYDE LIMITS. MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION												
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Where resilient flooring is installed, at least 80 percent of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specifications 01350). See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODD/EHLB/IAQ/Pages/VOC.aspx#material 5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits. 5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual. Exceptions: Existing mechanical equipment. 5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. SECTION 5.505 INDOOR MOISTURE CONTROL 5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. SECTION 5.506 INDOOR AIR QUALITY 5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 6. 5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120(c)(4). SECTION 5.507 ENVIRONMENTAL COMFORT 5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2. Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings. Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction. 5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior-windows of a minimum STC of 40 or OITC of 30 in the following locations: 1. Within the 65 CNEL noise contour of an airport. Exceptions: 1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan. 2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element. 5.507.4.1.1. Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30). 5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1hr) of 50 dBA in occupied areas during any hour of operation. 5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior. 5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record. 5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40. Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toobase.org/PDF/CaseStudies/stc_loc_ratings.pdf . SECTION 5.508 OUTDOOR AIR QUALITY 5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2. 5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs. 5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons. 5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities. Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and pentahydrofluoropropane.	PRODUCT	CURRENT LIMIT	HARDWOOD PLYWOOD VENEER CORE	0.05	HARDWOOD PLYWOOD COMPOSITE CORE	0.05	PARTICLE BOARD	0.09	MEDIUM DENSITY FIBERBOARD	0.11	THIN MEDIUM DENSITY FIBERBOARD ₂	0.13
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Y	NA	RESPON. PARTY	DESCRIPTION
			5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below. 5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack. 5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less. 5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils. 5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil. Exception: Single-flared tubing connections may be used with a multilayer seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations. 5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows. 5.508.2.2 Valves. Valves and fittings shall comply with the California Mechanical Code and as follows. 5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve. 5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve. 5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use. 5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic. 5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place. 5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps. Exception: Valves with seal caps that are not removed from the valve during stem operation. 5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel, or be coated to prevent corrosion from these substances. 5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency. 5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver. 5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging. 5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum. 5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge. 5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge. 5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging. 5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes. 5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes. 5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. CHAPTER 7 INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS 702 QUALIFICATIONS 702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following: 1. State certified apprenticeship programs. 2. Public utility training programs. 3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations. 4. Programs sponsored by manufacturing organizations. 5. Other programs acceptable to the enforcing agency. 702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector: 1. Certification by a national or regional green building program or standard publisher. 2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors. 3. Successful completion of a third party apprentice training program in the appropriate trade. 4. Other programs acceptable to the enforcing agency. Notes: 1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. 2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS). [BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency. Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. 703 VERIFICATIONS 703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.

NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT DIVISION THREE

601 WEST SANTA ANA BOULEVARD SANTA ANA, CA 92701

SHEET TITLE

CALGREEN 3

ISSUANCE

100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ. NO.

180218.02

DRAWN

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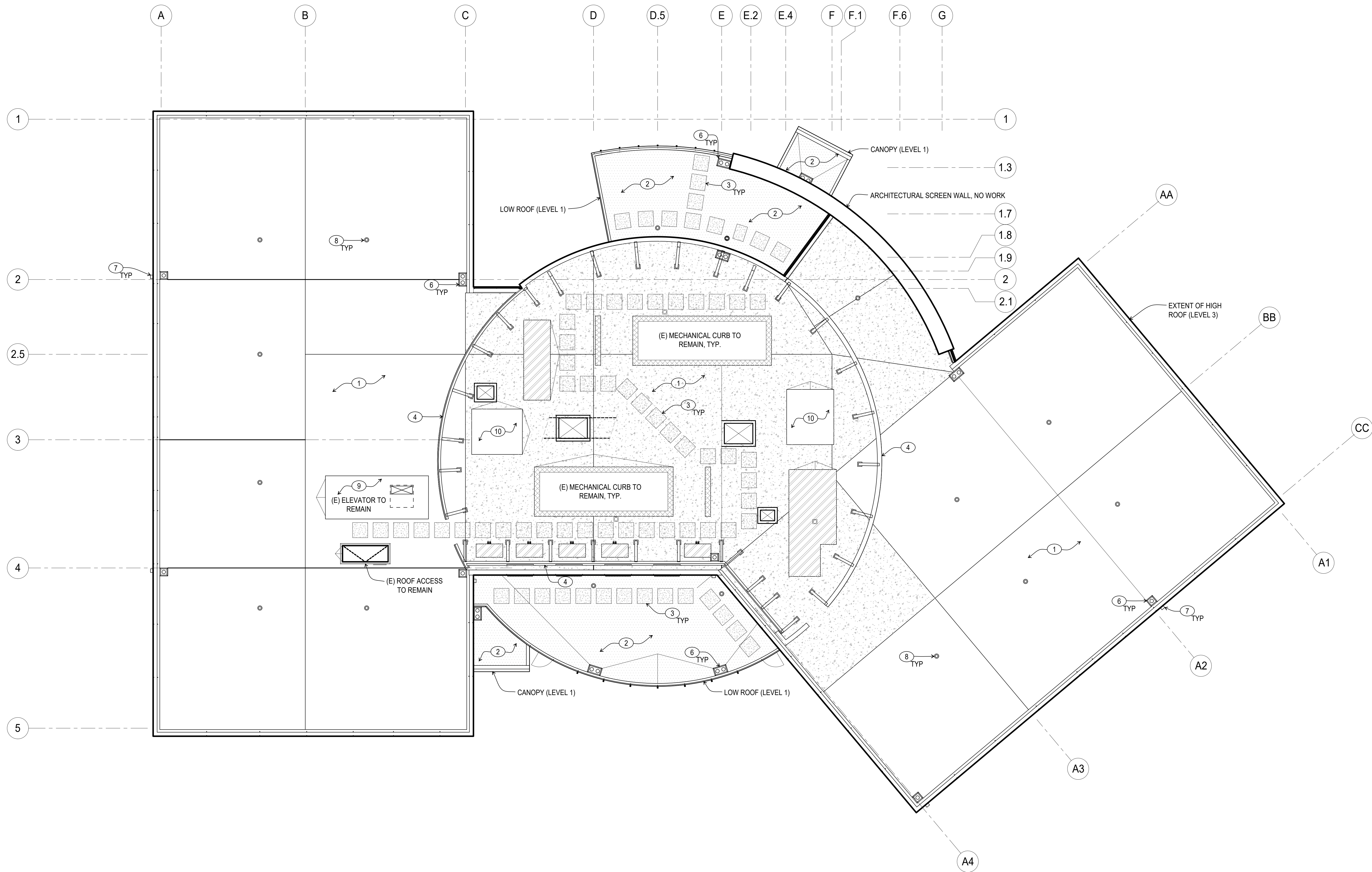
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SHEET 5 OF 12

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.



NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
ROOF DEMOLITION PLAN

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ NO.
180218.02

DRAWN
GD

CHECKED
KF

DRAWING NO.

AD1.00

SHEET 6 OF 12

1 ROOF DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION NOTES

- DIMENSIONS AND AREAS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. VERIFY ALL DIMENSIONS IN FIELD.
- PROVIDE FALL PROTECTION PER CA TITLE & REGULATIONS.
- PROTECT (E) MECHANICAL EQUIPMENT, ELEC CONDUITS & EQUIPMENT, & PLUMBING FIXTURE & PIPING TO REMAIN. COMPONENTS SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. COORDINATE WORKING SCHEDULE W/ BLDG. ENGINEER.
- SALVAGE (E) GRAVEL BALLAST AT LEVEL 1 ROOF AND RETAIN FOR REINSTALLATION.
- DEMOUNT ABOVE-DECK COMPONENTS OF (E) DRAINS AND OVERFLOWS AND RETAIN FOR REUSE. RETAIN BELOW DECK COMPONENTS IN PLACE.
- ALL MECHANICAL EQUIPMENT TO REMAIN IN PLACE.

DEMOLITION KEYNOTES

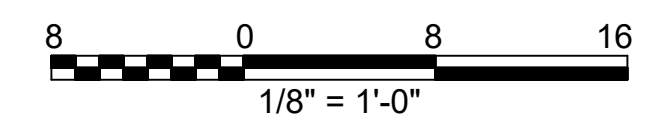
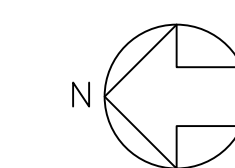
- COMPLETELY REMOVE (E) SBS MEMBRANE & SOLID INSULATION TO STRUCTURAL DECK. PERFORM STRUCTURAL INSPECTION FOR POTENTIAL STRUCTURAL REPAIR REQUIRED FOR LEAK / WATER DAMAGE. REPAIR & PREP ROOF SURFACE TO RECEIVE (N) PVC ROOFING. SEE SPECS & MFR INSTALLATION INSTRUCTIONS FOR REQUIREMENTS, TYP.
- COMPLETELY REMOVE (E) GRAVEL BALLAST AND SBS MEMBRANE TO SURFACE OF METAL DECKING. PERFORM STRUCTURAL INSPECTION FOR POTENTIAL STRUCTURAL REPAIR REQUIRED FOR LEAK / WATER DAMAGE. REPAIR & PREP ROOF SURFACE TO RECEIVE (N) ROOFING TO MATCH EXISTING. SEE SPECS & MFR INSTALLATION INSTRUCTIONS FOR REQUIREMENTS, TYP.
- REMOVE (E) TRAFFIC PADS.
- RETAIN (E) MECH SCREEN IN PLACE, TYP.
- (E) CONG CRICKET TO REMAIN. TAPERED RIGID FOAM TO BE REPLACED, TYP.
- RETAIN (E) ROOF DRAIN IN PLACE, TYP.
- RETAIN (E) S.M. SCUPPERS IN PLACE, TYP.
- RETAIN (E) TIE BACK IN PLACE, TYP.
- DEMO ROOFING AT ELEVATOR OVERRUN
- DEMO ROOFING AT SHAFT ENCLOSURE

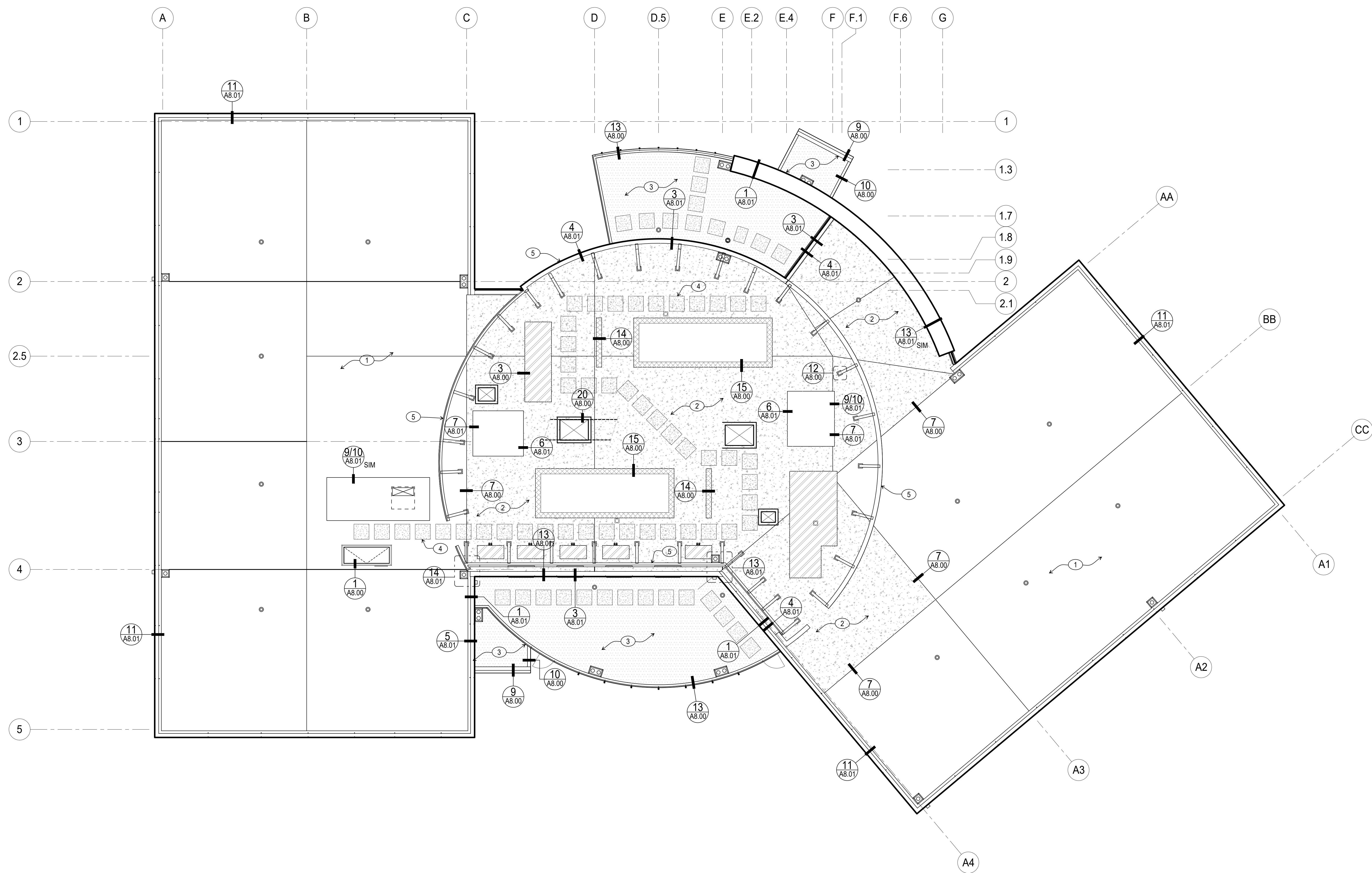
DEMOLITION LEGEND

- [Pattern: Dotted] SBS ROOFING OVER PERLITE COVERBOARD OVER RIGID INSULATION DEMO TO MTL DECK
- [Pattern: Stippled] SBS ROOFING OVER PERLITE COVERBOARD DEMO TO CONCRETE DECK
- [Pattern: Horizontal Lines] GRAVEL BALLAST OVER BUILT-UP ROOFING OVER PERLITE COVERBOARD DEMO TO MTL DECK

DEMOLITION SYMBOLS

- [Symbol: Square with circle] (E) ROOF DRAIN AND OVERFLOW; SEE NOTES
- [Symbol: Square with square] (E) ROOF DRAIN - ADJACENT SCUPPER PROVIDES OVERFLOW DRAINAGE; SEE NOTES
- [Symbol: Circle with dot] (E) TIEBACK TO REMAIN
- [Symbol: Square with diagonal lines] (E) ROOF WALKWAY PADS TO BE REMOVED
- [Symbol: Square with horizontal lines] (E) RAISED CONCRETE PAD FOR MECHANICAL EQUIPMENT TO REMAIN
- [Symbol: Square with cross-hatch] (E) CONCRETE CURB FOR MECH EQUIP. TO REMAIN





1 ROOF PLAN
SCALE: 1/8" = 1'-0"

ROOF PLAN NOTES

- DIMENSIONS AND AREAS SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. VERIFY ALL DIMENSIONS IN FIELD.
- PROVIDE FALL PROTECTION PER CA TITLE & REGULATIONS.
- PROTECT (E) MECHANICAL EQUIPMENT, ELEC CONDUITS & EQUIPMENT, & PLUMBING FIXTURE & PIPING TO REMAIN. COMPONENTS SHALL REMAIN OPERATIONAL DURING CONSTRUCTION. COORDINATE WORKING SCHEDULE W/ BLDG. ENGINEER.
- MATCH EXISTING ROOF HEIGHTS AND PROFILES IN NEW WORK.
- SEE A1.01 FOR ROOF SLOPE PLAN.
- REINSTALL SALVAGED ABOVE-DECK COMPONENTS OF (E) DRAINS AND OVERFLOWS.
- BUILDING TO REMAIN OPERATIONAL DURING CONSTRUCTION. PROTECT (E) MECH/ELEC EQUIPMENT, DUCTWORK, CONDUIT, & PIPING ON ROOF.
- COMPLY W/ ROOFING MFR'S INSTALLATION INSTRUCTIONS AND SPECIFICATION FOR ROOFING APPLICATION, FLASHING AND EDGE TREATMENT.

ROOF PLAN KEYNOTES

- (N) ROOF TYPE A
- (N) ROOF TYPE B
- (N) ROOF TYPE C
- (N) TRAFFIC PADS
- (E) MECHANICAL SCREEN TO REMAIN

ROOF PLAN LEGEND

- ROOF TYPE A (SEE DETAILS 19/A8.00)
PVC ROOFING OVER
1/2" COVER BOARD OVER
5" RIGID INSULATION (AVG. SLOPED TO DRAIN) OVER
(E) 1-1/2" METAL DECK
(E) (R-30 ASSEMBLY)
- ROOF TYPE B (SEE DETAIL 18/A8.00)
PVC ROOFING OVER
1/2" COVER BOARD OVER
(E) 4-1/2" NORMAL WEIGHT CONCRETE OVER
(E) VENTED 3" METAL DECK
(E) (R-30 BATT INSULATION HUNG UNDER METAL DECK)
- ROOF TYPE C (SEE DETAIL 17/A8.00)
(R) DECORATIVE GRAVEL BALLAST OVER
PVC ROOFING OVER
1-1/2" COVER BOARD OVER
(E) 1-1/2" METAL DECK
(E) (R-30 BATT INSULATION HUNG UNDER METAL DECK)

ROOF PLAN SYMBOLS

- ROOF DRAIN AND OVERFLOW (SEE DETAIL 8/A8.00)
- ROOF DRAIN - ADJACENT SCUPPER PROVIDES OVERFLOW DRAINAGE (SEE DETAIL 4/A8.00 FOR TYPE A ROOF AND 5/A8.00 FOR TYPE B ROOF)
- TIEBACK (SEE DETAIL 21/A8.00 FOR FLASHING)
- ROOF WALKWAY PADS, APPROX. 3'X3' SQUARE
- RAISED CONCRETE PAD FOR MECHANICAL EQUIPMENT (SEE DETAILS 3/A8.00 FOR FLASHING)
- CONCRETE CURB FOR MECH EQUIP.
- ROOF RECEPTOR
SEE DETAIL 6/A8.00



NO.	DESCRIPTION	DATE
REVISIONS		

**SANTA ANA
COURT OF
APPEALS
ROOF
REPLACEMENT**

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE

ROOF PLAN

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ NO.
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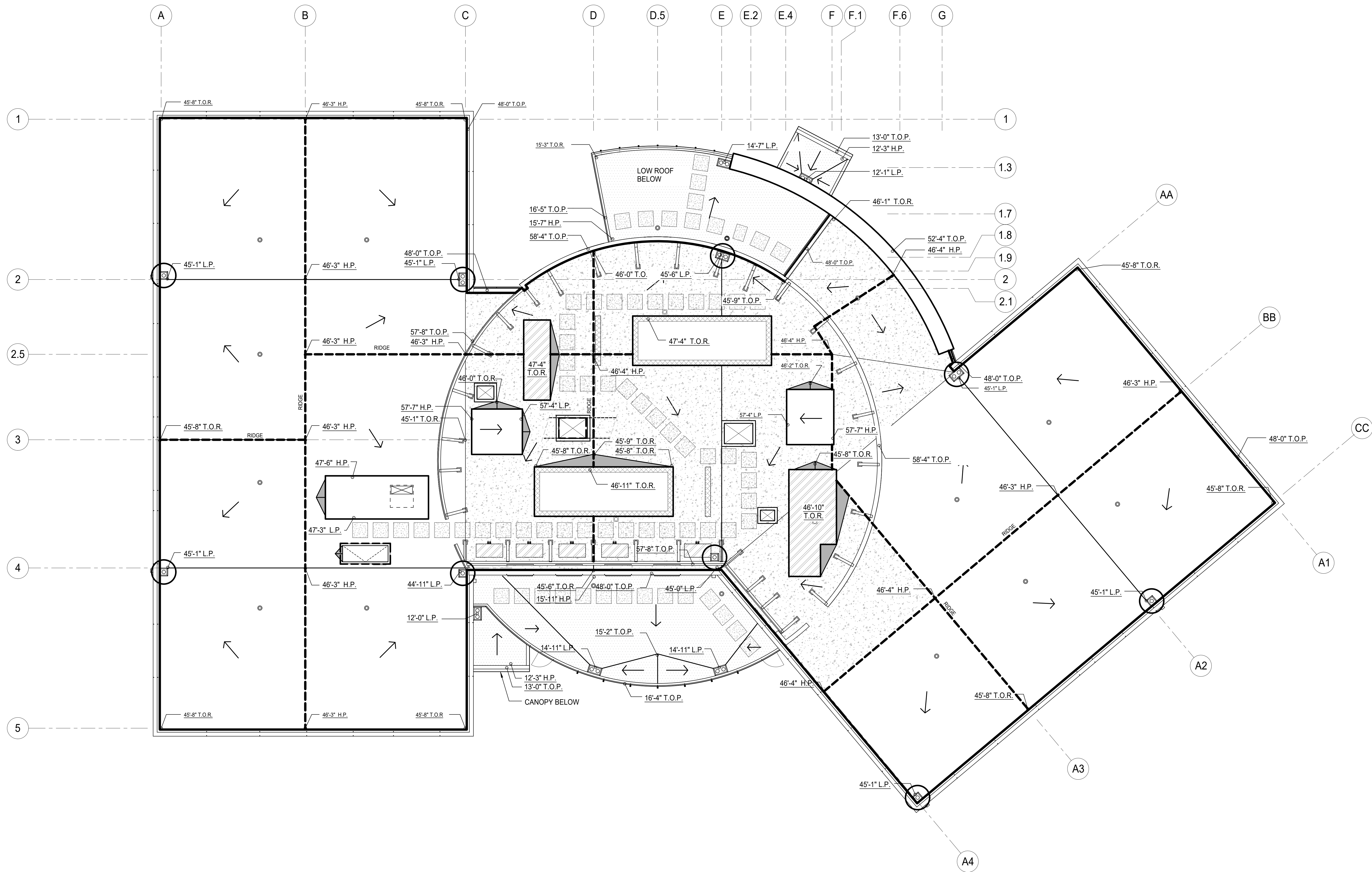
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SHEET 7 OF 12



1 ROOF SLOPE PLAN
SCALE: 1/8" = 1'-0"

ROOF SLOPE GENERAL NOTES

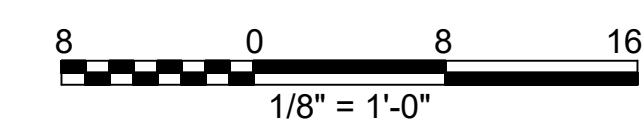
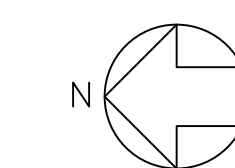
1. RECONSTRUCT CRICKETS, TYP.
2. ALL SLOPES AND PROFILES TO MATCH EXISTING.
3. R30 AGGREGATE VALUE FOR ROOF AREAS.

