

Exhibit A – Scope of Work and Specifications

CORONA-NORCO UNIFIED SCHOOL DISTRICT

BID NO. 2023/24-216
ROOFING FOR VARIOUS SCHOOL SITES

SITE LOCATIONS		
	NAME:	ADDRESS:
1	Rosa Parks Elementary	13830 Whispering Hills, Eastvale, CA 92880
2	Roosevelt High School	7447 Scholar Way, Eastvale, CA 92880
3	Norco Intermediate School	2711 Temescal Ave, Norco, CA 92860
4	Corona Ranch Elementary	785 Village Loop Dr, Corona, CA 92879
5	District Office	2820 Clark Ave, Norco, CA 92860
6	George Washington Elementary	1220 West Parkridge Ave, Norco, CA 92860
7	Corona High School	1150 West Tenth St, Corona, CA 92882
8	Coronita Elementary	1757 Via Del Rio, Corona, CA 92882
9	Cesar Chavez Academy	1150 Paseo Grande, Corona, CA 92882
10	Centennial High School	1820 Rimpau Ave, Corona, CA 92881
11	Home Gardens Academy	13550 Tolton Ave, Corona, CA 92879
12	Temescal Valley Elementary	22950 Claystone Ave, Corona, CA 92883
13	Roosevelt High School	7447 Scholar Way, Eastvale, CA 92880
14	Norco Intermediate School	2711 Temescal Ave, Norco, CA 92860



GUIDE: RE-ROOF SPECIFICATION

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Corona/Norco USD
M & O Support Services Manager
2820 Clark Ave, Norco, CA 92860**

PROJECT SITES: Rosa Parks Elementary School – 2nd half of building

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: CNUSD -Rosa Parks Elementary School – Right half of main building and back wing
ADDRESS: 13830 Whispering Hills Dr
Corona, CA.

AREA TO BE MAINTAINED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.		Dry Weights
#606	80# Inverted Cap - Mechanically fastened	80 lbs.
#902	Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604	Fiberglass Base Sheet	25 lbs.
#902	Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604	Fiberglass Base Sheet	25 lbs.
#197	Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189	Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294	Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
	Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280	White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
	*Option: # 588 Emulsion Aluminum Reflective Coat- 11/2 gallons per 100 sq.ft. (add 7 lbs.)	
	Approximate Total Dry Weight	223 lbs.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.

- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.
 - 2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
 - 3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.

4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
 2. Make repairs or replacements at no additional cost to Owner.
 3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
- B. MANUFACTURER'S WARRANTY
1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
 2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #294 Base Coat at 1 ½ Gal/square and #280 White at 2 Gal/Square
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion
 7. Walk pads
 8. Approved mechanical fasteners
 9. Wolmanized wood nailers
 10. Replacement metal to be 24 gauge galvanized sheet metal

- a. Metal edging to have maximum ¼" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
 12. Josam or Smith drains and overflows
 13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or re nail roof sheathing where necessary. Cover gaps of ½" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 1. Set flange over base plies set in #167 Rubberized Flashing.

2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
4. Ruftac is an acceptable alternative to I.2.
5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.

J. 3-COURSING

1. Prime wall surface at least 3" above termination edge of the base flashing.
2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
4. If not covered by metal counterflashing cover with Monolithic Emulsion system.

K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.

L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.

M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.

N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.

N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.

O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.

P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck 1/2 inch.
- D. Specification H3-NGC-MR
 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".
- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.

- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.

FLASHINGS

A. General Requirements

1. Prime concrete surfaces with specified primer and allow to dry.
2. Complete first ply of flashing daily to assure watertight installation.
3. Install Base Flashing to a maximum 24-inch height.
4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass

B. Install Flashing Specification Number #180

1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
2. Nail top of completed base flashings 8" (204mm) o.c.
3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
4. Apply compatible sealant.

C. Wall Flashings

1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and

scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.

- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.6l/m²) coat. (canopies or shelters only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE REROOFED
Scope of work

NAME OF SCHOOL: CNUSD - Rosa Parks Elementary School – Half of main building and back wing
ADDRESS: 13830 Whispering Hills Dr
Corona, CA.

AREA TO BE REROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor **MUST** notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:**
1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Eleanor Roosevelt HS – 2 buildings

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Eleanor Roosevelt HS – 2 buildings
7447 Scholar Way
Eastvale CA 92880

AREA TO BE RE-ROOFED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
*Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	223 lbs.

*To be used over non-airconditioned spaces only.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.

2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion

7. Walk pads
8. Approved mechanical fasteners
9. Wolmanized wood nailers
10. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum 1/4" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
12. Josam or Smith drains and overflows
13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or re nail roof sheathing where necessary. Cover gaps of 1/2" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.

- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 - 1. Set flange over base plies set in #167 Rubberized Flashing.
 - 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 - 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 - 4. Ruftac is an acceptable alternative to I.2.
 - 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
 - 1. Prime wall surface at least 3" above termination edge of the base flashing.
 - 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 - 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck 1/2 inch.
- D. Specification H3-NGC-MR
 - 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 - 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".

- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.61/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Eleanor Roosevelt HS – 2 buildings
7447 Scholar Way
Eastvale CA 92880

AREA TO BE RE-ROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

Note: 1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.

2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Norco INT – 2 buildings and Canopies

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Norco INT
2711 Temescal Ave.
Norco CA 92860

AREA TO BE RE-ROOFED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
*Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	223 lbs.

*To be used over non-airconditioned spaces only.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.

2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion

7. Walk pads
8. Approved mechanical fasteners
9. Wolmanized wood nailers
10. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum 1/4" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
12. Josam or Smith drains and overflows
13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or re nail roof sheathing where necessary. Cover gaps of 1/2" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.

- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 - 1. Set flange over base plies set in #167 Rubberized Flashing.
 - 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 - 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 - 4. Ruftac is an acceptable alternative to I.2.
 - 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
 - 1. Prime wall surface at least 3" above termination edge of the base flashing.
 - 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 - 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck ½ inch.
- D. Specification H3-NGC-MR
 - 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 - 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".

- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.61/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Norco INT
2711 Temescal Ave.
Norco CA 92860

AREA TO BE RE-ROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:**
1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Corona Ranch ES – 2 buildings

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Corona Ranch Elementary School
785 Village Loop Dr.
Corona CA 92879

AREA TO BE RE-ROOFED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
*Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	223 lbs.

*To be used over non-airconditioned spaces only.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.

2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion

7. Walk pads
8. Approved mechanical fasteners
9. Wolmanized wood nailers
10. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum 1/4" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
12. Josam or Smith drains and overflows
13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or renail roof sheathing where necessary. Cover gaps of 1/2" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.

- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 - 1. Set flange over base plies set in #167 Rubberized Flashing.
 - 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 - 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 - 4. Ruftac is an acceptable alternative to I.2.
 - 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
 - 1. Prime wall surface at least 3" above termination edge of the base flashing.
 - 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 - 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck ½ inch.
- D. Specification H3-NGC-MR
 - 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 - 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".

- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.61/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Corona Ranch Elementary School
785 Village Loop Dr.
Corona CA 92879

AREA TO BE RE-ROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:**
1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



**GUIDE: RESTORATION SPECIFICATION
FOR PORTABLES**

**TIM RUSSELL
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 CLARK AVE.
NORCO, CA 92860**

PROJECT SITES: District Office – Portables

ROOF MAINTENANCE

NAME OF SCHOOL: District Office – Portables
ADDRESS: 2820 Clark Ave
Norco CA

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof Maintenance System. Site Work Description is part of this specification. In event of conflict between Site Work Description and these standard requirements follow the Site Work Description. Work includes, but is not limited to:
1. Repair of existing system (See Site Work Description for additional requirements)
 - a. Repair of defects in the roof membrane including blisters, splits, fishmouths, and loose laps.
 - b. Repair or replacement of defects in the flashings at walls, roof penetrations, metal flanges, etc. including replacement of deteriorated cant strips, curbs, wood nailers, etc.
 - c. Replacement of deteriorated sheet metal to match existing as designated on job walk. (See Site Work Description)
 - d. Cleaning and resetting roof drains/scuppers as applicable.
 - e. Repair or replacement of defects in expansion joints with compatible material as applicable.
 - f. Removal of all debris from the roof.
 1. Resurface roof membrane and base and wall flashings (See Site Work Description for selected Spec #)
 - a. Henry Specification #H2-PE-MR
 2. Miscellaneous requirements including:
 - a. Wood blocking or Dura-block under pipe supports where missing or deteriorated
 - b. Install protective layer of Ruftac under unsecured wood blocking where missing or deteriorated.
 3. Unit Pricing (See Site Work Description if applicable)

1.01 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)

1.02 SYSTEM DESCRIPTIONS

Henry Specification #H2-PE-MR

Over prepared existing roof install 2 ply #196 Polyester Sheet adhered in #197 Asphalt Emulsion. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with Base Coat of #294 (grey) and Top Coat of #280 (white).

Specification System & Weights per 100 Sq. ft.	Dry Weights
Existing roof	TBD
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq. ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq. ft.	3 lbs.
#294 Base Coat – 1-1/2 Gallons per 100 sq. ft.	8 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 Top Coat – 2 Gallons per 100 sq. ft.	7 lbs.
Approximate Total Dry Weight	Existing roof + 112 lbs.

1.03 SUBMITTALS

- A. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- B. Complete materials list of all items to be furnished and installed under this Section.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications

- 1. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
- 2. Manufacturer must hold the original warranty.

E. Contractor Qualifications

- 1. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
- 2. Contractor must provide knowledgeable foreman who understands all aspects of the specification.

1.07 QUALITY ASSURANCE

A. Pre-Job Conference

- 1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
- 2. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation

requirements and procedures and any other information pertinent to the roof system installation

shall be discussed.

- B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.
- C. A copy of the specification is to be on the job site.

1.08 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

- 1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

- 1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.

heated

- 2. When ambient temperatures are below 40°F (4°C), materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

- 1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters.
- 2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.09 JOB CONDITIONS

A. Protection Requirements.

- 1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawn Walks, etc. in traffic areas.

- 2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.

- 3. Lock valves on tankers when not attended.

- 4. Cover or arrange air intakes to be turned off during application of solvent-based materials.

B. Environmental Requirements.

- 1. Do not apply material during precipitation or when rain is a probability during or after application

before material can set.

- 2. Never apply solvent-based adhesives or coatings to a wet surface.

below

- 3. Never apply water-based emulsions when the ambient temperature is below 50°F or will fall below 40°F before the emulsion has cured to a tack-free black surface. High humidity, fog and dew

will

greatly extend the time for emulsions to cure.

- 4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.10 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for one year from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
4. MANUFACTURER'S WARRANTY
5. Furnish Manufacturer's 10 -year Extension Warranty for material and workmanship.

1.11 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo CA 90245. (323) 583-5000. Local Representative: Gideon Brown

2.02 PRODUCT DELIVERY

1. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. #197 Asphalt Emulsion – meeting following requirements:

ASTM D-1227 Type III, Class I

Color. Black

Viscosity @ 77°F 8000-15000 cps (ASTM D2196)

Density @ 77°F 8.7 lbs./gal

Non-volatile Matter by Weight 47-53% (ASTM D2939)

Pliability @ 32°F No cracking or separating (ASTM D2939)

2. #196 Polyester meeting following requirements:

Weight. 2.9 oz./sq. yd.

Elongation 25.8% (ASTM D-1682)

Trapezoidal Tear Strength 14.2 lbs. (ASTM D-1117)

Tensile 41 lbs. (ASTM D-1682)

Mullen Burst 127 lbs. (ASTM D-3786)

REFLECTIVE SURFACING

- A. Premium Elastomeric Top Coating: #280 White – ASTM D6083
- B. Premium Elastomeric Base Coat: #294
- C. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface.
- D. #588 Aluminum Emulsion-

MISCELLANEOUS PRODUCTS

1. #103 VOC Compliant Primer
2. #189 Glass Roving
- E. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
- F. #167 Rubberized Flashing
- G. #289 ElastoCaulk

- H. #183 Reinforcing Glass – Yellow
- I. #176 Pond Patch
- J. Walk pads approved by manufacturer
- K. Approved mechanical fasteners
- L. Termination bar
- M. Wolmanized wood nailers
- N. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼” rise. 4” minimum width
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
- O. Lead Flashings to be minimum 4 oz. – factory or field soldered
- P. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. General Requirements and Roof Repair Requirements are part of these Specifications.
- B. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.
- C. Remove all edge metal. Cut back 12”
 - a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16” the other 20” 604 to make surface flush
 - b. Replace with new 24 GA Galvanized 4” wide edge metal flashing set in #167 Rubberized Flashing.
 - c. Install 12” Ruftac embedded into a generous application of #167 Rubberized Flashing
- D. Clean the existing roof thoroughly. Power wash or vacuum low spots and valleys. Prime valleys and ponded areas where dirt has collected including areas around all pipes, skylights, vents and other projections. Prime with #197 asphalt emulsion diluted 5 parts emulsion to one part water.
- E. Reinforce all valleys with an extra layer of #196 polyester embedded in #197 asphalt emulsion at rate of 4 gallons per 100 sq. ft.. Extend ply at least 12” up inclines. Apply in the direction of the slope of the valley, lapping 4” on ends.
- F. Inspect and mark flashings for deterioration, splits, punctures, separation from wall, etc. and repair or replace in accordance with specified procedures.
- G. Replace deteriorated, severely buckled, brittle or badly cracked base flashings determined to be non-repairable with Henry Specification #196.
- H. Clean thoroughly and prime all existing flashings and scuppers which are in good condition and seal with 6” yellow glass or polyester fabric and #167 Rubberized Flashing.
- I. Resecure any loose membrane flashing nailing top edge 8” o.c.
- J. Replace damaged or rusted metal flashings with new 24-gauge galvanized flashings.
- K. Inspect and mark roof membrane for defects including blisters, splits, holes in membrane and deterioration of roofing felts. Repair in accordance with specified procedures.
- L. Clean all drains and remove clamping rings, dried mastic and any other loose material. Prime with asphalt primer. Install a layer of #600 Ruftac 3 feet square at all drains set in a layer of #167 Rubberized Flashing.
- M. Lift all support modified mastic ports for conduits and other pipes. Replace all rotted wood pipe supports. Prime under such supports and install a layer of Ruftac embedded into a generous application of #167 Rubberized Flashing. Extend Ruftac 6” (152mm) beyond the support on all

- sides. Reset supports and resecure same as original. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- N. Three-Course all pipes and corners with yellow glass or polyester fabric and #167 Rubberized Flashing.
 - O. SHEET METAL
 - 1. Sheet metal is to be a minimum of 24 gauge galvanized steel.
 - 2. Prime all surfaces of sheet metal that will come in contact with roofing mastics, adhesives and coatings.
 - 3. Solder all joints. Corner flanges must be full corners.
 - 4. Provide metal clips one gauge heavier than coping, gravel stop or edge metal.
 - 5. Face of counter flashing and gravel stop or edge metal should be sufficient dimension to cover top of flashing or wood blocking. If necessary add sheet metal "skirt".
 - P. PIPE PENETRATIONS, ELECTRICAL JACKS, EQUIPMENT STANDS
 - 1. Install storm collars on all pipe penetrations and jacks.
 - Q. Replace deteriorated caulking. Remove old sealant. Wire brush and prime. Replace with compatible caulking.
 - R. WALK PADS
 - A. Install walk pads over finished roof. Space pads 2" apart to allow drainage.
 - B. Set walk pads in not less than 5 generous spot applications of the specified mastic.

3.02 GENERAL REPAIR REQUIREMENTS

- repair
- A. Thoroughly clean roof surface of dirt, debris, loose granules and contaminants at and around area extending 18" beyond perimeter of defect.
 - B. Prime area and allow to dry.
 - C. Extend repair a minimum of 6" beyond damage.
 - D. Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A brush coat of emulsion or aluminum coating is required over the Ruftac if it is to remain exposed.
 - D. Alternate to 3.02D: 5-course application of 2 layers of polyester, sandwiched between alternating layers of #289 ElastoCaulk. Increase number of layers of polyester and ElastoCaulk to match the number of damaged original roofing plies.
 - E. On insulated systems inspect for water infiltration. Remove wet or damaged insulation and replace with insulation of same type and thickness. Mechanically attach insulation or adhere with #111 InsulBond adhesive. Install new roof membrane in accordance with not less than Henry Specification H3-IG4C-MR.
 - F. Alternate repair methods require approval of Henry Company Technical Services.

3.03 MEMBRANE REPAIRS

- A. SMALL HOLES AND CRACKS
 - 1. See General Repair Requirements 3.02
 - 2. Apply #167 Rubberized Flashing 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2-4" beyond.
 - 3. For damaged areas larger than 1/4" repair with Ruftac or 5-course with #289 ElastoCaulk and Polyester
- B. BLISTERS
 - 1. See General Repair Requirements 3.02.
 - 2. Cut and remove blistered material until good adhesion of the membrane is found.

3. Install the same number of plies as are removed, but not less than two plies. Fill depression with sufficient number of plies of #604 set in #902 Permanent Bond Adhesive to make surface flush.

3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.
4. Alternate to 3.03B2 and 3. Make an X cut at blister, cutting only the layer(s) that is raised. Fold back plies and allow to dry. Apply #209 modified mastic between plies and press in place. Trim any overlap.

C. FISHMOUTHS, BUCKLES, WRINKLES, RIDGES

1. See General Repair Requirements 3.02.
2. Cut out defective material to an adhered area.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 modified mastic inches onto existing roof.

D. SPLITS

1. See General Repair Requirements 3.02.
2. Prepare surface area 24 inches on each side of split and 36 inches beyond end of the split.
3. Cut out loose felt from the split area.
4. Extend split 12 inches further in length by cutting through the membrane.
5. Make a 6-8 inch T-cut at both ends of the split.
6. Cut #606 80# granulated sheet 9 inches wide and sufficient length to cover the split. Install granule side down centered over the split.
7. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.

3.04 FLASHING REPAIR PROCEDURES

A. GENERAL REPAIR REQUIREMENTS

1. Thoroughly clean base flashing and adjacent roof surface of dirt, debris, loose granules or gravel, contaminates at and around repair area extending 18" beyond perimeter of defect.
2. Prime area and allow to dry completely.
3. Extend repair a minimum of 6" beyond damage.
4. Repairs that extend to top of base flashings are to be mechanically fastened and three-coursed.

B. LOOSE, WRINKLED, BUCKLED, CRACKED BASE FLASHINGS

1. See General Repair Requirements 3.04A
2. Install the same number of plies as are removed, but not less than two plies.
3. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
4. Repeat procedure extending second ply 3" beyond previous layer.
5. Fasten through tin discs top of the base flashing to the wall or curb 6" on center maximum.
6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.

C. OPEN LAPS

1. See General Repair Requirements 3.04A
2. Carefully cut out open lap or void at side lap or field membrane.
3. Remove debris, clean and prime.
4. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
5. Repeat procedure extending second ply 3" beyond previous layer.

6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- D. GAPS AT TOP OF BASE FLASHING
1. See General Repair Requirements 3.04A
 2. Make a vertical slit in the base flashing until a bonded area is found.
 3. Carefully pull back membrane and apply #167 Rubberized Flashing to wall or curb and press membrane back in place.
 4. Over repair, set one ply of Ruftac in #167 Rubberized Flashing extending 6" on either side of repair.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- E. LOOSE MECHANICAL ATTACHMENT
1. Remove loose fasteners
 2. Resecure base flashings through tin discs of a larger diameter or fastened to an adjacent location (new hole).
 3. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- F. DETERIORATED BASE FLASHINGS
- B. Remove and replace deteriorated base flashings.
 - C. Install Henry Specification #196.
- 3.05 BASE FLASHINGS – SPECIFICATION #196
- A. Prime concrete surface with specified primer and allow to dry.
 - B. Install #600 Ruftac in three foot lengths (cut cross machine or from end of roll) using salvage edge for laps. Prime where membrane will overlap.
 - C. Cut #600 Ruftac to required dimensions. Align sheet before removing release paper. Press in place. Lap ends 4". Set termination edges in #167 Rubberized Flashing. Extend onto field 4". Lightly prime exposed Ruftac surface and allow to dry.
 - D. On plywood walls nail #600 Ruftac 9 inches o.c. in both directions.
 - E. Flashing Cap. Cut #196 Polyester to extend not less than 2" above the Ruftac ply and 6" onto the field of the roof. Coat the surface to receive the polyester with #107 Asphalt Emulsion and embed the polyester. Lap ends 4". Stagger laps with layer below. Extend onto field 6".
 - F. Nail top of completed base flashings 8" o.c.
 - G. 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass.
 1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - D. Install counterflashing.
 - E. Apply specified surfacing and reflective coat.
 - F. Maximum allowable flashing height is 24 inches. For higher requirements install base flashings and complete wall with wall flashing.

