ADDENDUM NO. 03
September 25, 2018

To Drawings and Specifications dated August 03, 2018.
DSA Application No.: 02-116660 - Approved August 14, 2018

MARENGO RANCH ELEMENTARY SCHOOL – HVAC REPLACEMENT
Galt Joint Union Elementary School District

Prepared by: **PBK**
2520 Venture Oaks Way, Suite 440
Sacramento, California 95833

PBK Project Nos.: 17233

A. Receipt of this Addendum shall be acknowledged on the Bid Form.

B. This Addendum forms part of the Contract documents for the above referenced project and shall be incorporated integrally therewith.

C. Each bidder shall make necessary adjustments and submit this proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.

GENERAL INFORMATION

Item No. 1 This Addendum is intended to address the two (2) questions that came in after the mandatory pre-bid walk. It will also address the new roofing system for non-metal roofs.

Item No. 2 RFI 01– Question: Please advise exactly where the new concrete is to be placed. The Structural drawings have the new foundation and the existing foundation with the same line-type and shows up almost the same grey tone on our copy. Can you please provide a highlighted of the new foundation to place? As you see below this image is hard to differentiate.

Response: See attached SK-1 provided by KPFF.

Item No. 3 RFI 02 – Question: See attachment for questions and responses.

SPECIFICATIONS

Item No. 4 Replace the attached Specification Section in its entirety:

07 54 19 – KEE Membrane Roofing System

DRAWINGS

Item No. 5 Not Used

END OF ADDENDUM NO. 03

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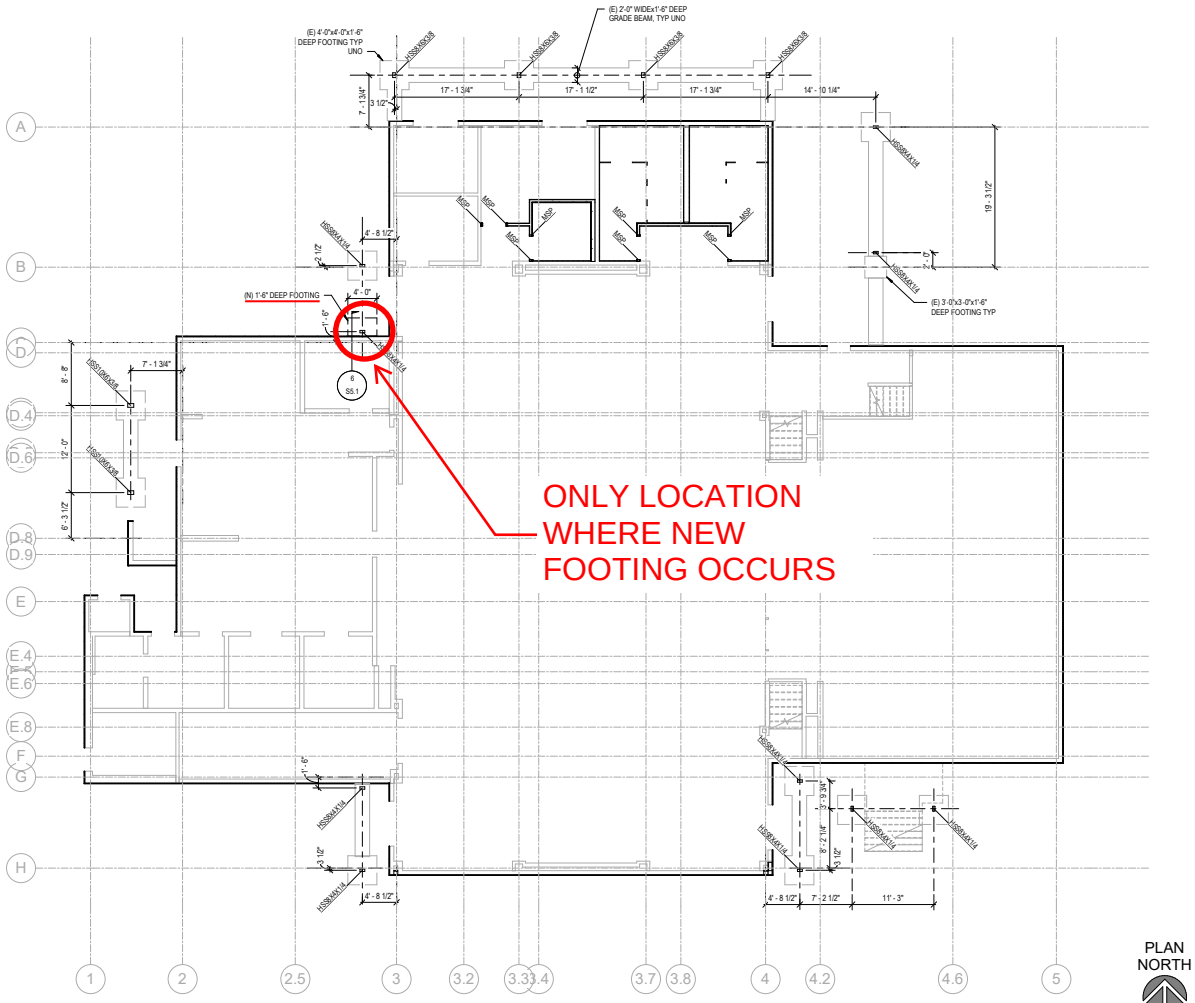
project MARENGO RANCH		by RRM	sheet no. SK-1
location		date 9/21/2018	
client PBK			job no. 1700-304
REF.		IB#	

