BID DOCUMENTS COVER SHEET

CONTRACT DOCUMENTS

FOR

D-4007 Roof Replacement Phase 1

AT

Diablo Valley College

321 Golf Club Road

Pleasant Hill, CA 94523

CONTRA COSTA COMMUNITY COLLEGE DISTRICT

Consist of the following:

ADDENDUM # 2

Steelhead Engineers, Inc.

SEI JN: 16040

2570 W. El Camino Real Ste. 320

Mountain View, CA 94040

June 30, 2016
NOTICE TO ALL CONTRACTORS

You are hereby notified of the following changes, clarifications and/or modifications to the original Contract Documents, Project Manual, Drawings, Specifications and/or previous Addenda. This Addendum shall supersede the original Contract Documents and previous Addenda wherein it contradicts the same, and shall take precedence over anything to the contrary therein. All other conditions remain unchanged.

This Addendum forms a part of the Contract Documents and modifies the original Contract Documents dated June 9, 2016. Acknowledge receipt of this Addendum in space provided on the Bid Proposal Form. Failure to acknowledge may subject Bidder to disqualification.

A. GENERAL INFORMATION:

None.

B. SPECIFICATIONS:

<table>
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## ADDENDUM #2

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ADDENDUM #2

C. DRAWINGS:

AD2.12 DRAWINGS:

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B. ADD THE FOLLOWING DRAWINGS: A1.0, AD2.0, AD2.1, A2.0, A2.1, A2.2, A2.3, A2.10, A2.11, A2.12, A10.50, A10.51, A10.52, A10.55, A10.56, this Addendum #2.

AD2.13 DRAWINGS:

A. ADD THE FOLLOWING DRAWINGS: HM-ET, HM-AB, this Addendum #2.

D. ATTACHMENTS:

SPECIFICATIONS
AD2 Section 00010 TABLE OF CONTENTS.
AD2 Section 00300 BID PROPOSAL FORM
AD2 Section 01140 WORK RESTRICTIONS
AD2 Section 01210 ALLOWANCES
AD2 Section 01340 ADMINISTRATIVE FORMS AND LOGS
AD2 Section 02 41 00 SELECTIVE DEMOLITION
AD2 Section 02 82 00 ASBESTOS ABATEMENT AND DISPOSAL
AD2 Section 06 10 00 ROUGH CARPENTRY
AD2 Section 07 54 05 THERMOPLASTIC MEMBRANE ROOFING
AD2 Section 07 60 00 FLASHING AND SHEET METAL
AD2 Section 09 90 00 PAINTING

DRAWINGS
AD2 A1.0
AD2 AD2.0
AD2 AD2.1
AD2 A2.0
AD2 A2.1
AD2 A2.2
AD2 A2.3
AD2 A2.10
AD2 A2.11
AD2 A2.12
Ad2 A10.50
AD2 A10.51
AD2 A10.52
AD2 A10.55
AD2 A10.56
AD2 HM-AB
ADDENDUM #2

If you have any questions regarding this Addendum, please contact:

Jovan Esprit - Contract Manager  
Contra Costa Community College District  
500 Court St., Martinez, CA 94553  
Email: jesprit@4cd.edu  
Facsimile: 925-229-6959;

All other terms and conditions of BID are to remain the same.

END OF ADDENDUM #2
<table>
<thead>
<tr>
<th>DIVISION 00</th>
<th>PROCUREMENT AND CONTRACTING REQUIREMENTS</th>
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<td>SECTION 00015</td>
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SECTION 01330 SUBMITTAL PROCEDURES
SECTION 01340 ADMINISTRATIVE FORMS AND LOGS
SECTION 01400 QUALITY CONTROL REQUIREMENTS
SECTION 01415 MITIGATION MONITORING REGULATORY REQUIREMENTS
SECTION 01416 SPECIAL PROCEDURES
SECTION 01500 TEMPORARY FACILITIES AND CONTROL
SECTION 01505 CONSTRUCTION WASTE MANAGEMENT
SECTION 01770 CONTRACT CLOSEOUT PROCEDURES
SECTION 01785 OPERATIONS AND MAINTENANCE DATA
SECTION 01820 DEMONSTRATION AND TRAINING
SECTION 01210 ALLOWANCES

Technical Specification Index

02 41 00 Selective Demolition
02 82 00 Asbestos Abatement and Disposal
06 10 00 Rough Carpentry
07 54 06 Thermoplastic Membrane Roofing
07 60 00 Flashing and Sheet Metal
07 92 00 Sealants
09 22 00 Portland Cement Plaster
09 90 00 Painting
Drawing Index

A1.0 Title Sheet, General Notes, Abbreviations and Legend

AD2.0 Roof Demolition Plan – ET Building

AD2.1 Roof Demolition Plan – AB Building

A2.0 Overall Roof Plan – ET Building

A2.1 Partial Roof Plan – AB Building

A2.2 Partial Roof Plan – AB Building

A2.3 Roof Walk Pad Layout – ET Building

A2.10 Main Roof Plan – AB Building

A2.11 Upper Roof Plan – AB Building

A2.12 Roof Walk Pad Layout – AB Building

A10.50 Roof Replacement Details

A10.51 Roof Replacement Details

A10.52 Roof Replacement Details

A10.55 Roof Overlay Details

A10.56 Roof Overlay Details

HM-ET

HM-AB
1. INTRODUCTION

   A. The Bidder proposes to perform the Work for the Contract Sum and within the proposed Contract Time, based upon an examination of the site and the Bid and Contract Documents.

   B. The Bidder certifies this Bid is submitted in good faith.

   C. The Bidder agrees that the Contract Sum and other proposed terms will be considered in evaluating Bids and may be negotiated and adjusted before awarding of Contract.

   D. The signed copy of the Certification of the Visit to the Site shall be attached to the Bid Form Submittal.

   E. A fully executed Statement of Bidder’s Qualifications signed by an authorized officer of the Bidder submitting the Bid shall be attached to the Bid Form.

   F. A fully executed Non-Collusion Affidavit signed by an authorized officer of the Bidder submitting Bid shall be attached to the Bid Form.

   G. The District shall award the contract to the lowest responsive and responsible Bidder.

   H. The District reserves the right to award the Additive/Deductive Alternates through change orders as budget allows within 30 calendar days after the Award of Contract.

Attention is directed to Labor Code Section 1725.5 regarding Department of Industrial Relations (DIR) contractor registration process; registration criteria and implementation of DIR registration requirements. Labor Code Section 1771.7 establishes contractor’s obligation to submit Certified Payroll (CPR) to the Department of Labor and Standards Enforcement (DLSE) and public works monitoring and enforcement. Labor Code Section 1773.3 requires the District to submit a PWC-100 to DIR for all public works contract awarded effective January 1, 2015.

2. CONTRACT SUM
A. BASE BID
For labor, materials, bonds, fixtures, equipment, tools, transportation, services, sales taxes, and other costs necessary to complete the general construction in accordance with the Contract Documents, for a stipulated Contract Sum in the amount of:

__________________________________________________ Dollars ($_____________________

B. ALLOWANCE #1
The Contractor recognizes that the amount of the Base Bid provided above includes a stipulated sum of $160,000.00 reserved for costs associated with additional work, labor, and/or materials beyond that included in Contract Documents, which is to be utilized at the sole discretion of the District.

Contractor Authorized Signature: ____________________________________________

3. COMPLETION TIME

A. For establishing the Date of Final Completion the contract time for the Base Bid shall be as indicated in Section 00600, Construction Agreement. This time may be subject to modification to facilitate the work, as mutually agreed upon at a later date.

B. The Bidder certifies that the Bid is based on the Contract Time for completion as stated in Section 00600, Construction Agreement. Bidder further certifies that the Base Bid amount is sufficient to cover all labor, materials, central office and construction site overhead, profit, and all other costs related to the completion of the Project for the entire Project construction time for both the General Contractor and all Subcontractors, as stated above in paragraphs 2 and 3.

4. ADDENDA

A. The Bidder acknowledges receipt of the following Addenda, and certifies the Bid has provided for all modifications and considerations required therein.

None [ ]
Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________
Addendum No.: ________ dated __________________

B. List of Additional Addenda Attached: Yes [ ] No. [ ].

Contra Costa Community College District
Diablo Valley College
D-4007 Roof Replacement Phase 1 – ET and AB Buildings

Section 00300 - Page 2 of 6
Bid Proposal Form
Addendum #2
June 30, 2016
5. DESIGNATION OF SUBCONTRACTORS

A. The Bidder has set forth a complete list indicating the type of work, name, and business address of each Subcontractor who will perform work in excess of one-half of one percent of the Contract Sum.

B. Any portion of the work in excess of the specified amount having no designated Subcontractor shall be performed by the Bidder.

C. Substitution of listed Subcontractors will not be permitted unless approved in advance by the District.

D. Prior to signing the Contract, the District reserves the right to reject any listed Subcontractor.

Attention is directed to Section 4100 through 4113 of the Public Contract Code concerning Subcontractors, with emphasis on Section 4104, known as the “Subletting and Subcontracting Fair Practices Act, effective July 1, 2014.

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E. Complete list of Subcontractors is attached: Yes [ ] No [ ]

F. Continuation list of Subcontractors is attached: Yes [ ] No [ ]

6. ACCEPTANCE AND AWARD

A. The District reserves the right to reject this Bid and to negotiate changes before or after execution of the Contract. This Bid shall remain open and shall not be withdrawn for a period of 90 days after Bid Opening date.
B. If written notice of acceptance of this Bid is mailed or delivered to the Bidder within 90 days after the date set for the receipt of this Bid, or other time before it is withdrawn, the Bidder will execute and deliver to the District a Contract prepared by District with the required Surety Bonds and Certificates of Insurance, within 10 days after personal delivery or deposit in the mail of the notification of acceptance.

C. Notice of acceptance or request for additional information may be addressed to the Bidder at the address provided.

7. BID SECURITY

A. The required 10 percent (10%) Bid Security for this Bid is attached in the form of:

( ) Bid Bond Issued By: ________________________________

( ) Certified or Cashier's Check No. ________________________________

Issued by: ________________________________

8. BIDDER'S BUSINESS INFORMATION

B. Individual [ ]:

Personal Name: ________________________________

Business Name: ________________________________

Address: ________________________________

Zip Code: __________________

Telephone: ________________________________

Fax Number: ________________________________

C. Partnership [ ]:

Co-partners' Names: ________________________________

Business Name: ________________________________

Address: ________________________________

Zip Code: __________________

Telephone: ________________________________
Fax Number: ________________________________

D. Corporation [ ]: ________________________________

Firm Name: ________________________________
Address: ________________________________
______________________ Zip Code:__________
Telephone: ________________________________
Fax Number: ________________________________
State of Incorporation: ________________________________
President: ________________________________
Secretary: ________________________________
Treasurer: ________________________________
Manager: ________________________________

E. Power of Attorney: Name:______________________________
Title: ________________________________

F. Contractor License No. _________ State of ________

G. Bidder is submitting this proposal on behalf of a Joint Venture. Names, license numbers, and relevant information are given on a separate attachment: Yes [ ] No [ ].

H. Upon request, furnish appropriate documentation to substantiate and/or support the data given.
9. The undersigned hereby certifies under penalty of perjury under the laws of the State of California that all the information submitted by the Bidder in connection with this Bid and all the representations herein made are true and correct.

Executed this __________ day of __________________________, 20________

__________________________________________________________________________
CSLB License No.: Exp: DIR Registration No.:  

__________________________________________________________________________
Firm Name

__________________________________________________________________________
Signature

__________________________________________________________________________
By (Print or Type Name)

__________________________________________________________________________
Title

End of Section 00300
SECTION 01140
WORK RESTRICTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY OF WORK RESTRICTION REQUIREMENTS

A. Prior to the start of Work, Contractor shall familiarize itself with the Work Restrictions as they relate to all Work required by the Contract Documents.

1. Upon receiving Notice of Award and prior to Notice to Proceed, the Contractor shall submit a preliminary baseline schedule to include times and durations of all Work Restricted Activities.

2. Prior to the Notice to Proceed, the Contractor shall submit and obtain approval of a Time Sensitive Work Activity Plan indicating how the Work will be implemented.

3. Prior to the Notice to Proceed, the Contractor shall submit and obtain approval of a schedule of temporary utility interruptions, if any, indicating the dates and durations of any interruption to any Project building utilities. Interruptions may not impact occupied buildings, and may only occur from Friday 8 PM to Monday 7 AM. 5 days prior notice and District approval required in all cases.

4. Failure to include sufficient costs in the bid, or failure to sufficiently provide resources during Work Restricted Activities shall not relieve the Contractor from properly complying with all Work Restrictions.

B. Work Restricted Activity Plan shall include:

1. Full size drawings (36”x42”) of site plans showing the locations and dimensions of temporary facilities including but not limited to all site trailers, equipment and material storage area (onsite and offsite), access for pedestrians and vehicles and haul routes, avenues of ingress/egress to the campus and Project construction sites, all temporary signage, fenced area(s), and details of fencing and/or safety barricades per excavation location.

2. The Contractor shall provide a weekly updated Plan including updated look-ahead schedules until the Work is complete.

3. Contractor shall submit (3) sets of the initial submittal of the preliminary schedule and Work Restricted Activity Plan for District approval.

C. Contractor shall perform and complete all Work Restricted Activities to ensure the following:

1. The continuous and uninterrupted use of all occupied areas, including but not limited to the applicable power, data, telephone, waterline, fire alarm system, fire sprinkler system mechanical, gas, storm, sewage, plumbing, and electrical systems serving these areas.

2. Protection of students, staff, faculty and personnel in occupied areas and surrounding and adjacent areas from the hazards and dust associated with construction.
3. The work areas, roads, parking lots, and streets are to be kept clear, clean, and free of loose debris, construction materials and partially installed work which would create a safety hazard or interfere with subcontractor and personnel duties and traffic. The Contractor shall sweep the areas clean at the end of each work day and make every effort to keep dust and noise to a minimum at all times.

4. Prior to starting work, the Contractor shall provide a proposed schedule of temporary interruptions or shutdown of any Project building utility system to the District Representatives. The Contractor shall provide written request (5) working days prior to the desired time for the proposed interruption(s). Work shall be performed at times other than the Campus’s normal hours of operation, or as directed by the District’s Construction Manager. Temporary interruptions shall be completed prior to the start of the next business day at the Campus to maintain continuous and uninterrupted use of Campus facilities.

1.3 SUMMARY OF WORK RESTRICTIONS

A. General: Work Restrictions are comprised of Work Restricted Activities included in the Work Restricted Activity Plan described above. All Work Restricted Activities must be completed within the timelines, work shift times, and the scheduled time period as required by the Contract Documents or as approved by District. Comply with the following:

B. Time Essential Work Restrictions. These Work Restricted Activities shall be completed at the outset of the project following the Notice of Award. The Work Restricted Activities that are essential to protect the Campus community, and minimize disruption to the Campus’s daily operations include, but are not limited to: temporary construction fencing, temporary construction barriers, construction and way-finding signage, dust control and safe and ADA complaint access (ingress/egress) for pedestrians and vehicles around the construction areas.

C. Time Sensitive Work. This includes Work activities that may impact Project building ingress or egress, or any other normal operation within the Project buildings. The ET Building houses active classes and takes scheduling priority for these Work activities.

a. ET Building Time Sensitive Work: In order to minimize disruption to Campus operations, the following ET Building Work activities shall be scheduled to begin at the earliest possible date following the Notice to Proceed, and complete at the earliest possible date thereafter:

i) asbestos abatement

ii) removal of existing roof aggregate

iii) removal of existing roof membranes

iv) demolition of existing roof decking

v) installation of roof protection board
PART 2 - PRODUCTS

2.1 MATERIALS
   A. All labor, equipment, materials, and all other requirements shall be provided and will be the sole responsibility of the Contractor for execution of entire work including all requirements of each Work Restricted Activity.

PART 3 - EXECUTION

3.1 MEANS AND METHODS OF CONSTRUCTION
   A. Contractor to provide and shall be responsible for any and all means and methods that will be constructed, implemented and/or maintained on the site for all Work Restricted Activities.

END OF SECTION 01140
SECTION 01210
ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS
A. Section 00100 – “Notice Inviting Bids”
B. Section 00200 – “Instructions to Bidders”
C. Section 00600 – “Construction Agreement”
D. Section 01010 – “Summary of Work”
E. Divisions 2 through 16 Sections for items of Work covered by Allowances.