ROOF SLOPE LEGEND

- | | |
|--|--|
| | ROOF TYPE A (SEE DETAIL 19/A8.00)
PVC ROOFING OVER
1/2" COVER BOARD OVER
5" RIGID INSULATION (AVG. SLOPED TO DRAIN) OVER
(E) 1-1/2" METAL DECK
(E) (R-30 ASSEMBLY) |
| | ROOF TYPE B (SEE DETAIL 18/A8.00)
PVC ROOFING OVER
1/2" COVER BOARD OVER
(E) 4-1/2" NORMAL WEIGHT CONCRETE OVER
(E) VENTED 3" METAL DECK
(E) (R-30 BATT INSULATION HUNG UNDER METAL DECK) |
| | ROOF TYPE C (SEE DETAIL 17/A8.00)
(R) DECORATIVE GRAVEL BALLAST OVER
PVC ROOFING OVER
1-1/2" COVER BOARD OVER
(E) 1-1/2" METAL DECK
(E) (R-30 BATT INSULATION HUNG UNDER METAL DECK) |

ROOF SLOPE SYMBOLS

- | | |
|--|--|
| | ROOF DRAIN AND OVERFLOW (SEE DETAIL 8/A8.00) |
| | ROOF DRAIN - ADJACENT SCUPPER PROVIDES OVERFLOW DRAINAGE
(SEE DETAIL 4/A8.00 FOR TYPE A ROOF AND 5/A8.00 FOR TYPE B ROOF) |
| | TIEBACK (SEE DETAIL 21/A8.00 FOR FLASHING) |
| | ROOF WALKWAY PADS, APPROX. 3'X3' SQUARE |
| | RAISED CONCRETE PAD FOR MECHANICAL EQUIPMENT
(SEE DETAILS 3/A8.00 FOR FLASHING) |
| | CONCRETE CURB FOR MECH. EQUIP. |
| | ROOF RECEPTOR
SEE DETAIL 6/A8.00 |



NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA
COURT OF
APPEALS
ROOF
REPLACEMENT

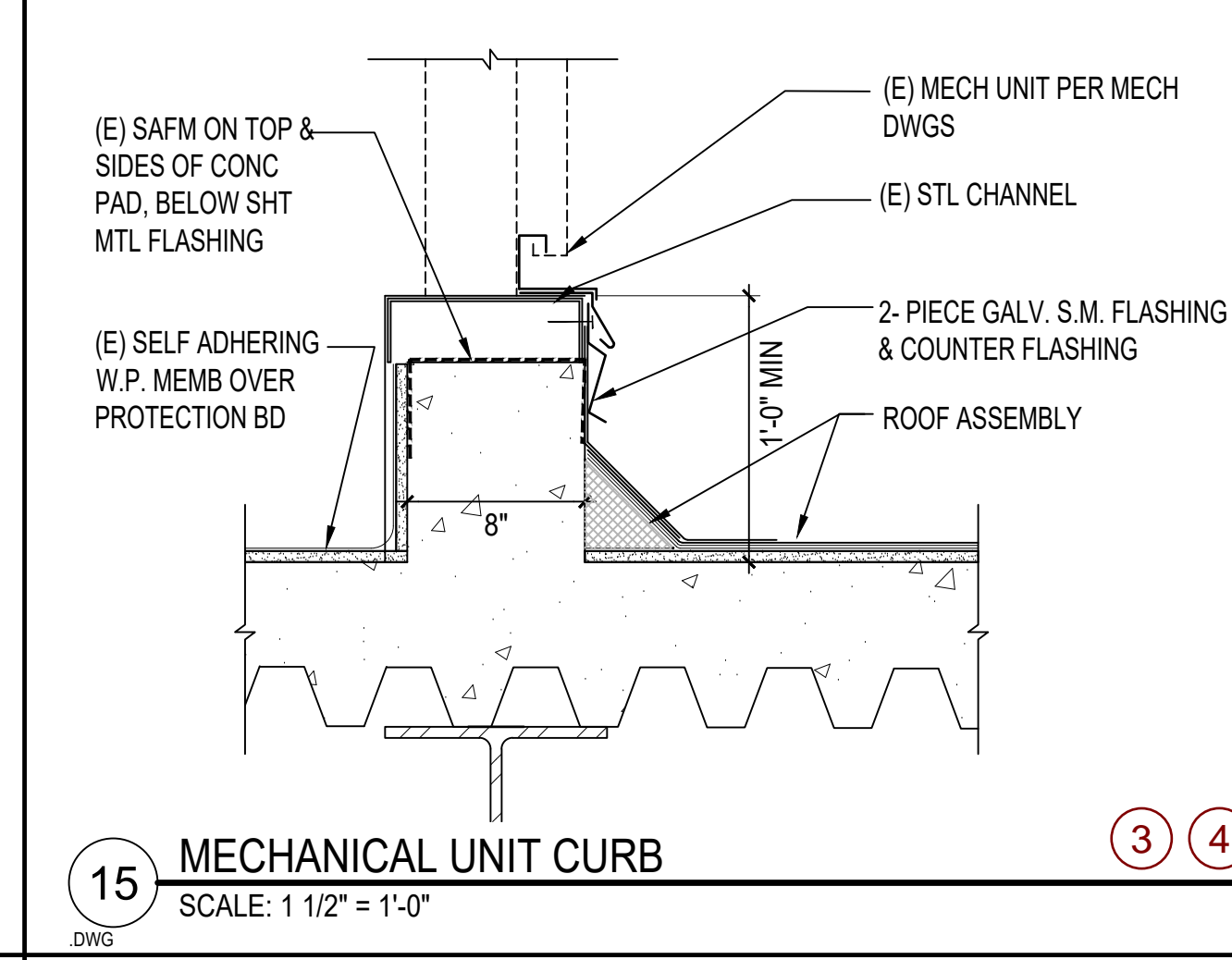
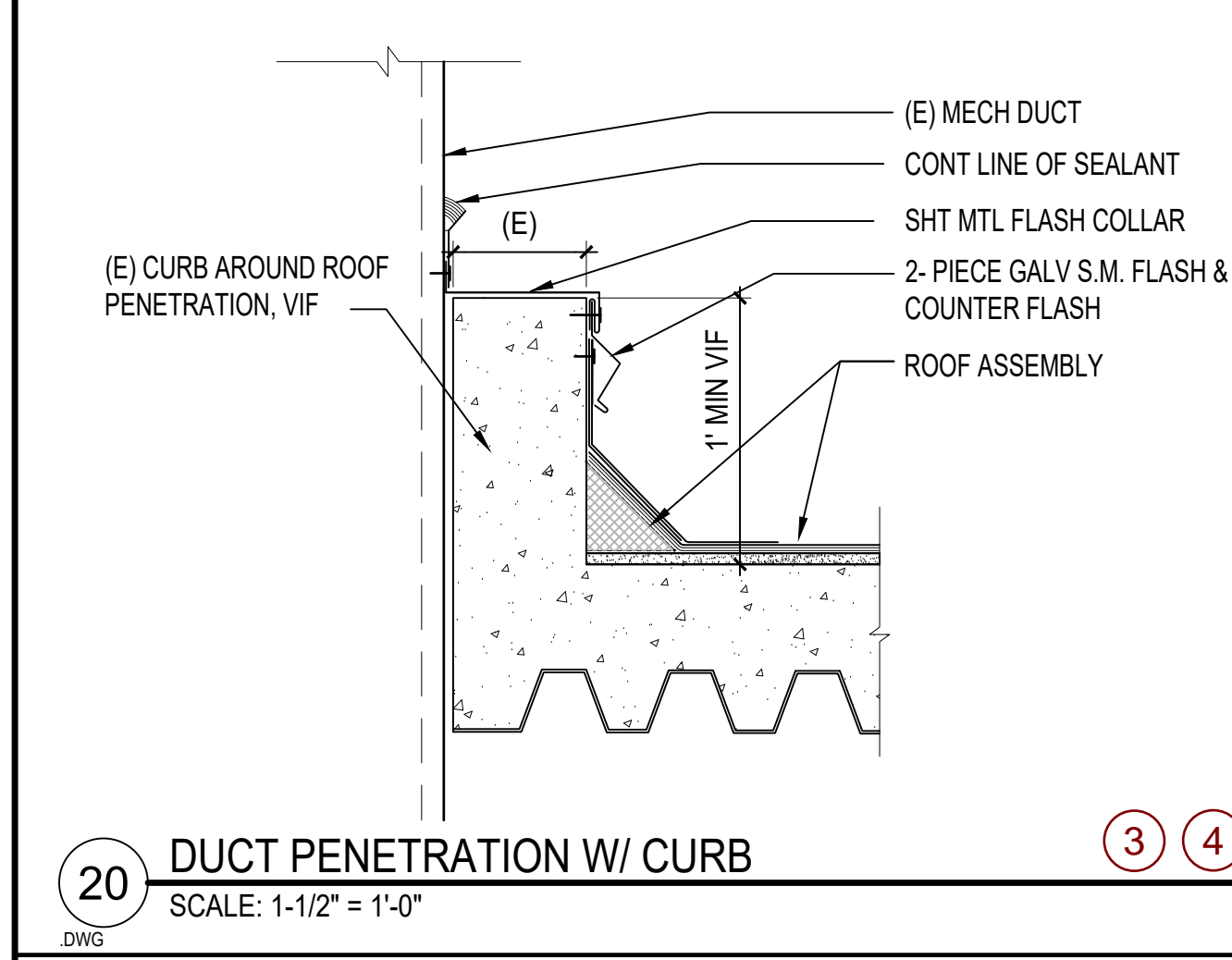
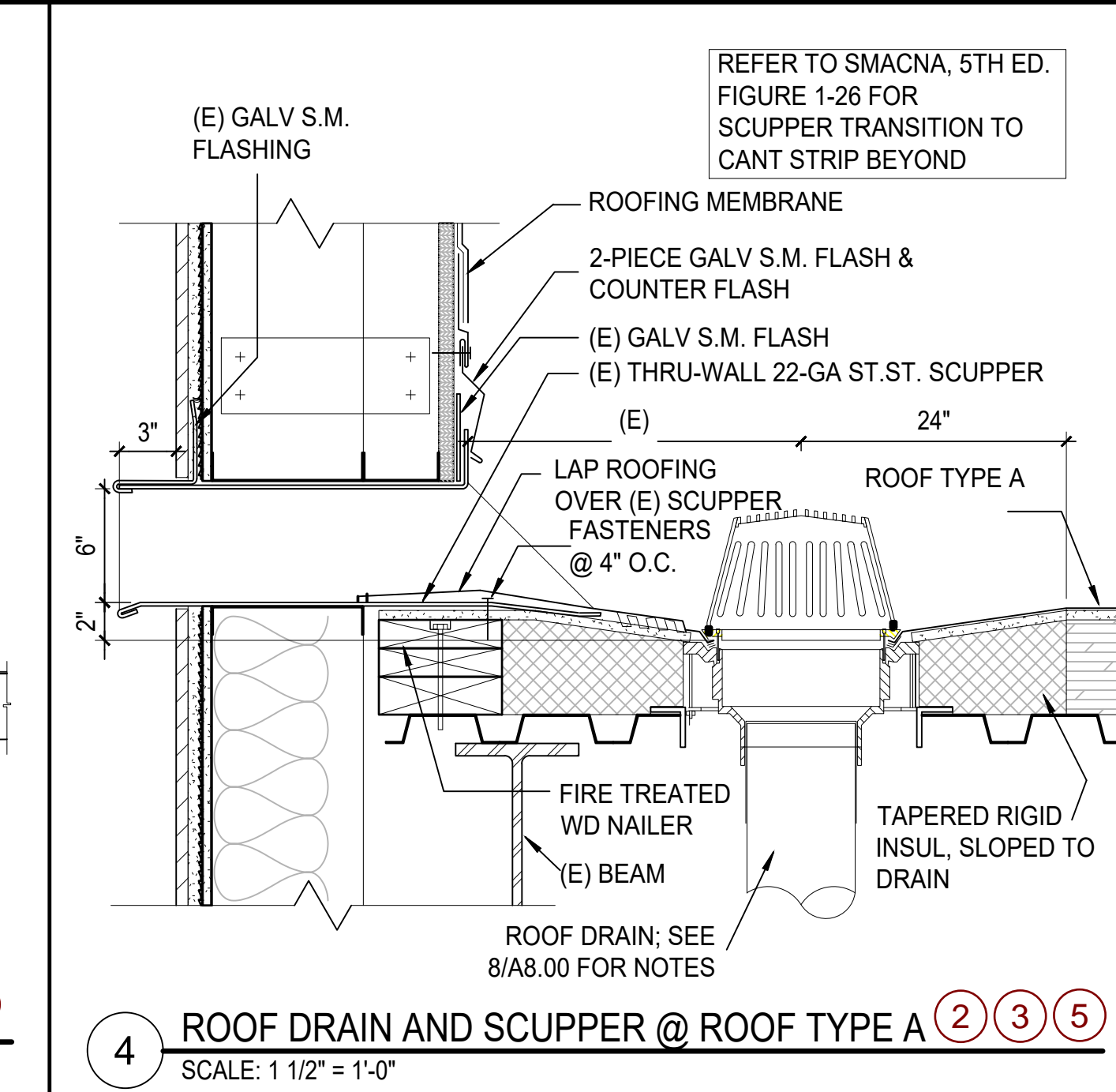
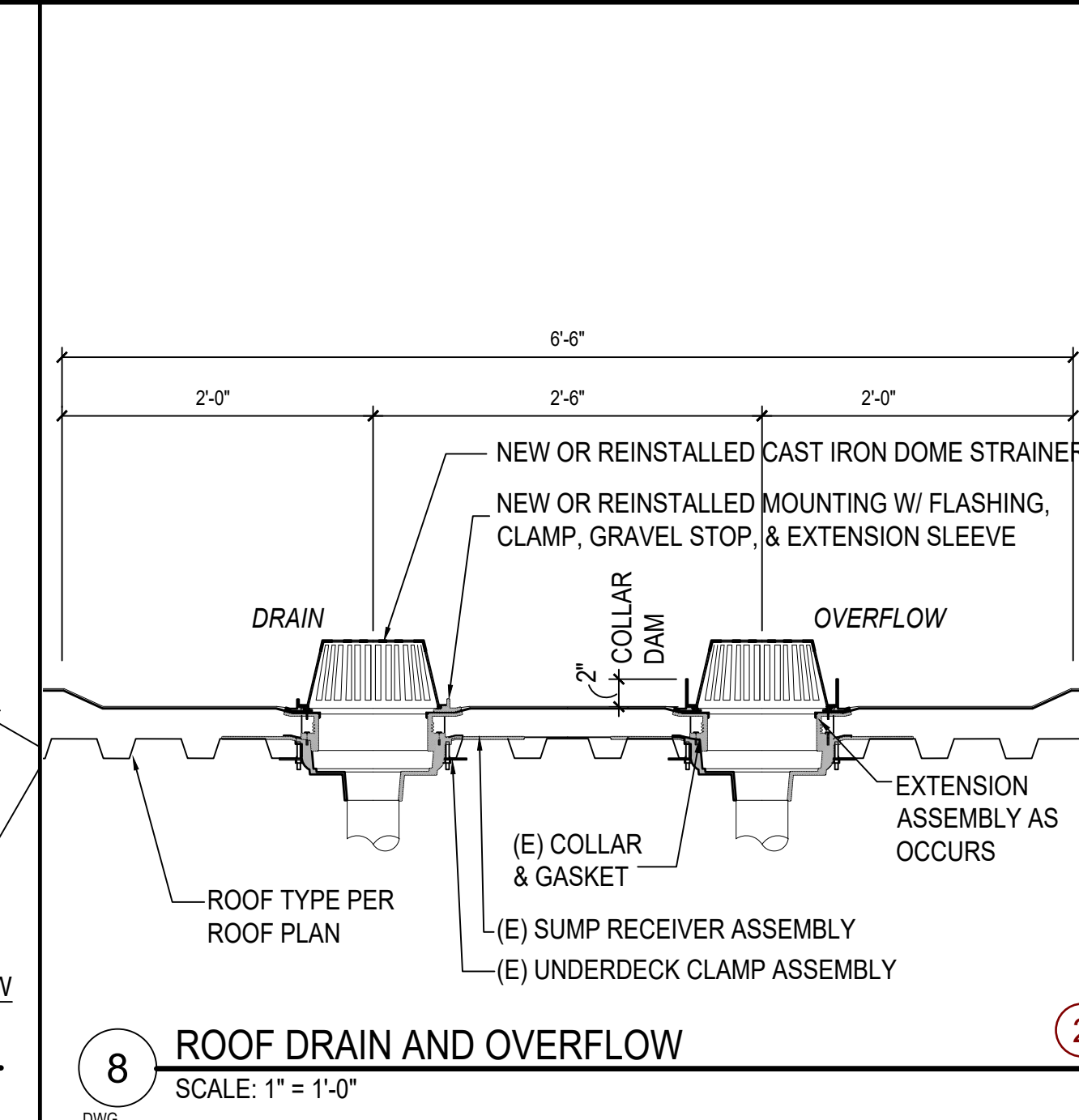
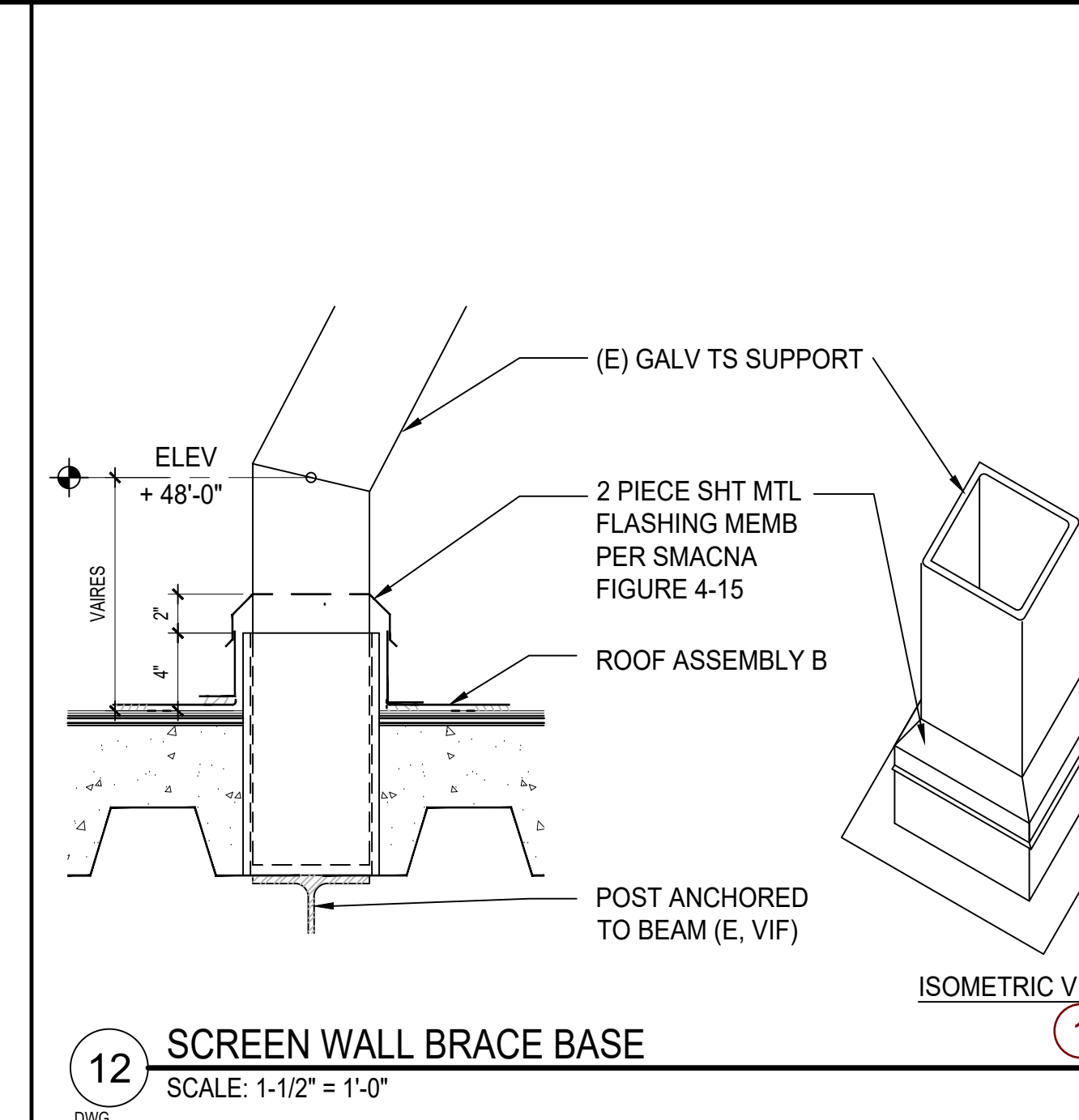
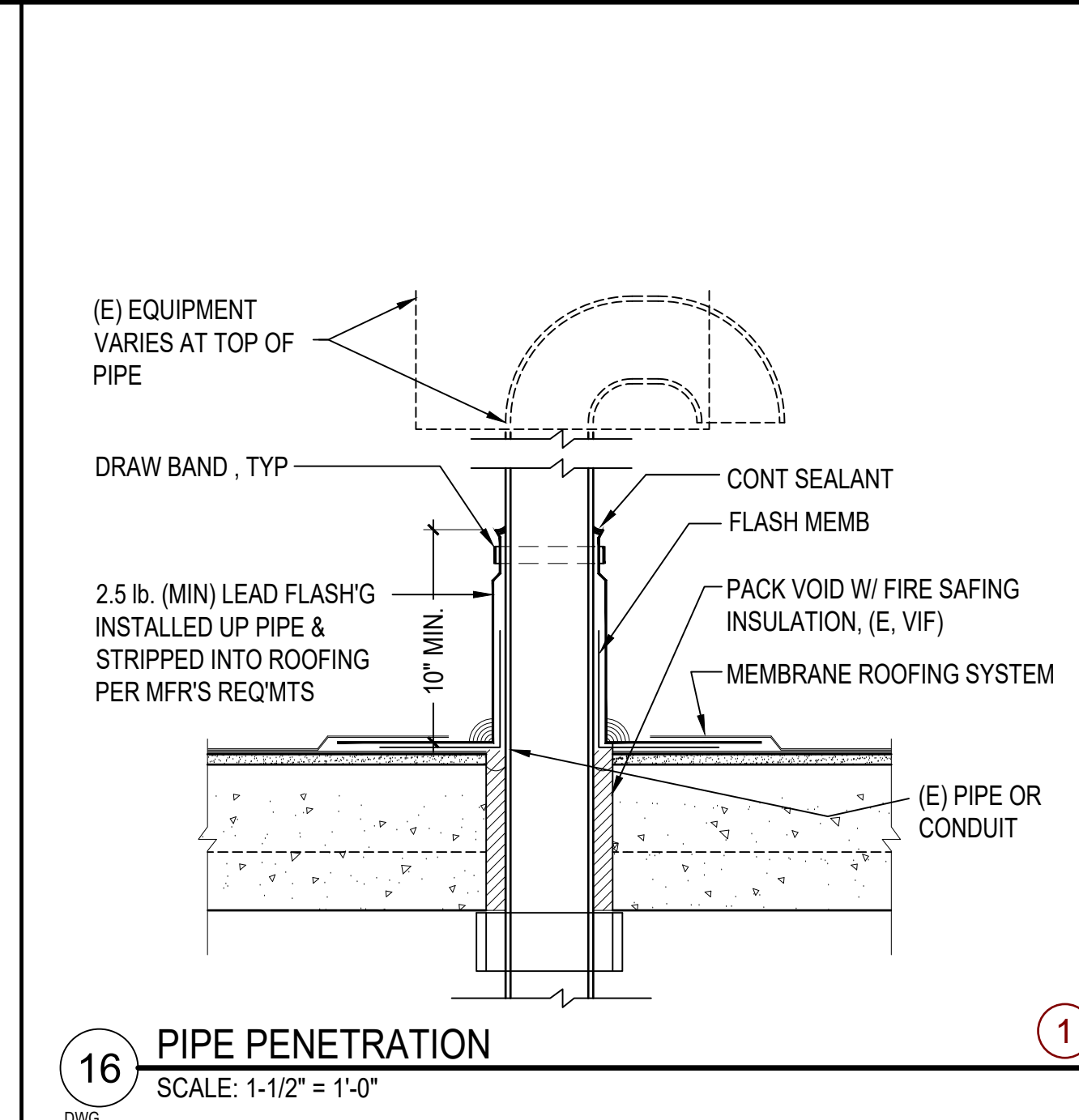
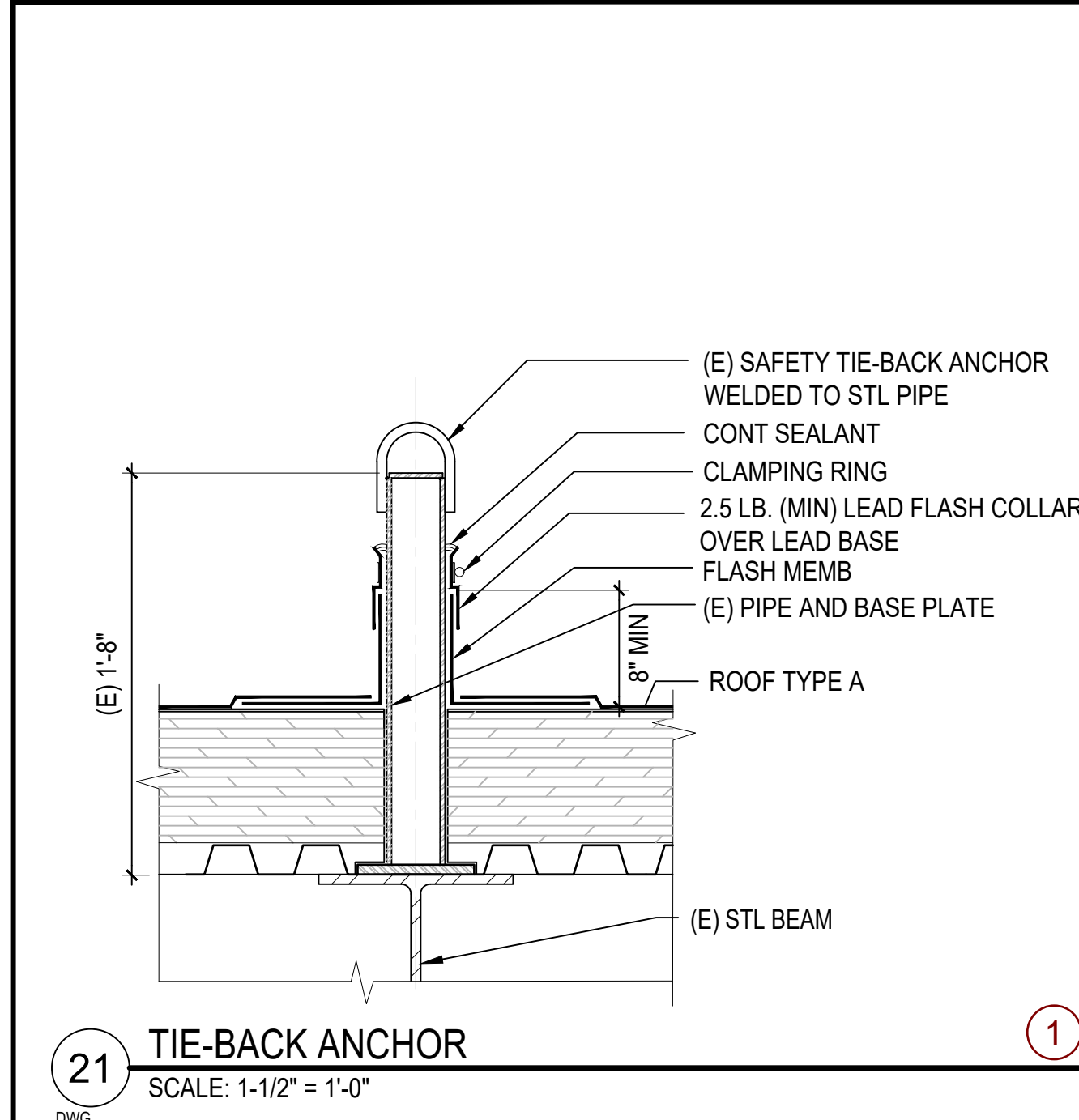
FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
ROOF SLOPE PLAN