RESPONSE TO RFI #01

FOOTING LOCATION CLARIFICATION



2 FOUNDATION PLAN - BLDG B
1/8" = 1'-0"

REF S2.1

RFI 02 - Questions and Responses:

Question#1

Based on the jobwalk today and reading through the RFP for Preconstruction and LLB service, it's a little confusing if the District is looking to bring on General Contractor based on the Preconstruction Cost, GC Fee and General Conditions (as noted on page 14 of Form A and Fee proposal, Exhibit C and page 5) or is the District looking for Hard Bid LUMP SUM price for the project? - (See section from the RFP below) Response: The District does not want a hard bid lump sum. Please follow the format included in the RFP.

IX. FEE PROPOSALS

Proposers will be required to include in Exhibit "C" as required by the Submittal Format and Content section and Exhibit "A" of the RFP: (1) a Preconstruction Services Fee expressed as a lump sum fixed price based on the construction budget, schedule, and description in Sections II and V of the RFP; (2) a Lease-Leaseback Fee to include the Contractor's overhead and profit expressed as a percentage; and (3) a General Conditions Fee expressed as a lump sum monthly rate based on the construction budget, schedule, and description in Section X and Exhibit "A" of the RFP.

The District will use the total costs for the Preconstruction Services Fee, Lease-Leaseback Fee and General Conditions Fee as the basis for determining the Guaranteed Maximum Price ("GMP") for the Project, inclusive of all of the Contractor's costs for labor, materials, equipment, overhead and profit, general conditions, special conditions (if any), and Contractor Contingency, but shall specifically exclude the amount of the District Contingency. The GMP is comprised of "Tenant Improvement Payments" for the Work performed by the Contractor on the Project, and "Sublease Payments" which will be paid

3. Fee Proposal.

The Fee Proposal must be submitted in a separate, sealed envelope with your company name, proposal title, "Fee Proposal, Exhibit "C"," labeled on the outside of the envelope.

Provide a lump sum fee to provide preconstruction services, the lease-leaseback fee and a monthly general conditions cost on Exhibit "C". The proposed fees should include all direct labor costs, fringe benefits, insurance, overhead, profit, and all

EXHIBIT "C"

FEE PROPOSAL FORM

The Fee Proposal must be submitted in a separate, sealed envelope with your Firm name, proposal title, "Fee Proposal, Exhibit "C"", labeled on the outside of the envelope and submitted at the same time the proposal is submitted.

The District will use the total costs for all line items below to provide a Total Price Score for each Proposal, rather than score each line item cost separately. The prices provided below will be used as the basis for the Guaranteed Maximum Price for the Lease-Leaseback Agreement and the fee for the Preconstruction Services Agreement to be entered into with the District; therefore, Proposers are requested to provide accurate pricing. No revisions to the costs or prices noted below shall be allowed unless agreed to and approved by the District.