3.06 WALL FLASHINGS

- A. Cover wall with one layer of polyester fabric embedded into 4 gallons per 100 sq. ft. of #197 asphalt emulsion. Extend wall flashing over base flashing 4 inches.
- B. Extend wall flashing over wall and down outside face 2 inches or 3-course top edge with specified mastic and #183 Yellow Glass.

3.07 MEMBRANE APPLICATION –Valleys, Waterways & Specification #H1-PE-MR

- A. All surfaces shall be well secured, firm, smooth and free from rough spots and sharp projections before roof application shall begin.
- B. Complete all repairs prior to application of membrane.
- C. Surface may be damp but must be free of free standing water.
- D. Over the prepared roof, apply a uniform layer of #197 Emulsion using a brush or roofing spray equipment at the rate of 4 gallons per 100 sq. ft. Immediately embed the fabric into the wet emulsion without wrinkles. Press fabric into the emulsion by a soft push broom or paint roller. Overlap preceding sheet and end laps 4 inches.
- E. Along perimeter install a half width of polyester followed by a full layer. At vertical transitions run material to the toe of the cant.

3.08 SURFACING –

- A. After the emulsion or repairs have cured, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Specification #H1-PE-MR or H-MR
 - 1. Cover prepared roof and flashing surfaces with not less than 9 gallons per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. of ¾" long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable.
 - 2. Spray emulsion in a pattern so that when system is dry, there are no voids or bridging of glass over any seam of the membrane. Finish to be 72 dry mils.
- D. Specification #HMS-197/588 or #HMS-197/294-280
 - 1. Over the roof surface, apply a uniform layer of #197 asphalt emulsion using a brush or spray equipment at the rate of 3 gallons per 100 ft.
 - 2. Spray base flashings and other designated surfaces.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counterflashing.
- F. Spray base flashings and other designated surfaces.

3.09 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. See Site Work Description for specified reflective coating:

1. White Elastomeric Coating -Apply #280 White Elastomeric Roof Coating over a base coat of #294.

a. Apply #294 Premium Elastomeric Base Coat at a rate of 1-1/2 gallon/100 ft.².

b. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface

c. Apply #280 White Elastomeric Roof Coating at a rate of 2 gallon/100 ft.².

d. Apply base and top coat the same day. Allow to dry thoroughly between coats. Schedule work so second coat can dry before nightfall. Apply second coat at right angles to first coat

2. (Optional) - Apply #588 Aluminum Emulsion at a rate not less than 1½ gallons /100 ft.² in one coat. At non air-conditioned space only

C. Any areas that peel must be redone before the project will be considered complete.

D. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application. Repeat if necessary.

3.10 CLEAN-UP

A. Test all drains to confirm they are free flowing and clear of debris.

B. Clean gutters and downspouts as needed of all debris.

C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.

D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE MAINTAINED

NAME OF SCHOOL: District Office – Portables
ADDRESS: 2820 Clark Ave
Norco CA

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

ROOF PREPARATION

Power wash existing roof surface to remove dirt, debris, and any loose reflective coating to provide a clean and smooth roof deck.

Remove all edge metal. Cut back 12"

- a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush
- b. Replace with new 24 GA Galvanized 4" wide edge metal flashing set in #167 Rubberized Flashing.
- c. Install 12" Ruftac embedded into a generous application of #167 Rubberized Flashing

RECOAT SYSTEM

Apply one layer of polyester over existing roof, layer set in 4 gallons of #197 Asphalt Emulsion.

Apply Monolithic System (9 gallons of #197 Emulsion and 3lbs chopped fiberglass) as specified in master specifications.

Apply White Acrylic Reflective Coating to meet Title 24 requirements as specified in master specifications. (PG 280 White Elastomeric Reflective Coating over PG 294 Base Coat as specified in Master Specification.)

Install Ceramic granules into wet base coat at a rate of 20lbs per 100 sq. ft.

For Ten Year Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

SPECIAL CONDITIONS

Cut out blisters, wrinkles, etc., as specified in master specifications and cover with 2 layers of polyester each set in 4 gallons of undiluted #197 Asphalt Emulsion. Polyester patch to be 6" larger in all directions.

Over all added penetrations & flashings during modernization. Apply two layers of polyester set in 4 gallons of #197 Asphalt Emulsion.

Contractor must water test internal drains and notify owner's representative before roofing crew starts work or Contractor will be held responsible for plugged drains at completion of repairs and maintenance of existing roof eligible for a ten-year warranty extension.

Contractor replace any broken rings, missing bolts or clamps install new metal screens where any are missing.

Contractor to remove existing clamp ring. Clean, prime and apply 1 layer of 36"x 36" Ruftac set in #167 Rubberized Flashing. Re-set clamp ring.

Remove all existing pitch pans and install split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Install new lead flashing around pipe support on A/C screen.

Clean, prime and reseal all corners at curbs, base flashings, etc., with asphalt primer and #167 Rubberized Flashing.

Remove blocking under conduits and other pipes running across roof and replace with a minimum of 2"x4" block (must be redwood or pressure treated). Set blocks on top of extra layer of Ruftac. Ruftac must extend 6" beyond edge of blocks on all sides. Ruftac shall be set in a generous application of #167 Rubberized Flashing (not cold applied cement) prior to Monolithic System application. Do not nail through roof membrane

Contractor to install one layer of Ruftac (6" larger in all directions) under all wood blocks, sleepers, etc., where needed or missing.

Clean gutters prior to respray application.

Metal Edging: Cut out existing edge metal. Install new 24-gauge (low rise type) metal edging (1/4" maximum) with 4" roof flange, set in 1/8" bed of #167 Rubberized Flashing. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer apply 12 wide layer of Ruftac prior to Monolithic System.

Walk Pad: At A.C. units and roof hatches, install units of decktop where specified. Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3"x4" units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad. Then, turn over pad and set in place on top of reflective coating. Allow approximately 1" between each unit to allow for drainage. (Around 2 – Sides Only)

END THIS SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Washington ES - Canopy only

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Washington ES – Canopy Only
1220 West Parkridge Ave.
Norco, CA92860

AREA TO BE RE-ROOFED: as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with # 588 Emulsion Aluminum Reflective Coat.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	198 lbs.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.

- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.
 - 2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
 - 3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.

4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
 2. Make repairs or replacements at no additional cost to Owner.
 3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
- B. MANUFACTURER'S WARRANTY
1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
 2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. ~~Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.~~
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion
 7. Walk pads
 8. Approved mechanical fasteners
 9. Wolmanized wood nailers
 10. Replacement metal to be 24 gauge galvanized sheet metal

- a. Metal edging to have maximum ¼" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
 12. Josam or Smith drains and overflows
 13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or re nail roof sheathing where necessary. Cover gaps of ½" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 1. Set flange over base plies set in #167 Rubberized Flashing.

2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
4. Ruftac is an acceptable alternative to I.2.
5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.

J. 3-COURSING

1. Prime wall surface at least 3" above termination edge of the base flashing.
2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
4. If not covered by metal counterflashing cover with Monolithic Emulsion system.

K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.

L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.

M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.

N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.

N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.

O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.

P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck 1/2 inch.
- D. Specification H3-NGC-MR
 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".
- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.

- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.
- E. Replace all coping metal

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- ~~B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.~~
- ~~C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface~~
- ~~D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.~~
- D. Apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.6l/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Washington ES – Canopy only
1220 West Parkridge Ave.
Norco, CA92860

AREA TO BE RE-ROOFED: as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. Canopy Roof Substraights areas to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor **MUST** notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install new bonerized coping metal

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:
- Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 - When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



RE- ROOFING SPECIFICATION WITH RIGID INSULATION

FOR

**Tim Russell
Corona/Norco USD
M&O Support Services Manager
2820 Clark Ave.
Norco CA 92860**

**Project Site:
RE-ROOFING: Washington Elementary School –
2 buildings only**

ROOFS TO BE RE-ROOFED

NAME OF SCHOOL: Washington ES – 2 Buildings
1220 West Parkridge Ave.
Norco, CA92860

AREA TO BE RE-ROOFED: as per drawing and/or jobwalk.

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)
- G. Title 24 – Part 6 – Cool Roofs

1.03 DEFINITIONS

- A. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

A. **Henry Specification #H3-IGC-MR**

Over prepared deck surface mechanically fasten tapered polyisocyanurate insulation. Adhere layer of roof coverboard in InsulBond Insulation Adhesive. Install 3 layers of #604 25# adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with Chopped Fiberglass. Finish with #294 Base Coat and #280 White Elastomeric Coating.

***Note: #588 Aluminum Reflective Coating can be used over non air-conditioned spaces like canopies.**

Specification System & Weights per 100 Sq.ft.

Dry Weights

Tapered Insulation for crickets	TBD
InsulBond Insulation Adhesive	5 lbs.
Coverboard – Prime wood fiber board or DensDeck ½”	TBD
#902 Permanent Bond Adhesive –2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.

#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion top coat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Elastomeric Base Coat – 1-1/2 Gallons per 100 sq.ft.	12 lbs.
Broadcast 20 lbs granules into wet #294 base coating over entire surface.	20 lbs.
#280 White Elastomeric Top Coat – 2 Gallons per 100 sq.ft.	<u>12 lbs.</u>
*588 Aluminum Coating Top Coat – 1 ½ Gallons per 100 sq. ft.	
Total Dry Weight	196 lbs

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 3. Detailed descriptive list of the materials proposed for use.
 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 8. Copy of manufacturer's inspection form.
 9. Qualifications of manufacturer's inspector(s)
 10. Proposal from manufacturer for site specific quality control program.
 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors

Association, Construction Specifications Institute, and California Association of School Business Officials.

2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute

B. Contractor Qualifications

1. Contractor to be approved by the primary material manufacturer.
2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements: Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent-based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 90245. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

2.02 PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.

B. TAPERED INSULATION

1. Polyisocyanurate insulation ASTM C-1289-95
2. Density - ASTM D1622 – nominal 2 pcf
3. Compressive strength - ASTM D1621 – nominal 20 psi
4. Polyisocyanurate insulation overlay of minimum ½ inch perlite, fiberboard or 3/4" Henry Recover Board.
5. Mechanical fasteners – corrosion resistant – listed with Factory Mutual

6. Insulation adhesive: InsulBond Insulation Adhesive applied at rate of 2 to 2 ½ gallons per 100 sq.ft.
- C. INTERPLY (Select specified ply sheet)
1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- D. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive meets the requirements of ASTM D-3019, Type III
 - Stormer viscosity @ 77°F 75-100 sec. (ASTM D-4479)
 - Density @ 77°F 9.8-10.2 lbs/gal. (ASTM D-1475)
 - Solids by weight 80%±.2% minimum (ASTM D-4479)
 - Flash Point 100°F minimum (ASTM D-3278)
 - Moisture by weight 2.5% maximum (ASTM D-4479)
 - Mineral/Other stabilizers by wt. 30-33% (ASTM D-4479)
 - Asphalt by weight 45% (ASTM D-4479)
 - Lap Adhesion @ 24hrs cure 30 lbf/in. min. (ASTM D-3019)
 - Appearance Black, fibrous
 - Max.VOC 250 grams/liter
- E. BASE FLASHING
1. ModifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced. . Lightly sanded on both sides. Membrane to be adhered with cold adhesive. Meets requirements of ASTM D-6164-97 when tested in accordance with ASTM D-5147.

Tensile Strength -	MD 112 lbf/in. - CD 88 lbf/in.
Elongation @ 0°F (-18°C)	MD 40% - CD 37%
Tear Resistance	MD 117 lbf/in. - CD 88 lbf/in.
Thickness	2.2mm (90 mils)
- F. SURFACING (9 Gallons with 3 lbs. Glass/Square):
1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 - Color. Black
 - Viscosity @ 77°F 8000-15000 cps (ASTM D2196)
 - Density @ 77°F 8.7 lbs./gal
 - Non-volatile Matter by Weight 47-53% (ASTM D2939)
 - Pliability @ 32°F No cracking or separating
 2. #189 Chopped Fiberglass
- G. REFLECTIVE SURFACING (as specified in Project Scope of Work)
1. #294 Elastomeric Base Coat – 1-1/2 Gallons per 100 sq.ft.
 2. Broadcast 20 lbs granules into wet #294 base coating over entire surface
 3. #280 White Elastomeric Top Coat – 2 Gallons per 100 sq.ft. – CRRC labled and meet reflectance and emittance values required in Title 24 – Part 6
 4. Option: #588 Aluminum Coating top coat – 1 ½ Gallons per 100 sq.ft. at non air-conditioned areas.
- H. MISCELLANEOUS PRODUCTS
1. Primer #113 VOC Compliant Primer
 2. #600 Ruffac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion
 7. #176 Pond Patch
 8. Walk pads
 9. Approved mechanical fasteners

10. Wolmanized wood nailers
11. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
12. Lead Flashings to be minimum 4 oz. – factory or field soldered
13. Josam or Smith drains and overflows
14. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

3.02 EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

3.03 PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or renail roof sheathing where necessary. Cover gaps of ½" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

3.04 GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of plastic cement. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of #167 Rubberized Flashing prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing Loosen brackets so pipes can expand and contract freely.
- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.

- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 - 1. Set flange over base plies set in #167 Rubberized Flashing.
 - 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 - 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 - 4. Ruftac is an acceptable alternative to I.2.
 - 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
 - 1. Prime wall surface at least 3" above termination edge of the base flashing.
 - 2. Over completed base flashing trowel a 5 inch wide layer of #167 Rubberized Flashing 1/8" thick to completely cover nails and top edge of base flashing.
 - 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of #167 Rubberized Flashing covering fabric completely. Bring to a feather edge and finish in a straight line.
 - 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in specified #167 Rubberized Flashing. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of #167 Rubberized Flashing and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #167 Rubberized Flashing.

3.05 SPECIFICATION H3-IGC-MR (OVER INSULATION – ANY DECK TYPE)

- A. INSULATION
 - 1. GENERAL. Lay insulation in parallel courses. Stagger end joints in adjoining courses. Apply insulation flush to parapets and wood nailers.
 - 2. Mechanical Application: Steel or Wood Decks - Mechanically attach first layer of insulation using a minimum of one fastener per 2.7 sq.ft.(.25 m²) Install additional fasteners at perimeter and corners boards if required to meet FM 1-90 wind up-lift. OR
 - 3. Adhesive Application Second layer – Set insulation in InsulBond Insulation Adhesive at application rate of 2 to 2 ½ gallons per 100 sq.ft Apply InsulBond Insulation Adhesive in serpentine pattern 6" (153mm) apart. Stripes of ½" (13mm) diameter or 1-1/4" (32mm) wide by 3/16" (5mm) thick will provide the proper quantity (one per flange on steel decks). Set insulation into the InsulBond Insulation Adhesive. Allow no more than 10-20 minutes of air exposure prior to setting the insulation into the wet adhesive and walking it in. Maximum board size to be 4' x 4'.
 - 4. (Optional) Over the insulation apply densdeck (thickness TBD) set in a uniform application of InsulBond Insulation Adhesive at a rate of 2 gallons per 100 sq. ft.
 - 5. Do not install any more insulation than can be roofed the same day.

B. MEMBRANE

1. Over the insulation, apply three (3) layers of #604 25# glass fiber interply sheets set in a uniform application #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
2. Starting at the low point, apply a 12" (457mm) wide piece, then over that, one 24" (610mm) wide, then over both, a full width piece. Install the remaining sheets full width overlapping preceding sheet 24-2/3". Run plies to top of can't.

3.05 METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".
- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.

3.06 FLASHINGS

A. General Requirements

1. Prime concrete surfaces with specified primer and allow to dry.
2. Complete first ply of flashing daily to assure watertight installation.
3. Install Base Flashing to a maximum 24-inch height.
4. Ruftac may be used in lieu of #605 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
7. Unless otherwise specified 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass

B. Install Flashing Specification Number #180

1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
2. Nail top of completed base flashings 8" (204mm) o.c.
3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
4. Apply compatible sealant.

C. Wall Flashings

1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

3.07 SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.

- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

3.08 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 ½ gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs granules per 100 sq. ft., into wet #294 base coating over entire surface.
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. At Canopy walkways apply #588 Aluminum Emulsion Coating at the rate 1 ½ gallons per 100 square feet in one (.6l/m²) coat.
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

3.09 CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE REROOFED
Scope of work

NAME OF SCHOOL: Washington ES – 2 Buildings
1220 West Parkridge Ave.
Norco, CA92860

AREA TO BE RE-ROOFED: as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

All HVAC Units, Curbs and Abandoned Pipe, Flashings, etc. to be removed by others.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-IGC-MR: Tapered Insulation where needed - three layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive #280 White Elastomeric Reflective Coating over #294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:** 1. Assemble interply sheets shingle fashion, the top finish sheet MUST be installed full width single ply.
2. Broadcast 20 lbs granules per 100 sq. ft., into wet #294 Base Coat in all waterways

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane

Note: Non-Nailable Deck – Apply a spot application (9" spots) of #902 Permanent Bond Adhesive 18" on center staggered in two rows 12 inches from each edge to secure buffer in place.

“Ten & Ten” Manufacturer’s Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer’s representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped, and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer’s inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner’s representative at any time during progress of work.

SPECIAL CONDITIONS

All Electrical junction boxes & all valves of any type to be protected prior to monolithic & reflective coating applications.

Install all new 4# lead flashings.

Clean, prime and apply 1 layer of 12" Ruftac over completed plies and 5-course at access thresholds.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Install 2x6 nailer at roof edge (this only need to be in here if the roofs do not have parapet walls)

Install new 2x4 blocks under conduit or pipes every 10 feet; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Remove existing counterflashing, prime and seal new roof system with #167 Rubberized Flashing 5-course system, and spray entire parapet with Monolithic System and Reflective Coating as specified.

Note: Apply 1 layer of 12" polyester set in asphalt emulsion over 5-course.

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

Note: 1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced, or new drains may be installed.

2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Scupper type drains, shall be set on top of buffer, into a generous application of #167 Rubberized Flashing and nailed with galvanized nails. Seal flange with 6" wide yellow jacket. Install base sheets tightly then reinforce with a 3"x3" layer pressed in tightly. Prime and 3-Course all corners of scupper over completed system with #167 Rubberized Flashing

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

If necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed, and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END THIS SECTION



**GUIDE: RESTORATION SPECIFICATION
FOR PORTABLES**

**TIM RUSSELL
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 CLARK AVE.
NORCO, CA 92860**

PROJECT SITES: Corona HS – Permanent Portables

ROOF MAINTENANCE

NAME OF SCHOOL: Corona HS – Permanent Portables
ADDRESS: 1150 West Tenth St.
Corona CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof Maintenance System. Site Work Description is part of this specification. In event of conflict between Site Work Description and these standard requirements follow the Site Work Description. Work includes, but is not limited to:
1. Repair of existing system (See Site Work Description for additional requirements)
 - a. Repair of defects in the roof membrane including blisters, splits, fishmouths, and loose laps.
 - b. Repair or replacement of defects in the flashings at walls, roof penetrations, metal flanges, etc. including replacement of deteriorated cant strips, curbs, wood nailers, etc.
 - c. Replacement of deteriorated sheet metal to match existing as designated on job walk. (See Site Work Description)
 - d. Cleaning and resetting roof drains/scuppers as applicable.
 - e. Repair or replacement of defects in expansion joints with compatible material as applicable.
 - f. Removal of all debris from the roof.
 1. Resurface roof membrane and base and wall flashings (See Site Work Description for selected Spec #)
 - a. Henry Specification #H2-PE-MR
 2. Miscellaneous requirements including:
 - a. Wood blocking or Dura-block under pipe supports where missing or deteriorated
 - b. Install protective layer of Ruftac under unsecured wood blocking where missing or deteriorated.
 3. Unit Pricing (See Site Work Description if applicable)

1.01 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)

1.02 SYSTEM DESCRIPTIONS

Henry Specification #H2-PE-MR

Over prepared existing roof install 2 ply #196 Polyester Sheet adhered in #197 Asphalt Emulsion. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with Base Coat of #294 (grey) and Top Coat of #280 (white).

Specification System & Weights per 100 Sq. ft.	Dry Weights
Existing roof	TBD
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq. ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq. ft.	3 lbs.
#294 Base Coat – 1-1/2 Gallons per 100 sq. ft.	8 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 Top Coat – 2 Gallons per 100 sq. ft.	7 lbs.
Approximate Total Dry Weight	Existing roof + 112 lbs.