ISSUANCE
100% CONSTRUCTION DOCUMENTS
10/13/21

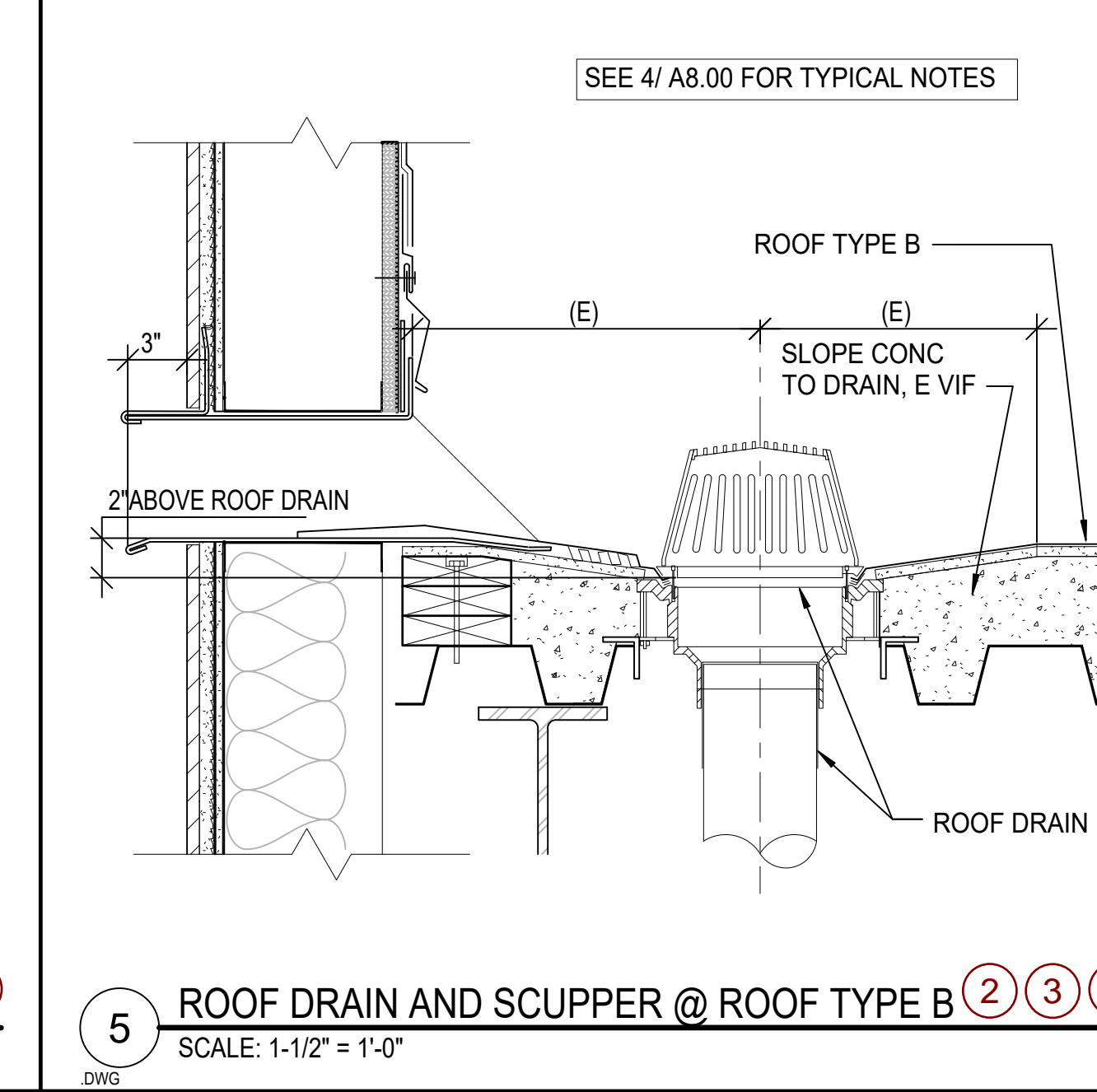
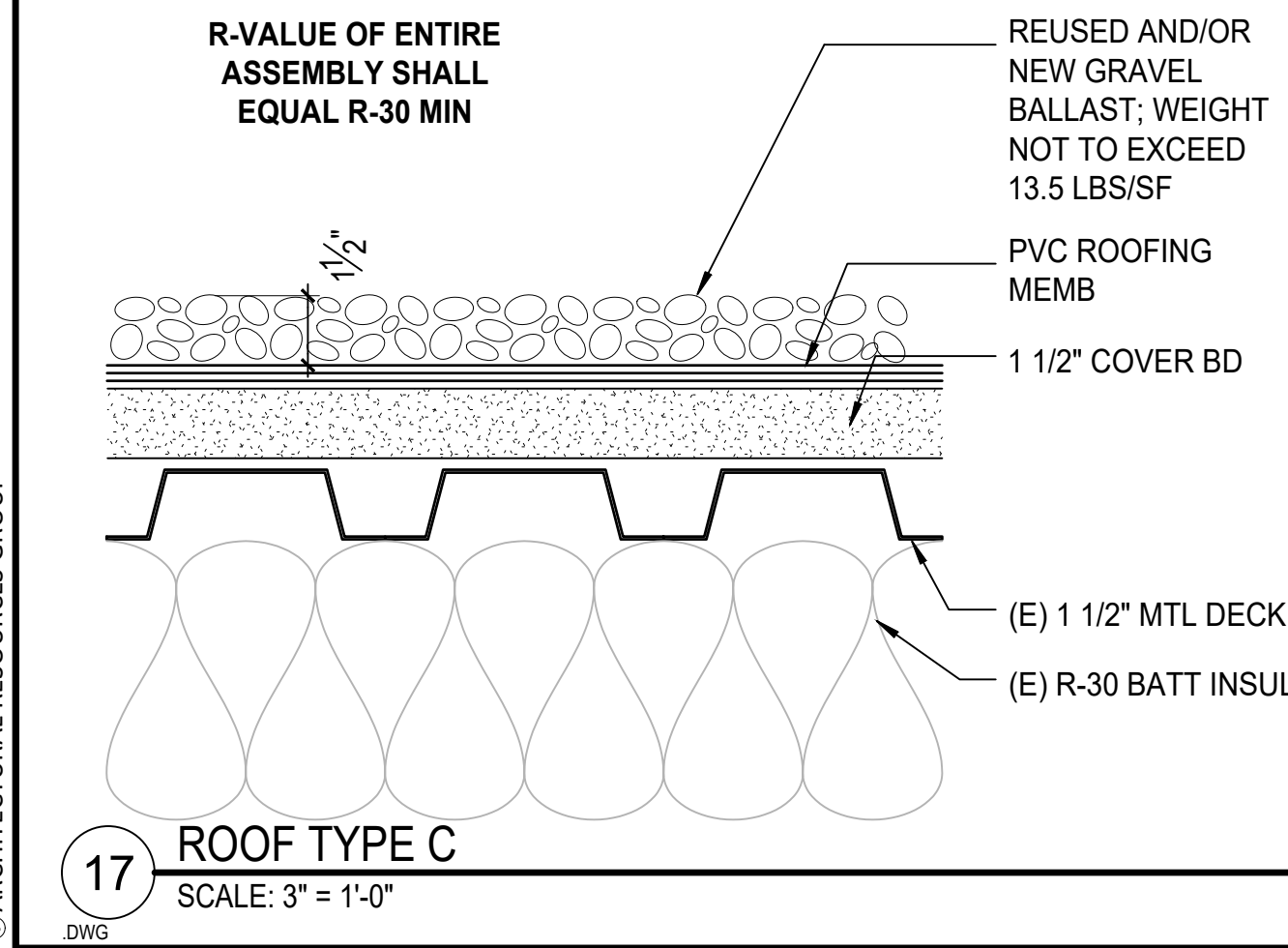
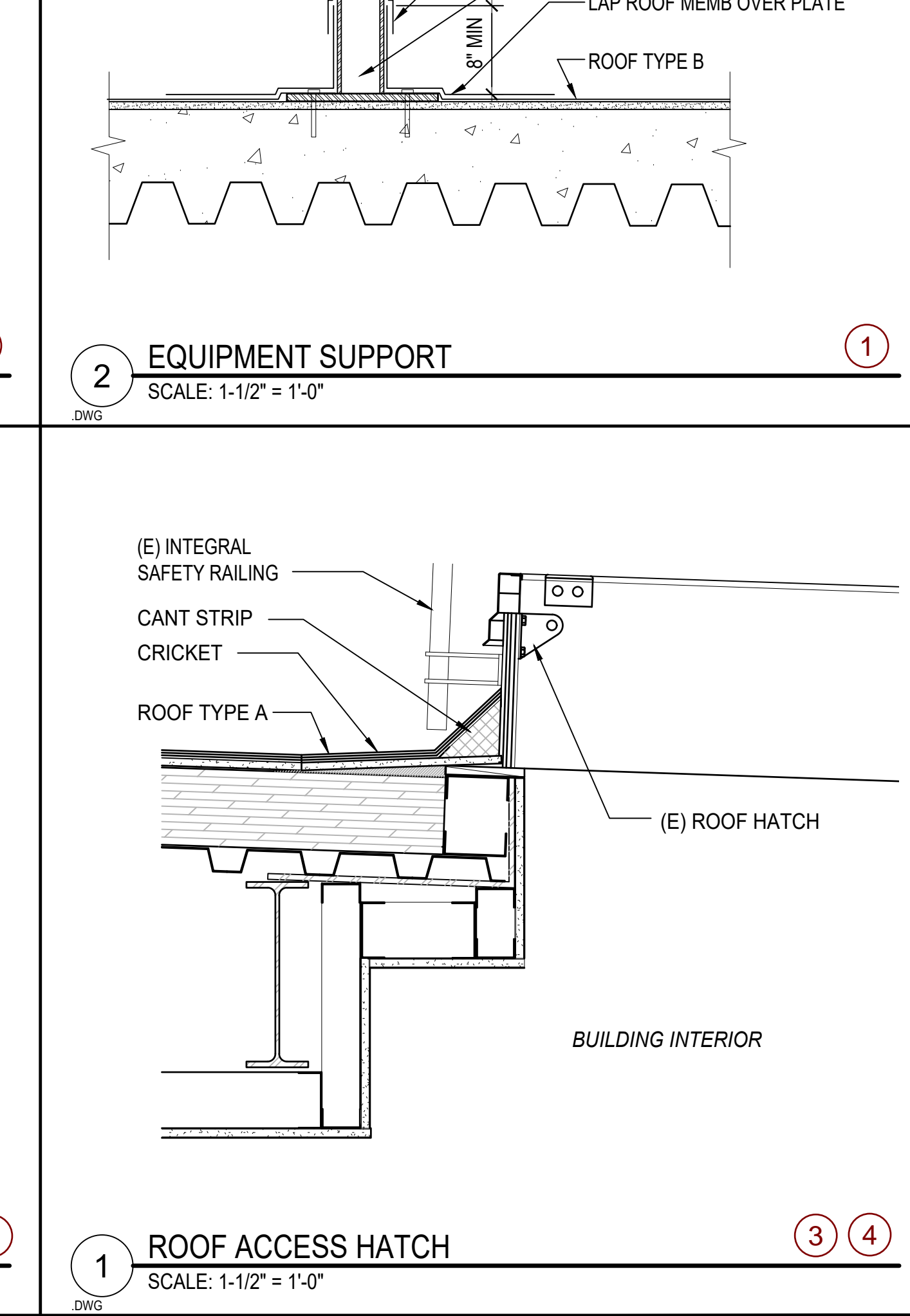
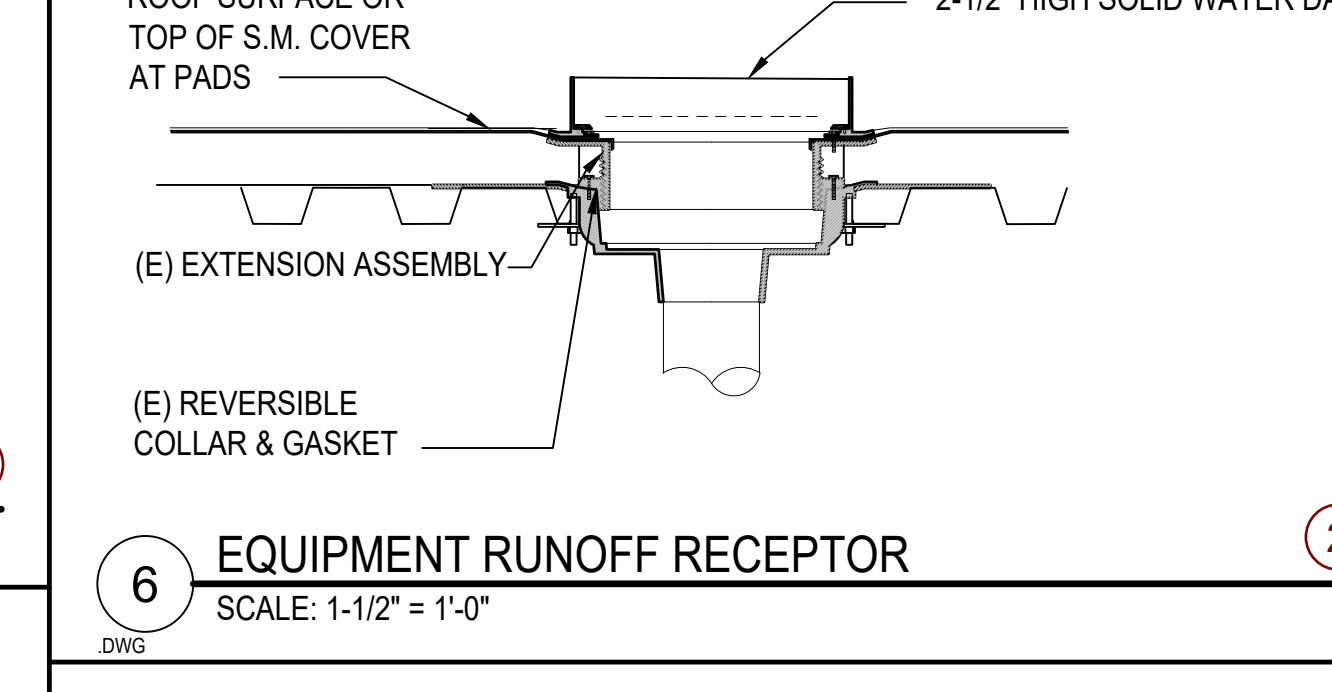
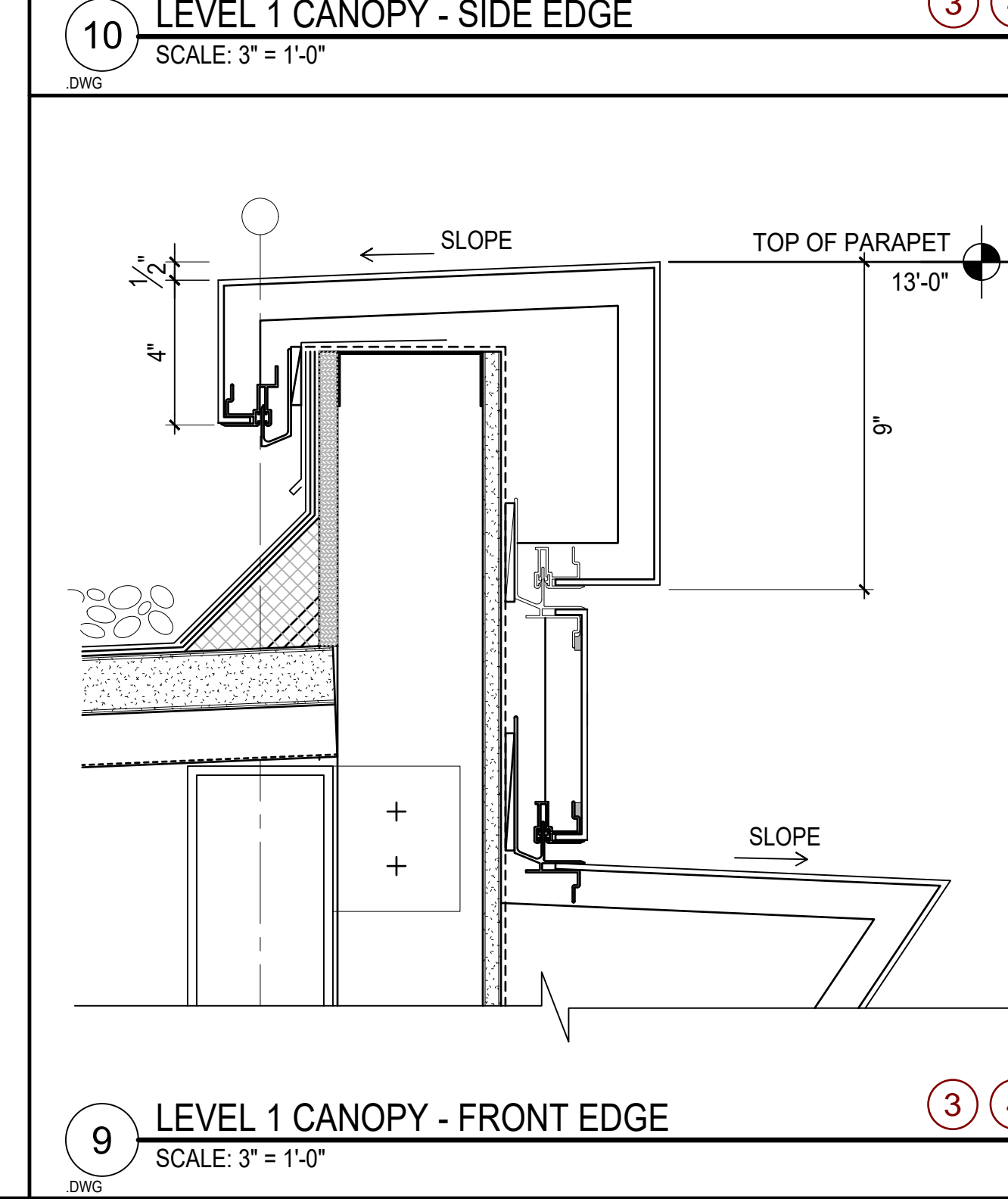
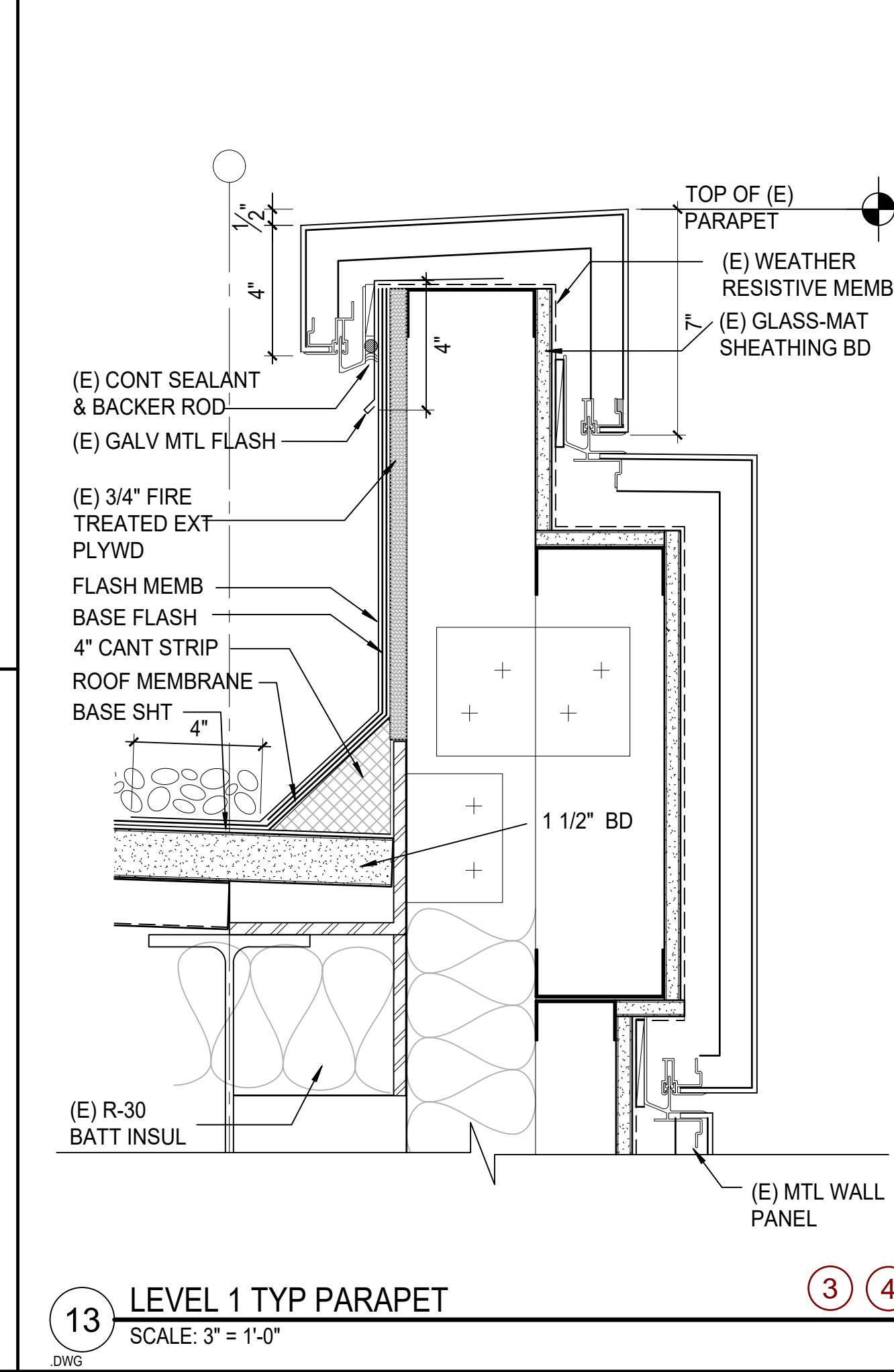
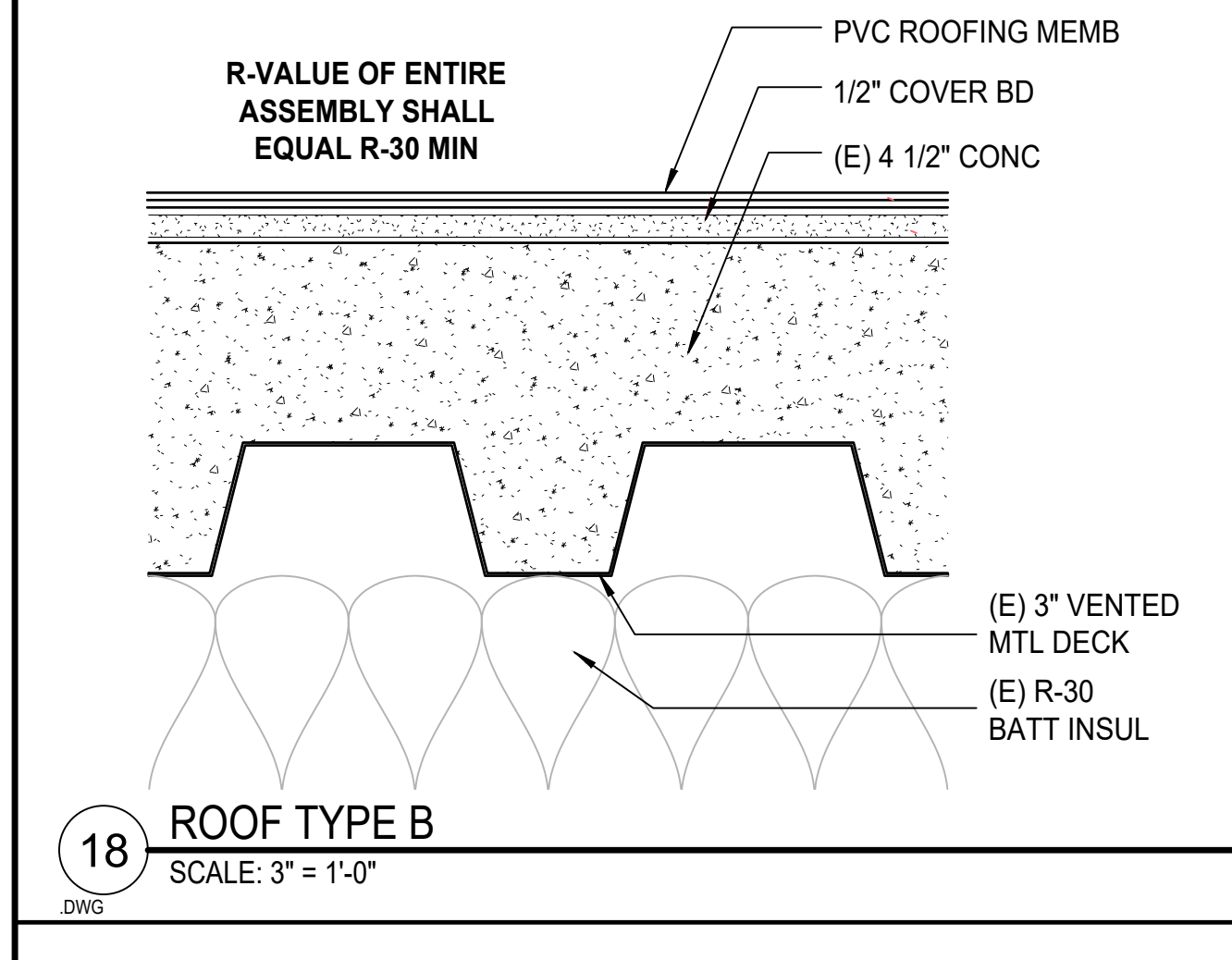