1.3 SUMMARY
A. This Section includes administrative and procedural requirements governing Allowances.

1.4 GENERAL
A. Types of Project Allowances include the following:
   1. Lump-sum Allowance.

1.5 GENERAL
A. Description of Allowance No. 1: An Allowance of One Hundred Sixty Thousand Dollars ($160,000) for all costs associated with additional Work, labor, and/or materials beyond that specified in the Contract Documents, and to be utilized at the sole discretion of the District.
B. Contractor shall initially show Allowance #1 in the Schedule of Values as a single line item. Change Orders which are associated with the use of the Allowance will be included in the updated Schedule of Values in the same manner as other Change Orders, and the value of the Allowance line item will be decreased by the same amount.
C. Additional Work may include, but is not limited to, plywood roof deck replacement, 2x and/or 3x T&G wood roof decking replacement, and removal and/or relocation of roof mounted conduits.
1.6 SUBMITTALS
A. Submit proposals for purchase and/or installation of products or systems included under Allowances, following the process specified for Change Orders.
B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each Allowance related item.
C. Coordinate and process submittals for Allowance items in same manner as for other portions of the Work.

1.7 LUMP-SUM ALLOWANCE REQUIREMENTS
A. Contractor’s cost for products, delivery, installation, labor, insurance, payroll, taxes, bonding and equipment rental and all other costs will be included in a Change Order authorizing expenditure of funds from an Allowance.
B. Funds will be drawn from an Allowance only with District approval evidenced by a Change Order prepared by the Architect and approved by the District.
C. At Contract closeout, any funds remaining in Allowance will be credited to District by Change Order.

PART 2 - PRODUCTS
NOT USED.

PART 3 – EXECUTION

3.1 EXAMINATION
A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.
B. Coordinate materials and their installation for each Allowance item with related materials and installations to ensure that each Allowance item is completely integrated with related Work.

3.2 MODIFICATIONS TO WORK
A. Coordinate Allowance items with other portions of the Work in the same manner as other Work required by the Contract Documents.
B. General: Execute Allowance Work under the same conditions as other Work of this Contract.
C. Coordination: Modify or adjust affected Work as required to completely and fully integrate Allowance Work into the Project.

END OF SECTION 01210
SECTION 01311
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY
A. This Section specifies the administrative requirements and includes descriptions of required project coordination for the work including, but not limited to, the following:
   1. Coordination
   2. Coordination of Contract Closeout

1.3 COORDINATION
A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of Work, with provisions for accommodating items to be installed later and for accommodating items to be installed by other District contractors.
B. Resolve differences or disputes concerning coordination, interference, or extent of Work of the various Sections of the Specifications.
C. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
D. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.
E. Cooperate with District and District suppliers and/or contractors during move-in and occupancy of the completed Work.
F. Contractor shall coordinate construction operations and means and method of construction included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
   1. Coordinate structural, mechanical, and electrical elements prior to installation. All penetrations of structural elements must first receive approval of Architect and District pursuant to the submittal process described in Section 00700, General Conditions. Rerouting of ductwork, piping, or conduit and resulting changes to other work caused by failure to coordinate beforehand is the responsibility of the Contractor and shall not be considered justification for either additional cost or time.
   2. Schedule construction operations in sequence required to obtain the best constructed results where installation of one part of the Work depends on installation of other components, before or after its own installation.
3. Coordinate installation of different components with other contractors or other trades to ensure maximum and appropriate accessibility for required maintenance, service, and repair. Where availability of space is limited, coordinate installation of different components to ensure maximum and appropriate performance and accessibility for required maintenance, service, operations, and repair of all components, and building systems.

4. Make adequate provisions to accommodate items scheduled for later installation.

5. The manner in which the Specifications are divided into Divisions and Sections is not intended to indicate division of work between trades nor indicate trade union or jurisdictional agreements.
   a. Assign and subcontract construction activities, and employ workers in a manner that will not risk jurisdictional disputes that could result in conflicts, delays, claims, or losses.

1.4 ADMINISTRATIVE COORDINATION

A. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work.

B. Project Documents Management and Exchange
   1. The Contractor, District, IOR, and Architect shall mutually utilize an internet based system for the exchange and tracking of Project documents. The system to be utilized for this Project is EADOC, by EADOC, LLC.
   2. The District will provide training for and access to the EADOC system for key Project team members, and will also pay the system usage fees.
   3. To the maximum extent feasible, document exchange between and among the Contractor, District, IOR, and Engineer shall occur electronically via the EADOC system. Such documents include, but are not limited to:
      a. Product data and other submittals
      b. ASI's, Field Directives, and similar documents
      c. RFI's
      d. Payment applications
      e. Change Orders
      f. Schedules
      g. Correspondence
      h. Other documents and deliverables as required by the Contract Documents.
   4. All Project documents entered into the EADOC system will be stored remotely at a secure EADOC, LLC location.
   5. EADOC demonstration videos and screenshots can be found at the following link: http://eadocsoftware.com/demo/
1.5 COORDINATION OF THE WORK
   A. Coordinate use of project space and sequence of installation of mechanical, electrical, structural, and other Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently for maximum and appropriate accessibility for other installations, for maintenance, service, operations, and for repairs.
   B. Contractor shall use large scale drawings, if their preparation is required as part of Work of these specifications, together with shop drawings if applicable and layout drawings of other affected sections of these specifications to check, to coordinate, and to integrate the Work of various sections to prevent interferences.
   C. Perform and complete checking and coordination before commencing construction in the affected areas.
   D. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of plumbing, fixtures, electrical fixtures, and fixtures and outlets with finish elements.

1.6 CONSERVATION
   A. Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
      1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections of the Specifications for disposition of salvaged materials that are designated as District’s property.

1.7 MEANS AND METHODS
   A. Contractor is solely responsible for construction means, methods, techniques, sequences, and procedures for performing all Work.

1.8 ADMINISTRATIVE AND SUPERVISORY PERSONNEL
   A. Contractor shall provide other administrative and supervisory personnel as required for proper performance of the Work.
      1. Include specific or dedicated personnel required for coordination of operations with other contractors.

1.9 COORDINATION WITH WORK BY DISTRICT
   A. Coordinate service connections for District furnished and District installed equipment. Verify that service connections are correct sizes and in required locations.
   B. Coordinate support and anchorage for equipment furnished and installed by the District. Provide blocking and backing as shown or directed to facilitate installation of equipment by others.
1.10 PERIODIC VERIFIED REPORTS
A. The Contractor shall complete and submit the Final Verified Report required by DSA when applicable. In addition to other conditions precedent to Final Payment, the Contractor's completion and submission of the Final Verified Report is an express condition precedent to the District's obligation to make the Final Payment. In addition to completion and submission of the Final Verified Report, as a material obligation under the Contract Documents, the Contractor shall comply all DSA requests for reports or other data relating to the Work, the status thereof or conformity of the Work to the Contract Documents.

PART 2 - PRODUCTS

1.11 EADOC Construction Management Software
A. The Project will make use of the EADOC Construction Management Software. The system is a web-based user-interface that can is accessible by typical web-browsers. The District will provide training prior to the start of the Project.

PART 3 - EXECUTION - Not Used.

END OF SECTION 01311
SECTION 01340
ADMINISTRATIVE FORMS & LOGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

A. This section specifies the information and format requirements for administrative forms and logs.

1.3 ADMINISTRATIVE FORMS & LOGS

A. The Contractor shall use District provided administrative forms for the Work. Administrative forms and logs include, but are not limited to, the following:
   1. Transmittal Form
   2. Submittal Transmittal Form
   3. Request for Information Form
   4. Substitution Request Form
   5. 3-Week Projected Construction Schedule Form
   6. 3-Week Testing & Inspection Schedule Form
   7. Proposed Change Order Form*
   8. Change Order Form*
   9. Request for Information Log Form
   10. Submittal Log Form
   11. Proposed Change Order Log Form
   12. Change Order Log Form
   13. Contractor's Proposal for Contract Modification Form* (includes sample numbers to demonstrate calculations only)
   14. Contractor Production Report
   15. Construction Directive Form

B. Forms generated by project management software may be substituted if substitution forms contain essentially the same information as shown in these contract documents. Allowance for the use of substitute forms is at the sole discretion of the District, and shall be requested and approved before use of the substitute form. Forms marked with an asterisk (*) may NOT be substituted under any condition.

C. Microsoft Excel files of these forms are available for Contractor use from the District.
1.4 FORMS INCORPORATED BY REFERENCE

A. Forms available from the California Department of General Services, Division of the State Architect, http://www.dgs.ca.gov/dsa/Forms.aspx, related to administration, construction, testing, and inspection of public work school facilities are hereby incorporated by reference into these Contract Documents.

1.5 CONTRACTOR RESPONSIBILITIES

A. Nothing in this Section, including, but not limited to, the above forms and log forms, shall be construed to limit, relieve, or release Contractor from liability to District for any damages sustained as a result of inaccurate or incorrect information supplied by the Contractor.

PART 2 – PRODUCTS - Not Used.

PART 3 – EXECUTION - Not Used.

END OF SECTION 01340
SUBSTITUTION REQUEST FORM

Contract Name: xx
Contract #: xxx

RFS # Date: ____________

DSA Application #: ____________

Campus: Contra Costa College

Project No., Name: ____________________________

CERTIFICATION

Contractor:__________________________________________ Date: ____________

A. Does the substitution affect dimensions shown on Drawings?

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

C. What effect does the substitution have on other trades?

D. Will substitution cause change to Project Schedule, or to critical delivery dates? Add? Shorten?

E. Differences between proposed substitution and specified item?

F. What is the Cost Differential including all mark-ups?

G. Are Manufacturer’s guarantees for the proposed item the same as for item specified? Explain differences.

H. The undersigned accepts full responsibility for delays caused by redesign of other items of the Work necessitated by substitution.

I. The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

A/E Response: ____________________________ District Representative Response: ____________________________

O Accepted  O Accepted
O Not Accepted  O Not Accepted
O Accepted As Noted  O Accepted As Noted
O Received Too Late  O Received Too Late

BY:________________ Date:________________ BY:________________ Date:________________
SECTION 02 41 00

SELECTIVE DEMOLITION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Demolition of and removal of roof systems.
B. Demolition of and removal of exterior finishes to perform the roof installation.
C. Protection of building interiors from dirt, dust and damage.

1.02 RELATED SECTIONS

A. Division 1 – General Requirements.
B. Appendix – Hazardous Material Abatement

1.03 SPECIAL JOB CONDITIONS

A. Roofing, exterior wall finish and sealant that is removed shall be made watertight and secure in the same day’s operation.
B. Contractor will verify roof demolition scope with the Owner Representative and/or Architect/Engineer prior to the start of work.
C. The building will be occupied and in use during the work.
D. The Contractor will be responsible for the building watertightness after the existing roofs are removed.

1.04 SUBMITTALS

A. The Contractor shall submit a detailed demolition plan to the Construction Manager, outlining the means and methods to be utilized in the removal, transportation and disposal of the existing roof system and related debris. The removal plan shall also include the Contractor’s proposed methods for interior and exterior protection and cleanup during removal and re-roofing operations. Identify the proposed location(s) of dumpsters.
1.05 EQUIPMENT

A. Conveyances: Buggies or wheelbarrows used on roofs shall be limited to 3/8 cubic yard capacity.

B. Chutes: Provide enclosed chutes for debris transfer from the roof vertically for a distance of 10 feet or more. Do not extend chutes in an unbroken line for more than 20 feet, without substantial breaks at intervals not greater than 20 feet. Debris shall not spill from the bottom of the chute directly onto the ground. Direct chutes into an approved construction debris container. Provide a hose with a nozzle connected to an adequate water supply, near chute outlet to wet debris as necessary for dust control.

C. Hoists/Cranes: Provide hoists or cranes to remove debris and transport materials to and from the roof. All materials shall be properly secured to prevent loose materials or debris from breaking loose from hoisting apparatus. Debris to be transported from the roof shall be placed directly in approved construction debris containers. Proper protection of wall areas for their entire height shall be provided in the form of heavy duty tarps secured or affixed to exterior walls directly adjacent to or under the area of hoisting.

D. The use of “bobcat” type removal equipment is prohibited.

E. Mechanical cutting equipment: Roof cutting equipment shall have an operable blade depth setting mechanism, in order to control the cutting depth of the blade and alleviate the potential of damage to the structural deck.

PART 2 – MATERIALS

NOT USED

PART 3 – EXECUTION

3.01 PREPARATION

A. Provide, erect, and maintain temporary barriers and security devices as required for performance of the Work.

B. Protect existing landscaping materials, appurtenances, structures, and finish materials that are not to be demolished.

C. Mark location of utilities.

D. Protect existing structures and paving from damage or displacement.

E. Where nature of demolition requires their use, erect and maintain trash and dust chutes for disposal of materials, rubbish and debris (See Paragraph 1.05).
3.02 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent occupancies.

B. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.

3.03 DEMOLITION

A. Disconnect, cap, and identify designated utilities within demolition areas; protect those utilities which should remain from damage.

B. Remove materials to be re-installed or retained. Store and protect in manner to prevent damage.

C. Remove demolished materials and debris from site.

D. Do not burn or bury materials on site.

E. Leave site in clean condition.

F. Remove temporary work.

3.04 STORAGE AND DISPOSAL

A. Items to be removed, stored, and protected for re-installation: As indicated on the Drawings and herein, including but not limited to the following:

1. Ducts, mechanical units, condensate lines, some HVAC units, or communications items that may require removal and reinstallation during reconstruction.

B. Items to be removed: As indicated on the Drawings and herein, including but not limited to the following:

1. For all roof areas except those stated in Paragraph B.2, roof systems, remove existing built-up roof and abate per hazardous materials report, as indicated on the Drawings.

2. For Roof Areas ET-1 to ET-5, remove the existing aggregate and base flashings, as shown on the Drawings.

3. Remove existing conduits and pipes on the AB roof as identified by the Owner.

4. Remove the water-damaged decking at ET Canopy-1 as shown on the Drawings. This will be included in the quantity allowance/unit costs for deck replacement.
5. **Remove existing base flashings at ET Building as required to install new base flashings.**

C. **Debris disposal:**

1. All debris shall be transported to dumpsters at ground level by enclosed chute. Uncontrolled dropping of debris to ground level will not be permitted. Control visible emissions at the dumpster location by wetting the debris with a fine spray of water at the dumpster level and by providing a tarp cover over the dumpster.

2. Dispose of all debris in accordance with all applicable local, State, Federal regulations for the proper transportation and disposal of roofing materials at an approved landfill.

3.05 **CLEANING**

A. Clean, restore and/or replace items stained, dirtied, discolored or otherwise damaged due to the Work, as required by the Owner.

B. Clean roof, building (interior and exterior), and surrounding areas so they are free of trash, debris and dirt caused by, or associated with the Work.

C. Clean out drain leaders and piping to the point where it exits the site. Water test all roof drains and downspouts prior to and after construction by running water from a hose into each gutter and downspout in the presence of the Owner and/or Owner Representative.

D. Sweep site and paved areas clean daily.

**END OF SECTION**
SECTION 02 82 00
ASBESTOS ABATEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.
B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT
A. The Contractor is responsible for repair, to the satisfaction of the District, of surfaces not scheduled for demolition that become damaged as a result of the work. All unscheduled repair work shall be at no increase to contract price.
B. Contractor shall coordinate removal with all site requirements related to protection of existing finishes. Water and encapsulants used during abatement work must not migrate beyond established regulated work area barriers. All protection work must be completed prior to the start of abatement work on each roof and any pathways of travel to the work areas.
C. This project deals with abatement of asbestos-containing materials (ACMs). It is necessary for the Contractor to coordinate all abatement work with the project drawings and specifications. During all work, provide monitoring and worker protective equipment in accordance with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this specification. Where there is conflict, the most stringent requirement shall apply.
D. The work covered by this specification includes the handling, removal, and proper disposal of ACMs. All ACMs shall be removed and disposed of according to all federal, state and local regulations. The Contractor shall determine if additional hazardous materials will be impacted by the scope of the abatement work. The cleanup of any incidental asbestos found in areas undergoing abatement of asbestos that become separated from the building during the dismantling process are part of the work.
E. The abatement workers shall have received Cal-OSHA accredited training and be certified for asbestos abatement work.
F. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for asbestos abatement in accordance with this specification.
G. Comply with all federal, state, and local regulations pertaining to asbestos removal, storage, transportation and disposal; employee heath and safety; Contractor certifications; and all licenses, permits, and training.
H. Work on the premises shall be confined to areas designated in the Contract Documents. Materials and equipment shall be stored within areas designated by the District. Should additional space be required, the Contractor shall request permission for additional space and shall adequately safeguard occupants from associated health and safety hazards.

I. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to asbestos abatement, handling, and the subsequent cleaning of contaminated areas.

J. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, sensitive building finishes, adjacent building areas, and shall ensure that there is no airborne release of dusts. The District may collect air samples in the building and in adjacent areas to evaluate the Contractor’s performance. Evidence of settled dust or elevated airborne levels of contaminants will require the implementation of additional controls at no increase to contract price.

K. It is the Contractor's responsibility to determine the quantities of ACMs that will require removal prior to commencement of the project. The Contractor shall conduct a site visit to determine exact locations of materials that will require abatement. This section provides appropriate protocols for handling and disposal of ACMs. All ACMs shall be removed according to the procedures outlined in this specification. If additional suspect ACMs are discovered during the course of the abatement work, immediately notify the District and/or the District’s Environmental Consultant.

L. The work of this section shall be performed by an entity that holds a current, valid asbestos handling license issued by the California State Contractor’s Licensing Board (SCLB) and a current valid Certificate of Registration for Asbestos-Related Work issued by the California Department of Industrial Relations-Division of Occupational Safety and Health (Cal-OSHA), unless other specified. Display copies of CSLB license and Cal-OSHA Registration in a visible place at the job-site.

M. ACMs removed during the abatement activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the District thereby limiting the District's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose. The District or the District’s Environmental Consultant shall approve the non-ACM hazardous waste disposal site(s) prior to disposal for materials that may be disposed of in that manner.

N. All exterior asbestos abatement work shall be conducted within an asbestos regulated work area demarcated with barrier tape and asbestos signage, unless otherwise specified.
1.3 DEFINITIONS

A. The following definitions pertain to work of this section.

1. Abatement: Process of controlling fiber release from ACMs including encapsulation, enclosure, controlled renovation procedures, removal, clean-up and disposal.

2. ACM: Asbestos-containing material

3. Aggressive Sampling: Air sampling either during or following the agitation of the air.


5. Ambient Air Quality: The quality of air (in terms of airborne fiber content) that is present in a given space.

6. Area Monitoring: Sampling of airborne asbestos fiber concentrations within the work area and outside the work area. Sampling shall represent airborne concentrations that may reach the breathing zone.

7. Asbestos Fibers: Refers to asbestos fibers having an aspect ratio of 3:1, and those fibers longer than five (5) microns.

8. Asbestos Permissible Exposure Limit (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.

9. Asbestos-Containing Material (ACM): Those manufactured products and construction materials including structural and mechanical building materials, as well as packings and gaskets that contain more than one percent (1.0%) asbestos by weight.

10. Asbestos: Asbestos includes asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-gunerite (amosite), anthophylite, tremolite, and actinolite. For the purposes of determining worker respiratory protection, both the asbestiform and non-asbestiform of the above minerals, and any chemically treated or altered materials shall be considered as asbestos.

11. Authorized Visitor: Designated employees or consultants for the District and representatives of any federal, state or local regulatory or other agency having jurisdiction over the project.

12. Baseline: Refers to the background levels of asbestos monitored before abatement.

13. Breathing Zone: A hemisphere forward of the shoulders and head with a radius of approximately six to nine inches.

14. Breach: A rift or gap in the critical or secondary barriers that allow egress of air from the containment to outside, or vice versa.

15. Cal-OSHA: State of California, Occupational Safety & Health Administration.
16. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample(s) from the moment it is collected, transported, analyzed, and ultimately stored in an archive.

17. Change Area: Refers to the decontamination area used to change into and out of protective clothing.

18. Certified Industrial Hygienist (CIH): A person certified by the American Board of Industrial Hygiene.

19. Clean Area: An uncontaminated area or room that is part of the worker decontamination area, with provisions for storage of workers’ street clothes and protective equipment.

20. Clearance Level: Clearance level for samples analyzed by PCM will be less than 0.01 fibers per cubic centimeter of air and for TEM will be less than 70 structures per square millimeter (<70 s/mm²). Samples may be collected by non-aggressive sampling methods and the minimum air volume shall be 1,200 liters.

21. Competent Person: One who is capable of identifying existing and predictable hazards and who has the authority to take prompt corrective measures to eliminate them.

22. Critical Barrier: A unit of temporary construction that provides the only separation between asbestos work area and an adjacent potential occupied space. This includes the decontamination unit, perimeter walls, ceilings, penetrations and any temporary critical barriers between the work area and the uncontaminated environment.

23. CSLB: Contractors State Licensing Board

24. Decontamination Area: Area which is constructed to provide the means for workers to store clothing, equipment and other articles, and to properly remove contamination upon concluding work activities that result in exposure to these hazardous materials.

25. DOP: Dioctylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.

26. DOT: Federal Department of Transportation.

27. DOSH: Division of Occupational Safety & Health (see also Cal-OSHA)

28. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

29. Disposal Bag: Minimum six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from a work area to disposal or shipping container. Each disposal bag must have required labels according to Title 8 CCR 1529 (Cal-OSHA asbestos rule), 5194 (HAZCOM). RACM waste must be additionally labeled according to 49 CFR 171-179 (USDOT), and 40 CFR 61 Subpart M (NESHAP). Hazardous waste disposal bags must be labeled with generator’s name, address, site location, generator number, and the following information:
DANGER
CONTAINS ASBESTOS FIBERS
CANCER AND LUNG DISEASE HAZARD
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

30. District: Contra Costa Community College District

31. District’s Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's asbestos abatement work activities.

32. Encapsulant: A liquid material that can be applied to ACMs that controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together (penetrating encapsulant).

33. Encapsulation: A specified procedure necessary to coat ACMs or asbestos contaminated surfaces with an encapsulant to control the possible release of asbestos fibers into the ambient air.

34. Equipment Area: A contaminated area that is part of the worker decontamination area, with provisions for storage of contaminated clothing and equipment. The equipment area shall be kept clean from asbestos-containing debris at all times.

35. Excursion Limit: A California Code of Regulations (Title 8 CCR 1529) requirement that ensures no employee exposed to airborne concentrations of asbestos in excess of 1.0 fibers per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.

36. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

37. Fixed Object: A unit of equipment or furniture in the work area that cannot be removed from the work area.

38. Friable Asbestos-Containing Material: Material that contains more than 1.0% asbestos by weight, and that can be crumbled, pulverized or reduced to powder by hand pressure when dry.

39. Foreman: An individual who typically fulfills the duties of “competent person” as defined by Title 8 CCR 1529. This individual must supply documentation of a passing grade in a Cal-OSHA accredited course in Asbestos Contractor/Supervisor training. The foreman must be on-site during all abatement work.

40. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.

41. Manifest: The document authorized by both Federal and State authorities for tracking the movement of ACMs.
42. Movable Object: A unit of equipment in the work area that can be removed from the work area.

43. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere, and negative during inhalation in relation to the air pressure of the outside atmosphere.

44. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).


46. NIOSH: National Institute for Occupational Safety and Health: Sets test standards, analytical methods, and certifies performance of various respirator designs (research institute within Federal OSHA).

47. NIST: National Institute of Standards and Technology: Administers the NVLAP Program.

48. NVLAP: National Voluntary Laboratory Accreditation Program – evaluates and certifies laboratories doing PLM and TEM analyses.

49. Passive Sampling: Refers to air sampling with no air agitation.

50. Permissible Exposure Limits (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air and 30 minute excursion limit of 1.0 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.

51. Phase Contrast Microscopy (PCM): Technique using a light microscope equipped to provide enhanced contrast between the fibers and the background. Filters are cleared with a chemical solution and viewed through the microscope at a magnification of approximately 400X. This method does not distinguish between fiber types and only counts those fibers longer than 5 microns and wider than approximately 0.25 microns. Because of these limitations, fiber counts by PCM typically provide only an index of the total concentration of airborne asbestos in the environment monitored.

52. Polarized Light Microscopy (PLM): An optical microscope technique used to identify asbestos content and distinguish between different types of asbestos fibers by their shape and unique optical properties.

53. Powered Air Purifying Respirator (PAPR): A full facepiece respirator that has the breathing air powered to the wearer after it has been purified through a filter.

54. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

55. Remodel: Replacement or improvement of an existing building or portion thereof where exposure to airborne asbestos may result. Remodel includes,
56. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

57. Surfactant: A chemical wetting agent added to water to improve penetration, this reducing the quantity of water required for a given operation or area.

58. Transmission Electron Microscopy (TEM): Asbestos structure analysis for a specified volume of air. TEM is a technique that focuses an electron beam onto a thin sample. As the beams transmits through certain areas of the sample, an image resulting from varying densities of the sample is projected onto a fluorescent screen. TEM is the state-of-the-art analytical method for identifying asbestos fibers collected in air samples in non-industrial settings. TEM microscopes equipped with selected area electron diffraction (SAED) capabilities also can provide information on the crystal structure of an individual particle.

59. Visible Emissions: Any emission containing particulate material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

60. Visual Inspection: A visual inspection by District’s Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible debris and dust.

61. Water Filtration: Refers to water filtration to as small a particulate size as technically feasible, but not more than 5 microns.

62. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, HEPA vacuuming, or other cleaning utensils dampened with amended water and afterward thoroughly decontaminated or disposed of as asbestos contaminated waste.

63. Work Area: The area where asbestos removal is performed and that is defined or isolated to prevent the spread of asbestos fibers, dust or debris, and entry by unauthorized personnel. Work area is a regulated area as defined by Title 8 CCR 1529.

1.4 SCOPE OF WORK

A. Provide the removal of ACMs as specified in this section. Reference all other sections of the Specifications and other documents included in the contract documents for information and requirements that affect the work of this Section.

B. Table 1 attached provides estimated quantities of ACMs that will require removal and/or will be disturbed by the roof replacement work. A 10% variance of quantity of actual ACM and estimated ACM in Table 1 is not considered a changed condition. The Contractor is responsible for field verifying quantities of ACMs to be abated and/or disturbed.

C. The following materials shall be disposed of as regulated asbestos-containing material (RACM): All Category I and Category II materials rendered friable during the removal process.
D. The following materials can be disposed of as Category I Non-Friable ACMs if they are not rendered friable during removal: roofing mastics.

1.5 REFERENCES

The publications listed below form a part of this specification by reference. The publications are referred to in the text by basic designation only. If there is a conflict between any of the listed regulations or standards, then the most stringent or restrictive shall apply.

A. American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM)
   2. ANSI Z87.1, 2003, Occupational and Educational Eye and Face Protection
   3. ANSI Z88.2 1992, Respiratory Protection
   4. ANSI Z89.1, 1986, Requirements for Protective Headgear for Industrial Workers
   5. ANSI Z41, 1999, Personal Protection – Protective Footwear
   6. ANSI Z88.6, 1984, Respiratory Protection – Respiratory Use Physical Qualifications for Personnel
   9. ASTM D 1331, Solutions of Surface-Active Agents
   10. ASTM D 2794, 1993 Resistance of Coatings to the Effects of Rapid Deformation (Impact)
   15. ASTM E849, 1986 Safety and Health Requirement Relating to Occupational Exposure to Asbestos

B. California Assembly Bills (CAB)
   1. CAB 040, Yearly Registration of Contractors

C. California Code of Regulations (CCR)
   1. Title 8 CCR 5208, General Industry – Asbestos
2. CCR CARS, Carcinogen and Asbestos Registration Sections 340-344.53, 341.6 Amended, and 341.9 Amended Through 341.14
3. CCR ESO, Electrical Safety Orders, Chapter 4, Subchapter 5
4. CCR 1523, Illumination
5. CCR 1529, Asbestos in the Construction Industry
6. CCR 1531, Construction Respiratory Protective Equipment
7. CCR 3203, Injury and Illness Prevention Program
8. CCR 3204, Access to Employee Exposure and Medical Records
9. CCR 3220, Emergency Action Plan
10. CCR 3221, Fire Prevention Plan
11. CCR 5144, Respiratory Protection Equipment Standard
12. CCR 5194, Hazard Communication Standard
13. CCR 6003, Accident Prevention Signs
14. Title 22, Division 4, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste

D. California Health Services (CHS) Titles 22 and 23, California Administrative Code Disposal Requirements
   1. CHS 25123, Section 25123
   2. CHS 25124, Section 25124
   3. CHS 25143, Section 25143
   4. CHS 25163, Section 25163
   5. CHS 66508, Section 66508
   6. CHS 66510, Section 66510
   7. CHS DIV 4, Division 4, Commencing with Section 66000, "Disposal"

E. California Health and Safety Code (CHSC)
   1. CHSC 20, Division 20, Commencing with Section 24200

F. California Labor Code (CLC)
   1. CLC DIVISION 5, Part 1, commencing with 6300

G. California Propositions (CP)
   1. CP 65, Proposition 65

H. California State Board of Equalization (CSBE)
   1. CSBE ETU, Excise Tax Unit

I. California State License Board (CSLB)
   1. CSLB CBPC, California Business and Professional Code Sections 7058.5 and 7058.7, "Certification"

J. Code of Federal Regulations (CFR)
1. 29 CFR 1910.134, Respiratory Protection
2. 29 CFR 1910.141, Sanitation
3. 29 CFR 1910.145, Accident Prevention Signs and Tags
4. 29 CFR 1926.21, Safety Training and Education
5. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists
6. 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response
7. 29 CFR 1926.59, Hazard Communication
8. 29 CFR 1910.1000, Air Contaminants
9. 29 CFR 1926.1101, Asbestos
11. 40 CFR 61-SUBPART M, National Emission Standard for Asbestos
13. 40 CFR 745, Lead; Requirements for Lead-Based Paint Activities
14. 40 CFR 763, Asbestos Containing Material in Schools

K. State and Local Regulations
   1. Regulation 11, Rule 2, Bay Area Air Quality Management District (BAAQMD)

L. Underwriters Laboratories, Inc. (UL)
   1. UL 586-96, 1996 Test Performance of High-Efficiency Particulate Air Filter Units

1.6 SUBMITTALS PRIOR TO START OF WORK

A. The reviews by the District or District’s Environmental Consultant are intended to be only for general conformance with the requirements. The District or District’s Environmental Consultant assumes no responsibility for permits, licenses, notices, materials and methods, equipment or temporary construction required to execute the work described in this Section of the Specification or in other Sections of the Specification or in other documents included in the contract documents.

B. Before commencing work involving the abatement or disturbance of asbestos, submit the following for review by the District or District’s Environmental Consultant.
   1. Provide a detailed asbestos abatement work plan that follows Attachment A – Asbestos Abatement Work Plan Outline.
   2. Provide an asbestos site safety plan prior to project initiation. The site safety plan shall deal with, at a minimum: site safety and health hazards; fiber release incidents; control of water leakage or discharge within and/or from the work area; medical emergency; asbestos handling procedures; fall protection; electrical safety; Contractor’s internal administrative and inspection procedures; earthquakes and/or fire emergency procedures; protocol for responding to complaints or questions from interested parties; 24-hour emergency telephone numbers for company officers with authority to respond to emergencies.
3. Competent Person (as defined by Title 8 CCR 1529): Demonstrate education and specialized training with successful completion of examination of a Cal-OSHA accredited asbestos training course.

4. Workers: Demonstrate education and specialized training with successful completion of a Cal-OSHA accredited asbestos training course.

5. Submit current certificates (less than 11 months) signed by each employee and trainer that the employee has received proper training in the handling of materials that contain asbestos. Include documentation showing that the worker understands the following; health implications and risks involved (including the illnesses possible from exposure to airborne asbestos fibers), the use and limits of the respiratory equipment to be used, and the results of monitoring of airborne quantities of asbestos concerning health and respiratory equipment.

6. Proof of Respirator Fit Testing: Provide proof of respirator fit testing. Fit testing records must be less than eleven (11) months old and document testing on the type of respiratory protective equipment used for this project. Fit testing records must be signed by the Competent Person.