1.03 SUBMITTALS

- A. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- B. Complete materials list of all items to be furnished and installed under this Section.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications

- 1. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
- 2. Manufacturer must hold the original warranty.

E. Contractor Qualifications

- 1. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
- 2. Contractor must provide knowledgeable foreman who understands all aspects of the specification.

1.07 QUALITY ASSURANCE

A. Pre-Job Conference

- 1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
- 2. During the pre-job conference, attendees shall review the specifications to determine any potential

- problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
- B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.
 - C. A copy of the specification is to be on the job site.

1.08 DELIVERY, STORAGE & HANDLING

- A. Delivery Requirements
 - 1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.
- B. Storage Requirements
 - 1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
 - 2. When ambient temperatures are below 40°F (4°C), materials must be stored in protected or heated areas and brought to the roof as needed for application.
- C. Handling Requirements
 - 1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters.
 - 2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.09 JOB CONDITIONS

- A. Protection Requirements.
 - 1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawn Walks, etc. in traffic areas.
 - 2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
 - 3. Lock valves on tankers when not attended.
 - 4. Cover or arrange air intakes to be turned off during application of solvent-based materials.
- B. Environmental Requirements.
 - 1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
 - 2. Never apply solvent-based adhesives or coatings to a wet surface.
 - 3. Never apply water-based emulsions when the ambient temperature is below 50°F or will fall below 40°F before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
 - 4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.10 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for one year from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
4. MANUFACTURER'S WARRANTY
5. Furnish Manufacturer's 10 -year Extension Warranty for material and workmanship.

1.11 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo CA 90245. (323) 583-5000. Local Representative: Gideon Brown

2.02 PRODUCT DELIVERY

1. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. #197 Asphalt Emulsion – meeting following requirements:

ASTM D-1227 Type III, Class I

Color. Black

Viscosity @ 77°F 8000-15000 cps (ASTM D2196)

Density @ 77°F 8.7 lbs./gal

Non-volatile Matter by Weight 47-53% (ASTM D2939)

Pliability @ 32°F No cracking or separating (ASTM D2939)

2. #196 Polyester meeting following requirements:

Weight. 2.9 oz./sq. yd.

Elongation 25.8% (ASTM D-1682)

Trapezoidal Tear Strength 14.2 lbs. (ASTM D-1117)

Tensile 41 lbs. (ASTM D-1682)

Mullen Burst 127 lbs. (ASTM D-3786)

REFLECTIVE SURFACING

- A. Premium Elastomeric Top Coating: #280 White – ASTM D6083
- B. Premium Elastomeric Base Coat: #294
- C. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface.
- D. #588 Aluminum Emulsion-

MISCELLANEOUS PRODUCTS

1. #103 VOC Compliant Primer
2. #189 Glass Roving
- E. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
- F. #167 Rubberized Flashing
- G. #289 ElastoCaulk

- H. #183 Reinforcing Glass – Yellow
- I. #176 Pond Patch
- J. Walk pads approved by manufacturer
- K. Approved mechanical fasteners
- L. Termination bar
- M. Wolmanized wood nailers
- N. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼” rise. 4” minimum width
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
- O. Lead Flashings to be minimum 4 oz. – factory or field soldered
- P. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. General Requirements and Roof Repair Requirements are part of these Specifications.
- B. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.
- C. Remove all edge metal. Cut back 12”
 - a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16” the other 20” 604 to make surface flush
 - b. Replace with new 24 GA Galvanized 4” wide edge metal flashing set in #167 Rubberized Flashing.
 - c. Install 12” Ruftac embedded into a generous application of #167 Rubberized Flashing
- D. Clean the existing roof thoroughly. Power wash or vacuum low spots and valleys. Prime valleys and ponded areas where dirt has collected including areas around all pipes, skylights, vents and other projections. Prime with #197 asphalt emulsion diluted 5 parts emulsion to one part water.
- E. Reinforce all valleys with an extra layer of #196 polyester embedded in #197 asphalt emulsion at rate of 4 gallons per 100 sq. ft.. Extend ply at least 12” up inclines. Apply in the direction of the slope of the valley, lapping 4” on ends.
- F. Inspect and mark flashings for deterioration, splits, punctures, separation from wall, etc. and repair or replace in accordance with specified procedures.
- G. Replace deteriorated, severely buckled, brittle or badly cracked base flashings determined to be non-repairable with Henry Specification #196.
- H. Clean thoroughly and prime all existing flashings and scuppers which are in good condition and seal with 6” yellow glass or polyester fabric and #167 Rubberized Flashing.
- I. Resecure any loose membrane flashing nailing top edge 8” o.c.
- J. Replace damaged or rusted metal flashings with new 24-gauge galvanized flashings.
- K. Inspect and mark roof membrane for defects including blisters, splits, holes in membrane and deterioration of roofing felts. Repair in accordance with specified procedures.
- L. Clean all drains and remove clamping rings, dried mastic and any other loose material. Prime with asphalt primer. Install a layer of #600 Ruftac 3 feet square at all drains set in a layer of #167 Rubberized Flashing.
- M. Lift all support modified mastic ports for conduits and other pipes. Replace all rotted wood pipe supports. Prime under such supports and install a layer of Ruftac embedded into a generous application of #167 Rubberized Flashing. Extend Ruftac 6” (152mm) beyond the support on all

- sides. Reset supports and resecure same as original. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- N. Three-Course all pipes and corners with yellow glass or polyester fabric and #167 Rubberized Flashing.
 - O. SHEET METAL
 - 1. Sheet metal is to be a minimum of 24 gauge galvanized steel.
 - 2. Prime all surfaces of sheet metal that will come in contact with roofing mastics, adhesives and coatings.
 - 3. Solder all joints. Corner flanges must be full corners.
 - 4. Provide metal clips one gauge heavier than coping, gravel stop or edge metal.
 - 5. Face of counter flashing and gravel stop or edge metal should be sufficient dimension to cover top of flashing or wood blocking. If necessary add sheet metal "skirt".
 - P. PIPE PENETRATIONS, ELECTRICAL JACKS, EQUIPMENT STANDS
 - 1. Install storm collars on all pipe penetrations and jacks.
 - Q. Replace deteriorated caulking. Remove old sealant. Wire brush and prime. Replace with compatible caulking.
 - R. WALK PADS
 - A. Install walk pads over finished roof. Space pads 2" apart to allow drainage.
 - B. Set walk pads in not less than 5 generous spot applications of the specified mastic.

3.02 GENERAL REPAIR REQUIREMENTS

- repair
- A. Thoroughly clean roof surface of dirt, debris, loose granules and contaminants at and around area extending 18" beyond perimeter of defect.
 - B. Prime area and allow to dry.
 - C. Extend repair a minimum of 6" beyond damage.
 - D. Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A brush coat of emulsion or aluminum coating is required over the Ruftac if it is to remain exposed.
 - D. Alternate to 3.02D: 5-course application of 2 layers of polyester, sandwiched between alternating layers of #289 ElastoCaulk. Increase number of layers of polyester and ElastoCaulk to match the number of damaged original roofing plies.
 - E. On insulated systems inspect for water infiltration. Remove wet or damaged insulation and replace with insulation of same type and thickness. Mechanically attach insulation or adhere with #111 InsulBond adhesive. Install new roof membrane in accordance with not less than Henry Specification H3-IG4C-MR.
 - F. Alternate repair methods require approval of Henry Company Technical Services.

3.03 MEMBRANE REPAIRS

- A. SMALL HOLES AND CRACKS
 - 1. See General Repair Requirements 3.02
 - 2. Apply #167 Rubberized Flashing 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2-4" beyond.
 - 3. For damaged areas larger than 1/4" repair with Ruftac or 5-course with #289 ElastoCaulk and Polyester
- B. BLISTERS
 - 1. See General Repair Requirements 3.02.
 - 2. Cut and remove blistered material until good adhesion of the membrane is found.

3. Install the same number of plies as are removed, but not less than two plies. Fill depression with sufficient number of plies of #604 set in #902 Permanent Bond Adhesive to make surface flush.

3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.
4. Alternate to 3.03B2 and 3. Make an X cut at blister, cutting only the layer(s) that is raised. Fold back plies and allow to dry. Apply #209 modified mastic between plies and press in place. Trim any overlap.

C. FISHMOUTHS, BUCKLES, WRINKLES, RIDGES

1. See General Repair Requirements 3.02.
2. Cut out defective material to an adhered area.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 modified mastic inches onto existing roof.

D. SPLITS

1. See General Repair Requirements 3.02.
2. Prepare surface area 24 inches on each side of split and 36 inches beyond end of the split.
3. Cut out loose felt from the split area.
4. Extend split 12 inches further in length by cutting through the membrane.
5. Make a 6-8 inch T-cut at both ends of the split.
6. Cut #606 80# granulated sheet 9 inches wide and sufficient length to cover the split. Install granule side down centered over the split.
7. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.

3.04 FLASHING REPAIR PROCEDURES

A. GENERAL REPAIR REQUIREMENTS

1. Thoroughly clean base flashing and adjacent roof surface of dirt, debris, loose granules or gravel, contaminates at and around repair area extending 18" beyond perimeter of defect.
2. Prime area and allow to dry completely.
3. Extend repair a minimum of 6" beyond damage.
4. Repairs that extend to top of base flashings are to be mechanically fastened and three-coursed.

B. LOOSE, WRINKLED, BUCKLED, CRACKED BASE FLASHINGS

1. See General Repair Requirements 3.04A
2. Install the same number of plies as are removed, but not less than two plies.
3. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
4. Repeat procedure extending second ply 3" beyond previous layer.
5. Fasten through tin discs top of the base flashing to the wall or curb 6" on center maximum.
6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.

C. OPEN LAPS

1. See General Repair Requirements 3.04A
2. Carefully cut out open lap or void at side lap or field membrane.
3. Remove debris, clean and prime.
4. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
5. Repeat procedure extending second ply 3" beyond previous layer.

6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- D. GAPS AT TOP OF BASE FLASHING
1. See General Repair Requirements 3.04A
 2. Make a vertical slit in the base flashing until a bonded area is found.
 3. Carefully pull back membrane and apply #167 Rubberized Flashing to wall or curb and press membrane back in place.
 4. Over repair, set one ply of Ruftac in #167 Rubberized Flashing extending 6" on either side of repair.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- E. LOOSE MECHANICAL ATTACHMENT
1. Remove loose fasteners
 2. Resecure base flashings through tin discs of a larger diameter or fastened to an adjacent location (new hole).
 3. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- F. DETERIORATED BASE FLASHINGS
- B. Remove and replace deteriorated base flashings.
 - C. Install Henry Specification #196.
- 3.05 BASE FLASHINGS – SPECIFICATION #196
- A. Prime concrete surface with specified primer and allow to dry.
 - B. Install #600 Ruftac in three foot lengths (cut cross machine or from end of roll) using salvage edge for laps. Prime where membrane will overlap.
 - C. Cut #600 Ruftac to required dimensions. Align sheet before removing release paper. Press in place. Lap ends 4". Set termination edges in #167 Rubberized Flashing. Extend onto field 4". Lightly prime exposed Ruftac surface and allow to dry.
 - D. On plywood walls nail #600 Ruftac 9 inches o.c. in both directions.
 - E. Flashing Cap. Cut #196 Polyester to extend not less than 2" above the Ruftac ply and 6" onto the field of the roof. Coat the surface to receive the polyester with #107 Asphalt Emulsion and embed the polyester. Lap ends 4". Stagger laps with layer below. Extend onto field 6".
 - F. Nail top of completed base flashings 8" o.c.
 - G. 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass.
 1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - D. Install counterflashing.
 - E. Apply specified surfacing and reflective coat.
 - F. Maximum allowable flashing height is 24 inches. For higher requirements install base flashings and complete wall with wall flashing.

3.06 WALL FLASHINGS

- A. Cover wall with one layer of polyester fabric embedded into 4 gallons per 100 sq. ft. of #197 asphalt emulsion. Extend wall flashing over base flashing 4 inches.
- B. Extend wall flashing over wall and down outside face 2 inches or 3-course top edge with specified mastic and #183 Yellow Glass.

3.07 MEMBRANE APPLICATION –Valleys, Waterways & Specification #H1-PE-MR

- A. All surfaces shall be well secured, firm, smooth and free from rough spots and sharp projections before roof application shall begin.
- B. Complete all repairs prior to application of membrane.
- C. Surface may be damp but must be free of free standing water.
- D. Over the prepared roof, apply a uniform layer of #197 Emulsion using a brush or roofing spray equipment at the rate of 4 gallons per 100 sq. ft. Immediately embed the fabric into the wet emulsion without wrinkles. Press fabric into the emulsion by a soft push broom or paint roller. Overlap preceding sheet and end laps 4 inches.
- E. Along perimeter install a half width of polyester followed by a full layer. At vertical transitions run material to the toe of the cant.

3.08 SURFACING –

- A. After the emulsion or repairs have cured, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Specification #H1-PE-MR or H-MR
 - 1. Cover prepared roof and flashing surfaces with not less than 9 gallons per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. of ¾" long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable.
 - 2. Spray emulsion in a pattern so that when system is dry, there are no voids or bridging of glass over any seam of the membrane. Finish to be 72 dry mils.
- D. Specification #HMS-197/588 or #HMS-197/294-280
 - 1. Over the roof surface, apply a uniform layer of #197 asphalt emulsion using a brush or spray equipment at the rate of 3 gallons per 100 ft.
 - 2. Spray base flashings and other designated surfaces.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counterflashing.
- F. Spray base flashings and other designated surfaces.

3.09 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. See Site Work Description for specified reflective coating:

1. White Elastomeric Coating -Apply #280 White Elastomeric Roof Coating over a base coat of #294.

a. Apply #294 Premium Elastomeric Base Coat at a rate of 1-1/2 gallon/100 ft.².

b. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface

c. Apply #280 White Elastomeric Roof Coating at a rate of 2 gallon/100 ft.².

d. Apply base and top coat the same day. Allow to dry thoroughly between coats. Schedule work so second coat can dry before nightfall. Apply second coat at right angles to first coat

2. (Optional) - Apply #588 Aluminum Emulsion at a rate not less than 1½ gallons /100 ft.² in one coat. At non air-conditioned space only

C. Any areas that peel must be redone before the project will be considered complete.

D. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application. Repeat if necessary.

3.10 CLEAN-UP

A. Test all drains to confirm they are free flowing and clear of debris.

B. Clean gutters and downspouts as needed of all debris.

C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.

D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE MAINTAINED

NAME OF SCHOOL: Corona HS – Permanent Portables
ADDRESS: 1150 West Tenth St.
Corona CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

ROOF PREPARATION

Power wash existing roof surface to remove dirt, debris, and any loose reflective coating to provide a clean and smooth roof deck.

Remove all edge metal. Cut back 12"

- a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush
- b. Replace with new 24 GA Galvanized 4" wide edge metal flashing set in #167 Rubberized Flashing.
- c. Install 12" Ruftac embedded into a generous application of #167 Rubberized Flashing

RECOAT SYSTEM

Apply one layer of polyester over existing roof, layer set in 4 gallons of #197 Asphalt Emulsion.

Apply Monolithic System (9 gallons of #197 Emulsion and 3lbs chopped fiberglass) as specified in master specifications.

Apply White Acrylic Reflective Coating to meet Title 24 requirements as specified in master specifications. (PG 280 White Elastomeric Reflective Coating over PG 294 Base Coat as specified in Master Specification.)

Install Ceramic granules into wet base coat at a rate of 20lbs per 100 sq. ft.

For Ten Year Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

SPECIAL CONDITIONS

Cut out blisters, wrinkles, etc., as specified in master specifications and cover with 2 layers of polyester each set in 4 gallons of undiluted #197 Asphalt Emulsion. Polyester patch to be 6" larger in all directions.

Over all added penetrations & flashings during modernization. Apply two layers of polyester set in 4 gallons of #197 Asphalt Emulsion.

Contractor must water test internal drains and notify owner's representative before roofing crew starts work or Contractor will be held responsible for plugged drains at completion of repairs and maintenance of existing roof eligible for a ten-year warranty extension.

Contractor replace any broken rings, missing bolts or clamps install new metal screens where any are missing.

Contractor to remove existing clamp ring. Clean, prime and apply 1 layer of 36"x 36" Ruftac set in #167 Rubberized Flashing. Re-set clamp ring.

Remove all existing pitch pans and install split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Install new lead flashing around pipe support on A/C screen.

Clean, prime and reseal all corners at curbs, base flashings, etc., with asphalt primer and #167 Rubberized Flashing.

Remove blocking under conduits and other pipes running across roof and replace with a minimum of 2"x4" block (must be redwood or pressure treated). Set blocks on top of extra layer of Ruftac. Ruftac must extend 6" beyond edge of blocks on all sides. Ruftac shall be set in a generous application of #167 Rubberized Flashing (not cold applied cement) prior to Monolithic System application. Do not nail through roof membrane

Contractor to install one layer of Ruftac (6" larger in all directions) under all wood blocks, sleepers, etc., where needed or missing.

Clean gutters prior to respray application.

Metal Edging: Cut out existing edge metal. Install new 24-gauge (low rise type) metal edging (1/4" maximum) with 4" roof flange, set in 1/8" bed of #167 Rubberized Flashing. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer apply 12 wide layer of Ruftac prior to Monolithic System.

Walk Pad: At A.C. units and roof hatches, install units of decktop where specified. Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3"x4" units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad. Then, turn over pad and set in place on top of reflective coating. Allow approximately 1" between each unit to allow for drainage. (Around 2 – Sides Only)

END THIS SECTION

Application guide

Henry® Pro-Grade® Silicone Roof Coating System

This application guide provides instructions for successfully applying a Henry® Pro-Grade® Silicone roof coating system on metal, aged single-ply (TPO, PVC, EPDM and Hypalon®), asphalt roofs (roll roofing, modified bitumen and built-up roofing) and previously coated roofs. A Pro-Grade® Silicone roof coating system is a roof restoration system providing a cost-effective alternative to a full replacement. When installed according to these instructions, it is designed to provide a waterproof, fluid applied roofing system, supported by a variety of warranty offerings. This application guide is not intended to be used for applications on shingles, coal tar substrates, gravel covered roofs, cold storage or cryogenic structures, and Kynar® or Hylar® coated metal roofs. Metal roofs must be greater than 28 gauge (0.015").

PC Primer coat

BC Base coat

TC Top coat

S Sealant

RC Reinforced coating

Coverage rates							
10-year Pro-Grade® Silicone roof coating system options ¹							
Coating assembly configuration		Granulated cap sheet	Smooth cap sheet/ BUR (non-aggregate)	Aged or new PremiR+ EVO SPF ³	Single ply (TPO/PVC/ EPDM/Hypalon®)	Metal*	
Option #1	PC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	BC	Pro-Grade® 988	1.00 gal./sq. (15 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)
	TC	Pro-Grade® 988	1.00 gal./sq. (15 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)	0.75 gal./sq. (11 mil DFT)
Option #2	BC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	TC	Pro-Grade® 988	2.00 gal./sq. (30 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)
15-year Pro-Grade® Silicone roof coating system options ²							
Option #1	PC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	BC	Pro-Grade® 988	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)
	TC	Pro-Grade® 988	1.50 gal./sq. (22 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)
Option #2	BC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	TC	Pro-Grade® 988	2.50 gal./sq. (37 mil DFT)	2.00 gal./sq. (30 mil DFT)	2.00 gal./sq. (30 mil DFT)	2.00 gal./sq. (30 mil DFT)	2.00 gal./sq. (30 mil DFT)
20-year Pro-Grade® Silicone roof coating system options ²							
Option #1	PC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	BC	Pro-Grade® 988	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (15 mil DFT)	1.00 gal./sq. (15 mil DFT)	1.50 gal./sq. (15 mil DFT)	1.50 gal./sq. (15 mil DFT)
	TC	Pro-Grade® 988	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)	1.50 gal./sq. (22 mil DFT)
Option #2	BC	Pro-Grade® 294	1.25 gal./sq. (11 mil DFT)	1.00 gal./sq. (9 mil DFT)	n/a	n/a	n/a
	TC	Pro-Grade® 988	3.00 gal./sq. (44 mil DFT)	2.50 gal./sq. (37 mil DFT)	2.50 gal./sq. (37 mil DFT)	2.50 gal./sq. (37 mil DFT)	2.50 gal./sq. (37 mil DFT)

Ancillary components for all warranted assemblies					
Application		Product name	Product description	Coverage rate	
Option #1	S	Penetrations, flashings and seams	Pro-Grade® 923	Butter grade sealant	80 linear feet per 2 gallon pail applied at 1/8" thick and 4" wide
			Pro-Grade® 957	Fiber grade silicone sealant	80 linear feet per 2 gallon pail applied at 1/8" thick and 4" wide
Option #2	RC	Penetrations, flashings and seams	Pro-Grade® 988	Silicone roof coating	350 linear feet per 5 gallon pail
			195 Polyester Fabric	Repair and Reinforcement Fabric	300 linear feet per 6" x 300'-0" roll 300 linear feet per 4" x 300'-0" roll
**Optional primer		Pro-Grade® 941	for metal, single-ply and previously coated roofs	500 square feet per gallon unit	
Fastener head encapsulation		Pro-Grade® 928	Fastener sealer for metal roofs/pitch pocket sealer	100 fasteners per 10.1 fl. oz. cartridge	
Punctures		Pro-Grade® 920	Standard grade silicone sealant	100 punctures per 10.1 fl. oz. cartridge	

NOTES: * For slopes greater than 3:12, contact Henry® Technical Support or the local Henry® sales representative. Include a stretch factor increase of 15 to 30% when calculating metal roof surface area. DFT = Dry Film Thickness (minimum requirement). Product coverage rates represent minimum application requirement. Coverage rates are theoretical and do not take into account material loss due to spraying, surface texture, waste, etc. For previously coated roof membranes, the product coverage rates indicated in the charts above are applicable. ¹Pro-Grade 957 Silicone Fibered Sealer can be used to treat seams. ²Pro-Grade 923 is required at seams and parapets, 1/8" (125 mils) extending a minimum of 2" past area ³Use Pro-Grade® 941 Primer as required. For new SPF, 1" is required for 10-year warranty and 1.5" is required for 15- and 20-year warranties.