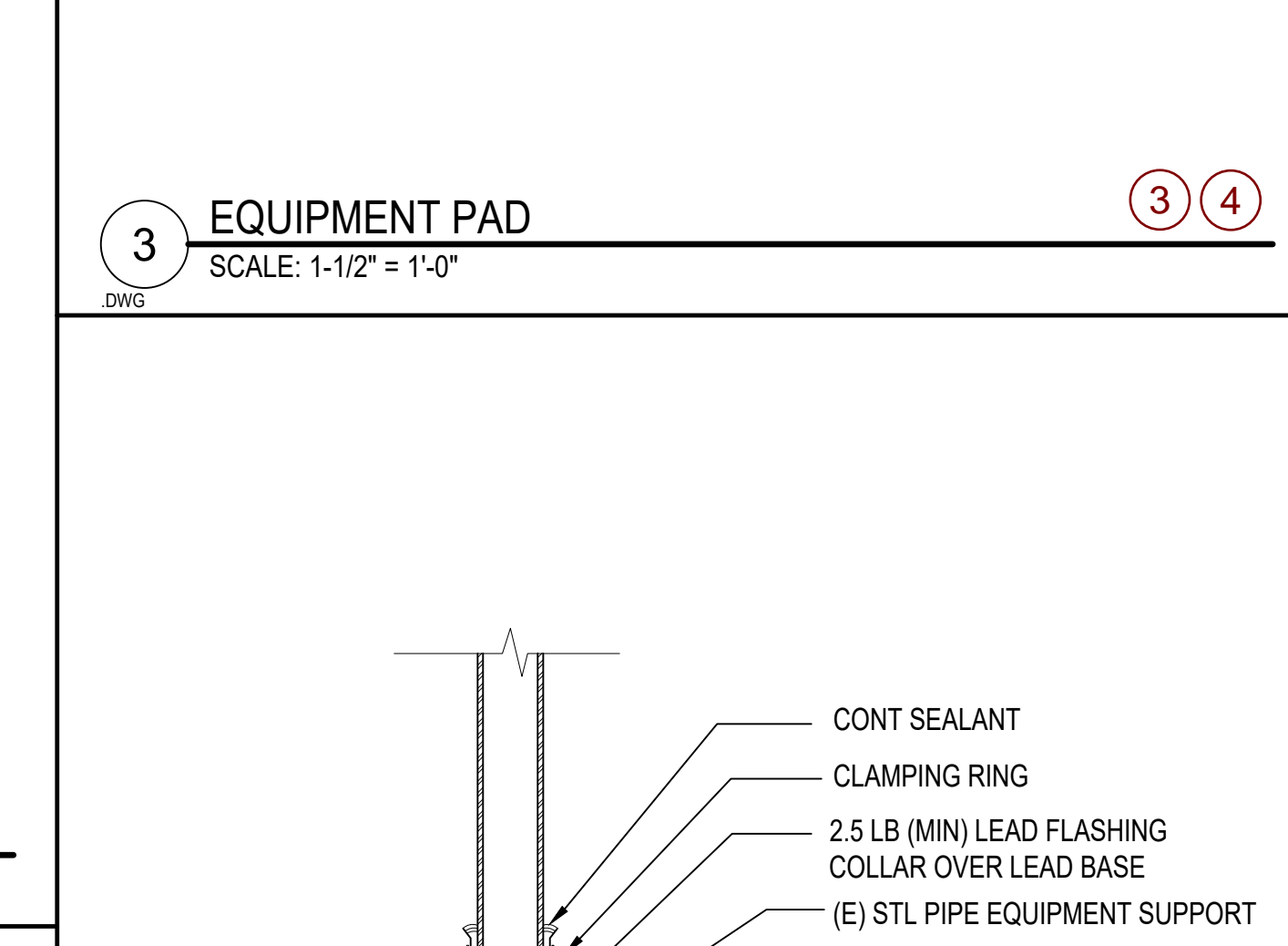
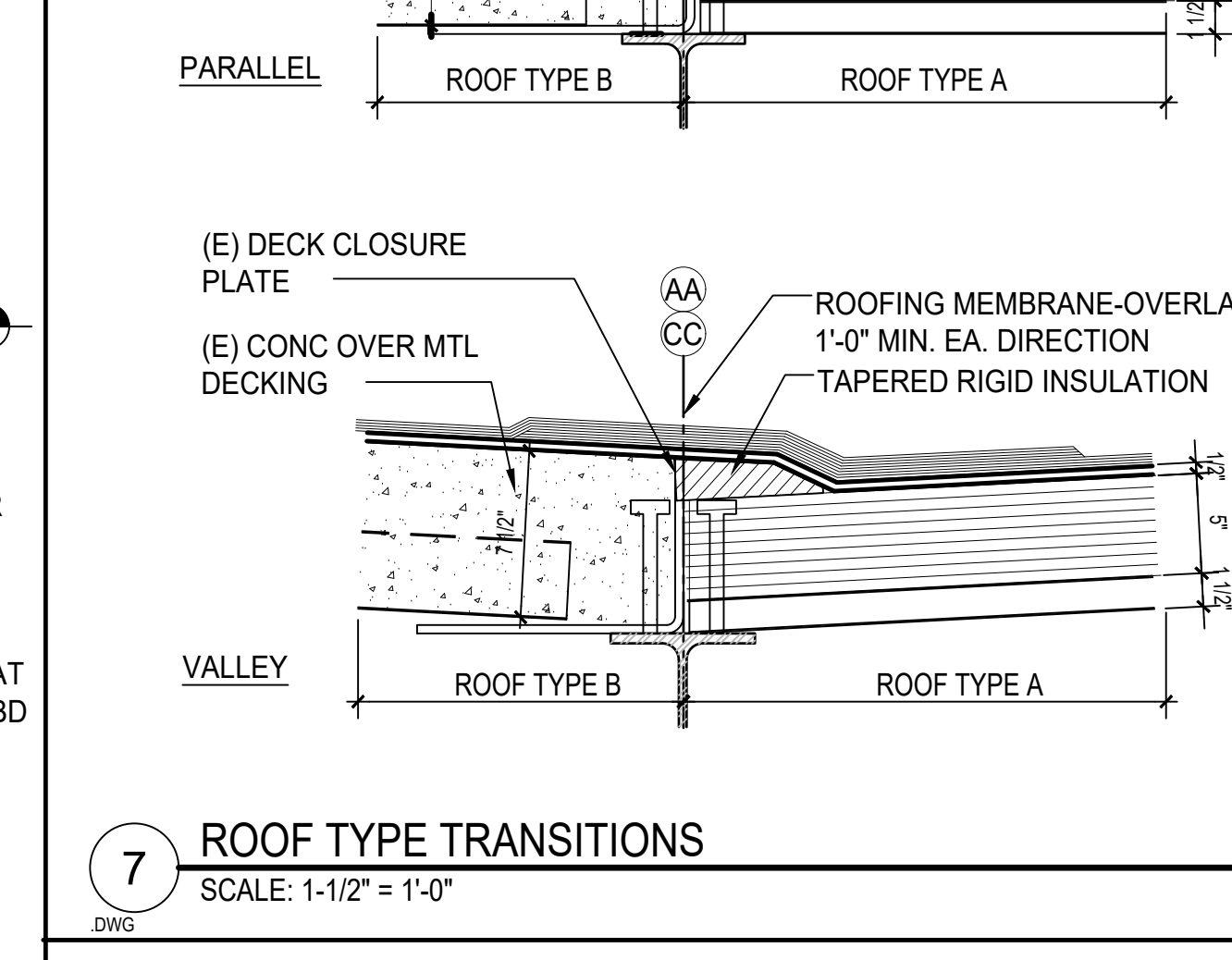
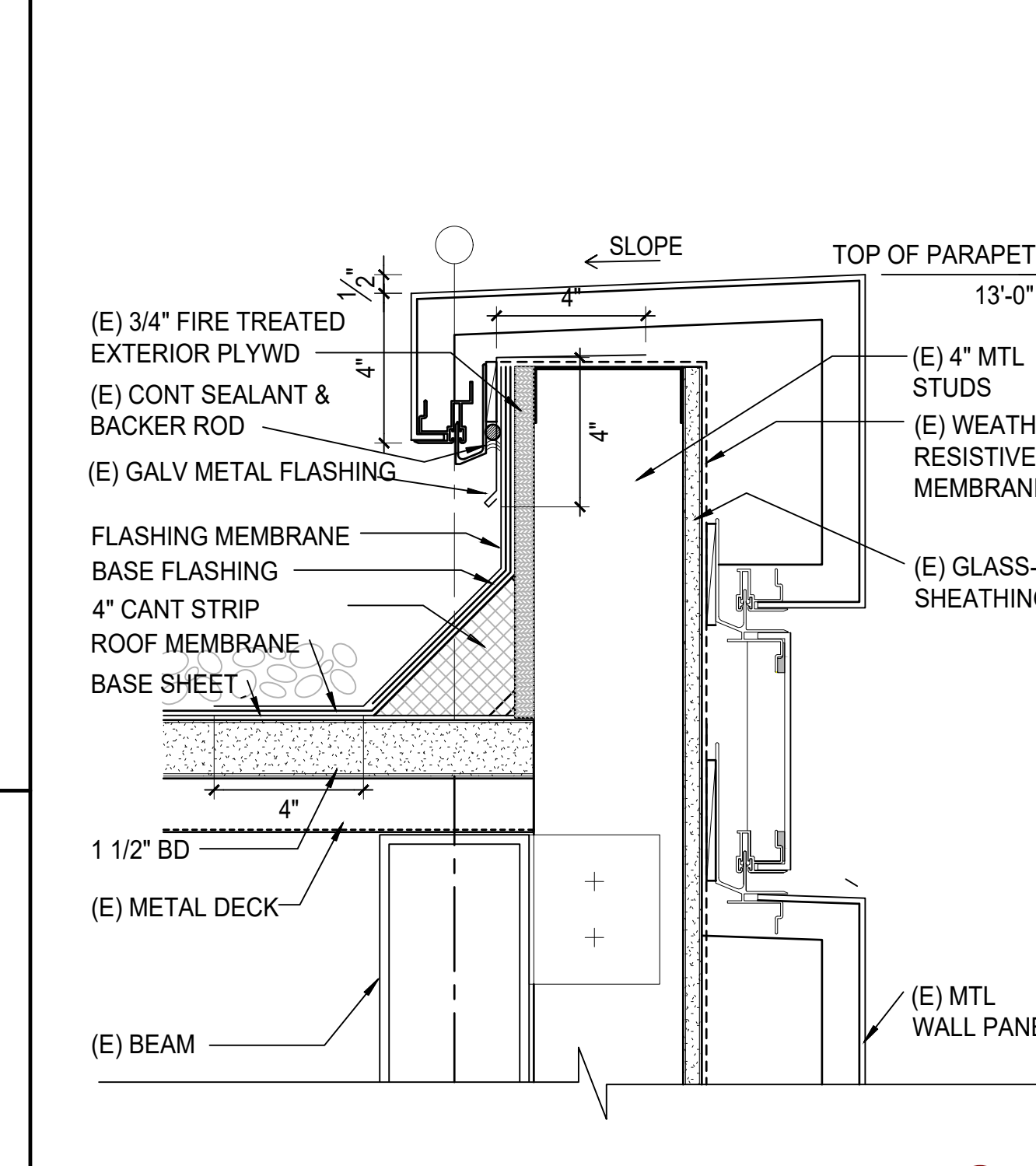
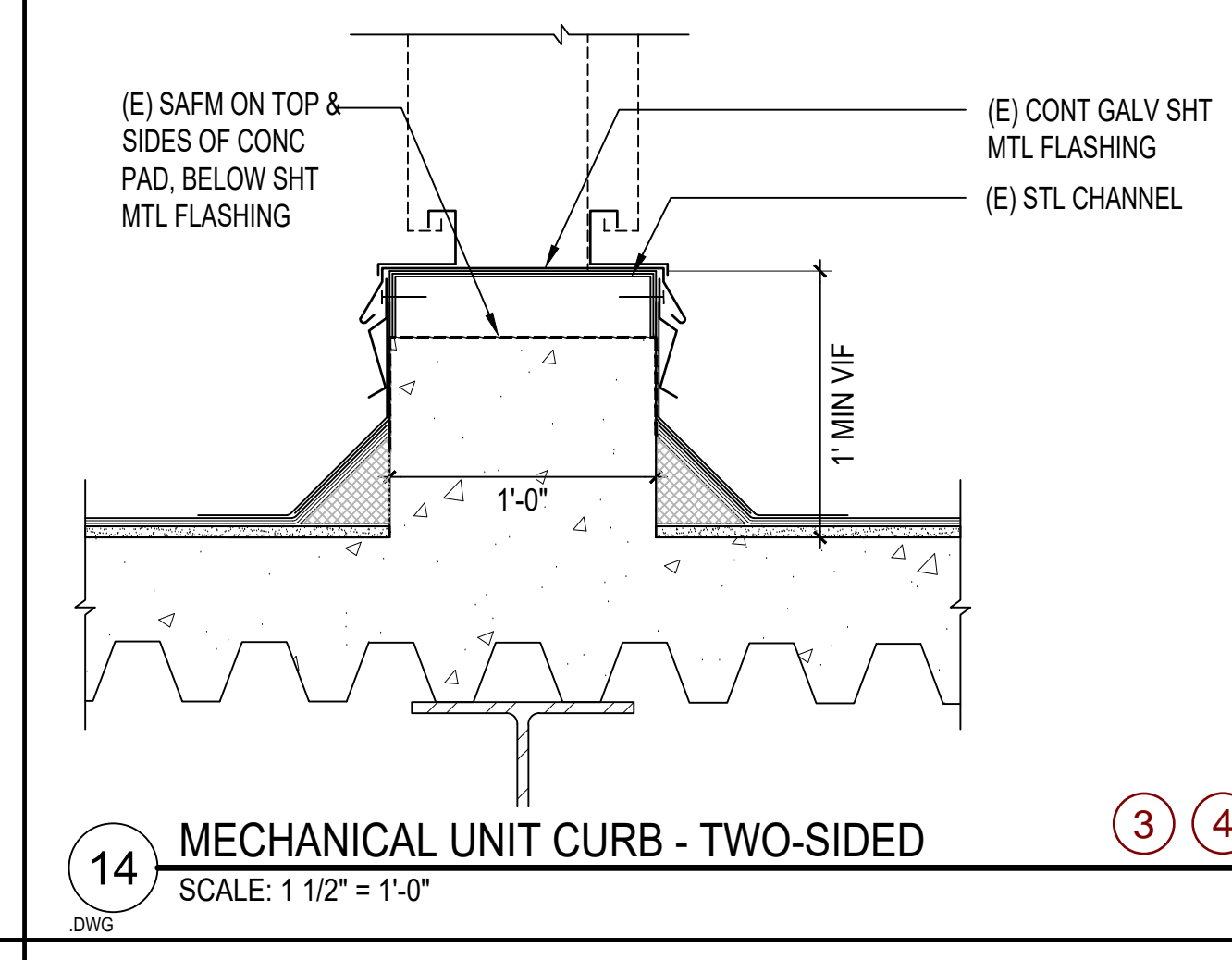
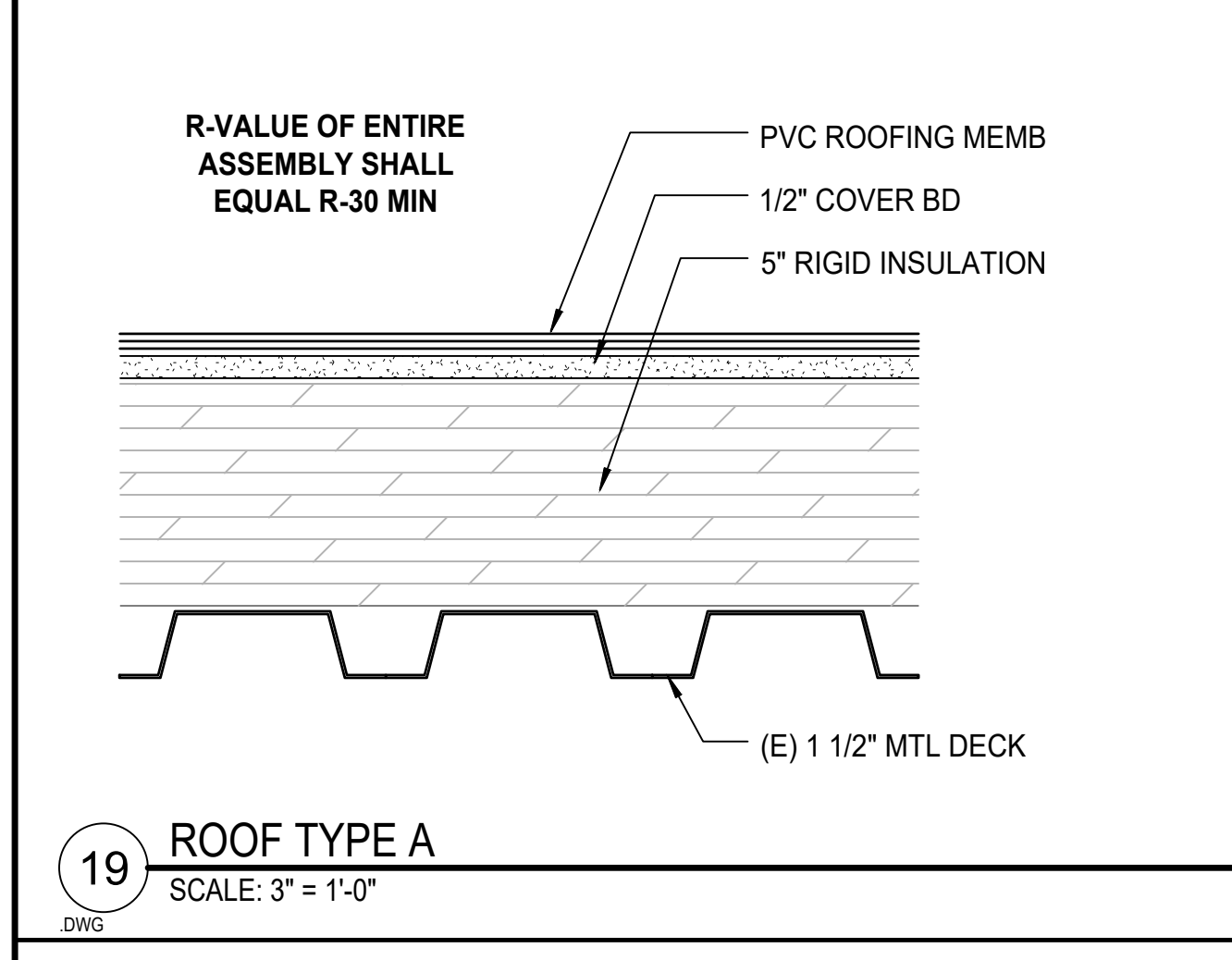
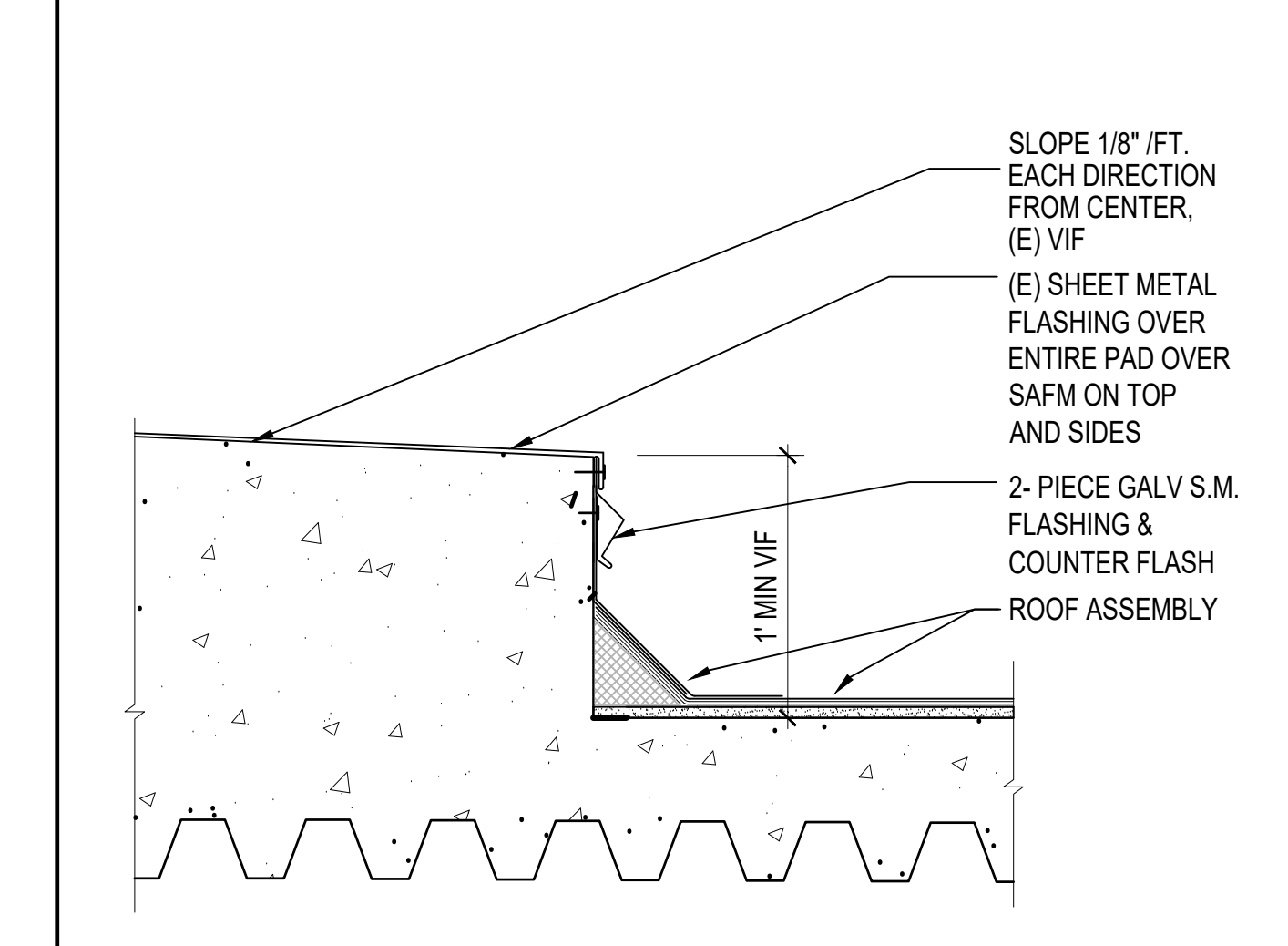
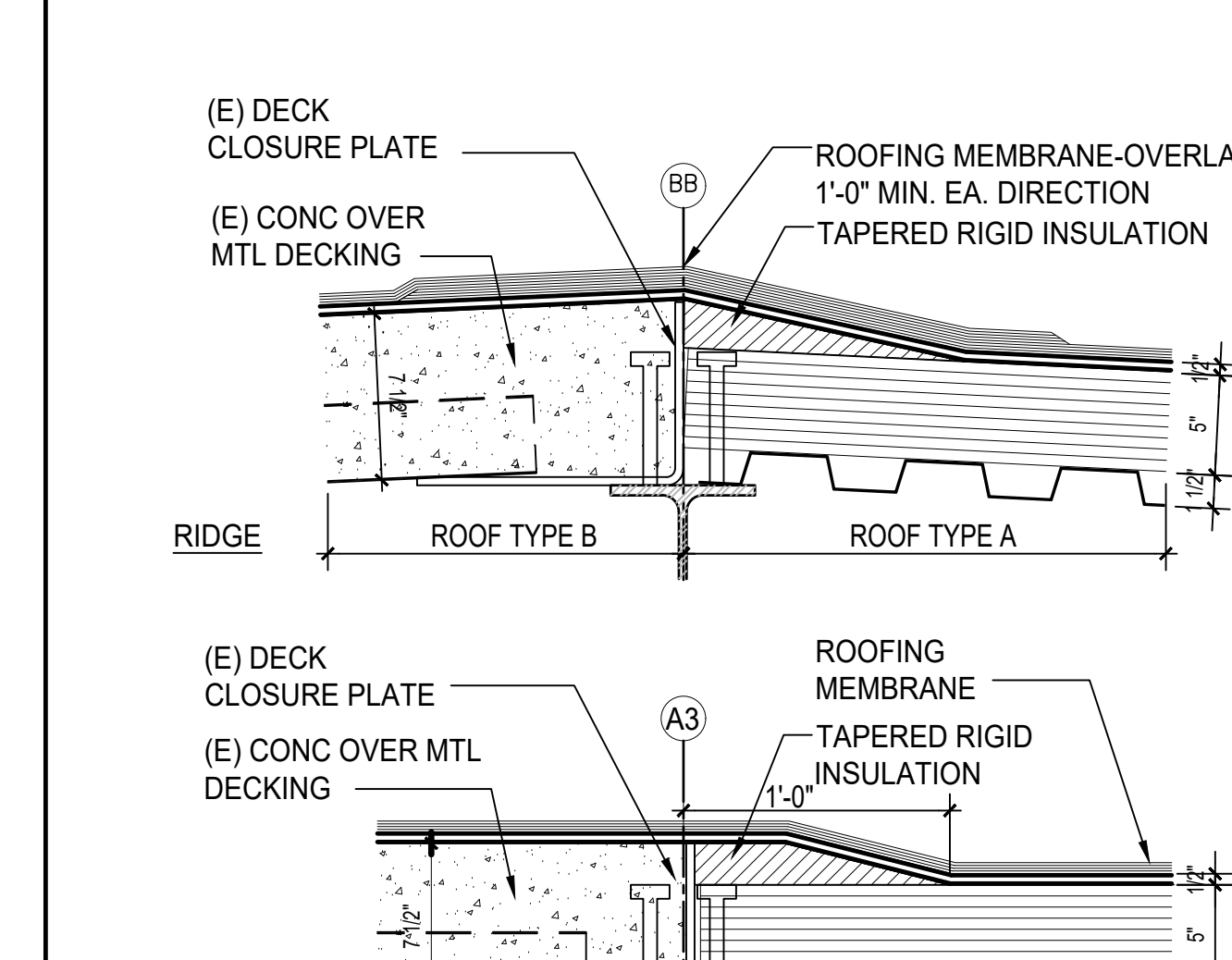
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DRAWING NO.
A1.01
SHEET 8 OF 12