7. Foreman Training: Submit evidence that the foreman to be used on the job fulfills the qualifications detailed in this specification and has experience in similar jobs.

8. Medical Examinations: Submit evidence signed by a physician that each employee used on the job has received an appropriate medical examination as detailed in Title 8 CCR 1529. The submitted document must be less than eleven (11) months old.

9. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor shall provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the District’s Environmental Consultant.

10. Certificates of Compliance: Submit manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne asbestos fibers conform to ANSI Z9.2. Submit results of onsite DOP testing of all HEPA-filtered ventilation equipment.

11. Submit the proposed landfills to be used for waste disposal.

12. Satisfactory proof that written notification and subsequent updates have been provided to the Bay Area Air Quality Management District (BAAQMD), in accordance with Regulation 11, Rule 2, Cal-OSHA, and Title 40 CFR Part 61 Subparts A&M, National Emission Standards for hazardous Air Pollutant, U.S. EPA, as applicable.

13. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.

14. Notification of Other Contractors: If other contractors are working at the job site, before beginning any work the Contractor must inform all other contractors in writing regarding the location, nature, and requirements of the work areas.

15. Safety Data Sheets/Specification Sheets: The Contractor shall submit Safety Data and Specification Sheets for all chemicals, encapsulants, etc. to be used for this project.
1.7 SUBMITTALS AT THE COMPLETION OF THE PROJECT

A. Upon completion of on-site work, Contractor shall provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the District prior to acceptance of final pay request and shall include the following:

1. Copies of the Security and Safety Logs showing names of persons entering the workspace. The logs shall include date and time of entry and exit, supervisor’s record of any accident (detailed description of accident).

2. Chain of custody documentation and laboratory reports for all analyses performed.

3. Emergency evacuations and any other safety or health incident.

4. Submit uniform hazardous and non-hazardous waste manifests prepared, signed and dated by an agent of the landfill. The manifest must certify the amount of hazardous materials delivered to the landfill. The manifest must be provided to the District or District’s Environmental Consultant within ten working days after delivery.

5. Personal air sample results.

6. Project Summary:
   a. Abatement contractor’s name and address, certification number (CSLB), registration number (DOSH) and Tax ID number.
   b. Hazardous waste hauler certifications (DHS, DOT).
   c. Name, address and registration number of hazardous waste hauler.
   d. Laboratory performing analyses (NVLAP).
   e. Contract number and name of project.
   f. Specific inventory (including locations and approximate quantities) of the hazardous materials which were removed or handled.
   g. Number of employees working on the project.
   h. Dates of commencement and completion of on-site work.
   i. Work method employed (i.e., glove bag, mini-containment, full containment with negative air and decontamination enclosure system, etc.)
   j. Name, location, telephone number and EPA registration of waste disposal site(s) used.
   k. DOP testing results.

1.8 CONTRACTOR MONITORING

A. The District or District’s Environmental Consultant reserves the right to perform air sampling in selected areas during the course of the project. District or District’s Environmental Consultant reserves the right to stop work within an area if in the course of performing monitoring, the District or District's Environmental Consultant observes instances of substantial non-conformance with this Section or other Sections of the Specification presenting health hazards to workers, the general public or the surrounding areas. Work shall not resume until the corrective measures...
have been enforced. Instances of substantial non-conformance shall include, but not be limited to, the following:

1. Activities or misconduct imperiling worker’s safety and health.

2. Airborne fiber concentrations as measured by PCM outside of the work area exceeding background or 0.01 f/cc whichever is greater. Airborne concentrations as measured by TEM outside of the work area exceeding background or 70 S/mm², whichever is greater.

3. Breaches in critical barriers resulting in potential release of asbestos to non-work areas.

B. The District’s Environmental Consultant may perform air sampling inside and outside the hazardous materials work area during all phases of the work. The Contractor shall cooperate fully with the District’s Environmental Consultant and ensure the cooperation of his workers during collection of air samples and work area inspections.

C. When visual inspections or air monitoring are specified, the Contractor shall notify the District or District’s Environmental Consultant in writing 24 hours in advance of the day and time when the Contractor will be ready for such inspections or monitoring. Such requests shall be initiated by the Contractor’s Competent Person or Foreman indicating that the work area has been previously inspected and is ready for inspection/testing.

D. Air monitoring generated by the District or District’s Environmental Consultant shall not be used by the Contractor to represent compliance with regulatory agency requirements for monitoring of workers exposure to airborne asbestos, nor shall any other activity on the part of the District or District’s Environmental Consultant be construed to meet the Contractor’s compliance with applicable health and safety regulations.

PART 2 - PRODUCTS

2.1 SIGNS AND LABELS:

A. Provide labeling in accordance with State and Federal EPA requirements. Provide the required signs, labels, warnings, placards or posted instructions for containers used to transport hazardous material to the landfill.

B. Location of Caution Signs and Labels: Provide bilingual caution signs at all approaches to work areas in languages used by the Contractor’s employees. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos-containing materials, scrap, waste, debris, and other products contaminated with hazardous materials.

C. Warning Sign Format: Vertical format conforming to Title 8 CCR 1529:
DANGER

ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

D. Warning Label Format: Provide labels that comply with Title 8 CCR 1529 of sufficient size to be clearly legible, displaying the following:

DANGER CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

2.2 ENCAPSULANTS

A. Encapsulants shall be U.L. Listed, in full-scale E-119 fire test.

B. Average depth of penetration shall meet manufacturer's recommendations.

C. Performance Requirements: Classification - penetrating encapsulant; spray applied and brushable. Product shall be tested and listed by EPA and possess the following characteristics:
   2. Fire classification - UL Class A approved in the specific or similar assembly to its intended application.
   3. Product shall be tested and rated non-toxic and non-irritating under the Federal Hazardous Substances Control Act and contain no methylene chloride.
   4. Material shall be tinted sufficiently to provide a readable contrast to background color to which it is applied.

2.3 PLASTIC SHEETING:

A. Use fire-retardant (FR) polyethylene (poly) film.
   1. Thickness - 6-mil, minimum, NO EXCEPTIONS.
   2. Flame Resistance/Flame Spread Rate <25.
   3. Conforms to NFPA #701 and Tested in accordance with ASTM E-84.

2.4 TAPE, ADHESIVE, SEALANTS:

A. Tape, 2” or wider, shall be capable of sealing joints of adjacent sheet of polyethylene and shall attach polyethylene sheet to finished or unfinished surfaces or similar materials. Tape shall be capable of adhering under dry and wet conditions, including use of amended water. Taping to critical or sensitive surfaces shall be completed using preservation sealing tape.
B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

C. Fire resistant sealants shall be compatible with concrete, metals, wood, etc. Sealant shall prevent fire, smoke, water and toxic fumes from penetrating. Sealant shall have a flame spread, smoke and fuel contribution of zero, and shall be ASTM and UL rated for 3 hours for standard method of fire test for fire stop systems.

2.5 VACUUM EQUIPMENT:

A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the vacuum units. The test results shall be signed by the individual performing the testing. Repeat DOP testing every thirty (30) days after initial testing. Provide documentation to the District or District’s Environmental Consultant with 24 hours of DOP testing.

2.6 RESERVE EQUIPMENT:

A. Contractor shall have the following equipment on site: two reserve, functioning and DOP-tested HEPA Filter Vacuum Cleaning Units. Contractor shall also have sufficient polyethylene (poly), respirators, protective equipment, tape, tools, decontamination areas for each work area.

B. Provide authorized visitors requiring access to the work area with suitable protective clothing, headgear, eye protection, as described in this specification, whenever the visitor must enter the work area. The Contractor shall have available and maintain at all times a minimum of three (3) suits and other suitable protective equipment for this purpose. All protective equipment shall be new and for the exclusive use of visitors.

C. The Contractor shall document that each visitor has been trained and fit-tested prior to entering an abatement area.

2.7 TRANSPORTATION EQUIPMENT:

A. Transportation equipment, as required, shall be lockable and suitable for loading, temporary storage, transit and unloading of contaminated waste without exposure to persons or property. Any vehicle used to transport asbestos waste shall be properly registered with all applicable controlling agencies.

2.8 CONNECTIONS TO WATER SUPPLY:

A. Contractor shall assure that all connections to the site's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water shall not damage existing finishes or equipment.
B. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system in each work area. Provide fittings as required to allow for connection to existing wall hydrants or spouts.

2.9 OTHER TOOLS AND EQUIPMENT:

A. The Contractor shall provide other suitable tools for the stripping, removal and disposal activities.

B. Prohibited Equipment: The following equipment is prohibited from use on this project unless accepted in writing by the District or District’s Environmental Consultant:
   1. High or low pressure water blasting equipment for hosing of work areas.
   2. Bead blasting or other uncontained abrasive blasting methods.
   3. Vacuum-powered removal or collection equipment located outside the asbestos work area, such as a “Vacu-Loader”.
   4. Equipment that creates excessive noise or vibration that would affect the safety of the building or generate complaints from neighboring building occupants. No equipment shall exceed an A-weighted sound level of 85 dB as measured at 3 ft. from the radiating source without written permission of the District or District’s Environmental Consultant.
   5. Metal wire-brushes.
   6. Flammable solvents with a flash point below 140 degrees F or materials containing ethylene glycol ether, methylene chloride, ethyl chloroform (1,1,1-trichloroethane), or other hazardous substances.
   7. Non-fire retardant polyethylene sheeting.
   8. Polyurethane spray foam for application in fire-rated assemblies, including but not limited to penetrations into stairwells, mechanical rooms, electrical closets, rated floor-to-floor assemblies, etc.

PART 3 - EXECUTION

3.1 INITIAL AREA ISOLATION

A. The District or District’s Environmental Consultant reserves the right to inspect and approve all regulated work area setups before any abatement is undertaken.

B. If a work area is breached (failure of polyethylene seals, visible dust emission, elevated fiber counts above background level, etc.), the Contractor shall take immediate action to control the breach and clean the area to the satisfaction of the District or District’s Environmental Consultant.

C. If sample results indicate that conditions have exceeded the baseline or clearance criteria, as determined by the District or District’s Environmental Consultant, all work shall cease. Work shall not recommence until the condition(s) causing the increase have been corrected.
D. Verify that all electrical power, gas and water systems to the work area have been shut down and disconnected so that there is no possibility of reactivation and electrical shock.

E. Provide all connections for temporary utilities in the work area needed throughout abatement. Temporary electrical power shall be according to OSHA and the National Electrical Code for Wet Environments.

F. Contractor shall conform to the District's lockout requirements, and secure the work area at all times. Area entrances and exits shall be secured by the Contractor throughout the abatement phase. Unauthorized visitors are strictly prohibited. Only the Contractor, District or District's designative representatives are permitted at the job site. Contractor shall ensure that all doors, gates, windows, and potential entrances to the work areas and the designated waste location areas are secured and locked at the end of each workday.

G. Contractor shall store all materials, equipment, and supplies for the project in areas designated by the District and in accordance with District’s requirements.

H. Provide signs around the perimeter of the works areas according to EPA and Cal-OSHA.

I. Contractor shall provide temporary sanitary services of adequate capacity to handle the maximum estimated crew size plus an additional twenty percent. Contractor shall maintain the temporary facilities throughout the duration of the project.

J. The Contractor shall be responsible for identifying all HVAC components (if applicable) that lead into or out of the work areas. All components shall be sealed airtight for the duration of the abatement work. All openings shall be sealed with two (2) layers of 6 mil polyethylene secured with duct tape, as applicable.

K. Pre-clean the work area and fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning methods. Protect fixed objects with protective barriers (as appropriate) and cover with 6 mil poly sealed with tape.

3.2 CONTAINMENT SET-UP PROCEDURES

A. Containment is not required for the exterior, non-friable roofing work. All exterior asbestos abatement not conducted in containment shall be carried out in a regulated area demarcated with asbestos warning signs and tape and 6-mil poly drop sheets sufficient in size to capture fallen debris. Critical barriers consisting of 2 layers of 6-mil poly sheeting shall be installed on HVAC equipment located on the roof.

B. Approved fire extinguishers (Class ABC, multi-purpose, dry chemical type, rated: 4A; 60BC) shall be readily available to workers (maximum travel distance of 50 feet) inside and adjacent to work area(s). Personnel and emergency exits shall be clearly indicated in the work area. The emergency exit plan shall be approved by the District’s Environmental Consultant prior to the set up of any work areas.
3.3 PERSONNEL PROTECTION

A. Informed Workers:

1. All workers shall be informed of the hazards of ACMs and any other hazardous materials exposure. Workers shall also be instructed in the use and fitting of respirators, protective clothing, decontamination procedures, and all other aspects associated with the abatement work.

B. Personal Hygiene Practices:

1. The Contractor shall enforce and follow good personal hygiene practices during the abatement of ACMs. These practices will include but not be limited to the following: no eating, drinking, smoking or applying cosmetics in the work area. The Contractor shall provide a clean space, separated from the work area, for these activities.

2. Workers shall remove street clothes in the clean area and put on a respirator and clean protective clothing before entering the work area. Upon exiting the work area, remove gross contamination from clothing before leaving the work area; proceed to the change area and remove clothing except respirators; proceed to the wash station area; clean the outside of the respirator with soap and water; remove respirator and thoroughly wash. Following wash station, proceed directly to the clean area and dress in street clothes. Do not wear disposable clothing outside the decontamination area.

3. If data gathered by the District or District’s Environmental Consultant in areas adjacent to the work areas shows exposure to airborne asbestos or other hazardous materials exceeding Cal-OSHA criteria, that area will become regulated and workers must wear protective clothing and approved respirators and must have a shower facility provided to them.

C. Respirators:

1. Establish a respiratory protection program as outlined by ANSI and required by Cal-OSHA. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH). Respirators selected must be approved by the Competent Person. Submit program for review a minimum of five (5) working days prior to the commencement of abatement activities.

2. Provide workers with approved and personally-issued respirators with replaceable filters. Provide sufficient quantity of filters approved by NIOSH for use in asbestos environments so that workers can change filters as required by the manufacturer.

3. At a minimum, provide each employee with the following respiratory protection for each work phase:

   a. Pre-cleaning, work area set-up, and work area removal work: NIOSH-approved, half-face respirators with HEPA cartridges.

   b. Asbestos abatement of roof mastics: half-face respirators with HEPA cartridges.

4. At all times, respiratory protection selected shall, at a minimum, meet the requirements of the Table 1 below.
Table 1 – Respiratory Protection

<table>
<thead>
<tr>
<th>Airborne Concentration of Asbestos</th>
<th>Required Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not in excess of 1.0 f/cc (10 X PEL)</td>
<td>Half-mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters</td>
</tr>
<tr>
<td>Not in excess of 5.0 f/cc (50 X PEL)</td>
<td>Full facepiece air purifying respirator equipped with high efficiency filters</td>
</tr>
<tr>
<td>Not in excess of 10 f/cc (1,000 X PEL)</td>
<td>Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode</td>
</tr>
<tr>
<td>Not in excess of 100 f/cc (10,000 X PEL)</td>
<td>Full facepiece supplied air respirator operated in pressure demand mode</td>
</tr>
<tr>
<td>Greater than 100 f/cc or unknown concentration</td>
<td>Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus</td>
</tr>
</tbody>
</table>

D. Protective Clothing:

1. Provide personnel exposed to asbestos fibers with fire retardant disposable protective whole body clothing, head coverings, gloves, and foot coverings. Provide appropriate gloves to protect workers hands from exposure to hazardous materials. Make sleeves secure at the wrists and make foot coverings secure at the ankles with tape. Ensure that all personnel entering and leaving the work area follow this procedure. Suits shall be of adequate size to accommodate the largest employee. Foot covers may be part of the coveralls. Non-disposable footwear shall be left in the work area until it is decontaminated or disposed of at the completion of the job.

2. Protective clothing will be worn inside the work area after the area passes pre-abatement inspection and shall remain in use until the area passes final clearance inspection.

E. Eye Protection: Provide safety glasses or goggles to personnel removing or handling asbestos-containing materials and waste.

F. Emergency Precautions and Procedures:

1. Establish emergency and fire exits from the work area. Display necessary signage at exits and paths to exits with representative visual aids. A diagram of all emergency and fire exits shall be posted in a conspicuous area proximate to the entrance to each work area.