The Firm proposes the following fees:

1. The Preconstruction Services fee shall be expressed as a lump sum firm-fixed price based on the construction budget, schedule, and description in Sections II and V of the RFP and Preconstruction Services Agreement at Exhibit "D" and shall be scored based upon the percentage the fixed price bears to the average fixed fee of all Proposers.

Preconstruction Services Fee: [LUMP SUM] $_____

2. The Lease-Leaseback Fee shall include the Firm's overhead and profit and should be expressed as a percentage. For purposes of evaluating the fee proposals, the lease-leaseback fee percentage will be multiplied by the construction budget.

Lease-Leaseback Fee: [PERCENTAGE] _____%

3. The General Conditions should be expressed as a lump sum based on the construction budget, schedule, and description in Section X and Exhibit "A".

General Conditions Cost: [MONTHLY RATE] $_____/month

Question #2

If the intend is to select a General Contractor based on Proposal and Fee (exhibit C) then can we extend the MEP subcontractor prequalification from the 26th (noted on page 8 of the RFP)to after the GC is selected so we can help get more MEP trade partners prequalified and help get better cost coverage. This would be our recommendation. Response: Yes the MEP subcontractor prequalification will be extended to after the GC is selected.

Comment: Item F on page 13 does a good job of providing what is needed for Preconstruction Service as part of the RFP. (see below)

- How safety was maximized

F. Preconstruction Services. Proposers must have direct experience and must be able to demonstrate an aptitude to "value engineer" or analyze the Projects' plans, components, and features, to find more efficient and cost-effective methods or alternatives. Describe your methodology in providing preconstruction services for the Project, specifically discussing value engineering, constructability review, site investigations, estimating, and scheduling. Provide examples of constructability reviews that you performed that resulted in the identification of significant design conflicts or omissions, and of value engineering that resulted in significant savings or money or time.

SECTION 07 54 19 KEE MEMBRANE ROOFING SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes: Requirement including but not limited to:
   1. KEE membrane waterproofing
   2. Accessories necessary for a complete installation.

1.3 SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
   2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.
   1. Include setting drawings showing layout, sizes, sections, profiles, and joint details of pedestal-supported concrete pavers.

C. Samples: For each exposed product and for each color and texture specified, including the following products.
   1. 8-by-8-inch (200-by-200-mm) square of waterproofing and flashing sheet.
   2. 8-by-8-inch (200-by-200-mm) square of insulation.
   3. 8-by-8-inch (200-by-200-mm) square of cover board.

D. Qualification Data: For Installer.

E. Field quality-control reports.

F. Sample Warranties: For special warranties.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity having minimum 5 years documented experience and employs installers and supervisors who are trained and approved by waterproofing manufacturer.

B. Source Limitations for Waterproofing System: Obtain waterproofing materials from single source from single manufacturer.

C. Preinstallation Conference: Conduct conference at site.
   1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures,

and protection and repairs.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
   1. Do not apply waterproofing in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.6 WARRANTY

A. Written warranty signed by manufacturer in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

B. Written warranty signed by Installer in which Installer agrees to warrant its work.
   1. Warranty Period: Two years from the date of Substantial Completion.
   2. Warranty includes removing and reinstalling protection board, drainage panels, insulation, and pedestals.

PART 2 PRODUCTS

2.1 KEE MEMBRANE

A. FiberTite-XT50 - nominal 50-mil ketone ethylene ester (KEE) membrane, reinforced with a 6.5-oz yd² knitted polyester fabric, as manufactured by Seaman Corporation, under the trade name FiberTite-XT50, conforming to the physical properties as outlined in the associated data sheet. FiberTite-XT50 greatly exceeds all requirements outlined ASTM D 6754 - 02 Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing. Membrane color shall be DC901 Energy Gray

PHYSICAL PROPERTIES

ASTM D 6754-02Test Method(s)	**ASTM D6754 Min. Req.**	**FiberTite-XT50 Typ. Values**
Thickness, mm (in.) *ASTM D 751*	0.79 (0.031)	1.27 (0.050) nom.
Thickness over Fiber mm (in) *Optical method (inches)*	0.15 (0.006)	0.38 (0.015)
Breaking Strength N (lbf) *ASTM D 751 proc. B – strip*	1175 (265)	1779 (400)
Elongation at Break % *ASTM D 751 - strip*	15	18
Tear Strength N (lbf) *ASTM D 751 proc. B. tongue tear*	335 (75)	556 (125)
Linear Dimensional Change % *ASTM D 1204 max %*	1.3	0.78
Fabric Adhesion N/m (lbf/in)	225 (13)	No Peel