DETAIL REFERENCE NOTES

- LIQUID FLASHING APPROVED BY MANUFACTURER FOR USE WITH ROOFING MEMBRANE CHOSEN FOR PROJECT MAY BE USED IN PLACE OF MECHANICAL FLASHING SHOWN IF PRE-APPROVED BY OWNER.
- RETAIN UNDERDECK COMPONENTS OF DRAINAGE ASSEMBLIES IN PLACE. DEMOUNT ABOVE-DECK ELEMENTS AS NEEDED FOR DEMOLITION AND REROOFING WORK. REINSTALL ABOVE-DECK ELEMENTS OR REPLACE WITH EQUAL.
- WHERE (E) FLASHING ASSEMBLIES KEY INTO (E) FABRIC NOT TO BE DEMOLISHED, LEAVE FLASHING ATTACHED AT TOP EDGE AND FOLD UP MIN REQ TO ACCESS ELEMENTS TO BE DEMOLISHED. RUN NEW ROOFING ASSEMBLIES UP UNDER FLASHING AND FOLD BACK TO ORIGINALLY INSTALLED POSITION. REMEDIATE CORNER JOINTS AND ANY OTHER AREAS OF (E) FABRIC AFFECTED BY THIS PROCEDURE.
- ALL CANT STRIPS, NAILERS, AND OTHER INCIDENTAL ROOF ASSEMBLY BACK-UP ARE TO BE REPLACES WITH NEW, COMPATIBLE WITH ROOFING MEMBRANCE CHOSEN FOR THE PROJECT.
- RETAIN SCUPPER ASSEMBLIES IN PLACE.



NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
ROOF DETAILS 1

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

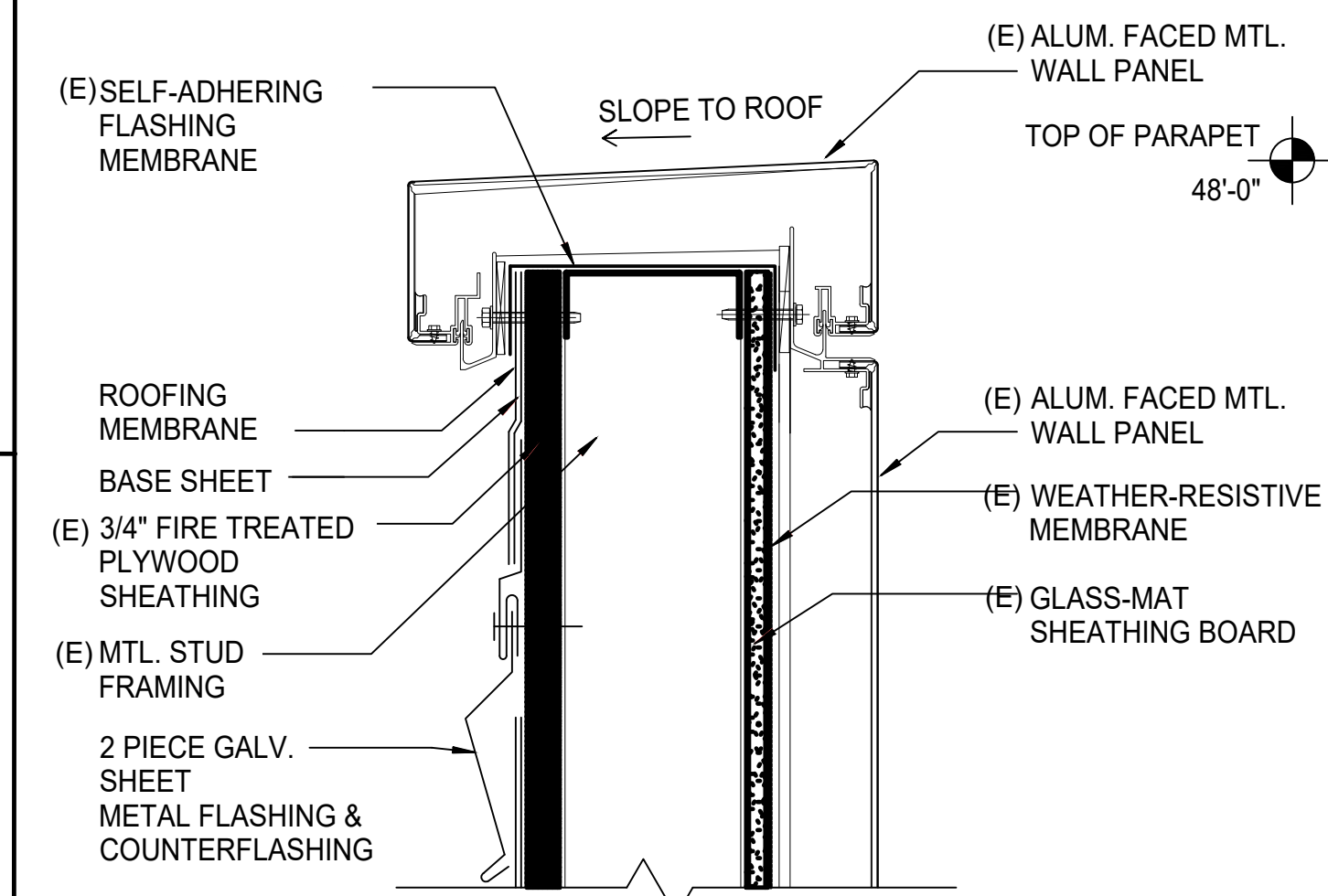
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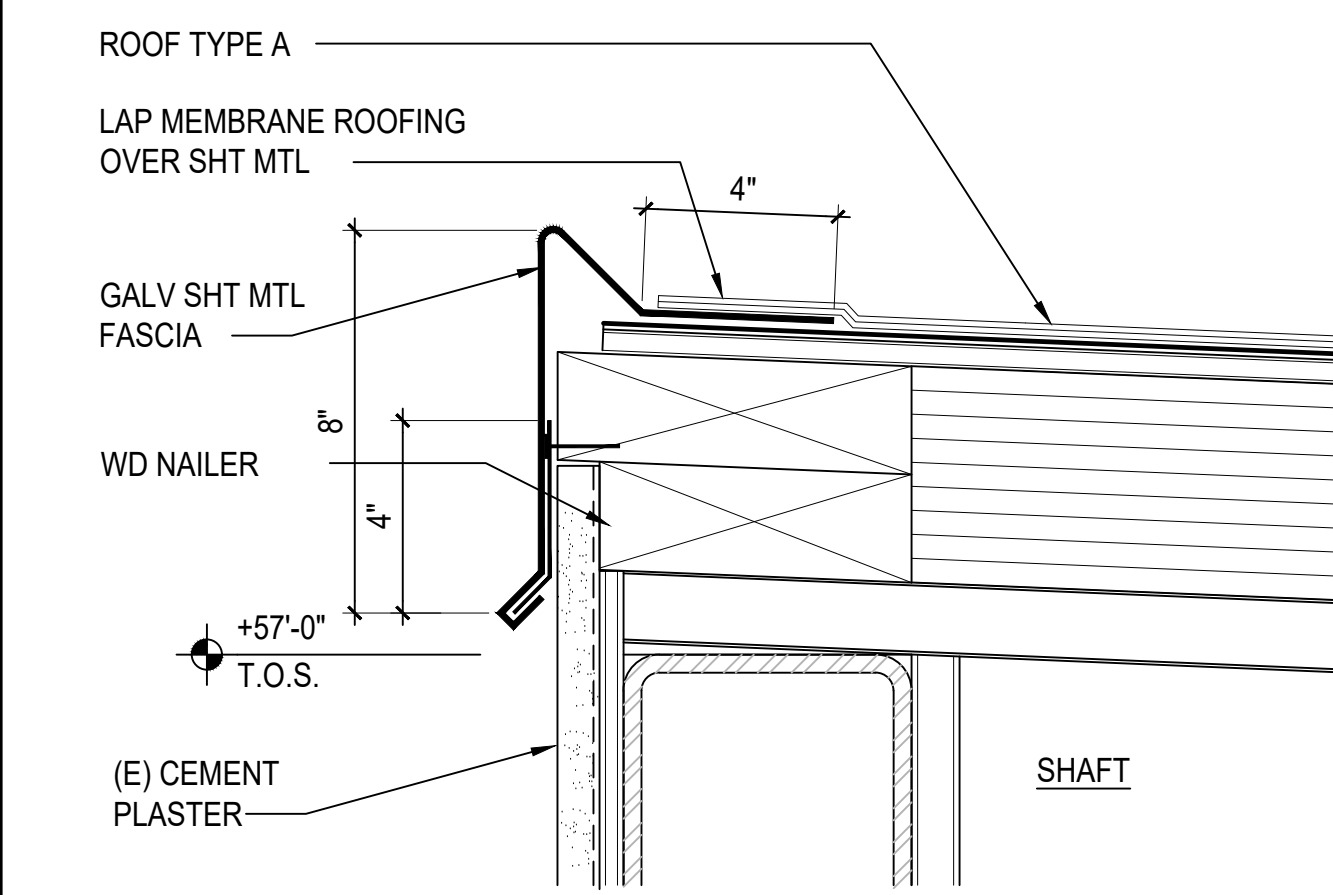
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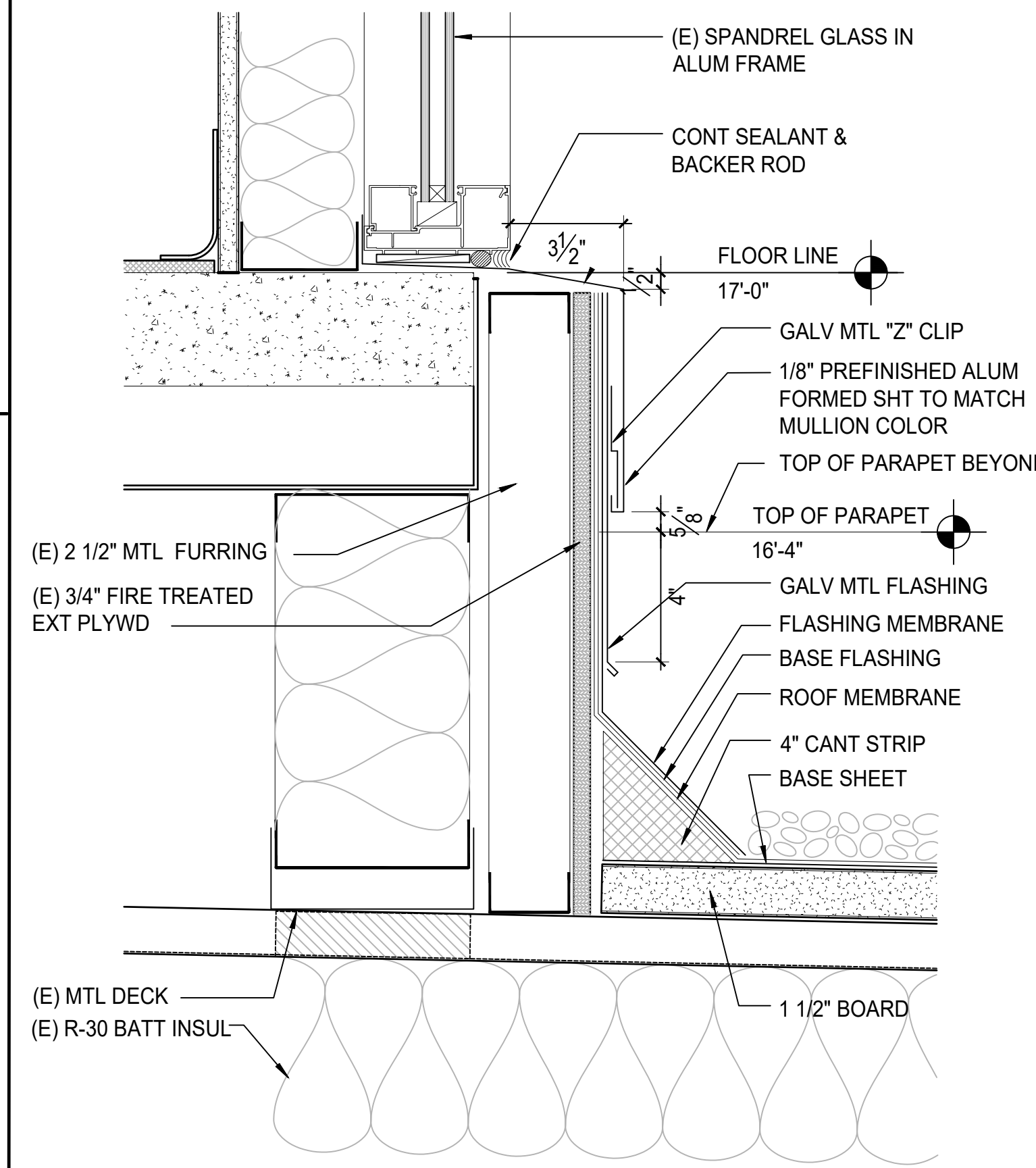
SHEET 9 OF 12



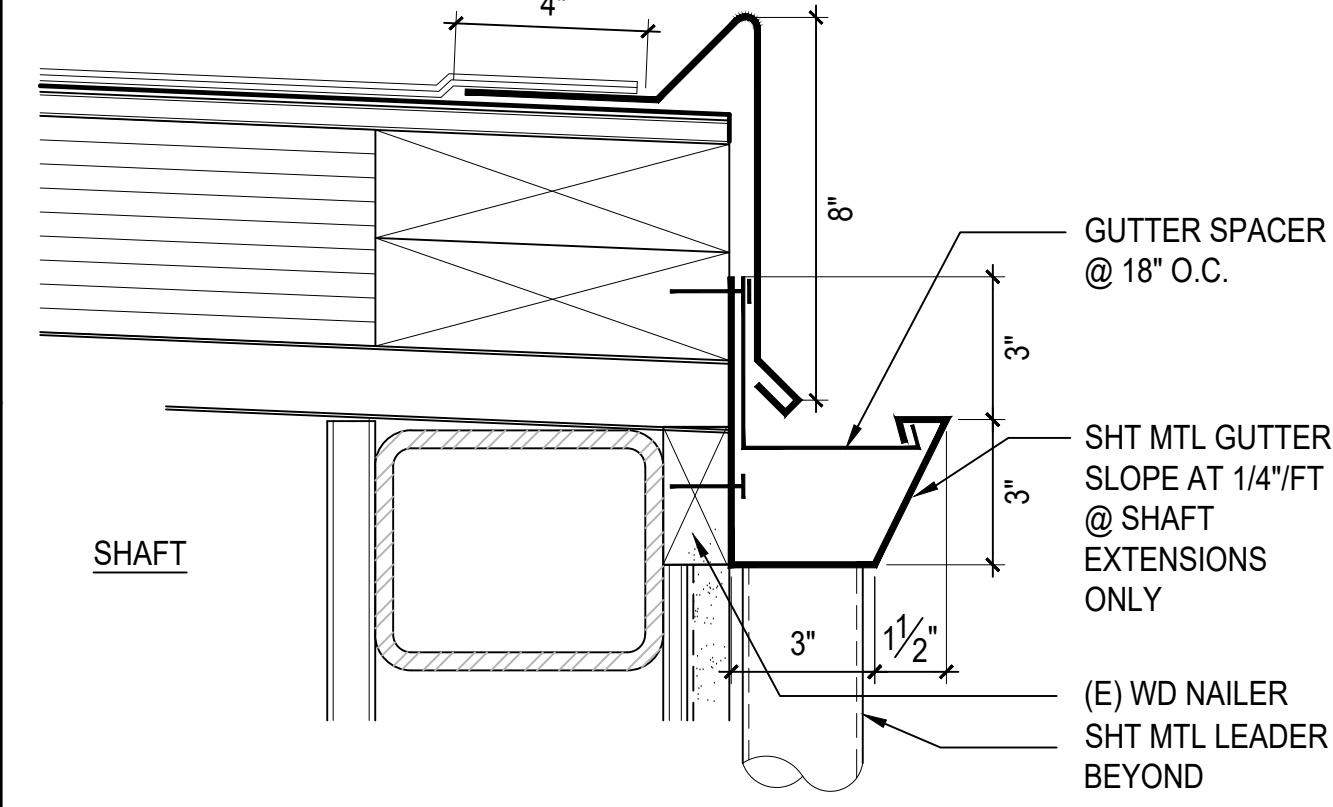
4 LEVEL 3 PARAPET AT STOREFRONT-TYPE WALL (3) (4)
SCALE: 3" = 1'-0"



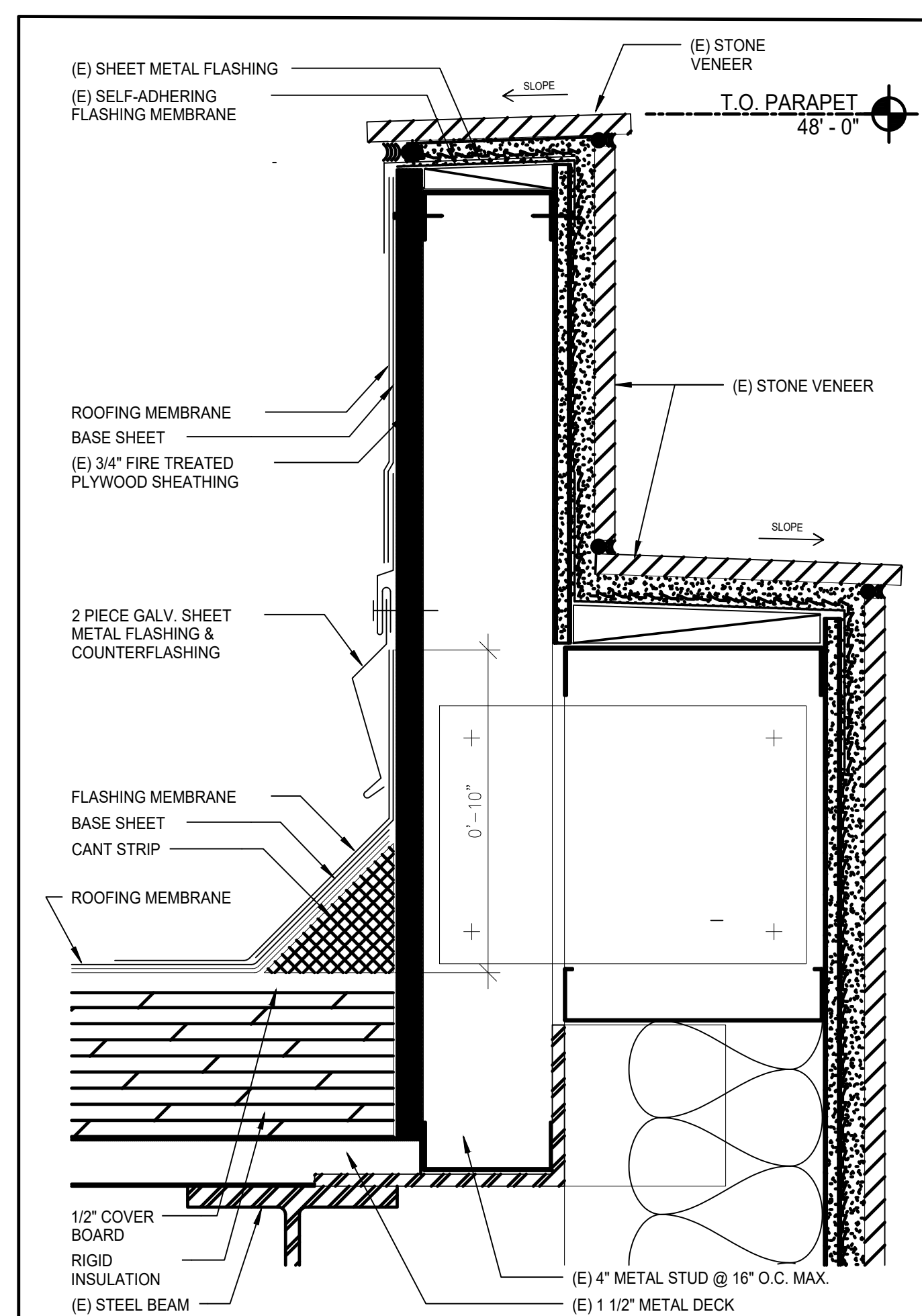
7 SHAFT ENCLOSURE - HIGH EDGE (3) (4)
SCALE: 3" = 1'-0"



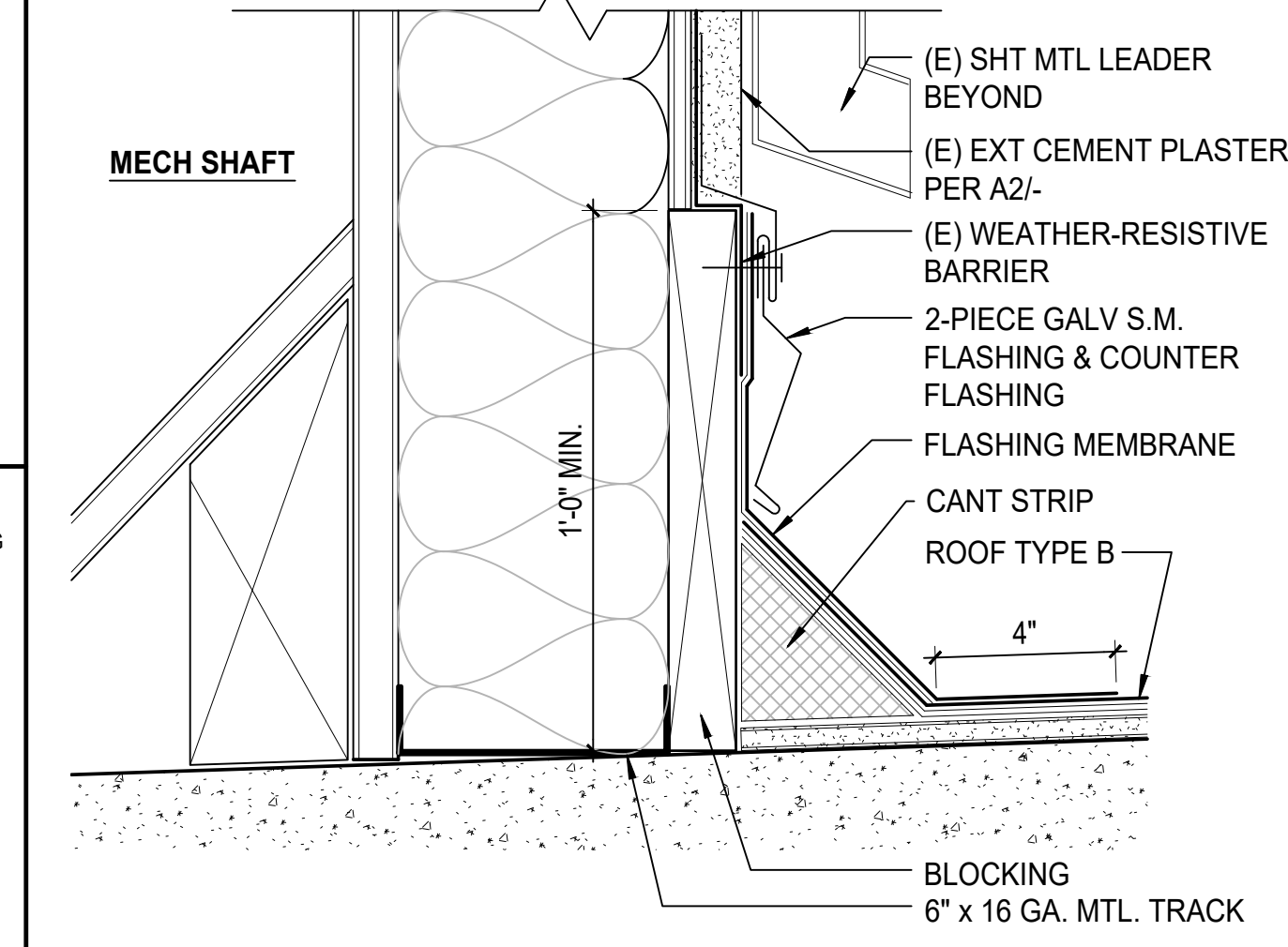
3 LEVEL 1 ROOF AT STOREFRONT WALL (3) (4)
SCALE: 3" = 1'-0"