2. The Contractor’s supervisor/competent person shall be trained and certified in first aid and CPR, and be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, the Contractor shall implement fiber reduction techniques until the injured person has been removed from the work area.
3.4 ASBESTOS REMOVAL

A. The Contractor shall abate all ACMs identified in this specification and/or that require disturbance to complete work specified in other specification sections.

B. The Contractor shall continuously apply wetting agent throughout the removal process. The wetting agent shall be applied with a low-pressure fine spray to minimize fiber releases. The materials shall be thoroughly saturated so that there is no detectable fiber release. All ACM shall be immediately packaged in leak-tight containers following removal.

C. Minimize removal activities of ACMs that generate airborne particulate. To the extent feasible, score or cut-out ACMs in sections, wetting along the scoring line continually, and misting the air with an airless sprayer to knock down suspended particulate. After completion of removal work, surfaces from which asbestos has been removed shall be wet cleaned to remove all visible material and residue.

D. Coordinate extent of removal with the other contract documents.

E. Wet clean the exterior surfaces of waste containers prior to removal from the work area. The Contractor shall transport asbestos-containing waste bags to the waste debris box at designated hours approved by the District or District’s Environmental Consultant. RACM shall be packaged in a minimum of two (2) 6-mil polyethylene bags. Bags shall be properly labeled for RACM disposal including site-specific generator labels. Non-friable waste shall be packaged in clear, leak-tight containers and properly labeled while stored on-site.

F. Asbestos-containing debris and contaminated water shall be cleaned from the work area at the end of each work shift. The Contractor shall clean the work area using wet methods and HEPA vacuum equipment.

3.5 REGULATED AREA MONITORING

A. Prior to each work shift and continuously throughout the project, each work area and decontamination area shall be inspected and repaired as needed.

B. Ambient asbestos fiber levels outside each work area shall not exceed 0.01 f/cc (PCM) or 70 s/mm² (TEM). If the asbestos fiber concentrations outside work areas exceed those levels shown above, then abatement must stop and operations be reviewed and modified until the fiber count can be reduced to within the acceptable limits.

3.6 AIR MONITORING

A. The purpose of any air monitoring that may be conducted by the District or District’s Environmental Consultant will be to detect possible release of fibers or dusts emanating from the work areas.

B. All PCM air sample analysis shall comply with NIOSH Method 7400. All TEM analysis shall be consistent with modified-AHERA protocols or NIOSH 7402.
C. The District or District’s Environmental Consultant reserves the right to perform and/or observe final clearance inspection and sampling.

D. The method of analysis for in-progress asbestos air samples shall be PCM and TEM at the option of the District or District’s Environmental Consultant.

E. The Contractor shall be responsible for all personal air sampling. These samples shall be taken each shift and for each distinct crew operation, and shall be used to verify adequacy of fiber control and respiratory protection. Personal breathing zone air sampling shall be in accordance with the Cal-OSHA asbestos standard. A minimum of 25% of the workforce shall be monitored during each shift. All sample results shall be available on-site within 24-hours of sample collection. If two consecutive shifts of non-compliant or overloaded samples are noted, the contractor shall hire a CAC/CSST at their own expense to assist in compliance with the specifications.

3.7 CLEARANCE INSPECTIONS

A. The District or District’s Environmental Consultant reserves the right to conduct visual inspections. Contractor shall notify the District or District’s Environmental Consultant when the decontamination process in each work area is complete. Evidence of debris will require additional clean up by the Contractor. Contractor shall be responsible for re-cleaning all areas found to be deficient.

B. If the District or District’s Environmental Consultant determines that the work area is sufficiently clean, the Contractor may proceed. If the District or District’s Environmental Consultant determines that certain areas require additional cleaning, the Contractor shall re-clean the work area and request a second inspection of the recleaned area. All costs incurred by the District or District’s Environmental Consultant for inspections required after the second inspection will be charged to the Contractor.

C. Once the visual inspection is passed, the Contractor shall be approved to remove the regulated work area.

3.8 ASBESTOS CLEARANCE CRITERIA:

A. The asbestos abatement work areas will be cleared by visual inspection only.

3.9 ASBESTOS DISPOSAL

A. It is the responsibility of the Contractor to determine current waste handling, labeling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these Specifications, local, state, and federal regulations and provide documentation of the same.

B. Ensure that polyethylene bags are sealed air-tight. All bags shall be wet cleaned prior to removing them from the work area.
C. Ensure all disposal containers are properly labeled according to 8 CCR 1529, 5194 (HAZCOM), 49 CFR 171-179 (USDOT), 40 CFR 61 Subpart M (NESHAP), and any local regulations and state regulations as required by this specification.

D. Filter all wastewater to the technically feasible limit, but not more than five (5) microns before disposal. Comply with all current local, state and federal codes relating to waste water release.

E. Asbestos-containing waste that is properly labeled and double-bagged may be temporarily stored in areas approved by the District. Areas must be made secure before storing the waste. Waste is not to remain in temporary storage area for longer than four (4) days before final load-out of materials.

F. All friable asbestos waste shall be double-wrapped prior to transport from the site.

G. All vehicles used to transport hazardous waste must be registered with the Department of Toxic Substances Control and Department of Transportation and maintain proper registration and with vehicle at all times.

H. Trucks must have an enclosed cargo area with a storage compartment that is fully lined with a minimum of one (1) layer of 6-mil polyethylene on the walls and two (2) layers on the floor.

I. All vehicles and containers used to transport waste are subject to inspection and approval of District prior to departure from site.

J. Contractor shall not throw bags into the truck in a way that may cause the bags to burst open.

K. Contractor shall provide at minimum one (1) day advance notification to the District when signatures are required on manifest(s). The Contractor shall ensure that the Hazardous or Non-Hazardous Waste Manifests are correctly filled out. The Contractor shall give the appropriate copies to the District and shall also instruct the District in writing that they must send the appropriate copy to the Department of Toxic Substances Control.

L. If a debris box is used, the Contractor shall make all necessary arrangement with the District including obtaining all appropriate permits.

M. Contractor is responsible for all coordination with the waste disposal site and with the waste hauling company.

N. Debris box for hazardous waste shall be fully lined with a double layer of polyethylene sheeting and must be locked at all times when unattended.

O. Debris box shall be constructed with minimum 20-gauge steel with no windows or openings other than the door. The door of the container shall have a secure cover on the locking device with access to the lock only at the key-hole. Once the debris box is filled and the manifest is signed, Contractor must transport the debris box off the job site.
P. Disposal shall be in a District approved landfill that meets EPA requirements.

**TABLE I**
**ESTIMATED QUANTITIES**
**ASBESTOS-CONTAINING MATERIALS**

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Material Location</th>
<th>Waste Category</th>
<th>Asbestos Type</th>
<th>Estimated Quantities To Be Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Technology Building (ET)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parapet Cap Mastic, Gray/Black</td>
<td>Throughout</td>
<td>Cat. I</td>
<td>8% CH</td>
<td>100 sf</td>
</tr>
<tr>
<td>(see photo 1 below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parapet Wall Mastic, Gray/Black</td>
<td>Throughout</td>
<td>Cat. I</td>
<td>7% CH</td>
<td>250 sf</td>
</tr>
<tr>
<td>(see photo 2 below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penetration Mastic</td>
<td>Roof Penetrations &amp; Corner of Flashings</td>
<td>Cat. I</td>
<td>6% CH</td>
<td>250 sf</td>
</tr>
<tr>
<td>(see photo 3 below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration Building (AB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penetration Mastic</td>
<td>Roof Penetrations &amp; Corner of Flashings</td>
<td>Cat. I</td>
<td>6% CH</td>
<td>100 sf</td>
</tr>
<tr>
<td>(see photo 4 below)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NA = Not Applicable, CH = Chrysotile, TR = Tremolite, RACM = Regulated asbestos containing material (friable), Cat. I = Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), Cat. II = Category II Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), sf = square feet.
Photo 1 – Parapet Cap Mastic

Photo 2 – Parapet Wall Mastic
Photo 3 – Penetration Mastic

Photo 4 – Penetration Mastic

END OF SECTION 02 82 00
ATTACHMENT A
ASBESTOS ABATEMENT WORK PLAN OUTLINE

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific Asbestos Abatement Work Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District’s facilities and the environment.

I. Location of Work:
The work to be completed under this work plan will be completed at:
(Building name)
(Location within building)

Previous asbestos inspections or surveys have found that ACMs are present at the following locations:
(List all materials and locations to assure the District and the Contractor are aware of all hazardous materials locations)

II. Description of Work:
Describe the anticipated work scope

III. Schedule:
<table>
<thead>
<tr>
<th>Phase/Task</th>
<th>Anticipated Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization</td>
<td></td>
</tr>
<tr>
<td>Set-up of work area(s), containments</td>
<td></td>
</tr>
<tr>
<td>Abatement</td>
<td></td>
</tr>
<tr>
<td>Final Cleaning</td>
<td></td>
</tr>
<tr>
<td>Visual Inspection</td>
<td></td>
</tr>
<tr>
<td>Final Clearance (visual and air sampling)</td>
<td></td>
</tr>
<tr>
<td>Teardown</td>
<td></td>
</tr>
<tr>
<td>Demobilization</td>
<td></td>
</tr>
</tbody>
</table>

IV. Equipment and Materials
List all equipment and materials to be used, such as the following:

HEPA Vacuums  Negative air filtration units
Scrappers     Manometers
Power saws    Shower facilities
Pry bars      Airless sprayers/compressors
Cutting shears Cleaning detergents
Other hand tools Solvents (must be approved by District)
Encapsulants/sealants Roller/brushes
Gloves        Disposable coveralls
Respiratory protection Eye & foot protection
Fall Protection Scaffolds/Ladders
Gas/Diesel Powered Equipment
V. Crew
List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure/contamination controls, and engineering controls. This description should include, but not be limited to, the following:

- OSHA Class I, II, III and IV work
- Wet methods
- Negative pressure enclosure
- Glovebag removal
- Respiratory protection
- HEPA vacuums
- Mini-containments
- Solvent removal of mastic
- List other procedures

VII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

VIII. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking and before leaving the project site. Describe handling or treatment of asbestos-contaminated solid waste and wastewater.

IX. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring and proposed consultant if air sampling requirements are not meet from two consecutive shifts.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas, locations of negative air machines and exhaust locations, direction of airflow, and decontamination areas.
XI. Waste

*Describe how all waste on this project will be packaged, labeled, stored, transported, manifested and disposed*

XII. Preparation of Asbestos Abatement Work Plan

*Date Prepared and Prepared By (signature, name and title)*
SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Plywood T1-11 siding repairs.

1.02 RELATED SECTIONS

A. Section 02 41 00 – Selective Demolition
B. Section 07 54 06 – Thermoplastic Membrane Roofing
C. Section 07 60 00 – Flashing and Sheet Metal
D. Section 09 91 00 – Painting

1.03 SUBMITTALS

A. Product Data

PART 2 - MATERIALS

2.01 SIDING

A. Siding: Match existing T1-11 siding (groove pattern and thickness to match existing panels).

B. Nails: Common shank nails – hot dipped galvanized:
   1. Siding and Plywood Roof Deck: 8d.
   2. Tongue-and-Groove: 16d (2x) and 20d (3x).

C. Building Paper: Super Jumbo-Tex, 60 minute, Grade D by Fortifiber corporation or approved equal.

E. Lumber:
   1. Tongue-and-Groove: Douglas Fir Larch Number 1 or better.
   2. Plywood Roof Decking: CD plugged with exterior glue.
   3. Fascia and Blocking: #2 Douglas Fir

PART 3 - EXECUTION

3.01 SIDING REPAIR

   A. Remove and dispose of existing siding as indicated in the Drawings. Do not damage the existing felt underlayment.

   B. Install 2x blockings, between existing studs along the upper edge of cut-out existing siding. Nail it with 12 d common shank nails at 6 inches on center along top and bottom siding edges and at each end of each sheet. Nail to field studs at 12 inches on center.

   C. Install Sheet metal transition piece, sheet membrane and two layers of building paper as shown on the Drawings.

   D. Install new siding in accordance with the manufacturer written instructions.

3.02 DECK REPLACEMENT

   A. Plywood Roof Deck:
      1. Remove existing water-damaged plywood. Verify quantity with Owner or Owner Representative prior to removal.
      2. Install new ½ in. thick plywood with nailing of 4 in. on center at edges and 12 in. on center in the field.

   B. Tong-and Groove Decking:
      1. Remove water-damaged decking. Verify quantity with Owner or Owner Representative prior to removal.
      2. Install new tong-and-groove decking – match existing size. Fasten with two nail per support.

3.03 FASCIA REPLACEMENT

   A. Remove existing 2x fascia.

   B. Install 2x fascia with mitered joints. Fasten with two nails per rafter end.

END OF SECTION
SECTION 07 54 05

THERMOPLASTIC MEMBRANE ROOFING SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Single-ply roof system complying with California Title 24 (Cool Roofing) regulations as shown on the Drawings.

1.02 RELATED SECTIONS

A. Section 07 60 00 – Flashing and Sheet Metal
B. Section 07 90 00 – Sealants

1.03 SCOPE

A. Membrane and related items shall be classified by Underwriters Laboratories, Inc. as a Class A Sheathing Material for use in construction of Class A coverings and amendments. Wind: Factory (FM) 1-75.

1.04 APPLICATION

A. Duro-Last/Duro-Fleece (DLDF) membrane is composed of PVC film laminated to both sides of a weft insertion knitted scrim and laminated to fleece backing.

B. Install new single-ply, fully-adhered reinforced PVC roofing and PVC overlay systems, as shown on the Drawings.

C. Install new fully-adhered membrane flashings and associated components along walls, curbs, or as shown in the Drawings and as required to properly terminate the roof membrane.

D. Clean and restore all areas damaged, stained or otherwise affected by the Work.

E. Include Operation/Maintenance manual and PVC repair kit with instructional course as provided by the manufacturer for use by the Owner’s maintenance staff.

F. Attend a roof-related preconstruction meeting after the submittals were transmitted and prior to the start of Work. Required attendees are the Owner Representative, Engineer, Contractor, and Roof Manufacturer.
1.05 PHYSICAL PROPERTIES

A. The single-ply membrane shall allow installation at any time of the year and shall provide resistance to ultra-violet rays, superb tear and puncture strength, the ability to be impervious to most caustic chemicals and acids, and show no ill effects to heat or cold.

1.06 ROOFING CONTRACTOR’S QUALIFICATIONS

A. Contractor shall submit work history data showing successful warranted installation experience of the specified system, and of being authorized by the roofing system manufacturer to install the specified manufacturer’s materials.

B. The Contractor shall use adequate amounts of such qualified workmen to install the specified roofing system.

C. The Contractor shall have an experienced, pre-qualified, superintendent having experience installing the roof system specified, familiar with the requirements of this project, on the job at all times when roofing system work is in progress. Training for superintendent shall include certification of completion of manufacturer’s in-house training course and on-site training.

1.07 REQUIREMENTS OF THE MEMBRANE MANUFACTURER

A. Roofing system components shall conform to the current published specifications and details of the membrane manufacturer.

B. There shall be no deviation made from this specification without prior written approval of the membrane manufacturer and the Owner or Owner representative.

C. Any manufacturer proposing to supply material for this project shall within fourteen (14) days prior to bid date, provide financial information regarding their roofing company, i.e. a current D&B report. A manufacturer who has less than $50,000,000 in annual roofing material sales, a net worth of less than $3,000,000 or a history of late payments to creditors will not be permitted to submit their roofing material for use on this project. Manufacturer may be asked to submit an audited document listing the long-term warranty liability commitment of manufacturer.

D. Provide primary thermoplastic membrane factory prefabricated roofing system from a single manufacturer, which has successfully manufactured raw materials into specified products for not less than five (5) years. No secondary private labels will be accepted. Provide secondary materials, such as insulation, gypsum board, vapor barriers as recommended and approved by manufacturer of primary materials.

E. Products primary and secondary shall be manufactured in the United States of America by a company owned by citizens of the United States.
1.08 FIELD INSPECTION

A. The Owner reserves the right to retain, at the Owner’s expense, an independent inspection service to provide part-time or full-time inspection of the roofing system installation. The inspector shall have free access to the work area.