Warranty: Henry® Pro-Grade® Silicone roof coating system warranty durations are based on overall coating thicknesses. See coverage rate chart for requirements. Coverage rates do not take into account material loss due to spraying, surface texture, waste, etc. Coverage rates are applicable for previously coated and non-coated roofs.

Safety statements: Use caution when applying and walking on coated surfaces. Coated surfaces can be extremely slippery and can create a fall hazard resulting in injury or death. All air intake ventilation equipment should be turned off to prevent fumes from entering building.

STEP 1: Substrate examination

I. Suitability of substrate:

- A. Substrate, insulation and all surfaces must be sound, dry, clean and free of oil, grease, rust, dirt, excess mortar, frost, laitance, loose and flaking particles or contaminants.
- B. Ensure skylights, scuppers, gutters, penetrations and structures are firmly secured, watertight and in good working condition.
- C. Ensure fasteners are secure and tight; replace loose fasteners with larger diameter fastener.
- D. Repair or replace defective existing roofing:
 - 1. Metal:
 - a. Replace damaged, weakened or corroded metal panels, fascia, gutters, vents, ridge caps or flashings compromising structural integrity.
 - b. Remove rust with wire brush, sandblast or mechanical abrasion until substrate is smooth and free of loose rust.
 - c. Remove old and damaged mastic repairs at laps, seams and metal fasteners.
 - 2. Modified Bitumen/Smooth BUR:
 - a. Remove and replace wet insulation and/or defective materials with like-materials and tie into existing roofing in accordance with NRCA standard roofing practices.
 - b. Coat seams with Pro-Grade® 923 or Pro-Grade® 957 at 1/8" thick (125 wet mils) extending 2" on each side of seam.
 - 3. Single ply:
 - a. To remove wet insulation and/or defective materials, cut membrane on three sides; fold back and replace with like-materials.
 - b. Fold single ply roofing back into place and patch using like materials or PG923 Butter Grade.
- E. All areas must promote positive drainage. Contact [Henry® Product Support](#) or your [sales representative](#) for ponding area repair procedures.

II. Adhesion tests: (For instructions see link): www.us.henry.com/silicone-adhesion-instructions

- A. Granulated modified bitumen: not required
- B. Adhesion test requirements:

- 1. Conduct at least two tests in the field of existing roof membrane, one every 10,000 sq. ft., plus any area of worn roofing, such as cracked or abraded surfaces.
- 2. Any change in roof substrate
- 3. Existing roof areas installed in phases
- 4. Shaded areas
- 5. Areas indicating ponding water
- C. Verify minimum 2.0 pli adhesion strength for each test for warranty eligibility.
- D. Adhesion test results less than 2.0 pli:
 - 1. Apply Pro-Grade® 941 primer and retest. Contact [Henry® Product Support](#) or your [sales representative](#) if results are less than 2.0 pli.

III. Moisture survey:

- A. The installing contractor must verify the existing roofing assembly is dry and leak free prior to installation for warranty eligibility.
- B. Evaluate existing roof assembly for moisture, including saturated insulation, roof deck, roof components and defective roofing. Repair and replace in accordance with this application guide.
- C. Do not install roof coating over saturated insulation or substrates.
- D. Moisture survey includes a visual inspection and one or more of the following:
 - 1. Infrared thermography
 - 2. Nuclear scan
 - 3. Electric capacitance/impedance testing
 - 4. Roof core cut samples

IV. Weather considerations:

- A. Substrate temperature must be above 35 °F (2 °C) and rising, 6 °F (3 °C) above dew point, and remain dry 15 minutes after application.

STEP 2: Substrate preparation

I. Clean:

- A. Confirm local water run-off ordinances and restrictions prior to cleaning roof.
- B. Surface cleaning:
 1. Carefully pressure wash all roof surfaces with greater than 2,000 psi pressure to remove loose granules, debris, rust, scale, dirt, dust, chalking, peeling or flaking coatings, etc. Do not force water into the roof system or damage roof surfaces.
 2. Remove grease, oils or contaminants which may interfere with adhesion using warm water and mild detergent.
 3. Treat areas of algae, mildew or fungus with a solution of household bleach and water.
 4. Rinse roof to ensure removal of all detergent or anything else that could affect adhesion.

II. Primers:

- A. Single-ply membrane or metal roof:
 1. Apply Pro-Grade® 941 where adhesion test results were less than 2.0 pli.
 2. Rust primer: Install a commercial grade rust-inhibitive primer per primer manufacturer recommendations.
- B. Asphaltic membranes, asphaltic coatings and/or asphaltic mastics:
 1. ~~Apply Pro-Grade® 294 as a bleed blocker prior to installing Pro-Grade® 988 and silicone accessories.~~

III. Flashing and details:

- A. Complete detailing and flashings prior to roof coating installation.
- B. Mix Pro-Grade® 988 with drill and mixer blade prior to use until consistent viscosity is achieved.
- C. Refer to chart below for pre-treatment of secure and intact seams.
- D. Metal seams:
 1. Completely remove existing seam coatings, mastics and sealants.
 2. Horizontal laps, un-crimped vertical seams and ridge cap seams:
 - a. Apply foot pressure to under lapping panel next to horizontal lap or vertical seam and stitch-fasten gaps opening more than 1/8" wide on metal panel lap to ensure a continuous substrate and eliminate gaps.
- E. MB/BUR and single-ply seams:
 1. Defective, loose or torn seams:
 - a. Apply Pro-Grade® 923 or Pro-Grade® 957 generously under loose or torn seams, splits, cracks, blisters and cracked metal edging using a stiff brush or putty knife.
 - b. Firmly press loose roof membrane into sealant.
 - c. Apply sealant at 1/8" thick (125 wet mils) over top, extending 2" on each side of defect until fully coated.

Pre-treatment of secure and intact seams*				
Flashing options	Modified Bitumen (MB) and Single Ply		Metal	
		10- and 15-year warranties	20-year warranty	Crimped standing vertical seams
Option #1	Apply Pro-Grade® 923 or Pro-Grade® 957 using a stiff brush or sealant knife at 1/8" thick (125 wet mils) extending 2" minimum each side of seam.		No seam pre-treatment required	Apply Pro-Grade® 923 or Pro-Grade® 957 using a stiff brush or putty knife at 1/8" inch thick (125 wet mils) extending 2" minimum each side of seam.
Option #2	Install one layer of coating at 1.5 gallons per square (24 wet mils) extending 2" on each side of seam.	<ol style="list-style-type: none"> 1. Install one layer of roof coating at 2 gallons per square (32 wet mils) extending 4" minimum on each side of seam. 2. Center 6" wide 195 Polyester Fabric over seam and fully embed into roof coating, ensuring 3" of fabric on each side of seam. Brush or roll fabric for proper adhesion and remove all voids. 3. Allow roof coating to dry to touch prior to subsequent layer. 4. Apply a second layer of roof coating at 1 gallon per square (16 wet mils), extending 4" minimum on each side of seam; ensure fabric is fully coated. 	No seam pre-treatment required	<ol style="list-style-type: none"> 1. Install one layer of roof coating at 2 gallons per square (32 wet mils), extending 4" minimum on each side of seam. 2. Center 6" wide 195 Polyester Fabric over seam and fully embed into roof coating, ensuring 3" of fabric on each side of seam. Brush or roll fabric for proper adhesion and remove all voids. 3. Allow roof coating to dry to touch prior to subsequent layer. 4. Apply a second layer of roof coating at 1 gallon per square (16 wet mils), extending 4" minimum on each side of seam; ensure fabric is fully coated.

*Built-up roof (BUR) assemblies do not require pre-treatment of secure and intact seams.

Roof curbs, parapets and pipe penetrations for MB/BUR, single ply and metal roofs

Option #1	Apply Pro-Grade® 923 or Pro-Grade® 957 using a stiff brush or sealant knife at 1/8" thick (125 wet mils) extending 4" minimum onto horizontal and vertical surfaces.
Option #2	<ol style="list-style-type: none">1. Install roof coating at 2 gallons per square (32 wet mils), extending 4" minimum onto horizontal and vertical surfaces.2. Center 6" wide 195 Polyester Fabric at upturn and fully embed into roof coating ensuring 3" of fabric on both horizontal and vertical surfaces. Brush or roll fabric for proper adhesion and remove all voids.3. Allow roof coating to dry to touch prior to subsequent layer.4. Apply roof coating at 1 gallon per square (16 wet mils), extending 4" minimum onto horizontal and vertical surfaces; ensuring fabric is fully coated.

Fastener heads for MB/BUR, single ply and metal roofs

Completely encapsulate fastener heads with Pro-Grade® 928

Drains for MB/BUR, single ply and metal roofs

1. Remove strainer, ring and other drain components.
2. Apply Pro-Grade® 923 or Pro-Grade® 957 using a stiff brush or sealant knife at 1/8" thick (125 wet mils) from the drain hole opening, extending 12" minimum continuously around the drain perimeter ensuring a smooth and continuous finish.

STEP 3: Roof coating application

I. Application of roof coating: Refer to the Coverage Rate Chart for warranted minimum requirements.

- A. Mix roof coating with drill and mixer blade prior to use until consistent viscosity is achieved.
- B. Clean and prepare substrate in accordance with **Step 2: Substrate preparation** of this application guide.
- C. Install Pro-Grade® 988 in accordance with this application guide.
 1. Modified Bitumen/BUR, steep-slopes and rough or aged surfaces may require additional coats to obtain a uniform and consistent thickness.
- D. Multiple coat systems:
 1. Pro-Grade® 988 may be utilized as a base and top coat; is intended as a base coat only.
 2. Ensure base coat and/or primer coat is fully cured prior to subsequent installation.

3. Ensure cured coating is clean prior to subsequent coating application.
4. Apply subsequent coats perpendicular in fashion to the previous coat.

II. Walkways (optional):

- A. Ensure substrate is clean in accordance with **Step 2: Substrate preparation** of this application guide prior to coating application.
- B. Apply additional Pro-Grade® 988 at traffic areas at a minimum 1 gallon per square (16 wet mils).
- C. Apply Henry Roofing Granules uniformly into wet roof coating at a rate of 20-30 pounds per square.
- D. Allow roof coating to dry.
- E. Remove loose particles from roof to avoid clogging drains.

Edge metal note: Cut back edge 4"-6" leave metal. repair edge with Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush

Note: Remove Expansion joint metal. Inspect edge and outer walls. If walls are in good shape, do the same edge work as around the rest of the parameter. If walls are rotted and have the potential to leak then replace with new metal and seal with #923 butter grade sealant



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**GUIDE: RESTORATION SPECIFICATION
FOR PORTABLES**

**TIM RUSSELL
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 CLARK AVE.
NORCO, CA 92860**

PROJECT SITES: Coronita Elementary School – Portables

ROOF MAINTENANCE

NAME OF SCHOOL: Coronita ES – Portables
ADDRESS: 1757 Via Del Rio
Corona CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof Maintenance System. Site Work Description is part of this specification. In event of conflict between Site Work Description and these standard requirements follow the Site Work Description. Work includes, but is not limited to:
1. Repair of existing system (See Site Work Description for additional requirements)
 - a. Repair of defects in the roof membrane including blisters, splits, fishmouths, and loose laps.
 - b. Repair or replacement of defects in the flashings at walls, roof penetrations, metal flanges, etc. including replacement of deteriorated cant strips, curbs, wood nailers, etc.
 - c. Replacement of deteriorated sheet metal to match existing as designated on job walk. (See Site Work Description)
 - d. Cleaning and resetting roof drains/scuppers as applicable.
 - e. Repair or replacement of defects in expansion joints with compatible material as applicable.
 - f. Removal of all debris from the roof.
 1. Resurface roof membrane and base and wall flashings (See Site Work Description for selected Spec #)
 - a. Henry Specification #H2-PE-MR
 2. Miscellaneous requirements including:
 - a. Wood blocking or Dura-block under pipe supports where missing or deteriorated
 - b. Install protective layer of Ruftac under unsecured wood blocking where missing or deteriorated.
 3. Unit Pricing (See Site Work Description if applicable)

1.01 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)

1.02 SYSTEM DESCRIPTIONS

Henry Specification #H2-PE-MR

Over prepared existing roof install 2 ply #196 Polyester Sheet adhered in #197 Asphalt Emulsion. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with Base Coat of #294 (grey) and Top Coat of #280 (white).

Specification System & Weights per 100 Sq. ft.	Dry Weights
Existing roof	TBD
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq. ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq. ft.	3 lbs.
#294 Base Coat – 1-1/2 Gallons per 100 sq. ft.	8 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 Top Coat – 2 Gallons per 100 sq. ft.	7 lbs.
Approximate Total Dry Weight	Existing roof + 112 lbs.

1.03 SUBMITTALS

- A. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- B. Complete materials list of all items to be furnished and installed under this Section.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications

1. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
2. Manufacturer must hold the original warranty.

E. Contractor Qualifications

1. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
2. Contractor must provide knowledgeable foreman who understands all aspects of the specification.

1.07 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. During the pre-job conference, attendees shall review the specifications to determine any potential

- problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
- B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.
 - C. A copy of the specification is to be on the job site.

1.08 DELIVERY, STORAGE & HANDLING

- A. Delivery Requirements
 - 1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.
- B. Storage Requirements
 - 1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
 - 2. When ambient temperatures are below 40°F (4°C), materials must be stored in protected or heated areas and brought to the roof as needed for application.
- C. Handling Requirements
 - 1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters.
 - 2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.09 JOB CONDITIONS

- A. Protection Requirements.
 - 1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawn Walks, etc. in traffic areas.
 - 2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
 - 3. Lock valves on tankers when not attended.
 - 4. Cover or arrange air intakes to be turned off during application of solvent-based materials.
- B. Environmental Requirements.
 - 1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
 - 2. Never apply solvent-based adhesives or coatings to a wet surface.
 - 3. Never apply water-based emulsions when the ambient temperature is below 50°F or will fall below 40°F before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
 - 4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.10 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for one year from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
4. MANUFACTURER'S WARRANTY
5. Furnish Manufacturer's 10 -year Extension Warranty for material and workmanship.

1.11 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo CA 90245. (323) 583-5000. Local Representative: Gideon Brown

2.02 PRODUCT DELIVERY

1. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. #197 Asphalt Emulsion – meeting following requirements:

ASTM D-1227 Type III, Class I

Color. Black

Viscosity @ 77°F 8000-15000 cps (ASTM D2196)

Density @ 77°F 8.7 lbs./gal

Non-volatile Matter by Weight 47-53% (ASTM D2939)

Pliability @ 32°F No cracking or separating (ASTM D2939)

2. #196 Polyester meeting following requirements:

Weight. 2.9 oz./sq. yd.

Elongation 25.8% (ASTM D-1682)

Trapezoidal Tear Strength 14.2 lbs. (ASTM D-1117)

Tensile 41 lbs. (ASTM D-1682)

Mullen Burst 127 lbs. (ASTM D-3786)

REFLECTIVE SURFACING

- A. Premium Elastomeric Top Coating: #280 White – ASTM D6083
- B. Premium Elastomeric Base Coat: #294
- C. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface.
- D. #588 Aluminum Emulsion-

MISCELLANEOUS PRODUCTS

1. #103 VOC Compliant Primer
2. #189 Glass Roving
- E. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
- F. #167 Rubberized Flashing
- G. #289 ElastoCaulk

- H. #183 Reinforcing Glass – Yellow
- I. #176 Pond Patch
- J. Walk pads approved by manufacturer
- K. Approved mechanical fasteners
- L. Termination bar
- M. Wolmanized wood nailers
- N. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼” rise. 4” minimum width
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
- O. Lead Flashings to be minimum 4 oz. – factory or field soldered
- P. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. General Requirements and Roof Repair Requirements are part of these Specifications.
- B. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.
- C. Remove all edge metal. Cut back 12”
 - a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16” the other 20” 604 to make surface flush
 - b. Replace with new 24 GA Galvanized 4” wide edge metal flashing set in #167 Rubberized Flashing.
 - c. Install 12” Ruftac embedded into a generous application of #167 Rubberized Flashing
- D. Clean the existing roof thoroughly. Power wash or vacuum low spots and valleys. Prime valleys and ponded areas where dirt has collected including areas around all pipes, skylights, vents and other projections. Prime with #197 asphalt emulsion diluted 5 parts emulsion to one part water.
- E. Reinforce all valleys with an extra layer of #196 polyester embedded in #197 asphalt emulsion at rate of 4 gallons per 100 sq. ft.. Extend ply at least 12” up inclines. Apply in the direction of the slope of the valley, lapping 4” on ends.
- F. Inspect and mark flashings for deterioration, splits, punctures, separation from wall, etc. and repair or replace in accordance with specified procedures.
- G. Replace deteriorated, severely buckled, brittle or badly cracked base flashings determined to be non-repairable with Henry Specification #196.
- H. Clean thoroughly and prime all existing flashings and scuppers which are in good condition and seal with 6” yellow glass or polyester fabric and #167 Rubberized Flashing.
- I. Resecure any loose membrane flashing nailing top edge 8” o.c.
- J. Replace damaged or rusted metal flashings with new 24-gauge galvanized flashings.
- K. Inspect and mark roof membrane for defects including blisters, splits, holes in membrane and deterioration of roofing felts. Repair in accordance with specified procedures.
- L. Clean all drains and remove clamping rings, dried mastic and any other loose material. Prime with asphalt primer. Install a layer of #600 Ruftac 3 feet square at all drains set in a layer of #167 Rubberized Flashing.
- M. Lift all support modified mastic ports for conduits and other pipes. Replace all rotted wood pipe supports. Prime under such supports and install a layer of Ruftac embedded into a generous application of #167 Rubberized Flashing. Extend Ruftac 6” (152mm) beyond the support on all

- sides. Reset supports and resecure same as original. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- N. Three-Course all pipes and corners with yellow glass or polyester fabric and #167 Rubberized Flashing.
 - O. SHEET METAL
 - 1. Sheet metal is to be a minimum of 24 gauge galvanized steel.
 - 2. Prime all surfaces of sheet metal that will come in contact with roofing mastics, adhesives and coatings.
 - 3. Solder all joints. Corner flanges must be full corners.
 - 4. Provide metal clips one gauge heavier than coping, gravel stop or edge metal.
 - 5. Face of counter flashing and gravel stop or edge metal should be sufficient dimension to cover top of flashing or wood blocking. If necessary add sheet metal "skirt".
 - P. PIPE PENETRATIONS, ELECTRICAL JACKS, EQUIPMENT STANDS
 - 1. Install storm collars on all pipe penetrations and jacks.
 - Q. Replace deteriorated caulking. Remove old sealant. Wire brush and prime. Replace with compatible caulking.
 - R. WALK PADS
 - A. Install walk pads over finished roof. Space pads 2" apart to allow drainage.
 - B. Set walk pads in not less than 5 generous spot applications of the specified mastic.