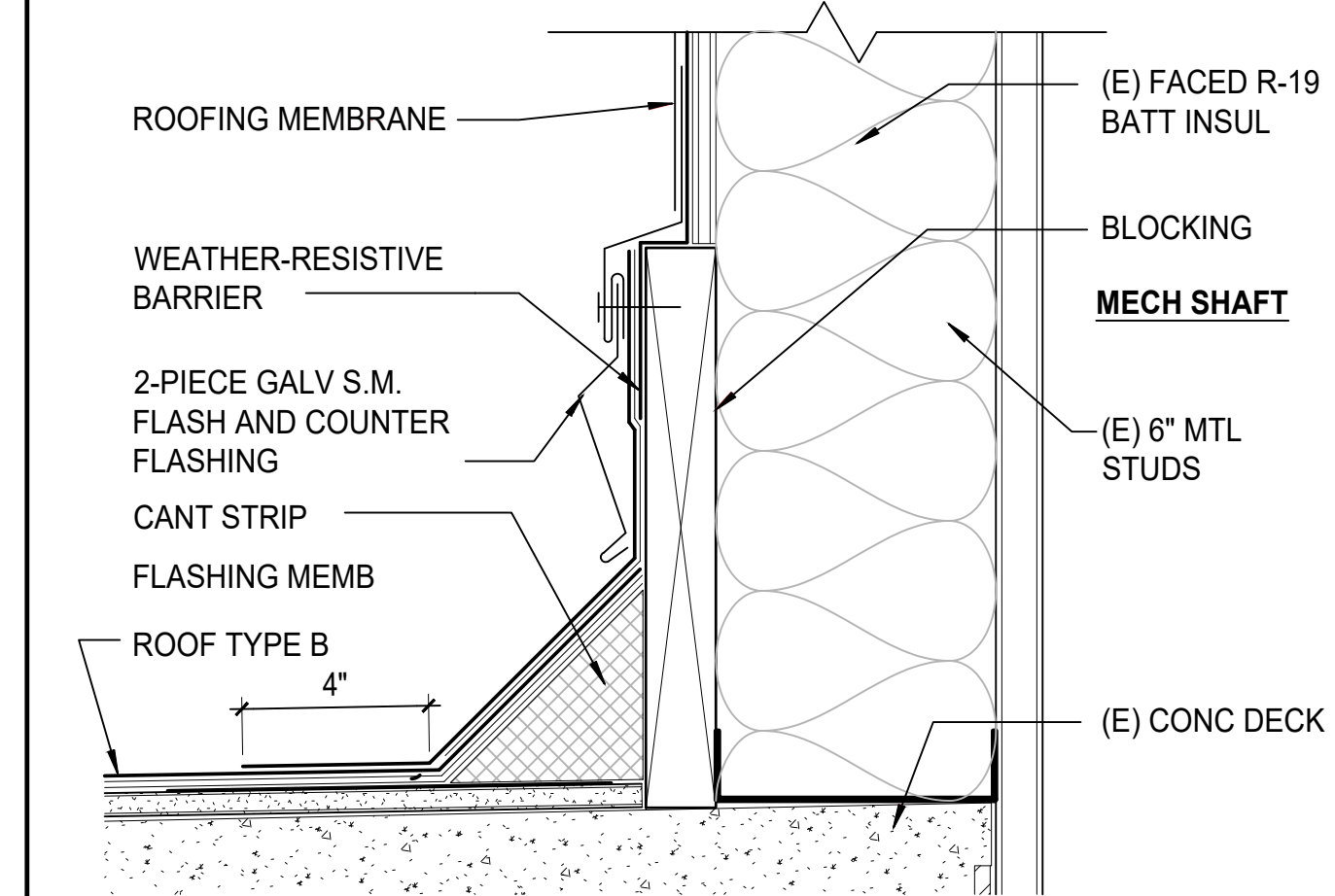
6 SHAFT ENCLOSURE - LOW EDGE (3) (4)
SCALE: 3" = 1'-0"



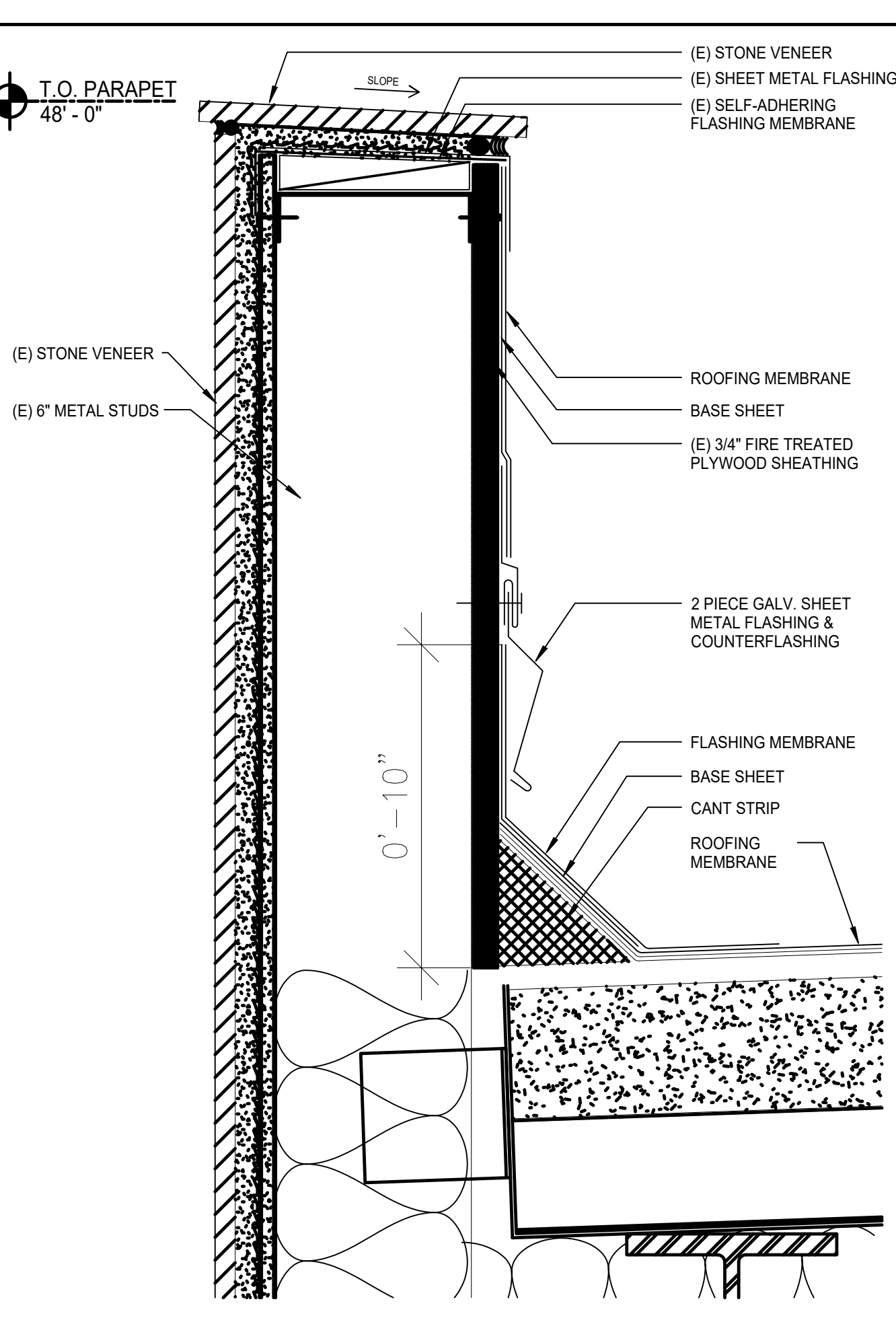
11 TYP LEVEL 3 PARAPET (ALT CONDITION) (3) (4)
SCALE: 3" = 1'-0"



10 SHAFT ENCLOSURE - BASE (ALT CONDITION) (3) (4)
SCALE: 3" = 1'-0"



9 SHAFT ENCLOSURE - BASE (3) (4)
SCALE: 3" = 1'-0"



13 TYP LEVEL 3 PARAPET (3) (4)
SCALE: 3" = 1'-0"

- DETAIL REFERENCE NOTES**
- LIQUID FLASHING APPROVED BY MANUFACTURER FOR USE WITH ROOFING MEMBRANE CHOSEN FOR PROJECT MAY BE USED IN PLACE OF MECHANICAL FLASHING SHOWN IF PRE-APPROVED BY OWNER.
 - RETAIN UNDERDECK COMPONENTS OF DRAINAGE ASSEMBLIES IN PLACE. DEMOUNT ABOVE-DECK ELEMENTS AS NEEDED FOR DEMOLITION AND REROOFING WORK. REINSTALL ABOVE-DECK ELEMENTS OR REPLACE WITH EQUAL.
 - WHERE (E) FLASHING ASSEMBLIES KEY INTO (E) FABRIC NOT TO BE DEMOLISHED. LEAVE FLASHING ATTACHED AT TOP EDGE AND FOLD UP MIN REQ TO ACCESS ELEMENTS TO BE DEMOLISHED. RUN NEW ROOFING ASSEMBLIES UP UNDER FLASHING AND FOLD BACK TO ORIGINALLY INSTALLED POSITION. REMEDIATE CORNER JOINTS AND ANY OTHER AREAS OF (E) FABRIC AFFECTED BY THIS PROCEDURE.
 - ALL CANT STRIPS, NAILERS, AND OTHER INCIDENTAL ROOF ASSEMBLY BACK-UP ARE TO BE REPLACES WITH NEW, COMPATIBLE WITH ROOFING MEMBRANCE CHOSEN FOR THE PROJECT.
 - RETAIN SCUPPER ASSEMBLIES IN PLACE.

NO.	DESCRIPTION	DATE
REVISIONS		

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
ROOF DETAILS 2

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

PROJ NO.
180218.02

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DRAWING NO.

A8.01

SHEET 10 OF 12

GENERAL NOTES	
1.	CONTRACTOR SHALL REVIEW THESE PLANS AND SPECIFICATIONS PRIOR TO BEGINNING WORK. CONTRACTOR SHALL ALSO REVIEW PLANS AND SPECIFICATIONS OF OTHER RELATED TRADES (INCLUDING STRUCTURAL AND ELECTRICAL) PRIOR TO BID, TO INSURE AN ACCURATE UNDERSTANDING OF EXACT SCOPE OF WORK. ANY ITEMS REQUIRING CLARIFICATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO BEGINNING WORK.
2.	ALL WORK SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS AND OTHER DISCIPLINES.
3.	AS A MINIMUM STANDARD, ALL WORK SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), NATIONAL FIRE PROTECTION AGENCY (NFPA) AND CALIFORNIA STATE ENERGY CONSERVATION CODE TITLE 24.
4.	ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES. NOTHING SHOWN IN THE PLANS OR STATED IN THE SPECIFICATIONS IS INTENDED TO INDICATE THAT THE INSTALLATION OR CONNECTIONS OF ANY ITEM OR DEVICE SHOULD BE INSTALLED CONTRARY TO MANUFACTURERS INSTRUCTIONS AND ALL APPLICABLE CODES AND REGULATIONS.
5.	THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED WORK. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES.
6.	PLUMBING CONTRACTOR SHALL FURNISH ALL MATERIALS FOR, AND MAKE CONNECTIONS TO ALL EQUIPMENT NOT IN THIS SECTION (N.I.T.S.) IN ORDER TO MAKE A COMPLETE, WORKABLE INSTALLATIONS.
7.	SUBMITTALS: APPROVAL OF SUBMITTALS DOES NOT RELEASE THE CONTRACTOR FROM OBLIGATIONS TO FULLY COMPLY WITH ALL REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS OR APPLICABLE CODE REGULATIONS.
8.	PROVIDE ACCESS AND CLEARANCE FOR MAINTENANCE FOR EQUIPMENT AND COMPONENTS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER AND APPLICABLE CODES.
9.	CUTTING, BORING, SAW CUTTING, OR DRILLING THROUGH NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED ON THE DRAWINGS OR ACCEPTED BY ARCHITECT WITH THE APPROVAL OF AUTHORITY HAVING JURISDICTION.
10.	INSTALL ALL PIPING IN A MANNER THAT WILL AVOID INTERFERENCE WITH THE ELECTRICAL AND MECHANICAL WORK.
11.	CONTRACTOR TO COORDINATE ALL WORK WITH OTHER TRADES PRIOR INSTALLATION OF PIPING AND EQUIPMENT.
12.	BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS, DEPTH, SIZE AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
13.	ALL ROOF DRAINS, OVERFLOW DRAINS AND RAINWATER PIPING WITHIN THE INTERIOR OF THE BUILDING SHALL BE TESTED IN ACCORDANCE WITH THE PROVISIONS OF THE PLUMBING CODE FOR TESTING DRAIN, WASTE AND VENT SYSTEMS.
14.	OVERFLOW DRAINS HAVING THE SAME SIZE AS THE ROOF DRAINS SHALL BE INSTALLED WITH THE INLET FLOW LINE BEING LOCATED 2" ABOVE THE LOW POINT OF THE ROOF.
15.	ROOF DRAINS AND OVERFLOW PIPING WITHIN THE BUILDING SHALL UTILIZE APPROVED DRAINAGE FITTINGS.

PLUMBING LEGEND		
SYMBOL	ABBREV.	DESCRIPTION
— OD	OD	OVERFLOW DRAIN
— SD	SD	STORM DRAIN
— ⊕		PIPE ELBOW UP
— ⊖		PIPE ELBOW DOWN
— (E)	(E)	EXISTING TO REMAIN