B. The Contractor shall arrange for the membrane manufacturer to provide inspection of the roofing system installation. Upon completion of the installation, an inspection shall be made by a Quality Assurance Specialist of the membrane manufacturer at no extra charge to the Owner or Contractor. The inspection is to confirm the roofing system is installed in accordance with the membrane manufacturer’s published specifications and details and Contract Documents.

1.09 DEFECTIVE WORK

A. Should the roofing system not be approved by the manufacturer’s technician, correcting the defective work shall be done by the Contractor until the roofing system satisfactorily meets all the specifications and manufacturer’s requirements. Corrective work shall be done with no additional expense to the Owner.

1.10 WARRANTIES

A. The Contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the date of acceptance by the membrane manufacturer. Should any leaks covered under the warranty occur during this period, corrective action shall be taken by the Contractor to repair the roof to the satisfaction of the Owner and the manufacturer. All corrective work shall be done at no cost to the Owner.

B. The warranty shall be full roofing system repair and/or replacement fifteen (15) year warranty covering materials and labor. The warranty shall be a no-dollar limit type and provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then current material and labor prices throughout the life of the warranty. Warranty shall contain no exclusions for ponded water, biological growth, incidental or consequential damages.

C. Warranty shall be issued by the original manufacturer of the roofing membrane. No private label membranes will be accepted.

D. No future work shall be done on the roof, including but without limitations, openings made for flues, vents, drains, sign braces, or other equipment fastened to or set on the roof, without prior notification of the Contractor or membrane manufacturer. Contractor or membrane manufacturer shall be given the opportunity to make the necessary roofing application recommendations, and require such recommendations to be complied with. Failure to observe this condition can render the warranty null and void.
E. Corrective measures on leaks shall be undertaken within seventy-two (72) hours after Owner notification has been received by the Contractor or the roofing manufacturer from the Owner.

1.11 SUBMITTALS

A. The contractor shall submit the following:

1. Written confirmation from membrane manufacturer of approved applicator status and that the Contractor is qualified for the specified warranty.

2. Manufacturer literature and MSDS sheets for the items listed in Part 2.

3. Submit 6 in. long samples of the following items for approval prior to ordering:
   a) Pre-manufactured pipe flashing
   b) Termination bar
   c) Sample of membrane
   d) Mechanical fasteners and metal distribution plates
   e) Lap splice sample (factory and field)
   f) Roofing insulation

4. Shop drawings including outline of the roof and roof size, perimeter and penetration details, special details and section layout, location of factory dielectric and field welds, accessory and material list.

5. Pullout Tests: Perform pullout tests and submit engineering results of manufacturer’s random location pull tests. Manufacturer shall obtain at least two (2) pull resistance tests from indicated locations of a sections of decking, where integrity is in question. Submit pull test results with drawing indicating the locations of the tests. Engineering results shall demonstrate the manufacturer’s reasons for selection of anchorage, frequency and the seaming patterns.

6. Membrane Data: Prior to receipt of bids, Contractor shall submit all forms and other required data to roofing system manufacturer for pre-approvals. Advise building Owner or Owner Representative in writing of any recommendations made or revisions required by manufacturer to particular job conditions. In the absence of any comments, the Owner and/or his representative shall assume the manufacturer’s most recently published specifications shall be followed.

7. Provide Operations/Maintenance manual and repair procedures to the Owner and/or Owner’s representative.
B. INSULATION

1. The Contractor shall verify dimensions and existing roof penetration locations to ensure proper layout and tapered insulation quantities. Submit a tapered insulation layout drawing (full size: 24 inch x 36 inch) from the insulation manufacturer. The drawing should include an outline of the roof area and locations of drains and major roof penetrations (i.e., smoke hatches and fan units). Provide a profile of tapered sections; indicate minimum and maximum thicknesses at perimeters, for the proposed insulation system.

2. Submit certification from each insulation manufacturer stating the roof membrane manufacturer for the specified warranty accepts the submitted products.

1.12 PRODUCT DELIVERY, STORAGE AND HANDLING PROCEDURES

A. Deliver materials in original unopened packaging.

B. Containers labeled with manufacturer’s name, brand name, and identification of various items.

C. Store materials in a dry area and protect from inclement weather. Damaged materials shall be replaced at contractor’s expense.

D. Do not allow roofing membrane to come in contact or be exposed to any materials that would be detrimental to or cause degradation of the roofing membrane.

1.13 JOB CONDITIONS

A. Environmental Conditions

1. In making field heat welds, make sure all welding surfaces are clean and free of moisture or foreign items.

2. Weather Precautions: Proceed with roofing work when existing and forecasted weather conditions permit work performance in compliance with manufacturer’s recommendations.

3. Roofing system shall not be applied when the surrounding air, surface temperature, relative humidity or wind velocity is not within the range acceptable under the manufacturer’s recommendations.

B. Protection

1. Prior to starting work, protect all work in an approved manner including all paving and faces of building walls. Provide special protection of the face of the building wall adjacent to hoist.
2. Complete the whole roofing section or any portion of the roof in a single day to avoid exposure to rain, dew, or moisture of any kind. If rain threatens during the day or in an emergency, protect the unfinished exposed roofing components and provide temporary water cut-offs around exposed edges and incomplete flashing areas.

3. All hoisting equipment shall bear on solid pad blocking. If on the roof surface, pad shall be large enough to evenly distribute the load to avoid crushing insulation and roof system. Pad shall consist of two separate layers of material to eliminate vibration and movement to directly affect the roofing membrane. Pad shall be of sufficient size to accommodate work tools and weights used around hoisting operations.

4. Repairs: Clean or repair surfaces damaged or soiled by operations under this contract to the satisfaction of the Owner or Owner’s representative without additional cost to the Owner. These would include, but not be limited to, windows, doors, floors, walls, stairs, elevators, steps, walks, curbs, lawn areas, or other roofs.

PART 2 – MATERIALS

2.01 ROOF MEMBRANE

A. A special formulated, permanent, thermoplastic alloy, bonded to a high tenacity, low shrinkage weft inserted polyester fabric with resistance to ultraviolet rays, microorganisms and impervious to most caustic chemicals.

B. Membrane shall be factory dielectrically welded, prefabricated sheets up to 2,500 square feet or as determined by job condition.

C. The new roofing shall be a prefabricated fully adhered installation of single-ply reinforced co-polymer alloy (CPA) membrane. Product: 60 mil thick fleece-back membrane by Duro-Last Corporation or approved equal. Manufacturer’s physical specifications and minimum performance criteria shall be in accordance with the following table.
MINIMUM PERFORMANCE AND PHYSICAL SPECIFICATION REQUIREMENTS FOR MEMBRANE

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Test Method Used</th>
<th>Specification Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Thickness</td>
<td>ASTM D-751</td>
<td>0.060 inch (60 mils) Nominal (with fleece)</td>
</tr>
<tr>
<td>Tear Strength</td>
<td>ASTM D-751 – Procedure B</td>
<td>50 x 200 lbf.</td>
</tr>
<tr>
<td>Breaking Strength</td>
<td>ASTM D-751 – Grab Method</td>
<td>554 x 408 lbf.</td>
</tr>
<tr>
<td>Elongation at Break</td>
<td>ASTM D-751 – Grab Method</td>
<td>34%</td>
</tr>
<tr>
<td>Low Temperature Bend</td>
<td>ASTM D-2136</td>
<td>no cracks, -40 degrees F</td>
</tr>
<tr>
<td>Static Puncture</td>
<td>ASTM D 5602</td>
<td>≥ 33 lbf.</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>ASTM D 570 166 hrs. @ 158º F</td>
<td>2.3%</td>
</tr>
<tr>
<td>Linear Dimensional Change</td>
<td>ASTM D1204 – 6 hrs. @176º F</td>
<td>-0.10 %</td>
</tr>
<tr>
<td>Accelerated Weathering</td>
<td>ASTM G 154 (Formerly G53)</td>
<td>No cracking, checking, crazing, or erosion at 5000 hours of exposure.</td>
</tr>
<tr>
<td>Factory Mutual Research</td>
<td>ASTM E-108; FM 4450 &amp; FM 4470</td>
<td>Rated 1-75</td>
</tr>
<tr>
<td>Underwriter’s Laboratory</td>
<td>UL-790</td>
<td>Class A, B and C approved</td>
</tr>
<tr>
<td>Scrim: Weft Inserted Polyester</td>
<td>-</td>
<td>18 x 9, 1000 denier</td>
</tr>
</tbody>
</table>

D. Membrane Adhesive: Duro-Last WB II or approved equal (for only Duro-Last membrane at walls) or approved equal.

E. Fleece Membrane Adhesive: Duro-Fleece CR-20 or approved equal (for only Duro-Fleece membrane at roof deck and at walls) or approved equal.

F. Underseal Adhesive: Duro-Last SB 240 or approved equal – trowelable mastic or approved equal.

G. Perimeter Flashing Adhesive: Duro-Caulk Advanced or approved equal.

H. Slip Sheet: Atlas FR-50 or approved equal

I. Manufacturer

1. Manufacturers requesting approval must submit acceptable information certifying that they are the direct manufacturer from raw material into specified membrane, factory prefabricate the membrane into roofing panels if any, and meet the performance and financial criteria required.

2. Fire resistance of CPA roofing system shall meet UL Class A. All packaging of membrane and insulation shall bear UL Class A label.

3. Membrane color shall be white.

2.02 MATERIALS

A. Membrane-Related Materials
1. All membrane components, including pipe and curb flashings, shall be factory prefabricated from the same fabric reinforced material used for the deck membrane.

2. Termination Sealant: Compatible with materials to which membrane is to be bonded, conforming to Federal Specifications TT-598 and TT-S-00230C as furnished by the membrane manufacturer.


4. Water Cut-Off Mastic: Compatible with materials with which it is used and furnished by the membrane manufacturer.

5. Fasteners: Compatible with roof deck as furnished by the membrane manufacturer. Fasteners shall be furnished by the membrane manufacturer and be Duro-Coated Duro-Last HD #14 and must pass 30 cycles in the Kesternich Cabinet, DIN #50018-2 Liter. The FM approved fastener is inserted through the hole in the distribution plate and properly secured to the roof deck.

6. Terminations/Edge Details: Shall be manufactured from rigid exterior vinyl with slotted holes for securement and furnished by membrane manufacturer. All other terminations/edge details must be approved and warranted by the membrane manufacturer.

7. Termination Bars: Duro-Last or approved equal.

8. Pourable Sealer: Duro-Last Pitch Pocket Filler or approved equal.

2.03 COVERBOARD & INSULATION

A. Cover Board: Board shall be a minimum of 1/4 inch thick by 4 feet by 8 feet. Dens-Deck Prime roof board by Georgia Pacific or approved equal – at roof decks. 1/2 inch thick 4 feet by 8 feet Dens-Deck roof board – at walls.

B. Tapered and Flat Stock Insulation: A rigid isocyanurate board with factory-applied fiberglass bituminous felts on both sides. Conforming to HH-I-530A (Type II, unfaced) and C1289-02, Type II, Class 1, Grade 2 with an average density of 2.0 lbs. per cubic foot. Manufacturer: DuroLast, Duro-Guard Polyisocyanurate ISO II or an approved equal flat and tapered panels. The board size: 4 foot by 8 foot, 1/4 in. per foot slope for tapered insulation.

2.04 MISCELLANEOUS

A. Roofing Nails: Stainless Steel “Stronghold” type: (for use on parapet walls, wood nailers).
B. Pipe Clamps: Stainless steel draw band clamps.

C. Fasteners and Accessories

1. Fasteners for securement of each layer of gypsum fire barrier board under pvc roof system through the isocyanurate insulation (where applicable) and into the wood deck shall be fluorocarbon-coated, No. 14 self-drilling, self-tapping screws, long enough to penetrate the receiving substrate 1-¼ inches minimum and 1-½ inches maximum. Fasteners shall be in conformance with FM 4470 specifications.

2. Provide screws with stress distribution plates by Duro-Last, minimum 0.024 inch thick, 3 inch square plate.

D. Nailers & Blocking

1. Blocking/Lumber: Grade #2 Douglas Fir with 19% moisture content max conforming to standard 15 grading and dressing rules of the West Coast Lumber Inspection Bureau, or other species of wood of equal strength. All lumber shall be grade marked at the mill and pressure treated by a method approved by the roofing membrane manufacturer: “Wolmanized” or “Osmose K-33” is acceptable.

2. Nailer Fasteners: Nailers shall be securely anchored to the deck to resist the minimum force required in the recent edition of Loss Prevention Data Sheet I-49, “Perimeter Flashing,” Factory Mutual Systems, for FM 1-75, fasteners spacing must be 4 inches o.c. maximaum. 16 d common nails must be minimum size fasteners.

3. PVC(Vinyl)-Clad Metal Flashing: GSM flashing coated on one side by membrane manufacturer with weldable, PVC-clad surface or pre-manufactured with factory/shop welded piece of membrane pre-welded to surface by membrane manufacturer.

4. Other Accessories: Shall be furnished and approved by the membrane manufacturer.

E. Asphalt-Compatible Membrane: Asphalt-compatible PVC membrane for flashings without fleece backing that will be in contact with existing asphalt residue

F. Tape: Aluminum tape locations where asphalt-based self-adhering sheet membrane flashings will be in contact with PVC roof membrane.

PART 3 – EXECUTION

3.01 SUBSTRATE INSPECTION AND PREPARATION
A. Inspect all surfaces to receive roofing for condition that will adversely affect execution, performance.

B. All roof surfaces and all sloped surfaces to gutters and outlets shall be checked and approved by the roofing contractor prior to the start of the roofing work.

C. Install roofing material only under satisfactory conditions as specified by the membrane manufacturer.

D. Scheduling: Schedule the roofing work in areas and sections in such a manner as to keep the new and existing insulation, roofing materials, and building dry and watertight during new roofing work.

E. Damage sustained to the facility or contents as a result of the scheduling of roofing work shall be the Contractor’s responsibility.

F. Preparation shall comply with the membrane manufacturer’s recommendations.

G. Mechanically secure separation material units to roofing deck independent of membrane attachment and cover immediately with membrane. Butt units tightly together, limiting joint separation to 1/8 inch, maximum. Meet attachment pattern requirements of the membrane manufacturer.

H. Prior to insulation installation, remove all dirt, debris and dust from deck surfaces with a vacuum. Insulation systems shall be installed on properly installed, clean, dry surfaces. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. Do not dry with open flames.

I. Inspect insulation boards for defects, including but not limited to: broken corners, improperly adhered skins, excessive moisture content, dimensional irregularities, or other defects which may adversely affect the replacement roof system. Mark defective insulation boards and remove them from site.

J. Cut insulation to the minimum dimension of 12 inches; the minimum surface area shall be 2 square feet.

K. Do not deliver to site or install any material or system that has not been approved. Materials installed without approval may be required to be removed. All containers must bear the label and material classification of the manufacturer. Partially used containers and unlabeled containers may not be incorporated into the work.

L. Comply with the manufacture’s written instructions and these specifications. In case of discrepancies, the greater quantity and/or better quality of work, as determined by the Owner, will be provided by the contractor at no additional cost.
M. Flashings shall be installed concurrently with the roof membrane to assure watertight terminations.

N. Do not cut any material with a solvent or dilutant unless approved by the owner in writing.

O. Keep covers tightly sealed on all canned and evaporative products to prevent premature curing.

P. Report any damaged or unsuitable deck sections immediately to the Owner’s representative prior to covering and replacing.

Q. The contractor shall ensure that all applicable safety requirements are strictly followed. This includes OSHA, CALOSHA and other applicable requirements regarding work with construction equipment for workers and building occupants.

R. Welded seams shall be checked after cooling for continuity with a dull, flat head screwdriver or other suitable object. Daily, on-site evaluation of welded seams shall be made by the Contractor at locations as directed by the Owner’s representative or membrane materials representative. Two inch wide cross-section cuts shall be taken through completed seams. Correct weld displays failure from shearing of the membrane prior to separation of the weld. Each test cut cross-section area shall be patched by the Contractor at no extra charge to the Owner.

S. Membrane specified to be fully adhered to insulation and various other horizontal and vertical substrates must be adhered completely without voids, bridging of membrane or unattached membrane.

3.02 GENERAL REQUIREMENTS

A. Precautions

1. Do not lay out or expose insulation that cannot be covered by membrane on the same day.

2. In making field heat welds, make sure edges are clean and free of tar, mastic or other foreign items.

3. Do not expose membrane and accessories to a constant temperature in excess of 120 degrees Fahrenheit.

4. Sealants and adhesives should be applied according to the manufacturer’s specifications and all containers shall be disposed of properly.