3.02 GENERAL REPAIR REQUIREMENTS

- repair
- A. Thoroughly clean roof surface of dirt, debris, loose granules and contaminants at and around area extending 18" beyond perimeter of defect.
 - B. Prime area and allow to dry.
 - C. Extend repair a minimum of 6" beyond damage.
 - D. Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A brush coat of emulsion or aluminum coating is required over the Ruftac if it is to remain exposed.
 - D. Alternate to 3.02D: 5-course application of 2 layers of polyester, sandwiched between alternating layers of #289 ElastoCaulk. Increase number of layers of polyester and ElastoCaulk to match the number of damaged original roofing plies.
 - E. On insulated systems inspect for water infiltration. Remove wet or damaged insulation and replace with insulation of same type and thickness. Mechanically attach insulation or adhere with #111 InsulBond adhesive. Install new roof membrane in accordance with not less than Henry Specification H3-IG4C-MR.
 - F. Alternate repair methods require approval of Henry Company Technical Services.

3.03 MEMBRANE REPAIRS

- A. SMALL HOLES AND CRACKS
 - 1. See General Repair Requirements 3.02
 - 2. Apply #167 Rubberized Flashing 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2-4" beyond.
 - 3. For damaged areas larger than 1/4" repair with Ruftac or 5-course with #289 ElastoCaulk and Polyester
- B. BLISTERS
 - 1. See General Repair Requirements 3.02.
 - 2. Cut and remove blistered material until good adhesion of the membrane is found.

3. Install the same number of plies as are removed, but not less than two plies. Fill depression with sufficient number of plies of #604 set in #902 Permanent Bond Adhesive to make surface flush.

3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.
4. Alternate to 3.03B2 and 3. Make an X cut at blister, cutting only the layer(s) that is raised. Fold back plies and allow to dry. Apply #209 modified mastic between plies and press in place. Trim any overlap.

C. FISHMOUTHS, BUCKLES, WRINKLES, RIDGES

1. See General Repair Requirements 3.02.
2. Cut out defective material to an adhered area.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 modified mastic inches onto existing roof.

D. SPLITS

1. See General Repair Requirements 3.02.
2. Prepare surface area 24 inches on each side of split and 36 inches beyond end of the split.
3. Cut out loose felt from the split area.
4. Extend split 12 inches further in length by cutting through the membrane.
5. Make a 6-8 inch T-cut at both ends of the split.
6. Cut #606 80# granulated sheet 9 inches wide and sufficient length to cover the split. Install granule side down centered over the split.
7. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.

3.04 FLASHING REPAIR PROCEDURES

A. GENERAL REPAIR REQUIREMENTS

1. Thoroughly clean base flashing and adjacent roof surface of dirt, debris, loose granules or gravel, contaminates at and around repair area extending 18" beyond perimeter of defect.
2. Prime area and allow to dry completely.
3. Extend repair a minimum of 6" beyond damage.
4. Repairs that extend to top of base flashings are to be mechanically fastened and three-coursed.

B. LOOSE, WRINKLED, BUCKLED, CRACKED BASE FLASHINGS

1. See General Repair Requirements 3.04A
2. Install the same number of plies as are removed, but not less than two plies.
3. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
4. Repeat procedure extending second ply 3" beyond previous layer.
5. Fasten through tin discs top of the base flashing to the wall or curb 6" on center maximum.
6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.

C. OPEN LAPS

1. See General Repair Requirements 3.04A
2. Carefully cut out open lap or void at side lap or field membrane.
3. Remove debris, clean and prime.
4. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
5. Repeat procedure extending second ply 3" beyond previous layer.

6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- D. GAPS AT TOP OF BASE FLASHING
1. See General Repair Requirements 3.04A
 2. Make a vertical slit in the base flashing until a bonded area is found.
 3. Carefully pull back membrane and apply #167 Rubberized Flashing to wall or curb and press membrane back in place.
 4. Over repair, set one ply of Ruftac in #167 Rubberized Flashing extending 6" on either side of repair.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- E. LOOSE MECHANICAL ATTACHMENT
1. Remove loose fasteners
 2. Resecure base flashings through tin discs of a larger diameter or fastened to an adjacent location (new hole).
 3. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- F. DETERIORATED BASE FLASHINGS
- B. Remove and replace deteriorated base flashings.
 - C. Install Henry Specification #196.
- 3.05 BASE FLASHINGS – SPECIFICATION #196
- A. Prime concrete surface with specified primer and allow to dry.
 - B. Install #600 Ruftac in three foot lengths (cut cross machine or from end of roll) using salvage edge for laps. Prime where membrane will overlap.
 - C. Cut #600 Ruftac to required dimensions. Align sheet before removing release paper. Press in place. Lap ends 4". Set termination edges in #167 Rubberized Flashing. Extend onto field 4". Lightly prime exposed Ruftac surface and allow to dry.
 - D. On plywood walls nail #600 Ruftac 9 inches o.c. in both directions.
 - E. Flashing Cap. Cut #196 Polyester to extend not less than 2" above the Ruftac ply and 6" onto the field of the roof. Coat the surface to receive the polyester with #107 Asphalt Emulsion and embed the polyester. Lap ends 4". Stagger laps with layer below. Extend onto field 6".
 - F. Nail top of completed base flashings 8" o.c.
 - G. 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass.
 1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - D. Install counterflashing.
 - E. Apply specified surfacing and reflective coat.
 - F. Maximum allowable flashing height is 24 inches. For higher requirements install base flashings and complete wall with wall flashing.

3.06 WALL FLASHINGS

- A. Cover wall with one layer of polyester fabric embedded into 4 gallons per 100 sq. ft. of #197 asphalt emulsion. Extend wall flashing over base flashing 4 inches.
- B. Extend wall flashing over wall and down outside face 2 inches or 3-course top edge with specified mastic and #183 Yellow Glass.

3.07 MEMBRANE APPLICATION –Valleys, Waterways & Specification #H1-PE-MR

- A. All surfaces shall be well secured, firm, smooth and free from rough spots and sharp projections before roof application shall begin.
- B. Complete all repairs prior to application of membrane.
- C. Surface may be damp but must be free of free standing water.
- D. Over the prepared roof, apply a uniform layer of #197 Emulsion using a brush or roofing spray equipment at the rate of 4 gallons per 100 sq. ft. Immediately embed the fabric into the wet emulsion without wrinkles. Press fabric into the emulsion by a soft push broom or paint roller. Overlap preceding sheet and end laps 4 inches.
- E. Along perimeter install a half width of polyester followed by a full layer. At vertical transitions run material to the toe of the cant.

3.08 SURFACING –

- A. After the emulsion or repairs have cured, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Specification #H1-PE-MR or H-MR
 1. Cover prepared roof and flashing surfaces with not less than 9 gallons per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. of ¾" long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable.
 2. Spray emulsion in a pattern so that when system is dry, there are no voids or bridging of glass over any seam of the membrane. Finish to be 72 dry mils.
 - D. Specification #HMS-197/588 or #HMS-197/294-280
 1. Over the roof surface, apply a uniform layer of #197 asphalt emulsion using a brush or spray equipment at the rate of 3 gallons per 100 ft.
 2. Spray base flashings and other designated surfaces.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counterflashing.
- F. Spray base flashings and other designated surfaces.

3.09 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. See Site Work Description for specified reflective coating:

1. White Elastomeric Coating -Apply #280 White Elastomeric Roof Coating over a base coat of #294.

a. Apply #294 Premium Elastomeric Base Coat at a rate of 1-1/2 gallon/100 ft.².

b. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface

c. Apply #280 White Elastomeric Roof Coating at a rate of 2 gallon/100 ft.².

d. Apply base and top coat the same day. Allow to dry thoroughly between coats. Schedule work so second coat can dry before nightfall. Apply second coat at right angles to first coat

2. (Optional) - Apply #588 Aluminum Emulsion at a rate not less than 1½ gallons /100 ft.² in one coat. At non air-conditioned space only

C. Any areas that peel must be redone before the project will be considered complete.

D. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application. Repeat if necessary.

3.10 CLEAN-UP

A. Test all drains to confirm they are free flowing and clear of debris.

B. Clean gutters and downspouts as needed of all debris.

C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.

D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE MAINTAINED

NAME OF SCHOOL: Coronita ES – Portables
ADDRESS: 1757 Via Del Rio
Corona CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

ROOF PREPARATION

Power wash existing roof surface to remove dirt, debris, and any loose reflective coating to provide a clean and smooth roof deck.

Remove all edge metal. Cut back 12"

- a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush
- b. Replace with new 24 GA Galvanized 4" wide edge metal flashing set in #167 Rubberized Flashing.
- c. Install 12" Ruftac embedded into a generous application of #167 Rubberized Flashing

RECOAT SYSTEM

Apply one layer of polyester over existing roof, layer set in 4 gallons of #197 Asphalt Emulsion.

Apply Monolithic System (9 gallons of #197 Emulsion and 3lbs chopped fiberglass) as specified in master specifications.

Apply White Acrylic Reflective Coating to meet Title 24 requirements as specified in master specifications. (PG 280 White Elastomeric Reflective Coating over PG 294 Base Coat as specified in Master Specification.)

Install Ceramic granules into wet base coat at a rate of 20lbs per 100 sq. ft.

For Ten Year Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

SPECIAL CONDITIONS

Cut out blisters, wrinkles, etc., as specified in master specifications and cover with 2 layers of polyester each set in 4 gallons of undiluted #197 Asphalt Emulsion. Polyester patch to be 6" larger in all directions.

Over all added penetrations & flashings during modernization. Apply two layers of polyester set in 4 gallons of #197 Asphalt Emulsion.

Contractor must water test internal drains and notify owner's representative before roofing crew starts work or Contractor will be held responsible for plugged drains at completion of repairs and maintenance of existing roof eligible for a ten-year warranty extension.

Contractor replace any broken rings, missing bolts or clamps install new metal screens where any are missing.

Contractor to remove existing clamp ring. Clean, prime and apply 1 layer of 36"x 36" Ruftac set in #167 Rubberized Flashing. Re-set clamp ring.

Remove all existing pitch pans and install split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Install new lead flashing around pipe support on A/C screen.

Clean, prime and reseal all corners at curbs, base flashings, etc., with asphalt primer and #167 Rubberized Flashing.

Remove blocking under conduits and other pipes running across roof and replace with a minimum of 2"x4" block (must be redwood or pressure treated). Set blocks on top of extra layer of Ruftac. Ruftac must extend 6" beyond edge of blocks on all sides. Ruftac shall be set in a generous application of #167 Rubberized Flashing (not cold applied cement) prior to Monolithic System application. Do not nail through roof membrane

Contractor to install one layer of Ruftac (6" larger in all directions) under all wood blocks, sleepers, etc., where needed or missing.

Clean gutters prior to respray application.

Metal Edging: Cut out existing edge metal. Install new 24-gauge (low rise type) metal edging (1/4" maximum) with 4" roof flange, set in 1/8" bed of #167 Rubberized Flashing. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer apply 12 wide layer of Ruftac prior to Monolithic System.

Walk Pad: At A.C. units and roof hatches, install units of decktop where specified. Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3"x4" units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad. Then, turn over pad and set in place on top of reflective coating. Allow approximately 1" between each unit to allow for drainage. (Around 2 – Sides Only)

END THIS SECTION



**GUIDE: RESTORATION SPECIFICATION
FOR PORTABLES**

**TIM RUSSELL
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 CLARK AVE.
NORCO, CA 92860**

PROJECT SITES: Chavez Academy – Portables

ROOF MAINTENANCE

NAME OF SCHOOL: Chavez Academy
ADDRESS: 1150 Paseo Grande
Corona, CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof Maintenance System. Site Work Description is part of this specification. In event of conflict between Site Work Description and these standard requirements follow the Site Work Description. Work includes, but is not limited to:
1. Repair of existing system (See Site Work Description for additional requirements)
 - a. Repair of defects in the roof membrane including blisters, splits, fishmouths, and loose laps.
 - b. Repair or replacement of defects in the flashings at walls, roof penetrations, metal flanges, etc. including replacement of deteriorated cant strips, curbs, wood nailers, etc.
 - c. Replacement of deteriorated sheet metal to match existing as designated on job walk. (See Site Work Description)
 - d. Cleaning and resetting roof drains/scuppers as applicable.
 - e. Repair or replacement of defects in expansion joints with compatible material as applicable.
 - f. Removal of all debris from the roof.
 1. Resurface roof membrane and base and wall flashings (See Site Work Description for selected Spec #)
 - a. Henry Specification #H2-PE-MR
 2. Miscellaneous requirements including:
 - a. Wood blocking or Dura-block under pipe supports where missing or deteriorated
 - b. Install protective layer of Ruftac under unsecured wood blocking where missing or deteriorated.
 3. Unit Pricing (See Site Work Description if applicable)

1.01 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)

1.02 SYSTEM DESCRIPTIONS

Henry Specification #H2-PE-MR

Over prepared existing roof install 2 ply #196 Polyester Sheet adhered in #197 Asphalt Emulsion. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with Base Coat of #294 (grey) and Top Coat of #280 (white).

Specification System & Weights per 100 Sq. ft.	Dry Weights
Existing roof	TBD
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq. ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq. ft.	3 lbs.
#294 Base Coat – 1-1/2 Gallons per 100 sq. ft.	8 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 Top Coat – 2 Gallons per 100 sq. ft.	7 lbs.
Approximate Total Dry Weight	Existing roof + 112 lbs.

1.03 SUBMITTALS

- A. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- B. Complete materials list of all items to be furnished and installed under this Section.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications

- 1. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
- 2. Manufacturer must hold the original warranty.

E. Contractor Qualifications

- 1. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
- 2. Contractor must provide knowledgeable foreman who understands all aspects of the specification.

1.07 QUALITY ASSURANCE

A. Pre-Job Conference

- 1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
- 2. During the pre-job conference, attendees shall review the specifications to determine any potential

problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.

- B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.
- C. A copy of the specification is to be on the job site.

1.08 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

- 1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

- 1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area use in cold weather.
- 2. When ambient temperatures are below 40°F (4°C), materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

- 1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters.
- 2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.09 JOB CONDITIONS

A. Protection Requirements.

- 1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawn Walks, etc. in traffic areas.
- 2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
- 3. Lock valves on tankers when not attended.
- 4. Cover or arrange air intakes to be turned off during application of solvent-based materials.

B. Environmental Requirements.

- 1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
- 2. Never apply solvent-based adhesives or coatings to a wet surface.
- 3. Never apply water-based emulsions when the ambient temperature is below 50°F or will fall below 40°F before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.10 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for one year from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
4. MANUFACTURER'S WARRANTY
5. Furnish Manufacturer's 10 -year Extension Warranty for material and workmanship.

1.11 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo CA 90245. (323) 583-5000. Local Representative: Gideon Brown

2.02 PRODUCT DELIVERY

1. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. #197 Asphalt Emulsion – meeting following requirements:

ASTM D-1227 Type III, Class I

Color. Black

Viscosity @ 77°F 8000-15000 cps (ASTM D2196)

Density @ 77°F 8.7 lbs./gal

Non-volatile Matter by Weight 47-53% (ASTM D2939)

Pliability @ 32°F No cracking or separating (ASTM D2939)

2. #196 Polyester meeting following requirements:

Weight. 2.9 oz./sq. yd.

Elongation 25.8% (ASTM D-1682)

Trapezoidal Tear Strength 14.2 lbs. (ASTM D-1117)

Tensile 41 lbs. (ASTM D-1682)

Mullen Burst 127 lbs. (ASTM D-3786)

REFLECTIVE SURFACING

- A. Premium Elastomeric Top Coating: #280 White – ASTM D6083
- B. Premium Elastomeric Base Coat: #294
- C. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface.
- D. #588 Aluminum Emulsion-

MISCELLANEOUS PRODUCTS

1. #103 VOC Compliant Primer
2. #189 Glass Roving
- E. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane

- F. #167 Rubberized Flashing
- G. #289 ElastoCaulk
- H. #183 Reinforcing Glass – Yellow
- I. #176 Pond Patch
- J. Walk pads approved by manufacturer
- K. Approved mechanical fasteners
- L. Termination bar
- M. Wolmanized wood nailers
- N. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼” rise. 4” minimum width
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
- O. Lead Flashings to be minimum 4 oz. – factory or field soldered
- P. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. General Requirements and Roof Repair Requirements are part of these Specifications.
- B. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.
- C. Remove all edge metal. Cut back 12”
 - a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16” the other 20” 604 to make surface flush
 - b. Replace with new 24 GA Galvanized 4” wide edge metal flashing set in #167 Rubberized Flashing.
 - c. Install 12” Ruftac embedded into a generous application of #167 Rubberized Flashing
- D. Clean the existing roof thoroughly. Power wash or vacuum low spots and valleys. Prime valleys and ponded areas where dirt has collected including areas around all pipes, skylights, vents and other projections. Prime with #197 asphalt emulsion diluted 5 parts emulsion to one part water.
- E. Reinforce all valleys with an extra layer of #196 polyester embedded in #197 asphalt emulsion at rate of 4 gallons per 100 sq. ft.. Extend ply at least 12” up inclines. Apply in the direction of the slope of the valley, lapping 4” on ends.
- F. Inspect and mark flashings for deterioration, splits, punctures, separation from wall, etc. and repair or replace in accordance with specified procedures.
- G. Replace deteriorated, severely buckled, brittle or badly cracked base flashings determined to be non-repairable with Henry Specification #196.
- H. Clean thoroughly and prime all existing flashings and scuppers which are in good condition and seal with 6” yellow glass or polyester fabric and #167 Rubberized Flashing.
- I. Resecure any loose membrane flashing nailing top edge 8” o.c.
- J. Replace damaged or rusted metal flashings with new 24-gauge galvanized flashings.
- K. Inspect and mark roof membrane for defects including blisters, splits, holes in membrane and deterioration of roofing felts. Repair in accordance with specified procedures.
- L. Clean all drains and remove clamping rings, dried mastic and any other loose material. Prime with asphalt primer. Install a layer of #600 Ruftac 3 feet square at all drains set in a layer of #167 Rubberized Flashing.

- M. Lift all support modified mastic ports for conduits and other pipes. Replace all rotted wood pipe supports. Prime under such supports and install a layer of Ruftac embedded into a generous application of #167 Rubberized Flashing. Extend Ruftac 6" (152mm) beyond the support on all sides. Reset supports and resecure same as original. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- N. Three-Course all pipes and corners with yellow glass or polyester fabric and #167 Rubberized Flashing.
- O. SHEET METAL
 - 1. Sheet metal is to be a minimum of 24 gauge galvanized steel.
 - 2. Prime all surfaces of sheet metal that will come in contact with roofing mastics, adhesives and coatings.
 - 3. Solder all joints. Corner flanges must be full corners.
 - 4. Provide metal clips one gauge heavier than coping, gravel stop or edge metal.
 - 5. Face of counter flashing and gravel stop or edge metal should be sufficient dimension to cover top of flashing or wood blocking. If necessary add sheet metal "skirt".
- P. PIPE PENETRATIONS, ELECTRICAL JACKS, EQUIPMENT STANDS
 - 1. Install storm collars on all pipe penetrations and jacks.
- Q. Replace deteriorated caulking. Remove old sealant. Wire brush and prime. Replace with compatible caulking.
- R. WALK PADS
 - A. Install walk pads over finished roof. Space pads 2" apart to allow drainage.
 - B. Set walk pads in not less than 5 generous spot applications of the specified mastic.

3.02 GENERAL REPAIR REQUIREMENTS

- repair
- A. Thoroughly clean roof surface of dirt, debris, loose granules and contaminates at and around area extending 18" beyond perimeter of defect.
 - B. Prime area and allow to dry.
 - C. Extend repair a minimum of 6" beyond damage.
 - D. Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A brush coat of emulsion or aluminum coating is required over the Ruftac if it is to remain exposed.
 - D. Alternate to 3.02D: 5-course application of 2 layers of polyester, sandwiched between alternating layers of #289 ElastoCaulk. Increase number of layers of polyester and ElastoCaulk to match the number of damaged original roofing plies.
 - E. On insulated systems inspect for water infiltration. Remove wet or damaged insulation and replace with insulation of same type and thickness. Mechanically attach insulation or adhere with #111 InsulBond adhesive. Install new roof membrane in accordance with not less than Henry Specification H3-IG4C-MR.
 - F. Alternate repair methods require approval of Henry Company Technical Services.

3.03 MEMBRANE REPAIRS

- A. SMALL HOLES AND CRACKS
 - 1. See General Repair Requirements 3.02
 - 2. Apply #167 Rubberized Flashing 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2-4" beyond.
 - 3. For damaged areas larger than 1/4" repair with Ruftac or 5-course with #289 ElastoCaulk and Polyester

B. BLISTERS

1. See General Repair Requirements 3.02.
2. Cut and remove blistered material until good adhesion of the membrane is found.
3. Install the same number of plies as are removed, but not less than two plies. Fill depression with sufficient number of plies of #604 set in #902 Permanent Bond Adhesive to make surface flush.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.
4. Alternate to 3.03B2 and 3. Make an X cut at blister, cutting only the layer(s) that is raised. Fold back plies and allow to dry. Apply #209 modified mastic between plies and press in place. Trim any overlap.