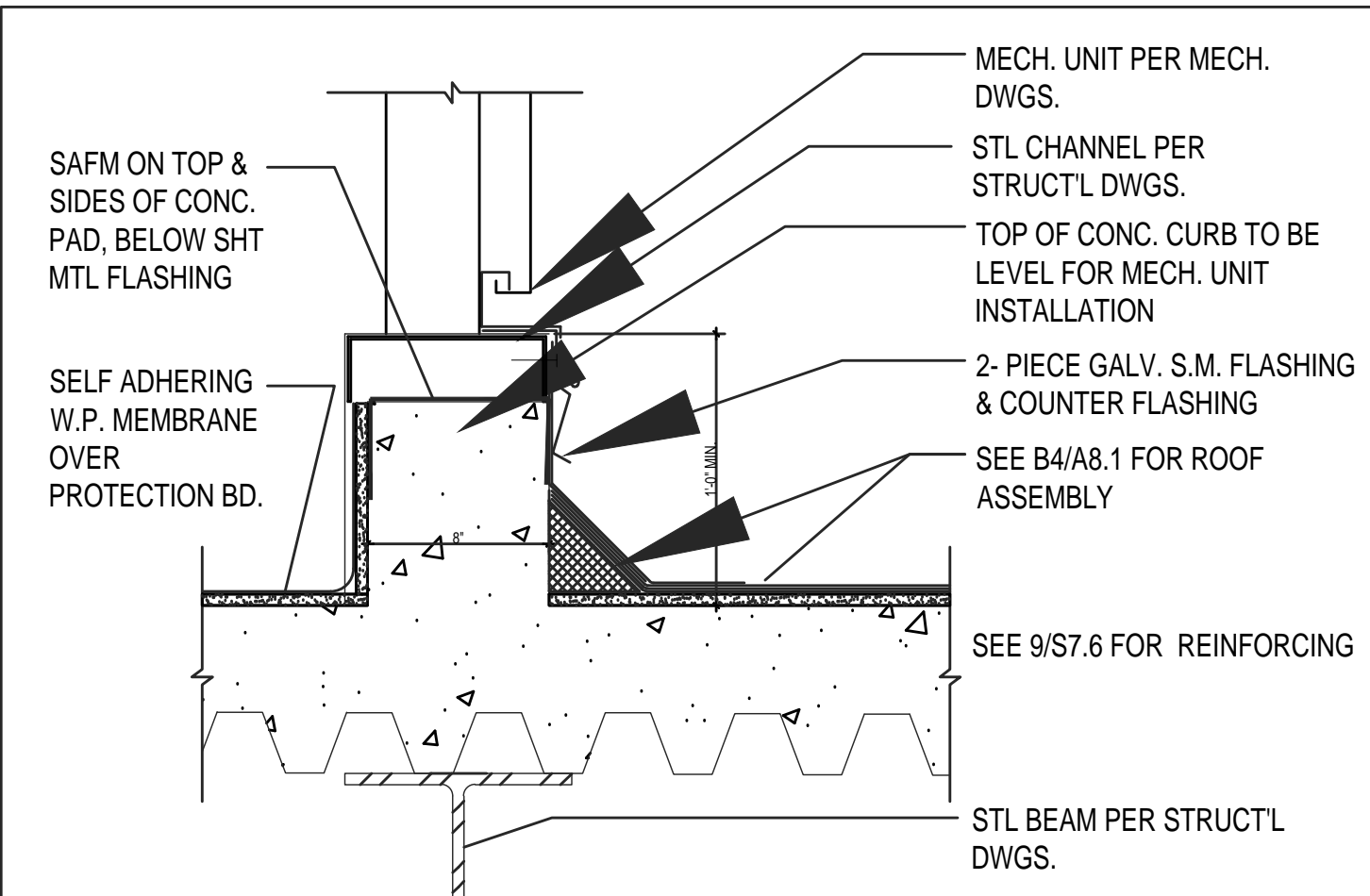
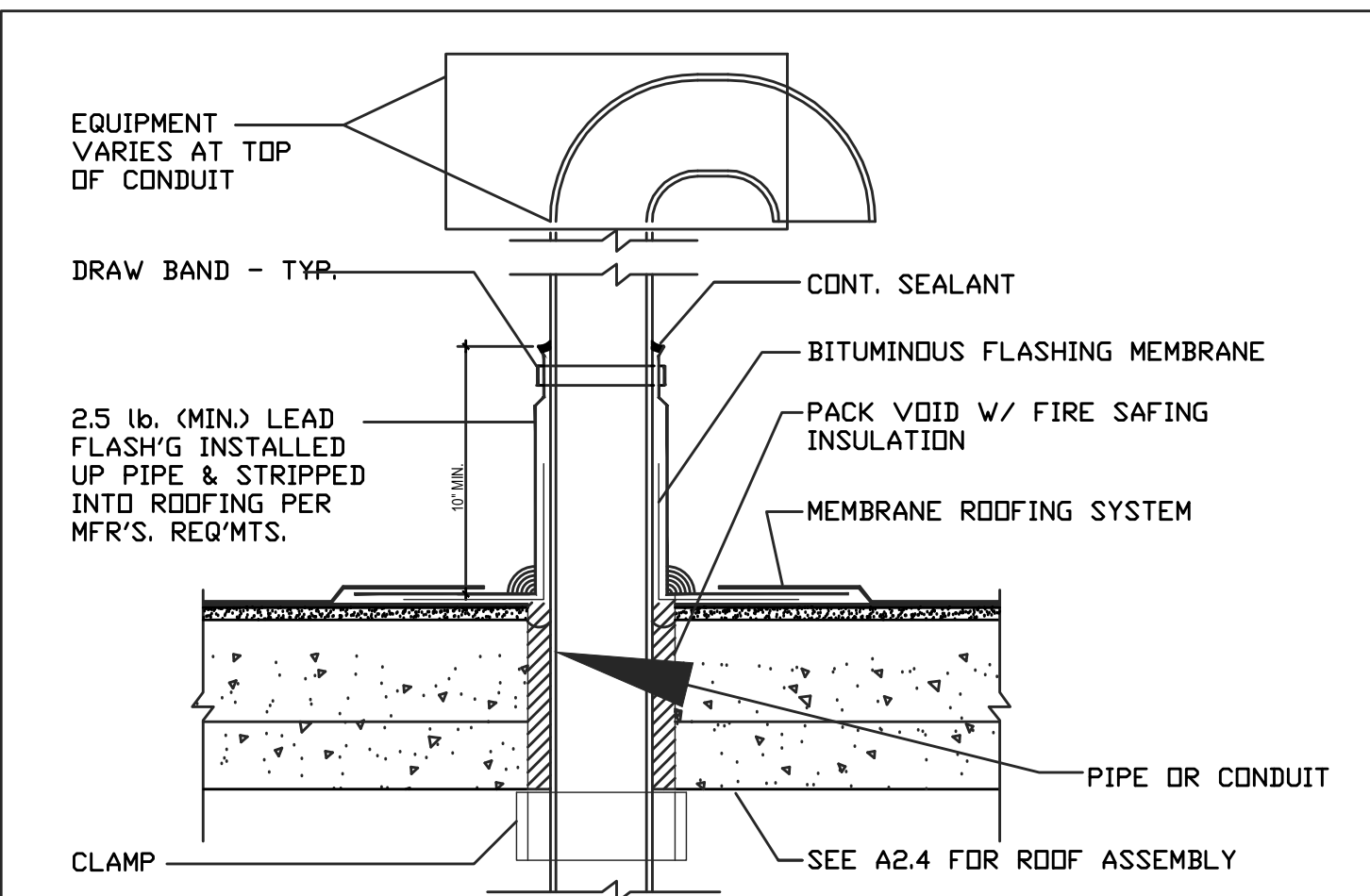
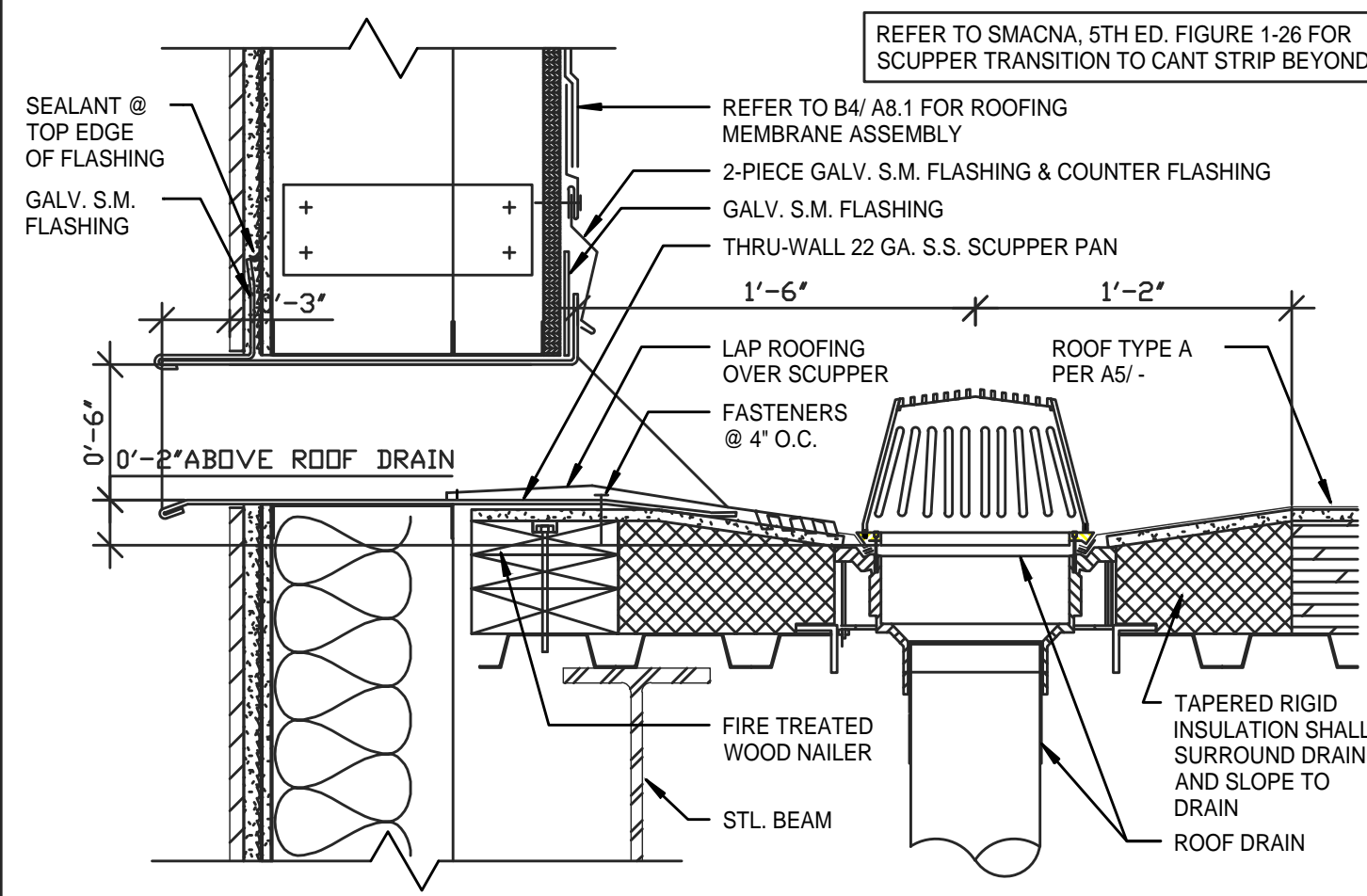
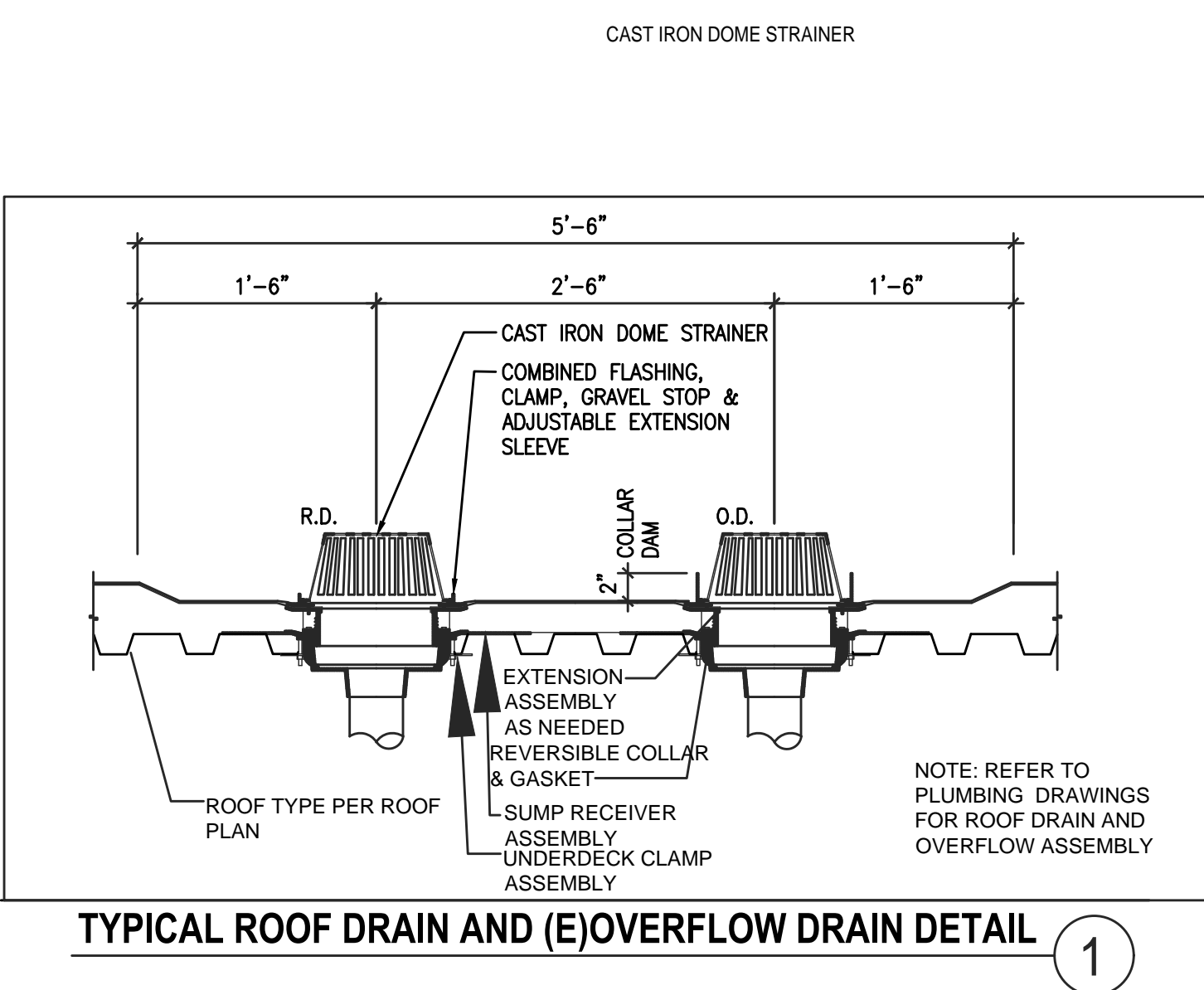
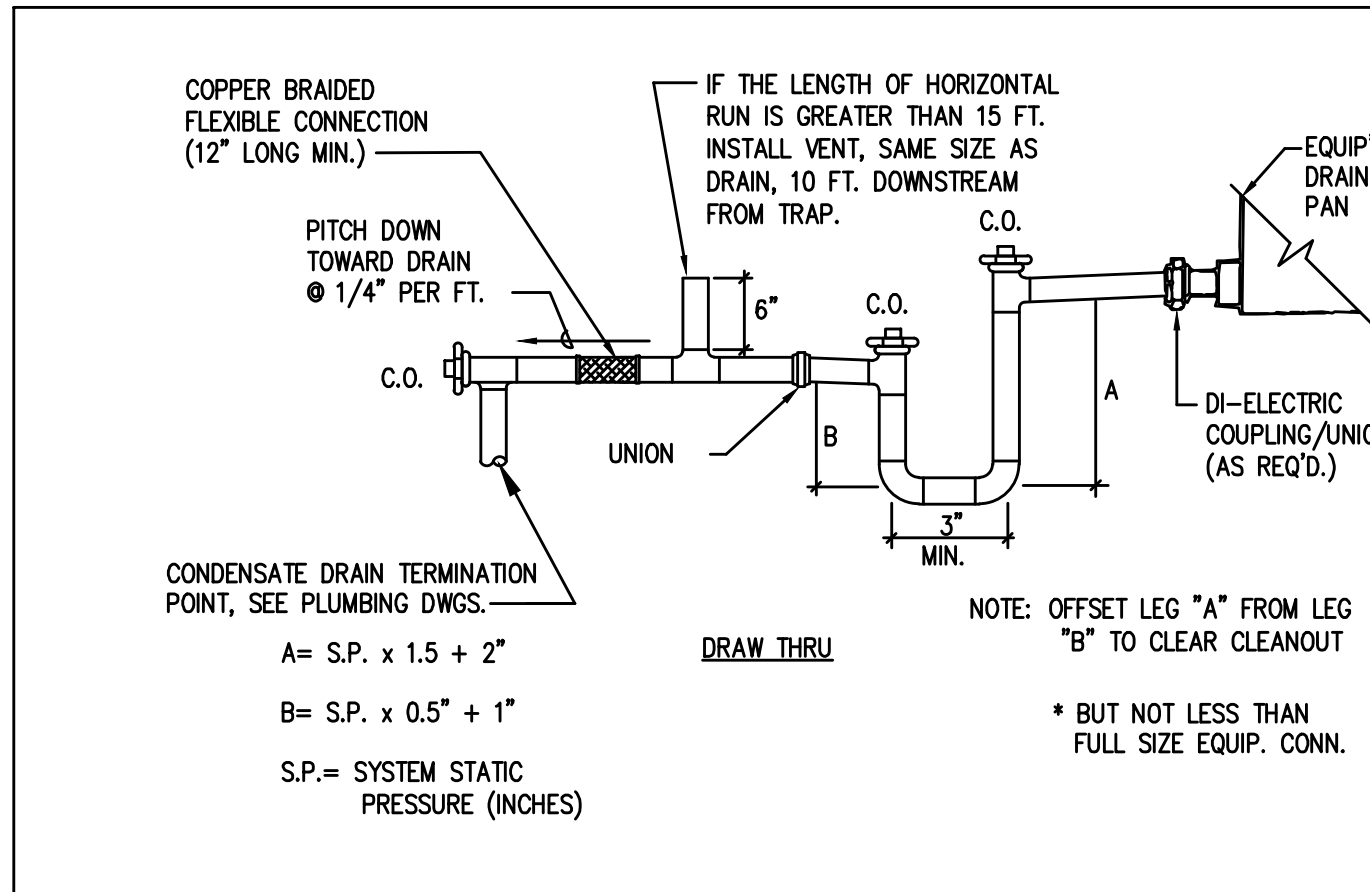
PLUMBING PIPE MATERIALS SCHEDULE			
SERVICES	LOCATION	CAST IRON NO. HUB, SERVICE WEIGHT, U.S.P. 301 OR ASTM A-74	REMARKS
STORM DRAIN	INSIDE, ABOVE GROUND	●	NO HUB COUPLINGS, TYPE 304 STAINLESS STEEL FM CLASS 1, ASTM C1540

PLUMBING FIXTURE SCHEDULE			
SYMBOLS	FIXTURES	QTY	NOTES
(E)4"RD-1 & (E)4"OD-1	(E)COMBINATION ROOF & (E)OVERFLOW DRAIN	1	EXISTING ROOF DRAIN SYSTEM
(E)3"RD-1 & (E)3"OD-1	(E)COMBINATION ROOF & (E)OVERFLOW DRAIN	2	EXISTING ROOF DRAIN SYSTEM
(E)3"RD-2 & (E)3"OD-2	(E)COMBINATION ROOF & (E)OVERFLOW DRAIN	4	EXISTING ROOF DRAIN SYSTEM
(E)3"RD-3 & (E)3"OD-3	(E)COMBINATION ROOF & (E)OVERFLOW DRAIN	1	EXISTING ROOF DRAIN SYSTEM
(E)4"RD-1 & (E)4"OD-1	(E)ROOF DRAIN & SCUPPER	4	EXISTING ROOF DRAIN SYSTEM
(E)3"RD-1 & (E)3"OD-1	(E)ROOF DRAIN & SCUPPER	2	EXISTING ROOF DRAIN SYSTEM
(E)2"RR-1	(E)ROOF RECEPTOR	2	EXISTING ROOF DRAIN SYSTEM
	TOTAL	16	

CONSTRUCTION NOTES	
1.	CONTRACTOR SHALL VERIFY ALL LOCATIONS, SIZES, ACTUAL POINT OF CONNECTION OF NEW PIPING TO EXISTING PIPING AND/OR NEW EQUIPMENT AND AVAILABILITY OF ALL ITEMS BEFORE COMMENCING ANY WORK.
2.	THESE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND ARE NOT INTENDED TO INDICATE ALL NECESSARY OFFSETS OF PIPING. THE CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT IN A MANNER AS TO CONFORM TO STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEADROOM, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. ALL INSTALLATIONS SHALL BE CONSISTENT WITH ACCEPTABLE INDUSTRY STANDARDS. CONTRACTOR SHALL PROVIDE OFFSETS, TRANSITION, ETC. AS REQUIRED (NOT SHOWN FOR CLARITY) FOR COMPLETE AND OPERABLE INSTALLATION AT NO ADDITIONAL COST TO THE CLIENT.
3.	NEW PLUMBING FIXTURES/EQUIPMENT INDICATED ON THIS DRAWING IS SHOWN IN APPROXIMATE POSITION(S). THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS INCLUDING EQUIPMENT LOCATIONS, POINT OF CONNECTIONS, AND STRUCTURAL MEMBERS PRIOR TO INSTALLATION. IN ALL CASES, ADEQUATE ACCESS (PER MANUFACTURERS RECOMMENDATIONS AND CODE COMPLIANCE) FOR MAINTENANCE AND REPLACEMENT OF EQUIPMENT SHALL BE PROVIDED.
4.	ALL DEMOLISHED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR WHO SHALL BE RESPONSIBLE FOR PROMPT DAILY REMOVAL FROM THE SITE. REMOVE ALL DEBRIS FROM THE SITE RESULTING FROM THE WORK AT THE CONCLUSION OF DAILY CONSTRUCTION. REMOVE ALL TEMPORARY CONSTRUCTION FROM THE SITE. THE AREA OF THE SITE SHALL BE LEFT BROOM CLEAN. IF NOT, UPON NOTIFICATION, OWNER WILL PERFORM ALL NECESSARY CLEAN-UP WORK AND BACK CHARGE THE CONTRACTOR FOR THE EXPENSE THUS INCURRED.
5.	ALL EQUIPMENT, MATERIAL, AND ALL CONNECTIONS THERETO SHALL BE INSTALLED COMPLETE PER MANUFACTURERS INSTRUCTIONS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL SYSTEM.
6.	CONTRACTOR MAY, AT HIS OPTION, REVISE PIPE ROUTING TO ALLOW FOR INSTALLATION IN THE AVAILABLE SPACE.
7.	ALL WORK SHALL BE BASED ON MINIMIZING DISRUPTIONS TO EXISTING BUILDING OPERATION AND SHALL BE PERFORMED IN ACCORDANCE WITH THE WORK SCHEDULE APPROVED BY THE OWNER.
8.	THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES IN THE AREA OF WORK WHICH ARE NOT INCLUDED IN THIS CONSTRUCTION. ANY DAMAGE RESULTING FROM THIS WORK SHALL BE REPAIRED AND/OR REPLACED AT NO ADDITIONAL COST TO THE CAMPUS.

APPLICABLE CODES	
ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE FOLLOWING CODES:	
2019 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.	
2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.	
2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.	
2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.	
2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.	
2019 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.	
2019 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.	
2019 CALIFORNIA ENERGY CODE, TITLE 24, PART 6	

DRAWING INDEX	
P0.1	PLUMBING NOTES, LEGENDS, SYMBOLS & DETAIL
P1.1	PLUMBING REMODEL ROOF PLAN



DESCRIPTION	DATE
REVISIONS	

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
PLUMBING NOTES, LEGENDS, SYMBOLS & DETAILS

ISSUANCE
100% CONSTRUCTION DOCUMENTS

10/13/21

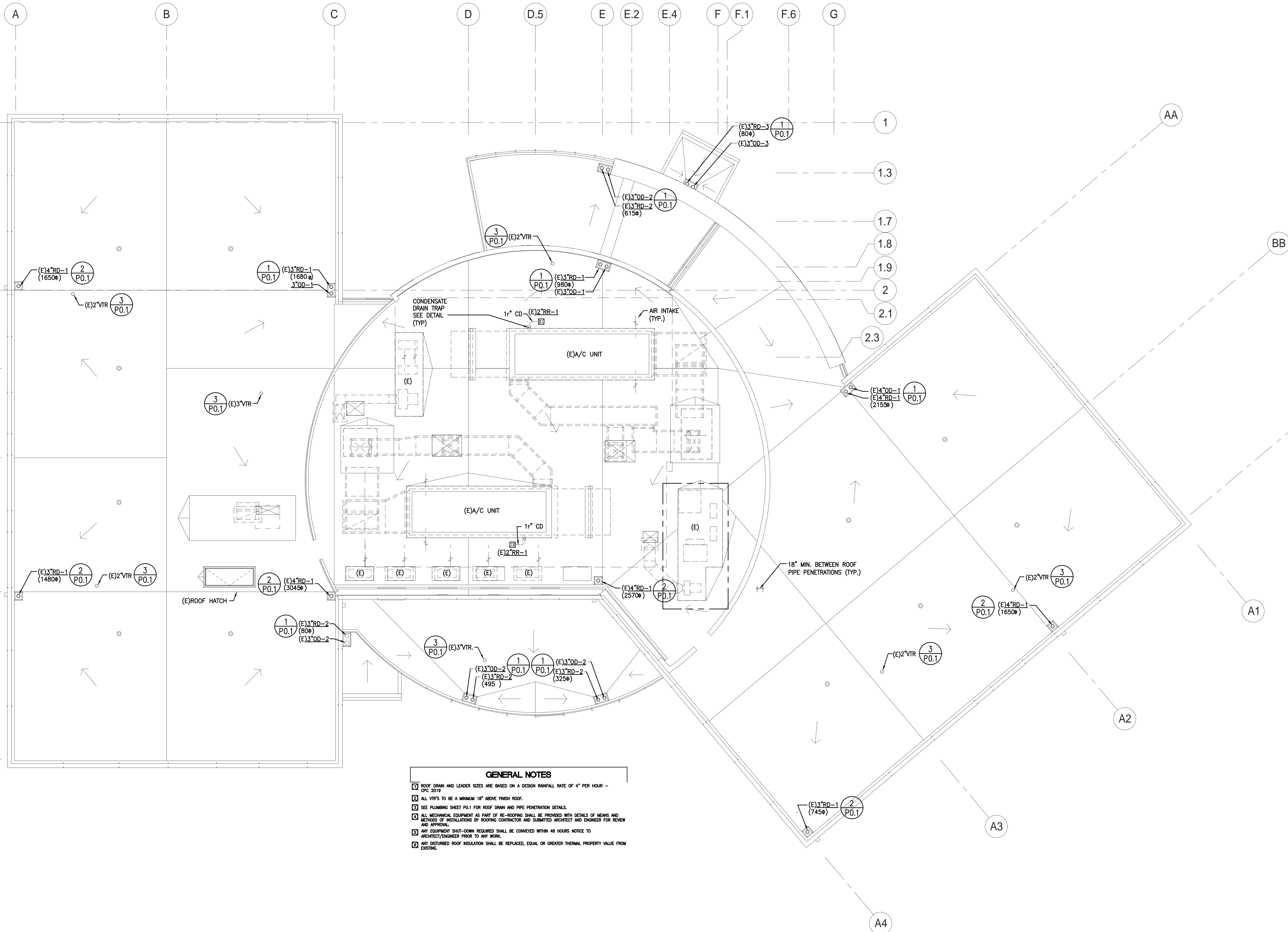
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JOB NO.: OTH-049-21



GENERAL NOTES

- 1 ROOF DRAIN AND LEADER SIZES ARE BASED ON A DESIGN RAINFALL RATE OF 4" PER HOUR - SPC 2019
- 2 ALL VIRS TO BE A MINIMUM 18" ABOVE FINISH ROOF.
- 3 SEE PLUMBING SHEET P0.1 FOR ROOF DRAIN AND PIPE PENETRATION DETAILS.
- 4 ALL MECHANICAL EQUIPMENT AS SHOWN ON THIS DRAWING SHALL BE PROVIDED WITH DETAILS OF MOUNTING AND METHODS OF INSTALLATION BY ROOFING CONTRACTOR AND SUBMITTED ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL.
- 5 ANY EQUIPMENT SHUT-DOWN REQUIRED SHALL BE CONVEYED WITHIN 48 HOURS NOTICE TO ARCHITECT/ENGINEER PRIOR TO ANY WORK.
- 6 ANY EXISTING ROOF INSULATION SHALL BE REPLACED, EQUAL OR GREATER THERMAL PROPERTY VALUE FROM EXISTING.

1 PLUMBING REMODEL ROOF PLAN
SCALE: 1/8" = 1'-0"

DESCRIPTION	DATE
REVISIONS	

SANTA ANA COURT OF APPEALS ROOF REPLACEMENT

FOURTH APPELLATE DISTRICT
DIVISION THREE
601 WEST SANTA ANA BOULEVARD
SANTA ANA, CA 92701

SHEET TITLE
PLUMBING ROOF PLAN

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