5. Start securing the membrane at the highest point and work towards the drains.
6. Storing, wheeling, or trucking directly on roof insulation or membrane surface is not recommended. Smooth, clean plywood or plank walkways, runways and platforms shall be provided as necessary.

B. Comply with local, state, and federal regulations regarding the removal and disposal of roofing materials.

C. Roofing shall not be applied when ambient temperature is less than 40° F or more than 100° F. Materials which have a temperature other than the recommended application temperature by the manufacturer shall not be installed.

D. Surfaces to receive membrane or flashings shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. No open flames will be allowed.

E. Completed roof areas shall not be trafficked. Work shall be coordinated to prevent this situation by working toward the roof edges and access ways. Should access to completed roof areas be necessary, the Contractor shall provide (membrane covered) plywood protection for the trafficked areas.

F. Temporary waterstops shall be installed at the end of each day’s work, and shall be removed before proceeding with the next day’s work. Waterstops shall be compatible with all materials and shall not emit dangerous or incompatible fumes.

G. The Contractor is cautioned that thermoplastic membranes are incompatible with oil-based and asphaltic-based cement. Creosote and penta-based materials are also incompatible. The Contractor should consult the manufacturer with respect to material compatibility and shall provide protection against contamination of PVC membrane and flashings.

H. The Contractor shall provide necessary temporary protection and barriers to segregate the work area and to prevent damages to adjacent areas.

I. Prior to and during application, dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping or similar methods.

J. Liquid materials such as solvents and adhesives shall be stored and used away from open flames, sparks and excessive heat.

K. The Contractor shall be a licensed and approved applicator recommended by the manufacturer of the roof system specified. The Contractor shall notify the manufacturer prior to initiating the construction. It is the responsibility of the Contractor to arrange for the membrane manufacturer’s technical representative to be on site when construction commences and a minimum of once per week until construction is completed. The Owner and Owner’s Representative should be notified of scheduled visits so that they may attend.
L. The building will be open to normal use during the time of construction. The Contractor shall take all precautions to create as little disruption as possible during the course of the work.

M. The Contractor shall provide and equip as many work crews as is necessary to complete the project within the Contract period and according to the Contract Specifications without sacrificing quality.

N. The Contractor shall closely follow adhesive application rates when adhering membranes and flashings. The contents within adhesive containers shall be thoroughly mixed prior to application. Submit adhesive container tags to the Owner’s Representative on a daily basis.

3.03 INSULATION INSTALLATION

A. Tapered Insulation (Roof Replacement Only)

1. Insulation shall be installed mechanically attached to the deck per drawings. Comply with FM I-75 rating and have minimum ¼ in. per foot slope.

2. Insulation shall have a maximum dimension of 4 feet by 8 feet

3. The insulation shall be staggered 50% from row to row.

4. Butt each insulation board firmly to the adjacent board. Do not jam insulation boards or allow cracks between insulation boards.

5. Cut boards to allow a maximum ¼ in. gap away from vertical surfaces.

6. Mechanical attachment may be done through roof cover board.

B. Crickets (Roof Replacement and Roof Overlay)

1. Install cover board over tapered isocyanurate insulation. Crickets shall be constructed to ensure a minimum slope of 1/2 in. per foot along the valley towards the drainage point.

2. Butt each insulation board firmly to the adjacent board. Do not jam insulation boards or allow cracks between insulation boards.

3. Cut boards to allow a maximum ¼ in. gap away from vertical surfaces.

3.04 COVERBOARD INSTALLATION (Roof Replacement and Roof Overlay)

A. Cover Board Installation
1. Cover board shall be installed mechanically attached and through insulation and/or existing roofing to the structural deck.

2. Cover boards shall have a maximum dimension of 4 feet by 8 feet.

3. The cover boards shall be staggered 50% from row to row.

4. Butt each cover board firmly to the adjacent board. Do not jam cover boards or allow cracks between cover boards.

5. Cut boards to allow a maximum ¼ in. gap away from vertical surfaces.

3.05 MEMBRANE INSTALLATION

A. Layout

1. Select the proper factory marked rolled sheet of roofing membrane for an outside corner or high point.

2. Orient the roofing membrane so the membrane long seams are running perpendicular to the direction of roof slope.

3. When laying out, pull the membrane tight.

B. Roof Sections

The intent of this Specification Section is to provide the Owner with a fully adhered membrane, 100% bonded to the substrate.

1. Ensure all bituminous substances and contaminants of the original system are removed or covered with slip sheet mechanically fasted to existing substrate at walls/curbs and adhered at roof deck. Clean flashings, etc., of all bitumen residue.

2. Install membrane system in accordance with the recommendations and requirements of the membrane materials manufacturer, as amended in these Specifications.

3. Duro-Fleece CR-20 membrane adhesive shall be used as the contact adhesive for the roof membrane.

4. Solvent-based adhesive, specially formulated for vertical surfaces, shall be used as the contact adhesive for flashings installed.

5. Inspect surface of roof cover boards prior to installation of roof membrane. Surfaces shall be clean and smooth with no excessive surface roughness. Contaminated surfaces or unsound surfaces shall be cleaned and voids shall be filled.
6. Over the properly installed and prepared gypsum fiberglass mat fire barrier board substrate, the adhesive shall be sprayed onto substrate only at a rate as recommended by the membrane manufacturer. Apply the adhesive in an even coating with no globs, puddles, or similar irregularities. Allow the adhesive to dry slightly but not completely.

7. The membrane shall be carefully unrolled into the wet adhesive. The adhesive shall be spread and the membrane rolled out until the entire roll has been set into adhesive. The membrane shall be pressed firmly in place with a weighted foam covered lawn roller by frequent rolls in two directions. Lap the adjacent sheets a minimum of 3 inches. **Note that adhesive shall not be applied in seam areas.**

C. Field Welding

1. Weld adjacent sheets in accordance with the manufacturer's written instructions. Both sides and end lap joints shall be hot-air welded. Hand welded laps shall be 4 inches wide minimum; machine welded laps shall be 3 inches wide minimum. Sheets must be welded immediately after installation.

2. Use welding equipment provided by the membrane materials manufacturer. All technicians shall successfully complete a course of instruction provided by the roof membrane manufacturer's representatives prior to welding. All weld surfaces must be clean and dry. **No adhesive or other contaminant shall be present within the lap areas.**

3. Hand welded seams shall be completed in three (3) stages. Warm up equipment for at least one (1) minute prior to welding.
   a. Tack weld the lap every 3 feet to hold seam in place.
   b. Weld the back edge of the lap with a thin, continuous weld to prevent loss of the hot air during the final weld.
   c. Insert the hot air nozzle into the lap, keeping the welding equipment at a 45° angle to the side lap. Once the material starts to flow, apply the hand roller at a right angle to the welding gun and press lightly. For straight laps, use the 1-1/2 inch wide nozzle. Correct weld speed will complete approximately 20 inches per minute. The hot air weld equipment shall have temperature adjustments to provide this proper speed and weld.

4. Alternately, an automatic lap welding machine may be used. Follow the manufacturer's strict requirements, instructions and local codes for electric supply, grounding and over current protection. The automatic weld machines power requirement is 218 to 230 volts at 30 amps. The availability of this voltage shall be verified at the work site on the roof before using the automatic welding machine.
The use of portable generators is recommended. Prior to utilizing the automatic weld machine on the roof, detailed instructions and operating procedure shall be obtained from the membrane manufacturer’s technical representatives.

5. Terminate the membrane at perimeters and penetrations once welding of adjacent sheet seams is completed. Membrane shall be terminated with the manufacturer’s recommended metal termination bar fastened at 6 inches (maximum) on center.

6. Flashings shall be installed concurrently with the roof membrane in order to achieve a watertight condition as the work progresses. When a situation arises where a break in the day’s work occurs in the central area of a roof, a temporary waterstop shall be constructed to provide a 100% watertight seal utilizing a raised temporary waterstop. Sweep back and totally clean a 6 inch edge along the existing roof and set a 2 inch x 4 inch stud atop the prepared area in roof cement. Carry the new membrane up and over 2 inch x 4 inch waterstop. Seal the edge of the membrane in a continuous heavy application of water cut-off mastic. Weight the membrane down in the sealant with a 2 inch x 10 inch wood member with ballast on top. Ballast should be approximately 20 pounds per linear foot. When restarting work, remove all sealant, membrane, insulation fillers, etc. from the work area. Do not reuse any of the temporary cut-off material in the new work. Cut off contaminated membrane and dispose of immediately. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.

7. Inspect all field welds with a probe. Re-weld loose laps at the end of each workday.

D. Perimeter Nailing and Around All Types of Penetrations Fastening

1. The membrane shall be mechanically fastened at all roof perimeters, parapets, curbs, walls, penetrations, in accordance with the Contract Documents and roofing manufacturer’s specifications and details, but not less than 1 fastener per every 12 inches of length.

E. Cut-Outs

1. Make cut-outs in roofing membrane for protrusions through the roof. Some situations might require that the deck membrane be slit to the section edge for fitting around protrusions.

2. Fasten around cut-outs with approved fasteners (see Section 2.02 Materials), 12 inches on center or a minimum of one per side.

F. Membrane Flashings

1. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary membrane flashings shall be allowed without the prior
written approval of the Owner. Approval shall only be given for specific locations on specific dates.

2. Follow the manufacturer's requirements and these Specifications. Ensure that shop drawings and material submittals have been approved.

3. Fully adhere polyester slip sheet at specified locations as detailed. Ensure that felt isolates bituminous products (new and existing) from new PVC flashings.

4. Wall flashings shall be fully adhered to the plywood/wood substrates or roof Dens-Deck boards, where occurs on walls using a solvent-based adhesive. Cut the Membrane in six (6) foot long sections. Apply adhesive at walls to both substrate and membrane at rates per membrane manufacturer 50-60 square feet. Do not apply adhesive in lap areas. Allow the adhesive to become tacky when touched with a dry finger on both surfaces. The product on the membrane cannot be permitted to dry completely. The coated membrane shall be rolled onto the coated substrate being careful to avoid wrinkles. Adjacent sheets shall be overlapped 3-inches. Bring the top of the membrane up and over the parapet wall or wood blocking and secure with annular ring nails as shown in the contract drawings. The wall flashing membrane shall extend 4 inches onto the roof membrane.

5. Membrane flashings shall be hot-air welded at their seams and at their connections with the adhered roof membrane or membrane clad metal flashings.

6. Vent pipes shall be flashed to the top of the pipe. Asphalt contaminated vent pipes which cannot be thoroughly cleaned shall be wrapped with aluminum tape prior to the installation of membrane flashing. Field or shop fabricated pipe caps of the PVC membrane shall be installed as shown in the detail drawings. Provide stainless steel pipe clamp (drawband) terminations at all locations.

7. Membrane termination shall be flashed in with reinforced membrane. Termination bars shall be utilized as detailed in the contract drawings. Set termination bars in a bed of sealant with fasteners spaced at 3 inches on center.

8. All perimeter edge termination details must include sealant.
3.06 SPECIAL REQUIREMENTS:
A. Do not apply adhesive in lap areas
B. The applicator shall keep track of the amount of adhesive used to confirm required by manufacturer adhesive rate.

3.07 CLEAN-UP
A. Upon completion of the membrane installation, the Contractor shall remove all foreign matter, rubbish and scrap material from the roof.
B. The membrane surface shall be cleaned using cleaners recommended by the membrane manufacturer.

3.08 INSPECTION & WARRANTY
A. Inspection: The Contractor shall submit all required drawings, details, and completed questionnaires to the roofing manufacturer before obtaining the specified warranty. After the authorized Manufacturer has inspected the roof for determining acceptability for warranty issuance, deficiencies on the final inspection report shall be corrected by the Contractor and made ready for reinspection within five (5) working days.
B. Warranty: Upon receipt of required materials, certifying inspection, and acceptance of the roofing system by the roofing manufacturer, the warranty shall be duly executed and issued to the Owner.

3.09 REPAIRS
A. Future repairs or additions to the roofing system shall be made using the heat welding process.
B. Contractor shall provide repair procedures to the Owner and/or Owner’s representative.

3.10 CONSTRUCTION DAMAGE
A. Upon completion of work, repair or replace as required, building materials damaged as a result of the roofing operations. Match existing materials and construction as determined by the Owner.

END OF SECTION
PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Sheet metal flashings shown on the Drawings

1.02 RELATED WORK
A. Section 07 54 00 – Thermoplastic Membrane Roofing System
B. Section 07 90 00 – Sealants

1.03 REFERENCES
A. ASTM A153 – Zinc Coating Hot-Dip Galvanized
B. SMACNA – Architectural Sheet Metal Manual
C. MIL-S-687ZB – General Specifications for Soldering Process
D. AWS D1.1 – Structural Welding Code

1.04 SUBMITTALS
A. Submit three (3), 6 inch by 6 inch samples, of each type and thickness of sheet metal to be used in the construction.
B. Submit three (3), samples of gutter assembly and flashings to be used in the construction.
C. Submit shop drawings with dimensions of all sheet metal details.
D. Submit mill certification.
E. Submit manufacturer literature for all accessory items in Part 2 of this Section.

1.05 STORAGE
A. Stack performed material to prevent twisting, bending, or abrasion, and provide ventilation.
B. Prevent contact with materials during storage, which may cause discoloration, staining or damage.

PART 2 - PRODUCTS

2.01 SHEET MATERIALS

A. Sheet Metal
   1. 22 gauge galvanized steel: ASTM A123 and A525.

B. Steel bars
   1. ASTM A36.

C. Vinyl Coated Drip Edge: 24 gauge galvalume with PVC coating by Duro-Last.

2.02 FINISHES

A. Not applicable.

2.03 ACCESSORIES

A. Fasteners
   1. Sheet Metal-to-Wood Blocking: No.12, 1-1/2 inch minimum long Stubbs stainless steel nails, annular-thread shank.
   2. Sheet Metal-to-Sheet Metal: No. 10, 1 inch long stainless steel sheet metal screws with metal capped neoprene washers.
   4. Unistrut: 3/8 inch diameter lag bolts, 3 inch long minimum.

B. Solder
   1. 50% tin and 50% lead.
   2. Flux: ASTM B32

C. Sealant and Backer Rod
   1. Refer to Section 07 90 00 – Sealants.
2.

D. Miscellaneous


2. Cold galvanized compound: Zinc-rich, spray-applied compound.


5. Drains: Z-121 by Zurn Industries or approved equal. Match existing pipe size.

2.04 FABRICATION SCHEDULE

A. All sheet metal to be 22 gauge galvanized steel unless noted below.

2.05 FABRICATION

A. Form sections true to shape, accurate in size, square and free from distortion or defects.

B. Form pieces to maximum length of 8 feet.

C. Mechanically fasten and solder watertight joints, splices and transitions which are not designed for expansion/contraction.

1. Fasten metal for strength and watertightness by solid riveting, welding or forming double lock seams.

2. Sealing for water tightness by soldering: after soldering, immediately remove all traces of acid or flux with appropriate neutralizer, followed by repeated washing and scrubbing.

3. Sealant-filled joints may not be substituted for solder joints: Use sealant as indicated on the Drawings.

D. Do not fabricate any sheet metal components without approved shop drawings and fabrication samples.
PART 3 - EXECUTION

3.01 INSPECTION

A. Field measure site conditions prior to fabricating Work Notify Architect/Engineer immediately of any inconsistency between existing conditions and the drawings.

B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Allow substrates to dry thoroughly. Do not proceed with flashing application if moisture content of exposed wood supporting metal flashing is above 19%.

B. Clean debris from all substrates.

3.03 INSTALLATION

A. General

1. Proceed with sheet metal installation in conjunction with roofing and flashing in each area.

2. Do not dilute primers, coatings, or sealants.

3. Keep containers closed except when removing materials from them.

4. Field fabricate sheet metal following the same criteria set forth in Paragraph 2.05 – FABRICATION.

5. Except as otherwise specifically shown on the Drawings or approved shop drawings, conform to the drawing details included in the SMACNA manual.