C. FISHMOUTHS, BUCKLES, WRINKLES, RIDGES

1. See General Repair Requirements 3.02.
2. Cut out defective material to an adhered area.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 modified mastic inches onto existing roof.

D. SPLITS

1. See General Repair Requirements 3.02.
2. Prepare surface area 24 inches on each side of split and 36 inches beyond end of the split.
3. Cut out loose felt from the split area.
4. Extend split 12 inches further in length by cutting through the membrane.
5. Make a 6-8 inch T-cut at both ends of the split.
6. Cut #606 80# granulated sheet 9 inches wide and sufficient length to cover the split. Install granule side down centered over the split.
7. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.

3.04 FLASHING REPAIR PROCEDURES

A. GENERAL REPAIR REQUIREMENTS

1. Thoroughly clean base flashing and adjacent roof surface of dirt, debris, loose granules or gravel, contaminates at and around repair area extending 18" beyond perimeter of defect.
2. Prime area and allow to dry completely.
3. Extend repair a minimum of 6" beyond damage.
4. Repairs that extend to top of base flashings are to be mechanically fastened and three-coursed.

B. LOOSE, WRINKLED, BUCKLED, CRACKED BASE FLASHINGS

1. See General Repair Requirements 3.04A
2. Install the same number of plies as are removed, but not less than two plies.
3. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
4. Repeat procedure extending second ply 3" beyond previous layer.
5. Fasten through tin discs top of the base flashing to the wall or curb 6" on center maximum.
6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.

C. OPEN LAPS

1. See General Repair Requirements 3.04A
2. Carefully cut out open lap or void at side lap or field membrane.
3. Remove debris, clean and prime.

4. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- D. GAPS AT TOP OF BASE FLASHING
1. See General Repair Requirements 3.04A
 2. Make a vertical slit in the base flashing until a bonded area is found.
 3. Carefully pull back membrane and apply #167 Rubberized Flashing to wall or curb and press membrane back in place.
 4. Over repair, set one ply of Ruftac in #167 Rubberized Flashing extending 6" on either side of repair.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- E. LOOSE MECHANICAL ATTACHMENT
1. Remove loose fasteners
 2. Resecure base flashings through tin discs of a larger diameter or fastened to an adjacent location (new hole).
 3. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- F. DETERIORATED BASE FLASHINGS
- B. Remove and replace deteriorated base flashings.
 - C. Install Henry Specification #196.
- 3.05 BASE FLASHINGS – SPECIFICATION #196
- A. Prime concrete surface with specified primer and allow to dry.
 - B. Install #600 Ruftac in three foot lengths (cut cross machine or from end of roll) using salvage edge for laps. Prime where membrane will overlap.
 - C. Cut #600 Ruftac to required dimensions. Align sheet before removing release paper. Press in place. Lap ends 4". Set termination edges in #167 Rubberized Flashing. Extend onto field 4". Lightly prime exposed Ruftac surface and allow to dry.
 - D. On plywood walls nail #600 Ruftac 9 inches o.c. in both directions.
 - E. Flashing Cap. Cut #196 Polyester to extend not less than 2" above the Ruftac ply and 6" onto the field of the roof. Coat the surface to receive the polyester with #107 Asphalt Emulsion and embed the polyester. Lap ends 4". Stagger laps with layer below. Extend onto field 6".
 - F. Nail top of completed base flashings 8" o.c.
 - G. 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass.
 1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - D. Install counterflashing.
 - E. Apply specified surfacing and reflective coat.
 - F. Maximum allowable flashing height is 24 inches. For higher requirements install base flashings and complete wall with wall flashing.

3.06 WALL FLASHINGS

- A. Cover wall with one layer of polyester fabric embedded into 4 gallons per 100 sq. ft. of #197 asphalt emulsion. Extend wall flashing over base flashing 4 inches.
- B. Extend wall flashing over wall and down outside face 2 inches or 3-course top edge with specified mastic and #183 Yellow Glass.

3.07 MEMBRANE APPLICATION –Valleys, Waterways & Specification #H1-PE-MR

- A. All surfaces shall be well secured, firm, smooth and free from rough spots and sharp projections before roof application shall begin.
- B. Complete all repairs prior to application of membrane.
- C. Surface may be damp but must be free of free standing water.
- D. Over the prepared roof, apply a uniform layer of #197 Emulsion using a brush or roofing spray equipment at the rate of 4 gallons per 100 sq. ft. Immediately embed the fabric into the wet emulsion without wrinkles. Press fabric into the emulsion by a soft push broom or paint roller. Overlap preceding sheet and end laps 4 inches.
- E. Along perimeter install a half width of polyester followed by a full layer. At vertical transitions run material to the toe of the cant.

3.08 SURFACING –

- A. After the emulsion or repairs have cured, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Specification #H1-PE-MR or H-MR
 - 1. Cover prepared roof and flashing surfaces with not less than 9 gallons per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. of ¾" long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable.
 - 2. Spray emulsion in a pattern so that when system is dry, there are no voids or bridging of glass over any seam of the membrane. Finish to be 72 dry mils.
- D. Specification #HMS-197/588 or #HMS-197/294-280
 - 1. Over the roof surface, apply a uniform layer of #197 asphalt emulsion using a brush or spray equipment at the rate of 3 gallons per 100 ft.
 - 2. Spray base flashings and other designated surfaces.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counterflashing.
- F. Spray base flashings and other designated surfaces.

3.09 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be

coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.

- B. See Site Work Description for specified reflective coating:
 - 1. White Elastomeric Coating -Apply #280 White Elastomeric Roof Coating over a base coat of #294.
 - a. Apply #294 Premium Elastomeric Base Coat at a rate of 1-1/2 gallon/100 ft.².
 - b. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface
 - c. Apply #280 White Elastomeric Roof Coating at a rate of 2 gallon/100 ft.².
 - d. Apply base and top coat the same day. Allow to dry thoroughly between coats. Schedule work so second coat can dry before nightfall. Apply second coat at right angles to first coat
 - 2. (Optional) - Apply #588 Aluminum Emulsion at a rate not less than 1½ gallons /100 ft.² in one coat. At non air-conditioned space only
- C. Any areas that peel must be redone before the project will be considered complete.
- D. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application. Repeat if necessary.

3.10 CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE MAINTAINED

NAME OF SCHOOL: Chavez IS
ADDRESS: 1150 Paseo Grande
Corona, CA 92882

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

ROOF PREPARATION

Power wash existing roof surface to remove dirt, debris, and any loose reflective coating to provide a clean and smooth roof deck.

Remove all edge metal. Cut back 12"

- a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush
- b. Replace with new 24 GA Galvanized 4" wide edge metal flashing set in #167 Rubberized Flashing.
- c. Install 12" Ruftac embedded into a generous application of #167 Rubberized Flashing

RECOAT SYSTEM

Apply one layer of polyester over existing roof, layer set in 4 gallons of #197 Asphalt Emulsion.

Apply Monolithic System (9 gallons of #197 Emulsion and 3lbs chopped fiberglass) as specified in master specifications.

Apply White Acrylic Reflective Coating to meet Title 24 requirements as specified in master specifications. (PG 280 White Elastomeric Reflective Coating over PG 294 Base Coat as specified in Master Specification.)

Install Ceramic granules into wet base coat at a rate of 20lbs per 100 sq. ft.

For Ten Year Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

SPECIAL CONDITIONS

Cut out blisters, wrinkles, etc., as specified in master specifications and cover with 2 layers of polyester each set in 4 gallons of undiluted #197 Asphalt Emulsion. Polyester patch to be 6" larger in all directions.

Over all added penetrations & flashings during modernization. Apply two layers of polyester set in 4 gallons of #197 Asphalt Emulsion.

Contractor must water test internal drains and notify owner's representative before roofing crew starts work or Contractor will be held responsible for plugged drains at completion of repairs and maintenance of existing roof eligible for a ten-year warranty extension.

Contractor replace any broken rings, missing bolts or clamps install new metal screens where any are missing.

Contractor to remove existing clamp ring. Clean, prime and apply 1 layer of 36"x 36" Ruftac set in #167 Rubberized Flashing. Re-set clamp ring.

Remove all existing pitch pans and install split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Install new lead flashing around pipe support on A/C screen.

Clean, prime and reseal all corners at curbs, base flashings, etc., with asphalt primer and #167 Rubberized Flashing.

Remove blocking under conduits and other pipes running across roof and replace with a minimum of 2"x4" block (must be redwood or pressure treated). Set blocks on top of extra layer of Ruftac. Ruftac must extend 6" beyond edge of blocks on all sides. Ruftac shall be set in a generous application of #167 Rubberized Flashing (not cold applied cement) prior to Monolithic System application. Do not nail through roof membrane

Contractor to install one layer of Ruftac (6" larger in all directions) under all wood blocks, sleepers, etc., where needed or missing.

Clean gutters prior to respray application.

Metal Edging: Cut out existing edge metal. Install new 24-gauge (low rise type) metal edging (1/4" maximum) with 4" roof flange, set in 1/8" bed of #167 Rubberized Flashing. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer apply 12 wide layer of Ruftac prior to Monolithic System.

Walk Pad: At A.C. units and roof hatches, install units of decktop where specified. Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3"x4" units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad. Then, turn over pad and set in place on top of reflective coating. Allow approximately 1" between each unit to allow for drainage. (Around 2 – Sides Only)

END THIS SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Centennial HS – 800 Building

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Centennial High School – 800 Building
1820 Rimpau Ave.
Corona CA

AREA TO BE RE-ROOFED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
*Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	223 lbs.

*To be used over non-airconditioned spaces only.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.

2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion

7. Walk pads
8. Approved mechanical fasteners
9. Wolmanized wood nailers
10. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum 1/4" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
12. Josam or Smith drains and overflows
13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or renail roof sheathing where necessary. Cover gaps of 1/2" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.

- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
1. Set flange over base plies set in #167 Rubberized Flashing.
 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 4. Ruftac is an acceptable alternative to I.2.
 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.
- (Note): Broom over all applied membranes at the end of the day.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck 1/2 inch.
- D. Specification H3-NGC-MR
 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".

- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.61/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Centennial High School
1820 Rimpau Ave.
Corona CA

AREA TO BE RE-ROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor **MUST** notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:**
1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION



**GUIDE: RESTORATION SPECIFICATION
FOR PORTABLES**

**TIM RUSSELL
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 CLARK AVE.
NORCO, CA 92860**

PROJECT SITES: Home Gardens Academy – Portables

ROOF MAINTENANCE

NAME OF SCHOOL: Home Gardens Academy – Portables
ADDRESS: 13550 Tolton Ave
Corona CA 92879

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

PART 1 – GENERAL

1.01 SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof Maintenance System. Site Work Description is part of this specification. In event of conflict between Site Work Description and these standard requirements follow the Site Work Description. Work includes, but is not limited to:
 - 1. Repair of existing system (See Site Work Description for additional requirements)
 - a. Repair of defects in the roof membrane including blisters, splits, fishmouths, and loose laps.
 - b. Repair or replacement of defects in the flashings at walls, roof penetrations, metal flanges, etc. including replacement of deteriorated cant strips, curbs, wood nailers, etc.
 - c. Replacement of deteriorated sheet metal to match existing as designated on job walk. (See Site Work Description)
 - d. Cleaning and resetting roof drains/scuppers as applicable.
 - e. Repair or replacement of defects in expansion joints with compatible material as applicable.
 - f. Removal of all debris from the roof.
 - 1. Resurface roof membrane and base and wall flashings (See Site Work Description for selected Spec #)
 - a. Henry Specification #H2-PE-MR
 - 2. Miscellaneous requirements including:
 - a. Wood blocking or Dura-block under pipe supports where missing or deteriorated
 - b. Install protective layer of Ruftac under unsecured wood blocking where missing or deteriorated.
 - 3. Unit Pricing (See Site Work Description if applicable)

1.01 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)

1.02 SYSTEM DESCRIPTIONS

A. **Henry Specification #H2-PE-MR**

Over prepared existing roof install 2 ply #196 Polyester Sheet adhered in #197 Asphalt Emulsion. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with Base Coat of #294 (grey) and Top Coat of #280 (white).

Specification System & Weights per 100 Sq. ft.	Dry Weights
Existing roof	TBD
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Asphalt Emulsion – 4 gallons/100 sq. ft.	16 lbs.
#196 Polyester	3 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq. ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq. ft.	3 lbs.
#294 Base Coat – 1-1/2 Gallons per 100 sq. ft.	8 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 Top Coat – 2 Gallons per 100 sq. ft.	7 lbs.
Approximate Total Dry Weight	Existing roof + 112 lbs.

1.03 SUBMITTALS

- A. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- B. Complete materials list of all items to be furnished and installed under this Section.

1.04 QUALIFICATIONS

A. Manufacturer Qualifications

- 1. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
- 2. Manufacturer must hold the original warranty.

E. Contractor Qualifications

- 1. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
- 2. Contractor must provide knowledgeable foreman who understands all aspects of the specification.

1.07 QUALITY ASSURANCE

A. Pre-Job Conference

- 1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
- 2. During the pre-job conference, attendees shall review the specifications to determine any potential

- problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
- B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.
 - C. A copy of the specification is to be on the job site.

1.08 DELIVERY, STORAGE & HANDLING

- A. Delivery Requirements
 - 1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.
- B. Storage Requirements
 - 1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
 - 2. When ambient temperatures are below 40°F (4°C), materials must be stored in protected or heated areas and brought to the roof as needed for application.
- C. Handling Requirements
 - 1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters.
 - 2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.09 JOB CONDITIONS

- A. Protection Requirements.
 - 1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawn Walks, etc. in traffic areas.
 - 2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
 - 3. Lock valves on tankers when not attended.
 - 4. Cover or arrange air intakes to be turned off during application of solvent-based materials.
- B. Environmental Requirements.
 - 1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
 - 2. Never apply solvent-based adhesives or coatings to a wet surface.
 - 3. Never apply water-based emulsions when the ambient temperature is below 50°F or will fall below 40°F before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.
 - 4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.10 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for one year from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.
4. MANUFACTURER'S WARRANTY
5. Furnish Manufacturer's 10 -year Extension Warranty for material and workmanship.

1.11 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo CA 90245. (323) 583-5000. Local Representative: Gideon Brown

2.02 PRODUCT DELIVERY

1. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

2.03 MATERIALS

- A. #197 Asphalt Emulsion – meeting following requirements:

ASTM D-1227 Type III, Class I

Color. Black

Viscosity @ 77°F 8000-15000 cps (ASTM D2196)

Density @ 77°F 8.7 lbs./gal

Non-volatile Matter by Weight 47-53% (ASTM D2939)

Pliability @ 32°F No cracking or separating (ASTM D2939)

2. #196 Polyester meeting following requirements:

Weight. 2.9 oz./sq. yd.

Elongation 25.8% (ASTM D-1682)

Trapezoidal Tear Strength 14.2 lbs. (ASTM D-1117)

Tensile 41 lbs. (ASTM D-1682)

Mullen Burst 127 lbs. (ASTM D-3786)

REFLECTIVE SURFACING

- A. Premium Elastomeric Top Coating: #280 White – ASTM D6083
- B. Premium Elastomeric Base Coat: #294
- C. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface.
- D. #588 Aluminum Emulsion-

MISCELLANEOUS PRODUCTS

1. #103 VOC Compliant Primer
2. #189 Glass Roving
- E. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
- F. #167 Rubberized Flashing
- G. #289 ElastoCaulk

- H. #183 Reinforcing Glass – Yellow
- I. #176 Pond Patch
- J. Walk pads approved by manufacturer
- K. Approved mechanical fasteners
- L. Termination bar
- M. Wolmanized wood nailers
- N. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼” rise. 4” minimum width
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
- O. Lead Flashings to be minimum 4 oz. – factory or field soldered
- P. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

3.01 GENERAL

- A. General Requirements and Roof Repair Requirements are part of these Specifications.
- B. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.
- C. Remove all edge metal. Cut back 12”
 - a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16” the other 20” 604 to make surface flush
 - b. Replace with new 24 GA Galvanized 4” wide edge metal flashing set in #167 Rubberized Flashing.
 - c. Install 12” Ruftac embedded into a generous application of #167 Rubberized Flashing
- D. Clean the existing roof thoroughly. Power wash or vacuum low spots and valleys. Prime valleys and ponded areas where dirt has collected including areas around all pipes, skylights, vents and other projections. Prime with #197 asphalt emulsion diluted 5 parts emulsion to one part water.
- E. Reinforce all valleys with an extra layer of #196 polyester embedded in #197 asphalt emulsion at rate of 4 gallons per 100 sq. ft.. Extend ply at least 12” up inclines. Apply in the direction of the slope of the valley, lapping 4” on ends.
- F. Inspect and mark flashings for deterioration, splits, punctures, separation from wall, etc. and repair or replace in accordance with specified procedures.
- G. Replace deteriorated, severely buckled, brittle or badly cracked base flashings determined to be non-repairable with Henry Specification #196.
- H. Clean thoroughly and prime all existing flashings and scuppers which are in good condition and seal with 6” yellow glass or polyester fabric and #167 Rubberized Flashing.
- I. Resecure any loose membrane flashing nailing top edge 8” o.c.
- J. Replace damaged or rusted metal flashings with new 24-gauge galvanized flashings.
- K. Inspect and mark roof membrane for defects including blisters, splits, holes in membrane and deterioration of roofing felts. Repair in accordance with specified procedures.
- L. Clean all drains and remove clamping rings, dried mastic and any other loose material. Prime with asphalt primer. Install a layer of #600 Ruftac 3 feet square at all drains set in a layer of #167 Rubberized Flashing.
- M. Lift all support modified mastic ports for conduits and other pipes. Replace all rotted wood pipe supports. Prime under such supports and install a layer of Ruftac embedded into a generous application of #167 Rubberized Flashing. Extend Ruftac 6” (152mm) beyond the support on all

- sides. Reset supports and resecure same as original. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.
- N. Three-Course all pipes and corners with yellow glass or polyester fabric and #167 Rubberized Flashing.
 - O. SHEET METAL
 - 1. Sheet metal is to be a minimum of 24 gauge galvanized steel.
 - 2. Prime all surfaces of sheet metal that will come in contact with roofing mastics, adhesives and coatings.
 - 3. Solder all joints. Corner flanges must be full corners.
 - 4. Provide metal clips one gauge heavier than coping, gravel stop or edge metal.
 - 5. Face of counter flashing and gravel stop or edge metal should be sufficient dimension to cover top of flashing or wood blocking. If necessary add sheet metal "skirt".
 - P. PIPE PENETRATIONS, ELECTRICAL JACKS, EQUIPMENT STANDS
 - 1. Install storm collars on all pipe penetrations and jacks.
 - Q. Replace deteriorated caulking. Remove old sealant. Wire brush and prime. Replace with compatible caulking.
 - R. WALK PADS
 - A. Install walk pads over finished roof. Space pads 2" apart to allow drainage.
 - B. Set walk pads in not less than 5 generous spot applications of the specified mastic.

3.02 GENERAL REPAIR REQUIREMENTS

- repair
- A. Thoroughly clean roof surface of dirt, debris, loose granules and contaminants at and around area extending 18" beyond perimeter of defect.
 - B. Prime area and allow to dry.
 - C. Extend repair a minimum of 6" beyond damage.
 - D. Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A brush coat of emulsion or aluminum coating is required over the Ruftac if it is to remain exposed.
 - D. Alternate to 3.02D: 5-course application of 2 layers of polyester, sandwiched between alternating layers of #289 ElastoCaulk. Increase number of layers of polyester and ElastoCaulk to match the number of damaged original roofing plies.
 - E. On insulated systems inspect for water infiltration. Remove wet or damaged insulation and replace with insulation of same type and thickness. Mechanically attach insulation or adhere with #111 InsulBond adhesive. Install new roof membrane in accordance with not less than Henry Specification H3-IG4C-MR.
 - F. Alternate repair methods require approval of Henry Company Technical Services.

3.03 MEMBRANE REPAIRS

- A. SMALL HOLES AND CRACKS
 - 1. See General Repair Requirements 3.02
 - 2. Apply #167 Rubberized Flashing 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2-4" beyond.
 - 3. For damaged areas larger than 1/4" repair with Ruftac or 5-course with #289 ElastoCaulk and Polyester
- B. BLISTERS
 - 1. See General Repair Requirements 3.02.
 - 2. Cut and remove blistered material until good adhesion of the membrane is found.