ASTM D 751		
Low Temperature Bend *ASTM D 2136 (°F)*	-30	-40
Retention of Properties after Heat Aging *ASTM D 3045 – 176°F/156 days* Breaking Strength Strip % Original: Elongation at Break Strip % Original:	 90 90	 90 90
Low Temperature Bend after Heat Aging	-30	-40
Change in Weight after Exposure in Water *ASTM D 471 158°F, 166h, one side only, max %*	0.0 +6.0	0.0, +3.7
Factory Seam Strength N (lbf) *ASTM D 751 Grab Method*	1780 (400)	> Fabric Strength
Hydrostatic Resistance Mpa (psi) *ASTM D 751*	3.5 (500)	5.9 (850)
Static Puncture Resistance *ASTM D 5602 (99lbf)*	Pass	Pass
Dynamic Puncture Resistance (J) *ASTM D 5635*	10	30
Accelerated Weathering *Practice G 155 / xenon* Cracking or Crazing at 7x magnification	5,000 hr. None	10,000 hr. None
Accelerated Weathering *Practice G 154 / UVA* Cracking or Crazing at 7x magnification	5,000 hr. None	10,000 hr. None
Fungi Resistance: *Practice G 21, 28 days* Sustained Growth Fungi Resistance: Discoloration	 None None	 None None
Abrasion Test Cycles *ASTM D 3389 H-18 wheel / 1,000 g load*	1,500	> 2,000
Solar Reflective Index (SRI) *Color: DC 196 off white*	n/a	98.54

2.2 FLASHING MEMBRANE

A. DC901 Energy Gray Nominal 50-mil FiberTite-XT membrane shall be used for all flashing requirements to match the field membrane and warranty expectations selected for the roofing system.

2.3 INSULATION

A. Roof insulation shall be installed, where specified and/or required to provide a suitable surface for the membrane roofing system and/or meet desired thermal values.

B. Whenever insulation thickness exceeds 2-inches install insulation in multi-layer assembly with all joints staggered the maximum amount possible to increase thermal efficiency.

C. Minimum acceptable characteristics for polyisocyanurate insulation:

1. FM approved rigid insulation
2. UL Classification: Class A
3. Density: 2.0 pcf. Minimum
4. Meet requirements of ASTM C1289

2.4 APPROVED INSULATION

A. Insulation shall be Tapered at 1/4-in per ft.; with an average LTTR R-Value of 25.0; FTR-Value Polyisocyanurate Insulation.

2.5 COVER BOARD

A. Cover-board (insulation overlayment) shall be a water-resistant gypsum core substrate conforming to the following:
   1. FM approved meeting Class A 1-90, for fire and wind.
   2. UL Classification: Class A Assembly.
   3. Meet requirements of ASTM C 473

B. Approved Cover Board
   1. 1/2 in. Securock Gypsum Fiber Roof Board

2.6 VAPOR RETARDER

A. Vapor retarder shall be a self-adhering vapor barrier membrane composed of SBS-modified bitumen adhesive on the bottom surface and a tri-laminate woven polyethylene on the top surface.

B. Approved Vapor Barrier
   1. FiberTite VaporTite Self-Adhering Vapor Barrier

2.7 ROOF ACCESSORIES

A. Furnish accessories manufactured, marketed or approved by MRSM required to complete the roof installation to manufacturer's specification including (as applicable) but not limited to the items listed below. Membrane accessory color shall be DC901 Energy Gray when applicable.
   1. ADHESIVES; application technique and coverage rates will vary according to substrate and environmental conditions.
      a. FTR-190e Bonding Adhesive; A VOC compliant solvent borne, contact (two sided) bonding adhesive, designed for bonding non-fleece back FiberTite membrane / flashing to properly prepared and pre-authorized vertical substrates.
      b. FTR-490 Adhesive; a polymeric water borne, VOC compliant bonding adhesive, one side application (substrate only), designed for bonding FiberTite-FB (fleece back) membranes to properly prepared and pre-authorized horizontal substrates
      c. ICP CR-20; A dual component elastomeric polyurethane froth adhesive designed for bonding Fleece Back FiberTite membranes (spatter application) to properly prepared and preauthorized horizontal and vertical substrates.