6. Comply with Military Specification MIL-S-6872B entitled, "General Specifications for Soldering Process" when forming soldered joints. Use conduction soldering methods. Areas to be joined shall be cleaned of all oil, grease, pencil marks, paint, dirt or other foreign substances. Remove all burrs using files, grinding stones or other methods. Hold parts in place using clamps, jigs and supports or by self-fixturing. If parts are tack-soldered to hold them in place, the area of tack-soldering shall be reworked into the final soldering. Parts cannot be allowed to move during the soldering process.

7. All corners, transition and termination pieces shall be mechanically fastened and soldered to provide strength and a weatherproof connection.

8. Apply sealant over the head when using pop rivets for fastening

9. All sheet metal edges shall be hemmed 1/4 inch minimum.
10. Roof deck flanges shall be 4 inches wide minimum.

11. Roof flanges shall be nailed 3 inches on center staggered.

12. Flash all roof flanges (top and bottom) in accordance with this Specification.

13. Flux shall be applied to all surfaces that will receive solder. Flux-cored solder shall not be used. Flux shall be fluid when heated and be effective in removing oxides and other impurities from the joint. Flux should be readily displaced by the molten solder.

14. Areas to be joined shall be heated above the liquious temperature of the solder. To deliver maximum heat, the copper bit of the soldering iron shall be applied at the right angle so that the flat side of the iron's bit provides maximum contact area. Solder shall be applied to the joint and not the bit of the iron. Allow solder to flow in place to provide a minimum 1 inch final width of solder over the joint. Joint shall not be disturbed until it has been allowed to completely cool. After soldering, completely remove all flux and acid by washing and scrubbing with a neutralizing agent.

B. Hook Strips/Cleats

1. Hook strips/cleats shall be formed with a 3 inch face and a 3/4 inch kick, bent out at a 60° angle to the face (or 30° to the wall).

2. Secure continuous hook strips/cleats to wood nailers with nails spaced at 6 inches on center.

3. Provide 1/8 inch gap at butt joints between hook strip/cleat sections.

C. Securement Clips

1. Securement clips shall be 6 inches long, 2 inches wide, and hemmed along each side of the long dimension.

2. Secure these clips to substrate with specified fasteners. Use a minimum of two (2) fasteners per clip and use 2 clips minimum. Space clips 32” o.c. maximum.

3. Bend clips a minimum of 1 inch over bottom drip edge of counterflashing and crimp tightly.

D. Counterflashing

1. Install counterflashing in accordance with approved shop drawings and manufacturer's product data to comply with specified performance requirements. Reglet and counter flashing components shall be true to line, without buckling, creasing, warp or bind in finished surfaces.
2. Coordinate counterflashing at roof surfaces with roofing work to provide weather tight condition at roof terminations.

3. Isolate dissimilar materials to prevent electrolysis. Separate bituminous coating.

4. Secure counterflashing using continuous cleats, clips and fasteners in accordance with product data and as indicated.

E. Skirt Flashing

1. Skirt flashings shall be formed with a 4 inch face and a ¾ inch kick, bent out a 60° angle to the face (or 30° to the wall).

2. Secure skirt flashings to the existing counterflashings with stainless steel rivets at all areas where existing counterflashings are being reused. Clean existing counterflashing and apply sealant over rivet heads.

F. Gravel Stop and Edge Metal

1. Secure continuous hook strips with the specified fasteners as previously noted.

2. Form gravel stop/edge metal cover plates to the dimensions indicated.

3. Provide 6 inch wide cover plates, set in full bed of sealant over all 1/8-inch gaps at butt joints in sheet metal sections. Hem edges of cover plates to fit snugly against fascias. Stagger butt joints between the hook strips and the fascias. At PVC coated edge metal, apply sealant at vertical edges of the back of two adjoining pieces, typical.

G. Sleeve Flashing and Storm Hoods

1. Storm hood and sleeve flashing shall be formed with locked and soldered seams. Sleeves shall have integral deck flanges with hemmed edges to the configurations shown on the Drawings. Storm hood shall counterflashing sleeves flashing 3 inches, minimum.

2. Secure sleeve flashings to wood blocking and flash into roof system.

3. Storm hood shall be secured to exhaust pipe with stainless steel band clamp. Set storm hood in full bed of sealant.
H. Mechanical Unit Cover Fasteners

1. Secure existing light mechanical unit covers to wood curbs with #10 stainless steel wood screws with integral metal-capped neoprene washers. Install screws at 12 inches on center, maximum, with a minimum of two screws per side of curb.

2. Secure mechanical unit to curb using 1/4 inch lag bolts installed through EPDM gasketed metal cap washer. Set EPDM gasket in bed of polyurethane sealant.

I. Vent, Duct, and Fan Flashings

1. Contractor shall provide samples or shop drawing for new vent, duct, and pan flashing with sheet metal covers. Do not fabricate prior to approval of samples and shop drawings.

2. Flashings shall be fabricated to be vandal resistant with solid welds and have slope toward free edges, on all four sides.

END OF SECTION
SECTION 09 90 00

PAINTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Surface preparation and field application of paints for miscellaneous items listed in this specification and as indicated on the Drawings.

1.02 RELATED SECTIONS

A. Section 07 60 00 – Flashings and Sheet Metal
B. Section 09 22 00 – Portland Cement Plaster

1.03 REFERENCES


1.04 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.05 SCOPE OF WORK

A. Exterior

1. All sheet metal flashing, new cement plaster, new siding, new wood fascia, undersides or replaced wood decking and plywood, and miscellaneous sheet metal items.

B. Painting Schedule:

1. Items listed in 1.05A: Color to be chosen by the District.

1.06 SUBMITTALS

A. Manufacturer’s Instructions, including:

1. Coating application instructions.
2. Coating color charts.

B. Schedule for coating application.

C. Applicator’s qualifications consisting of evidence showing satisfactory application of the proposed paint at a minimum of two sites. Provide contact name and telephone number for each site. Provide SSPC applicator certificate.

1.07 REGULATORY REQUIREMENTS

A. California Air Resources Board (CARB).

B. Bay Area Air Quality Management District.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the site in sealed and labeled containers; inspect to verify acceptability.

B. Include on container label: Manufacturer’s name, type of paint, brand name, lot number, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in a ventilated area, and as recommended by the manufacturer’s instructions.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Do not apply exterior coatings during rain, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exteriors; unless noted otherwise by the manufacturer’s instructions.

D. Provide minimum lighting level of 80 foot-candles measured at substrate surface.

PART 2 – PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Coating products shall not contain asbestos, zinc chromate, strontium chromate, or lead.
2.02 PRIMER

A. Metal Surfaces:
   1. Type: Alkyd Metal Primer
   2. Dry Film Thickness: 2.0 mils minimum per coat
   3. Number of coats: one

B. Wood Surfaces:
   1. Type: Acrylic Latex Primer
   2. Dry Film Thickness: 2.0 mils minimum per coat
   3. Number of coats: one

2.03 FINISH PAINT (Two Coats)

A. Metal Surfaces:
   1. Type: Acrylic Latex
   2. Dry Film Thickness: 1.5 mils minimum per coat
   3. Number of coats: two

B. Wood, Concrete, and Plaster Surfaces:
   1. Type: Gloss Enamel
   2. Dry Film Thickness: 1.5 mils minimum per coat
   3. Number of coats: two

2.04 PAINT MANUFACTURERS

A. Fuller O’Brien/ICI Paint Stores
B. Glidden Coatings and Resins
C. Pratt & Lambert
D. Sherwin Williams
E. Textured Coatings of America

2.05 ACCESSORIES

A. Etching Material: Compatible with primer and paint coating.

B. Equipment: Use coating manufacturer-approved equipment. Coating application shall be performed by brush or roller only.

C. Masking tapes, sheets, and sealants: Compatible with the materials they are applied to and shall not leave stains on the adjacent surfaces.

D. Cleaners and washes for removal of mill oil and scale: Compatible and recommended by the coating manufacturer.

E. Galvanized Iron Cleaner: Galvaprime.

PART 3 - EXECUTION

3.01 GENERAL

A. Prior to surface preparation and coating applications, remove, mask or otherwise protect all adjacent surfaces.

B. Contact Owner or Owner’s Representative for direction regarding deteriorated existing painted surfaces.

C. Spray-application of paint shall not be permitted unless approved in writing by the Owner.

D. Repair or replace items damaged in the course of painting to the Owner’s satisfaction.

3.02 EXAMINATION

A. Verify that substrate conditions are ready to receive Work as instructed by the product manufacturer, where applicable.

B. Examine surfaces scheduled to be finished prior to commencement of Work. Report any condition that may potentially affect proper installation.

C. Test shop applied primer for compatibility with subsequent cover materials.

D. Do not apply finishes unless moisture content of surfaces are at or below the following maximums:

2. Gypsum Board: 12%.

3.03 PREPARATION

A. Remove dirt, scale, loose coatings and particles, grease, oil, disintegrated coatings, and other substances deleterious to coating performance for component substrates in accordance with SSPC SP-1, Power Tool Cleaning, to remove rust and loose coatings as well as to remove glossy surfaces of existing paint films.

B. Before application of coatings on existing coating surfaces with no surface defect, defined as surfaces with intact coatings that can not be removed with a putty knife, wipe the previously painted surface with a clean, dry cloth saturated with the coating manufacturer’s recommended cleaning solution. Allow surface to dry.

B. Remove all mill oils and scale from galvanized sheet metal prior to painting.

C. Requirements specified herein are minimums. Comply with coating manufacture’s recommendations if more stringent.

3.04 APPLICATION: METAL SURFACES

A. Verify coating compatibility by applying a 2 foot square test patch on each surface to be painted. Obtain Owner's approval in writing on test patch before proceeding.

B. Apply coating materials to surfaces designated in this section's Scope of Work in accordance with Steel Structures Painting Council (SSPC) Paint - 1 methods. Thoroughly work coating materials into joints, crevices, and open spaces. Touch up damaged coatings before applying subsequent coats.

1. Etch all sheet metal items prior to applying primer. Apply primer and paint after repairs and mechanical fasteners have been installed.

2. Apply specified primer on the same day that the surface is cleaned. If flash rusting occurs, re-clean and prime the surface prior to finish coat application.

3. Use dry film thickness gages to measure coatings.

C. Environmental Conditions - Do not apply coatings during foggy or rainy weather or under the following conditions:

1. Ambient temperature less than 5° F above dew point.

2. Below 50° F or over 95° F for alkyd coatings.

D. Drying Time - Allow sufficient time between coats, as recommended by the coating manufacturer, to permit thorough drying. Provide each coat in the condition necessary to receive the next coat.
E. Do not allow primer coats or intermediate coats to weather for more than 30 days or longer than recommended by their manufacturer, before applying next coat. Follow Manufacturer’s recommendations for preparation primer coats or intermediate coats. Each coat shall entirely cover the previous coat or prepared surface with a visually perceptible difference in shade of successive coats.

3.05 APPLICATION: WOOD SURFACES

A. Prime all new wood components hidden and exposed, except for roof top blocking prior to installing. Prime face sides and back of each piece. Allow primer to dry prior to installing. Priming of new work after installation is forbidden. Prime areas of repaired cement plaster surfaces prior to painting.

B. Apply primer to all wood components to be repainted as part of this specification. Thoroughly work coating materials into joints, crevices, and open spaces. Touch up damaged coatings before applying subsequent coats.

1. Apply primer to existing wood components only after repairs and mechanical fasteners have been installed.

2. Apply specified primer on the same day that the surface is cleaned.

3. Use dry film thickness gages to measure coatings.

C. Drying Time: Allow sufficient time between coats, as recommended by the coating manufacturer, to permit thorough drying. Provide each coat in the condition necessary to receive the next coat.

D. Do not allow primer coats or intermediate coats to weather for more than 5 before applying next coat. Follow Manufacturer’s recommendations for preparation primer coats or intermediate coats. Each coat shall entirely cover the previous coat or prepared surface with a visually perceptible difference in shade of successive coats.

3.06 CLEANING

A. Repair brush marks, scratches, abrasions, and minor surface defects in coating’s finish in accordance with manufacturer’s printed instructions.

B. Finish of repaired surfaces shall be uniform and free from blemishes and variations in color and surface texture.

END OF SECTION
ROOF REPLACEMENT - D4007

ENGINEERING TECHNOLOGY (ET) & ADMINISTRATION (AB) BUILDINGS
DIABLO VALLEY COLLEGE
321 GOLF CLUB ROAD
PLEASANT HILL, CALIFORNIA

PREPARED FOR
CONTRA COSTA COMMUNITY COLLEGE DISTRICT

SCOPE OF PROJECT:
1. REMOVE EXISTING BUILT-UP ROOFS OR EXISTING AGGREGATE AS SHOWN ON DRAWINGS.
2. INSTALL NEW TAPERED INSULATION, AS SHOWN ON THE DRAWINGS.
3. INITIAL NEW-ENVELOPE ROOF SYSTEM AS SHOWN ON THE DRAWINGS.
4. ABATE MATERIALS SHOWN ON ROOF ABATEMENT PLANS.

DRAWING NO  TITLE
A1.0  TITLE SHEET, GENERAL NOTES, ABBREVIATIONS AND LEGEND
A2.0  ET BUILDING ROOF DEMOLITION PLAN
A2.1  AB BUILDING ROOF DEMOLITION PLAN
A2.0  ET BUILDING OVERALL ROOF PLAN
A2.2  ET BUILDING PARTIAL ROOF PLAN
A2.3  ET BUILDING ROOF WALK PAD LAYOUT PLAN
A2.10  AB BUILDING MAIN ROOF PLAN
A2.11  AB BUILDING UPPER ROOF PLAN
A2.12  AB BUILDING ROOF WALK PAD LAYOUT PLAN
A5.50  ROOF OVERLAY DETAILS
A5.51  ROOF OVERLAY DETAILS
A5.52  ROOF OVERLAY DETAILS
A5.55  ROOF OVERLAY DETAILS

ABATEMENT DRAWINGS:
HM-ET  ENGINEERING TECHNOLOGY ROOF ABATEMENT PLAN
HM-AB  ADMINISTRATION BUILDING ROOF ABATEMENT PLAN
A. THE GENERAL NOTES APPLY TO ALL HAZARDOUS MATERIALS WORK AND SHALL BE APPLICABLE AS IF INCLUDED IN EACH HAZARDOUS MATERIALS PLAN.

B. THE HAZARDOUS MATERIALS DRAWINGS INDICATE THE GENERAL LOCATIONS OF ACM'S AS DETERMINED FROM RGA'S LIMITED SURVEY CONDUCTED IN 2016. THE GENERAL CONTRACTOR SHALL COORDINATE WITH THE HAZARDOUS MATERIALS SUBCONTRATOR, PRIOR TO ABATEMENT ACTIVITIES TO DETERMINE THE LOCATIONS OF HAZARDOUS MATERIALS NECESSARY TO BE REMOVED.

C. THE DRAWINGS AND NOTES DEPICTING EXISTING CONDITIONS ARE INTENDED ONLY AS A MEANS OF PROVIDING THE CONTRACTOR A GENERAL SENSE OF EXISTING SITE AND BUILDING CONDITIONS WHERE ABATEMENT WORK IS NEEDED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL OTHER CONTRACT DOCUMENTS AND FIELD VERIFY THE SIZE, QUANTITY, LOCATION, CONFIGURATION, AND CONDITIONS WHICH AFFECT THE REMOVAL OF ALL HAZARDOUS MATERIALS DESCRIBED HEREIN.

D. ALL ABATEMENT WORK TO TAKE PLACE IN A REGULATED WORK AREA DEMARCATED WITH WARNING SIGNS AND TAPE.

E. THE CLEANUP OF ANY INCIDENTAL ASBESTOS IN AREAS UNDERGOING ABATEMENT OF ASBESTOS THAT BECOME SEPARATED FROM THE BUILDING MATERIALS DURING THE DEMOLITION OR DISMANTLING PROCESS ARE PART OF THE HAZARDOUS MATERIALS WORK.

F. ALL WORKERS SHALL BE EPA AND OSHA TRAINED AND CERTIFIED AND HAVE CURRENT MEDICAL AND RESPIRATOR FIT TEST DOCUMENTATION.

G. ALL WASTE SHALL BE TRANSPORTED AND DISPOSED OF UTILIZING APPROVED VENDORS. SUBSTITUTIONS MUST BE SUBMITTED TO THE OWNER FOR APPROVAL.
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