3. Install the same number of plies as are removed, but not less than two plies. Fill depression with sufficient number of plies of #604 set in #902 Permanent Bond Adhesive to make surface flush.

3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.
4. Alternate to 3.03B2 and 3. Make an X cut at blister, cutting only the layer(s) that is raised. Fold back plies and allow to dry. Apply #209 modified mastic between plies and press in place. Trim any overlap.

C. FISHMOUTHS, BUCKLES, WRINKLES, RIDGES

1. See General Repair Requirements 3.02.
2. Cut out defective material to an adhered area.
3. Cover with Ruftac set in #167 Rubberized Flashing extending 6 modified mastic inches onto existing roof.

D. SPLITS

1. See General Repair Requirements 3.02.
2. Prepare surface area 24 inches on each side of split and 36 inches beyond end of the split.
3. Cut out loose felt from the split area.
4. Extend split 12 inches further in length by cutting through the membrane.
5. Make a 6-8 inch T-cut at both ends of the split.
6. Cut #606 80# granulated sheet 9 inches wide and sufficient length to cover the split. Install granule side down centered over the split.
7. Cover with Ruftac set in #167 Rubberized Flashing extending 6 inches onto existing roof.

3.04 FLASHING REPAIR PROCEDURES

A. GENERAL REPAIR REQUIREMENTS

1. Thoroughly clean base flashing and adjacent roof surface of dirt, debris, loose granules or gravel, contaminates at and around repair area extending 18" beyond perimeter of defect.
2. Prime area and allow to dry completely.
3. Extend repair a minimum of 6" beyond damage.
4. Repairs that extend to top of base flashings are to be mechanically fastened and three-coursed.

B. LOOSE, WRINKLED, BUCKLED, CRACKED BASE FLASHINGS

1. See General Repair Requirements 3.04A
2. Install the same number of plies as are removed, but not less than two plies.
3. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
4. Repeat procedure extending second ply 3" beyond previous layer.
5. Fasten through tin discs top of the base flashing to the wall or curb 6" on center maximum.
6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.

C. OPEN LAPS

1. See General Repair Requirements 3.04A
2. Carefully cut out open lap or void at side lap or field membrane.
3. Remove debris, clean and prime.
4. Set one ply of Ruftac in #167 Rubberized Flashing extending 6" beyond damage.
5. Repeat procedure extending second ply 3" beyond previous layer.

6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- D. GAPS AT TOP OF BASE FLASHING
1. See General Repair Requirements 3.04A
 2. Make a vertical slit in the base flashing until a bonded area is found.
 3. Carefully pull back membrane and apply #167 Rubberized Flashing to wall or curb and press membrane back in place.
 4. Over repair, set one ply of Ruftac in #167 Rubberized Flashing extending 6" on either side of repair.
 5. Repeat procedure extending second ply 3" beyond previous layer.
 6. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- E. LOOSE MECHANICAL ATTACHMENT
1. Remove loose fasteners
 2. Resecure base flashings through tin discs of a larger diameter or fastened to an adjacent location (new hole).
 3. Three-course fasteners and termination edge of base flashing with specified mastic and #183 reinforcement fabric.
- F. DETERIORATED BASE FLASHINGS
- B. Remove and replace deteriorated base flashings.
 - C. Install Henry Specification #196.
- 3.05 BASE FLASHINGS – SPECIFICATION #196
- A. Prime concrete surface with specified primer and allow to dry.
 - B. Install #600 Ruftac in three foot lengths (cut cross machine or from end of roll) using salvage edge for laps. Prime where membrane will overlap.
 - C. Cut #600 Ruftac to required dimensions. Align sheet before removing release paper. Press in place. Lap ends 4". Set termination edges in #167 Rubberized Flashing. Extend onto field 4". Lightly prime exposed Ruftac surface and allow to dry.
 - D. On plywood walls nail #600 Ruftac 9 inches o.c. in both directions.
 - E. Flashing Cap. Cut #196 Polyester to extend not less than 2" above the Ruftac ply and 6" onto the field of the roof. Coat the surface to receive the polyester with #107 Asphalt Emulsion and embed the polyester. Lap ends 4". Stagger laps with layer below. Extend onto field 6".
 - F. Nail top of completed base flashings 8" o.c.
 - G. 3-course top edge with #167 Rubberized Flashing and #183 Yellow Glass.
 1. Prime wall surface at least 3" above termination edge of the base flashing.
 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - D. Install counterflashing.
 - E. Apply specified surfacing and reflective coat.
 - F. Maximum allowable flashing height is 24 inches. For higher requirements install base flashings and complete wall with wall flashing.

3.06 WALL FLASHINGS

- A. Cover wall with one layer of polyester fabric embedded into 4 gallons per 100 sq. ft. of #197 asphalt emulsion. Extend wall flashing over base flashing 4 inches.
- B. Extend wall flashing over wall and down outside face 2 inches or 3-course top edge with specified mastic and #183 Yellow Glass.

3.07 MEMBRANE APPLICATION –Valleys, Waterways & Specification #H1-PE-MR

- A. All surfaces shall be well secured, firm, smooth and free from rough spots and sharp projections before roof application shall begin.
- B. Complete all repairs prior to application of membrane.
- C. Surface may be damp but must be free of free standing water.
- D. Over the prepared roof, apply a uniform layer of #197 Emulsion using a brush or roofing spray equipment at the rate of 4 gallons per 100 sq. ft. Immediately embed the fabric into the wet emulsion without wrinkles. Press fabric into the emulsion by a soft push broom or paint roller. Overlap preceding sheet and end laps 4 inches.
- E. Along perimeter install a half width of polyester followed by a full layer. At vertical transitions run material to the toe of the cant.

3.08 SURFACING –

- A. After the emulsion or repairs have cured, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Specification #H1-PE-MR or H-MR
 - 1. Cover prepared roof and flashing surfaces with not less than 9 gallons per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. of ¾" long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable.
 - 2. Spray emulsion in a pattern so that when system is dry, there are no voids or bridging of glass over any seam of the membrane. Finish to be 72 dry mils.
- D. Specification #HMS-197/588 or #HMS-197/294-280
 - 1. Over the roof surface, apply a uniform layer of #197 asphalt emulsion using a brush or spray equipment at the rate of 3 gallons per 100 ft.
 - 2. Spray base flashings and other designated surfaces.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counterflashing.
- F. Spray base flashings and other designated surfaces.

3.09 REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. See Site Work Description for specified reflective coating:

1. White Elastomeric Coating -Apply #280 White Elastomeric Roof Coating over a base coat of #294.

a. Apply #294 Premium Elastomeric Base Coat at a rate of 1-1/2 gallon/100 ft.².

b. Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface

c. Apply #280 White Elastomeric Roof Coating at a rate of 2 gallon/100 ft.².

d. Apply base and top coat the same day. Allow to dry thoroughly between coats. Schedule work so second coat can dry before nightfall. Apply second coat at right angles to first coat

2. (Optional) - Apply #588 Aluminum Emulsion at a rate not less than 1½ gallons /100 ft.² in one coat. At non air-conditioned space only

C. Any areas that peel must be redone before the project will be considered complete.

D. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application. Repeat if necessary.

3.10 CLEAN-UP

A. Test all drains to confirm they are free flowing and clear of debris.

B. Clean gutters and downspouts as needed of all debris.

C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.

D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE MAINTAINED

NAME OF SCHOOL: Home Gardens Academy – Portables
ADDRESS: 13550 Tolton Ave
Corona CA 92879

AREA TO BE MAINTAINED: Portables as per drawing and/or jobwalk.

ROOF PREPARATION

Power wash existing roof surface to remove dirt, debris, and any loose reflective coating to provide a clean and smooth roof deck.

Remove all edge metal. Cut back 12"

- a. Tie-in with 2 layers of 604 set in 902 Adhesive. One 16" the other 20" 604 to make surface flush
- b. Replace with new 24 GA Galvanized 4" wide edge metal flashing set in #167 Rubberized Flashing.
- c. Install 12" Ruftac embedded into a generous application of #167 Rubberized Flashing

RECOAT SYSTEM

Apply one layer of polyester over existing roof, layer set in 4 gallons of #197 Asphalt Emulsion.

Apply Monolithic System (9 gallons of #197 Emulsion and 3lbs chopped fiberglass) as specified in master specifications.

Apply White Acrylic Reflective Coating to meet Title 24 requirements as specified in master specifications. (PG 280 White Elastomeric Reflective Coating over PG 294 Base Coat as specified in Master Specification.)

Install Ceramic granules into wet base coat at a rate of 20lbs per 100 sq. ft.

For Ten Year Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

SPECIAL CONDITIONS

Cut out blisters, wrinkles, etc., as specified in master specifications and cover with 2 layers of polyester each set in 4 gallons of undiluted #197 Asphalt Emulsion. Polyester patch to be 6" larger in all directions.

Over all added penetrations & flashings during modernization. Apply two layers of polyester set in 4 gallons of #197 Asphalt Emulsion.

Contractor must water test internal drains and notify owner's representative before roofing crew starts work or Contractor will be held responsible for plugged drains at completion of repairs and maintenance of existing roof eligible for a ten-year warranty extension.

Contractor replace any broken rings, missing bolts or clamps install new metal screens where any are missing.

Contractor to remove existing clamp ring. Clean, prime and apply 1 layer of 36"x 36" Ruftac set in #167 Rubberized Flashing. Re-set clamp ring.

Remove all existing pitch pans and install split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Install new lead flashing around pipe support on A/C screen.

Clean, prime and reseal all corners at curbs, base flashings, etc., with asphalt primer and #167 Rubberized Flashing.

Remove blocking under conduits and other pipes running across roof and replace with a minimum of 2"x4" block (must be redwood or pressure treated). Set blocks on top of extra layer of Ruftac. Ruftac must extend 6" beyond edge of blocks on all sides. Ruftac shall be set in a generous application of #167 Rubberized Flashing (not cold applied cement) prior to Monolithic System application. Do not nail through roof membrane

Contractor to install one layer of Ruftac (6" larger in all directions) under all wood blocks, sleepers, etc., where needed or missing.

Clean gutters prior to respray application.

Metal Edging: Cut out existing edge metal. Install new 24-gauge (low rise type) metal edging (1/4" maximum) with 4" roof flange, set in 1/8" bed of #167 Rubberized Flashing. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer apply 12 wide layer of Ruftac prior to Monolithic System.

Walk Pad: At A.C. units and roof hatches, install units of decktop where specified. Install decktop walkpads on top of completed roof system after aluminum is completely dry. Secure the 3"x4" units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad. Then, turn over pad and set in place on top of reflective coating. Allow approximately 1" between each unit to allow for drainage. (Around 2 – Sides Only)

END THIS SECTION



GUIDE: RE-ROOF SPECIFICATION

**Tim Russell
Manager, Support Services
CORONA-NORCO UNIFIED SCHOOL DISTRICT
2820 Clark Ave.
Norco CA 92860**

PROJECT SITES: Temescal Valley ES – partial building

SECTION 07520 – COLD PROCESS MONOLITHIC BUILT-UP ROOFING

NAME OF SCHOOL: Temescal Valley Elementary – partial building
22950 Claystone Ave,
Corona, CA 92883

AREA TO BE RE-ROOFED: Roof as per drawing and/or jobwalk.

PART 1 – GENERAL

SUMMARY

- A. Furnish necessary material and labor to install a Henry Roof System Specification or approved equal following the requirements of this Master Specification and site specific Scope of Work
- B. Other work included: Furnish and install sheet metal, metal pan collar flashing, pipe flashings and counterflashing.

1.02 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
- B. Western States Roofing Contractors Association (WSRCA)
- C. SMACNA
- D. Underwriters Laboratories (UL)
- E. American Society of Testing & Materials (ASTM)
- F. Uniform Building Code (UBC)

1.03 DEFINITIONS

- A. UNDERLAYMENT, BUFFER or BASE PLY– #606 80# Base sheet – first ply installed over wood deck
- B. INTERPLY – 2, 3 or 4 layers of #604 25# Fiberglass Base Sheet installed over Insulation or Underlayment.

1.04 SYSTEM DESCRIPTIONS

- A. Henry Specification #H3-NGC-MR - (See 3.05)
Over prepared deck surface mechanically fasten one layer #606 SBS 80# Inverted Cap and two ply #604 25# Fiberglass Base Sheet adhered in #902 Permanent Bond Adhesive. Surface with #197 Asphalt Emulsion reinforced with #189 Chopped Fiberglass. Finish with 294 Premium Elastomeric Base Coat and #280 White Elastomeric Roof Coating or other colors as specified.

Specification System & Weights per 100 Sq.ft.	Dry Weights
#606 80# Inverted Cap - Mechanically fastened	80 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#902 Permanent Bond Adhesive – 2 gallons per 100 sq.ft.	11 lbs.
#604 Fiberglass Base Sheet	25 lbs.
#197 Emulsion topcoat – 9 gallons per 100 sq.ft.	36 lbs.
#189 Chopped Fiberglass – 3 lbs. Per 100 sq.ft.	3 lbs.
#294 Premium Elastomeric Base Coat – 1 1/2 gallons per 100 sq. ft	5 lbs.
Broadcast 20 lbs Ceramic granules into wet #294 Base Coating over entire surface	20 lbs.
#280 White Elastomeric Finish Coat – 2 gallons per 100 sq. ft	7 lbs.
*Option: # 588 Emulsion Aluminum Reflective Coat- 1 ½ gallons per 100 sq.ft. (add 7 lbs.)	
Approximate Total Dry Weight	223 lbs.

*To be used over non-airconditioned spaces only.

1.05 SUBMITTALS

- A. Fire Hazard Classification - Provide letter certifying that roof membrane assembly qualifies for UL Class A fire hazard classification for the type of substrate(s), slope(s), insulation(s) (when applicable) and membrane(s) specified for this installation. Include copy of the UL listing.
- B. Applicator approval - Provide letter from manufacturer of roofing materials stating that applicator is acceptable to manufacturer.
- C. Complete materials list of all items to be furnished and installed under this Section.
- D. Copy of latest edition of the Roofing System Manufacturer's material specifications and installation instructions.
- E. Two (2) 3" x 5" samples of roof membrane mock-up and flashing membrane.
- F. Copy of Manufacturers Warranty.

1.06 SUBMITTALS OF EQUALS

- A. Submittals shall be made not less than ten (10) days prior to bid date. Primary roof systems that have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. All submittals which do not conform to the following requirements will be rejected.
- B. Furnish in triplicate:
 - 1. 8" x 10" mock up samples of the complete roof membrane and flashing membrane assemblies.
 - 2. Latest edition of the roofing system manufacturer's specifications and installation instructions.
 - 3. Detailed descriptive list of the materials proposed for use.
 - 4. Copy of UL approval of the proposed roofing system for the required assembly and slope. No other testing agency approvals will be accepted.
 - 5. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.
 - 6. List of ten (10) of the manufacturer's projects located within 25 miles of the project site of equal size and degree of difficulty which have been performing successfully for a period of at least ten (10) years. Include contact name and phone number.
 - 7. Complete list of material physical properties including solids. Owner reserves the right to request documentation from a nationally recognized independent lab certifying physical properties.
 - 8. Copy of manufacturer's inspection form.
 - 9. Qualifications of manufacturer's inspector(s)
 - 10. Proposal from manufacturer for site specific quality control program.
 - 11. Sample copy of the specified guarantee including terms and procedures for renewal.
 - 12. Documentation that manufacturer meets requirements of 1.06A.

1.07 QUALIFICATIONS

- A. Manufacturer Qualifications
 - 1. Manufacturer shall be a member in good standing with the Southern California Roofing Contractors Association, Western States Roofing Contractors Association, National Roofing Contractors Association, Construction Specifications Institute, and California Association of School Business Officials.
 - 2. Manufacturer must furnish as single source all primary roofing materials with manufacturer's labels and have current listing in Underwriters Laboratory Directory. Materials must bear UL Classification marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
 - 3. Manufacturer must provide list of 10 projects of equal size and difficulty within a 25 mile radius of the project site.
 - 4. Manufacturer shall employ a full-time field inspector available for periodic inspections (not less than twice weekly) and final inspections. Inspection reports to be available to the Owner Representative on request.
 - 5. Manufacturer must employ a Registered Roof Consultant and Registered Roof Observer certified by the Roof Consultants Institute.
- B. Contractor Qualifications
 - 1. Contractor to be approved by the primary material manufacturer.

2. Contractor must provide list of 3 projects of equal size and difficulty within a 50 mile radius using the specified roof system.
3. Contractor must provide a supervisor that can communicate with Manufacturer's Inspector and Owner Representative.
4. Contractor must provide knowledgeable foreman who understands all aspects of the specification.
5. Contractor to be a member in good standing with the local Roofing Contractors Association.

1.08 QUALITY ASSURANCE

A. Pre-Job Conference

1. Prior to the beginning of work, a pre-job conference shall be held at the job site.
2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the Henry Certified Contractor (HCC), a Henry Company representative, building owner, architect, consultant, and subcontractors including mechanical and electrical where such work penetrates the work of this Section.
3. During the pre-job conference, attendees shall review the specifications to determine any potential problems, changes, etc. Scheduling, weather conditions, unique job site conditions, installation requirements and procedures and any other information pertinent to the roof system installation shall be discussed.
4. The results of the conference shall be recorded with copies submitted to all participants

B. Notify Henry Company Inspector 48 hours prior to job start, schedule changes and prior to application of surfacing and reflective coat.

C. A copy of the specification is to be on the job site.

1.09 DELIVERY, STORAGE & HANDLING

A. Delivery Requirements

1. Deliver material in manufacturer's original sealed and labeled containers and in quantities required allowing continuity of application.

B. Storage Requirements

1. Store materials out of direct exposure to the elements. Store roll goods on a clean flat surface. Protect material against moisture. Store asphalt adhesives and cements in a heated area prior to use in cold weather.
2. When ambient temperatures are below 40°F (4°C), rolled materials must be stored in protected or heated areas and brought to the roof as needed for application.

C. Handling Requirements

1. Handle material in such a manner as to preclude damage and contamination with moisture or foreign matters
2. Materials that are found to be damaged or stored in any manner other than as stated above shall be automatically rejected and shall be removed and replaced at contractor's expense.

1.10 JOB CONDITIONS

A. Protection Requirements.

1. Protect building and grounds from overspray, staining and mechanical damage. Plank lawns, walks, etc. in traffic areas.
2. Applicator will be held responsible for any damage caused to roof top equipment, roof penetrations, clogged drains (if not identified prior to starting the work) and damage to building and grounds resulting from the execution of his work.
3. Lock valves on tankers when not attended.
4. Cover or arrange air intakes to be turned off during application of solvent based materials.

B. Environmental Requirements.

1. Do not apply material during precipitation or when rain is a probability during or after application before material can set.
2. Never apply solvent-based adhesives or coatings to a wet surface.
3. Never apply water-based emulsions when the ambient temperature is below 60°F (16°C) or will fall below 40°F (4°C) before the emulsion has cured to a tack-free black surface. High humidity, fog and dew will greatly extend the time for emulsions to cure.

4. Protect adjacent surfaces from staining and mechanical damage during application of roofing.

1.11 WARRANTY

A. CONTRACTOR WARRANTY

1. Prior to acceptance of the roofing work, furnish certified written warranty signed by Roofing Contractor agreeing to make repairs and replacements required to maintain roof, including flashing, in watertight condition for two years from date of substantial completion.
2. Make repairs or replacements at no additional cost to Owner.
3. Warranty shall include temporary repair work under emergency condition as required to maintain water tightness of the building pending permanent repairs.

B. MANUFACTURER'S WARRANTY

1. Furnish Manufacturer's 10 + 10 -year Warranty for material and workmanship. No exceptions to ponding water. There is to be no additional warranty or inspection fees for the 10-year extension.
2. Manufacturer to make inspection in the 2nd and 10th year of the warranty period.

1.12 MAINTENANCE

- A. Furnish Owner with annual maintenance requirements to maintain contractor and manufacturer's warranties.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURERS

- A. Materials manufactured or supplied by Henry Company, El Segundo, CA 902545. (323) 583-5000.
- B. Products by Tremco and Garland equal to the specified materials are also approved.
- C. Products by other manufacturers must be submitted 10 days prior for approval in accordance with Section 1.06 of these specifications.

PRODUCT DELIVERY

- A. Bulk delivery material shall be accompanied by a Henry Company bill of lading.

MATERIALS

- A. GENERAL: Refer to Project Scope of Work for applicable product references.
- B. Sheathing paper (wood decks only) -1 ply
- C. UNDERLAYMENT OR BUFFER PLY
 1. #606 80# Mineral Surface Underlayment, reverse rolled – ASTM D 3909-91
- D. INTERPLY (Select specified ply sheet)
 1. #604 Fiberglass Ply Sheet
 - a. nominal 25# asphalt coated base sheet
 - b. Tensile Strength: 65 lbs. MD – 55 lbs. XD
- E. INTERPLY ADHESIVE – 2 Gallons/Sq/Ply:
 1. #902 Permanent Bond Adhesive – low odor, modified and rubberized cold adhesive
- F. BASE FLASHING
 1. modifiedPlus NP180 s/s – SBS modified membrane, polyester reinforced.
- G. SURFACING (9 Gallons with 3 lbs. Glass/Square):
 1. #197 Asphalt Emulsion – ASTM D 1227-95 Type III, Class I
 2. and #189 Chopped Fiberglass
- H. REFLECTIVE SURFACING (as specified in Project Scope of Work)
 1. #588 Aluminum Emulsion- 1½ gal/Square (on canopies or shelters only)
 2. Premium Elastomeric Coating: #280 White at 2 Gal/Square and #294 Base Coat at 1 ½ Gal/square.
- I. MISCELLANEOUS PRODUCTS
 1. Primer #113 VOC Compliant Primer
 2. #600 Ruftac – 75 mil - SBS modified self-adhesive membrane
 3. #167 Rubberized Flashing
 4. #183 Reinforcing Glass – Yellow
 5. #196 Polyester Fabric
 6. #197 Asphalt Emulsion

7. Walk pads
8. Approved mechanical fasteners
9. Wolmanized wood nailers
10. Replacement metal to be 24 gauge galvanized sheet metal
 - a. Metal edging to have maximum ¼" rise.
 - b. All flanges to be 4 inches with full corners
 - c. Pitch pans to have soldered joints.
11. Lead Flashings to be minimum 4 oz. – factory or field soldered
12. Josam or Smith drains and overflows
13. Four inch cant strips ASTM C-208

PART 3 – APPLICATION

GENERAL

- A. Henry Company's General Requirements and Product Data are a part of this specification.
- B. Do not tear-off or remove any more roofing than can be replaced the same day.
- C. Unless sheet metal components are specified for replacement carefully remove, clean, prime and set aside for reinstallation. Carefully turn up counterflashing.

EXAMINATION

- A. Inspect deck and advise Owner's Representative of any corrections required before proceeding with roofing. Report in writing any unsatisfactory conditions that cannot be guaranteed. Absence of such report constitutes acceptance of the surfaces and conditions.

PREPARATION

- A. Sweep or vacuum all surfaces prior to commencement of roofing. Allow surface to dry before proceeding.
- B. Cut ply sheets into 18 foot lengths. Allow plies to flatten before application.
- C. All surfaces shall be well-secured, firm, smooth and free from rough spots and sharp projections before roof application begins.
- D. Wood decks. Repair and/or renail roof sheathing where necessary. Cover gaps of ½" or more between sheathing board with flat sheet metal stock nailed. Contractor to replace deteriorated sheathing with new to match existing unless specified otherwise under Scope of Work.
- E. Test interior drains to confirm that they flow freely. Immediately notify Owner's Representative if correction is required. Protect drains from plugs of gravel and debris.
- F. If not scheduled for new metal, carefully lift or remove metal counterflashing, coping, and gravel stop. Clean metal and set aside for reinstallation.

GENERAL REQUIREMENTS

- A. Install roofing in accordance with roofing system manufacturer's instruction, scope of work for the site and these requirements.
- B. Valleys and waterways. Install extra layer of the specified glass base set in full width application of #902 Permanent Bond Adhesive in valleys, drains and waterways.
- C. Prime metal flanges (all jacks, edge metal, etc.), concrete and masonry surfaces with a uniform coating of asphalt primer.
- D. Thinning or alterations of adhesives, primer, emulsion, reflective coat and sealants is not permitted.
- E. Clean all drains and remove clamp rings, dried mastic and any other loose material. Prime with asphalt primer and allow to dry. Install minimum 30" square leads in drains set in #167 Rubberized Flashing. When lead is not permitted by Owner install Ruftac. Replace broken or missing clamp rings, bolts or fasteners and drain bonnets with new. Complete drains the same day.
- F. Scuppers/Outlets. Set scuppers in 1/8" troweling of #167 Rubberized Flashing. Three course flange with #167 Rubberized Flashing and glass fabric.
- G. Lift all supports for conduits and other pipes. Install new wood blocks or Dura-Blok under conduit or pipes. Reinforce under block with one layer of 80# Cap Sheet cut 6 inches larger in all directions of block, granules side up, set in generous application of specified mastic prior to Monolithic surfacing. Seal top of bolts, screws, etc., with #167 Rubberized Flashing. Loosen brackets so pipes can expand and contract freely.

- H. EQUIPMENT PADS. Install one layer of Ruftac over equipment pads before installing metal pans.
- I. PIPE PENETRATIONS, ELECTRICAL JACKS, VENT PIPES EQUIPMENT STANDS
 - 1. Set flange over base plies set in #167 Rubberized Flashing.
 - 2. Seal with 6" strip of reinforcing fabric sealed solidly with #167 Rubberized Flashing. Cut a collar of base sheet to fit around vents and overlap the flanges 6" on sides. Set in application of #167 Rubberized Flashing.
 - 3. Form a #167 Rubberized Flashing cant around base of vents prior to the application of the Monolithic surfacing.
 - 4. Ruftac is an acceptable alternative to I.2.
 - 5. When specified in project's Scope of Work, install storm collars on all pipe penetrations and jacks.
- J. 3-COURSING
 - 1. Prime wall surface at least 3" above termination edge of the base flashing.
 - 2. Over completed base flashing trowel a 5 inch wide layer of plastic cement 1/8" thick to completely cover nails and top edge of base flashing.
 - 3. Embed a 4" wide strip of Yellow Glass Fabric and apply another 1/8" troweling of plastic cement covering fabric completely. Bring to a feather edge and finish in a straight line.
 - 4. If not covered by metal counterflashing cover with Monolithic Emulsion system.
- K. CANT STRIPS. Install cant strip at all horizontal to vertical transitions. Nail or set in mastic. Set to provide smooth transition without gaps. Miter corners. At scuppers bevel cant strip starting 8" back from outlet.
- L. COPING JOINTS: Clean coping joints. Prime 3 inches on both sides of joint and seal joint with 6 inch minimum layer of Ruftac.
- M. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, install a water cut-off at all open edges. Install alternating layers of plastic cement and roof felts. Construction is to withstand protracted periods of service. Remove cut-offs completely prior to the resumption of roofing.
- N...Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application during temperatures of less than 55-60 degrees. Provide waterstops and seal all terminations at the end of each day.

(Note): Broom over all applied membranes at the end of the day.
- N. Roll the membrane with a 75 lb. (34kg) (minimum) weighted roller within 30 minutes to 4 hours of application. Provide waterstops and seal all terminations at the end of each day.
- O. On slopes over 3" in 12" (250mm/m), install interplies parallel to slope blindnailing 4" (102mm) at end laps only, 6" (152mm) on center.
- P. WALKWAYS. Install walkways in 4' sections allowing 2" spacing between sheets. Cut and trim pieces as required to fit conditions. Set walkway in spot applications of #906 Plastic Cement.

Specification H3-NGC-MR (NAILABLE DECK – NO INSULATION)

- A. Over diagonal sheathing install one layer of rosin sheathing paper. Lap each sheet 2" (51mm) and nail sufficiently to hold in place.
- B. UNDERLAYMENT OR BUFFER Apply #606 inverted 80# base ply granule side down with 2" (51mm) side laps and 4" (102mm) end laps. Apply the first sheet of underlayment with a 12" (305mm) width and the remaining sheets full width.
- C. Nail underlayment through one inch tin disks at side laps 9" (229mm) on center and 18" (457mm) on center, staggered in two rows 12" (305mm) from each edge. Fasteners to be sufficient length to penetrate deck 1/2 inch.
- D. Specification H3-NGC-MR
 - 1. Over the underlayment, apply two (2) layers of #604 25# interply sheets set in a uniform application of #902 Permanent Bond Adhesive at a rate of 2 gallons per 100 sq.ft.
 - 2. Apply the first sheet with an 18" (457mm) width then over that a full width piece. Install the remaining sheets full width overlapping preceding sheet 19". Stagger laps with the layer below. Run plies to top of cant.

METAL EDGING

- A. Extend top layer of base sheet over edge of roof approximately 1".

- B. Install metal flange over completed membrane but before application of surfacing. Set metal flange in trowel application of #167 Rubberized Flashing. Nail 3" (76mm) o.c. staggered.
- C. Over prepared surface install 12-inch wide Ruftac over metal flange and extending onto the field of the roof.
- D. Seal Gap at Ruftac and edge metal with #209 or #163 Rubberized Flashing. Add granules on top.

FLASHINGS

- A. General Requirements
 - 1. Prime concrete surfaces with specified primer and allow to dry.
 - 2. Complete first ply of flashing daily to assure watertight installation.
 - 3. Install Base Flashing to a maximum 24-inch height.
 - 4. Ruftac may be used in lieu of #606 Mineral Surfaced Cap Sheet, but requires that surface be primed and allowed to dry.
 - 5. Install flashings in two pieces when height exceeds 24 inches. Overlap bottom layer 3 inches.
 - 6. Reinforce and make watertight all angles with one layer of mineral surfaced cap to extend two (2) inches above cant and two (2) inches onto field. Coat substrate and back of sheet with 902 Permanent Bond Adhesive at rate of 1 gallon per 100 sq.ft. per side. Allow to tack. May require approximately 30 minutes air time to be tacky. Press in place. Lap sides 3 inches.
 - 7. Unless otherwise specified 3-course top edge with #209 Mastic and #183 Yellow Glass
- B. Install Flashing Specification Number #180
 - 1. Cut layer of mineral surfaced cap to extend not less than 4" (51mm) above cant strip. Coat back of cap ply and wall with #902 Permanent Bond Adhesive at rate of ¾ gallon/100 sq.ft. (.3 l/m²) each side. Allow sheets to set until tacky. Press sheet in place. Lap ends 4" (102mm).
 - 2. Nail top of completed base flashings 8" (204mm) o.c.
 - 3. Provide counterflashing with minimum 4" (102mm) face installed in reglet or surface mount.
 - 4. Apply compatible sealant.
- C. Wall Flashings
 - 1. Wood Walls. Nail #606 granule side out. Nail 12 inches on center in all directions and 6" on end laps. Extend wall flashing over base flashing three inches.
 - 2. Concrete Walls. Unless otherwise specified, cover the inside and tops of concrete parapet walls with one layer of Ruftac. Extend membrane over base flashing three (3) inches and to within 3 inches of outside wall. Rub in firmly by using a wallpaper roller bonding Ruftac without wrinkles or loose areas. Nail top edge through one inch tin disks eight (8) inches o.c.
 - 3. Masonry Block Walls. Unless otherwise specified cover the inside and tops of masonry block walls with one layer of polyester embedded in 4 gallons of 197 Asphalt Emulsion. Side laps to be three (3) inches. Extend over base flashing three (3) inches and to within 3 inches of outside wall. Polyester to be fully embedded and without wrinkles.

SURFACING; Monolithic System

- A. After the adhesive has thoroughly cured (no solvent odor is evident and laps cannot be pulled apart), but not less than five days, sweep or pressure blow dust and debris from the roof surface to provide a clean surface. Hose and/or scrub off with water any residue accumulation.
- B. Protect adjacent walls not scheduled for emulsion and reflective coating. Protect equipment, roof top units, valves, switches, coils or moveable parts etc. not scheduled to receive Monolithic application from overspray. Mask off identification plates on equipment.
- C. Clean gutters prior to surfacing.
- D. Cover prepared surfaces with not less than 9 gallons (34l) per 100 sq.ft of undiluted #197 Asphalt Emulsion. Evenly blend emulsion with 3 lbs. (1.4kg) of ¾" (19mm) long chopped glass reinforcing sprayed with equipment approved by Henry Company. Tufting of the glass fibers is not acceptable. Spray emulsion in a pattern into laps of base sheet so that when system is dry, there are no voids or bridging of glass over any seam of the membrane.
- E. Unless otherwise specified, spray vents, ducts, and parapet walls. Spray parapet walls to within one inch of outside edge; above reglets and/or 5-course counter-flashing.
- F. Spray base flashings and other designated surfaces with the Monolithic System.

REFLECTIVE COATING:

- A. Let emulsion dry for (5) days. When emulsion surfacing has cured (tack-free and black), clean the surface of dust and debris. Before applying elastomeric base coat, lightly power wash roof surface and scrub out any pockets of residue surfactant materials that might have migrated to the surface. Allow roof to dry and then promptly apply the protective acrylic coating to avoid further surfactant migration. If entire roof was not able to be coated and uncoated surface has been exposed to rain or dew, re-hose off the section again to remove any residue prior to applying base coat.
- B. Apply #294 Elastomeric Base Coating at the rate of 1 1/2 gallons per 100 square feet (.6l/m²) in one coat.
- C. Broadcast 20 lbs Ceramic granules into wet 294 Base Coating over entire surface
- D. Apply #280 White Elastomeric Finish Coating at the rate of 2 gallons per 100 square feet in one (.6l/m²) coat.
- D. or apply #588 Aluminum Emulsion Coating at the rate 1 1/2 gallons per 100 square feet in one (.61/m²) coat. (non-air conditioned space only)
- E. Any areas that peel must be redone before the project will be considered complete.
- F. In arid climates when rain is unlikely within 30 days of application of the aluminum coat, hose roof surface 30 days after application.

CLEAN-UP

- A. Test all drains to confirm they are free flowing and clear of debris.
- B. Clean gutters and downspouts as needed of all debris.
- C. Any deficiencies found during final inspection will be corrected within 5 working days and will be re-inspected by a Manufacturer's Representative and Owner's Representative.
- D. Leave premises clean to complete satisfaction of the Owner.

END THIS SECTION

ROOF TO BE RE-ROOFED
Scope of work

NAME OF SCHOOL: Temescal Valley Elementary – partial building
22950 Claystone Ave,
Corona, CA 92883

AREA TO BE RE-ROOFED: Roofs as per drawing and/or jobwalk.

ROOF PREPARATION

Complete tear-off and removal of existing roofs.

Remove any abandoned pipes, flashings, etc.

Abandoned platforms, skylights, curbs, raised sleeper shall be removed and sheathed over to match existing sheathing.

Contractor shall give a per square foot price for replacing broken or water damaged sheathing, matching existing type and thickness.

Contractor shall give a per square foot price for replacing bad insulation matching existing type and thickness.

Note: Contractor to give a separate price to install 3"x6" steel plates with pre-drilled holes (Simpson TP327 20-gauge), secured with flat headed screws over weak plywood joints without end blocking or "H" clips.

Jobs may be stopped if the Contractor doesn't provide a knowledgeable Foreman who understands all aspects of the specification for which his company has contracted to install and supervise the workmanship of his crews. A copy of the specification is to be on the jobsite at all times.

ROOF SYSTEM

H3-NGC-MR: 80# Buffer (#606), two layers of 25# Base Sheet (#604), Monolithic System. All Roof Substraights other than covered walkways, lunch shelters and open areas to receive PG280 White Elastomeric Reflective Coating over PG294 Elastomeric Base Coat. On all other Roof Substraights to receive Aluminum Reflective Coating, as specified in Master Specification.

- Note:**
1. Assemble interply sheets shingle fashion, the top finish sheet **MUST** be installed full width single ply.
 2. Broadcast 20 lbs granules per 100 sq. ft., into wet monolithic surfacing on entire roof surface.

Base Flashing: Install Base Flashing Specification #180 (Modified Plus NP180 S/S Polyester Reinforced Membrane.

Extra layer of base sheet in all base flashings and waterways.

"Ten & Ten" Manufacturer's Roof Membrane Warranty. The Contractor MUST notify the School District and the manufacturer at least 24 hours prior to commencing work to arrange for inspection of the roofing application. Also, if the Contractor pulls off job for any reason, School District personnel and manufacturer's representative must be notified.

NOTE: Failure to inform the manufacturer prior to commencing work, project may be stopped and Contractor may be held responsible to make any corrections to fulfill contract obligations, without any extra cost being placed on the District or the manufacturer.

Manufacturer shall provide a qualified inspector with reroofing experience and knowledge (5 years plus). Manufacturer's inspector to make periodic inspections, as well as inspection reports. These reports can be provided to owner's representative at any time during progress of work.

SPECIAL CONDITIONS

Install new 24-gauge (low rise type) metal edging (1/4" maximum) set in 1/8" bed of #167 Rubberized Flashing. Install gravel stop on top of completed base sheet assembly as specified in master specifications. Prime roof flange and allow to dry. Install metal with 4" minimum end laps with #167 Rubberized Flashing between laps and up rise of metal joint. Nail 6" on center with suitable length galvanized nail which will penetrate wood nailer or sheathing in a minimum of 1/2". Then, over thoroughly dried primer, seal metal to base sheets with a 12 wide layer of Ruftac prior to Monolithic System.

Install all new 24-gauge galvanized metal flashings.

Install all new 4# lead flashings.

Clean gutters prior to Monolithic Spray System.

Furnish and Install new 24 Ga Sheet Metal Shim Stock with a 3" face and 1/4" drip edge. Fasten with 1 1/4" screws with rubber washers 2' on center at coping cap.

Install new 2x4 blocks or Dura-Blok under conduit or pipes every 10 foot; also reinforce under block with extra layer of 80# Underlayment, 6" wider than blocks, mineral side down, set in generous application of #167 Rubberized Flashing.

Note:

1. Where there are large pipes or several pipes running across roof, in lieu of blocks, contractor shall install pipe hanger brackets every 12' and hang all pipes to bracket (will explain on jobwalk). Base of brackets shall be reinforced under with 18"x18" Deck-Top and base shall be set in a generous application of #167 Rubberized Flashing.

2. Set steel base of hangers in a generous application of #167 Rubberized Flashing on top of completed base sheets. Secure brackets to roof using four proper sized wood screws per bracket. Seal base with a 9" wide layer of polyester and a 12" wide layer of polyester. Both layers shall be embedded in four (4) gallons of emulsion per ply and top coated with four (4) gallons of emulsion.

On wood walls, cover with one layer of 80# Mineral Surface Cap Sheet from top of cant strip to within 3" of outside edges, Apply by back coating sheet and while wet apply to wall and nail 18" in all directions, 6" on end laps. Wall covering shall be sprayed with Monolithic Emulsion and Reflective Coating to within 1" of outside edge. After emulsion is dry, granules on cap sheet must be hidden.

Install #167 Rubberized Flashing to all parapet wall fasteners prior to installation of Monolithic System.

Block Walls: Remove all reglet metal and install 5 course at roof to wall transition

Contractor must water test internal drains, especially on coal tar recovers, and notify owner's representative before tear-off crew starts work or Contractor will be held responsible for plugged drains at completion of new roof.

- Note:**
1. Contractor shall clean up any Josam type drain for reuse. Apply 3'x3' layer of Ruftac reinforcement on top of buffer down into drain. Any broken rings, missing bolts or clamps shall be replaced or new drains may be installed.
 2. When work is started at drains, the Contractor must complete the drain area with plies of base sheet and Ruftac or lead and install clamp rings the same day.

Contractor to replace any missing drain screens, with new metal screens to fit drain type.

Clean entire metal deck and spray roof surface with nine gallons emulsion, 3 lbs. Chopped glass (short glass), and cover with Reflective Coating.

HVAC Unit Equipment: Install decktop walkpads on top of completed roof system after acrylic coating is completely dry. Secure the 3'x4' units by applying five generous spots of #167 Rubberized Flashing on the back surface of each walkpad, turn over, in place, on top of Reflective Coating. Allow approximately 6" between each unit to allow for drainage. **(Around 2 – Sides Only)**

Install walk pad material 6" larger in all directions under all equipment support feet, set in generous amount of #167 Rubberized Flashing, mineral side up.

Remove existing Pitch Pans and install new split lead jacks as specified in master specifications to fit field conditions. Install clamp rings and seal with #167 Rubberized Flashing.

Double Canted Curbs: To be skirted around all sides of platform with minimum 15/31" CDX plywood as specified in Master Specification.

Prefabricated Metal Curbs & Cants: To be sheathed or skirted with a minimum 15/32" CDX plywood as specified in Master Specification.

It is necessary to get a smooth job, base sheets shall be cut and allowed to flatten in piles. Sheets should be broomed and cold process sheets shall be rolled with a weighted roller approximately 30 minutes or up to 4 hours after sheets are in place.

END OF SECTION