   2. FTR-601 Insulation Adhesive - Dual component, single bead (ribbon applied) urethane insulation adhesive.
   3. FTR-101 Sealant; a one-component gun-grade polyurethane sealant to seal flashing termination
   4. FTR-SL1 Sealant; a one-component *pourable*, self leveling, polyurethane sealant to fill "pitch pans"
   5. Fiber Clad Metal; to fabricate metal flashing, 4' x 10' sheets of 24 gauge hot dipped G-

90 steel, or 0.040 thick 3003H14 aluminum, laminated with a 0.020 mil polymeric coating.

6. FTR-Pre-Molded Flashing(s); injection molded vent stack and inside/outside corner flashing using FiberTite KEE compound.
7. FTR Non-Reinforced Membrane; field fabrication membrane, 0.060 mil non-reinforced KEE membrane
8. FTR-Tuff Track Walk Way & Protection Pads; high grade walk way/protection material with "slip resistant" design
9. FTR-Fasteners
   a. FiberTite MAGNUM Series; to secure FiberTite to steel, wood and structural concrete decks. A #15-13, buttress threaded, #3 Phillips head fastener constructed of case hardened carbon steel with a reduced diameter drill point and corrosion resistant coating.
   b. FiberTite HD; to secure insulation to steel, wood and structural concrete decks. A #14-13, heavy duty threaded steel #3 Phillips truss, self tapping corrosion resistant fastener.
10. FTR-MAGNUM Series Barbed Stress Plates; used to anchor membrane.
11. FTR-Sand Dollar Insulation Stress Plates; used to secure insulation and/or cover-board to steel, wood and structural concrete decking. Manufactured from high density polyethylene, 3 inch in diameter, designed with a self locking mechanism to secure the head of the FTR fasteners into the plate.
12. FTR-Termination Bar; membrane flashing(s) restraint/termination seals, nominal 1/8 inch x 1 inch x 10' 6060-T5 extruded aluminum bar with pre-punched slots, 8 inch on center.

2.8 WOOD NAILERS

A. Wood shall be No. 2 or better construction grade lumber.

B. Creosote or asphaltic type preservatives are not acceptable.

C. Minimum top nailer thickness shall be 1 ½ inches nominal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with requirements and conditions affecting performance of the waterproofing.
   1. Verify concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
   2. Verify substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D 4263.

B. Proceed with installation after correcting unsatisfactory conditions.

3.2 SURFACE PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form release agents, paints, curing compounds, and other penetrating contaminants or film forming coatings from concrete.

D. Remove fins, ridges, mortar, and projections and fill honeycomb, aggregate pockets, holes, and other voids.

E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.

F. Bridge and cover isolation joints, expansion joints with overlapping sheet strips of widths according to manufacturer's written instructions.
   1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.

G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.

H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.3 GENERAL

A. The latest manufacturer specifications and installation techniques are to be followed along with the following additional requirements. These specific minimum requirements must be accounted for in the contractors bid / proposal and shall not be altered.

B. The roofing contractor is responsible for providing a suitable substrate surface for the proper installation of the Membrane Roofing System, roof insulation and specified components.

C. The roofing contractor shall examine all areas and conditions where by work in this section is to be installed.

D. Notify the Building Owner / Owner Representative of any and all conditions detrimental to the proper and timely execution of the work. Do not proceed until such conditions have been corrected to the satisfaction of the owner / owner's representative.

E. Commencement of roofing operations indicates the roofing contractor's acceptance of the roofing substrate for roof application.

3.4 SUBSTRATE PREPARATION

A. Surfaces scheduled to receive new membrane roofing shall be free of any standing water, dew, ice, loose debris or any other contaminate that could impair the quality of the installation.

B. Substrate shall be smooth, clean and free of sharp edges and or projections and obvious depressions that would interfere with the installation of a high quality high performance

C. Examine all the areas and conditions where by work in this section is to be installed. Correct any and all conditions detrimental to the proper and timely execution of the work. Do not proceed until such conditions have been corrected to the satisfaction of the owner / owner's representative.

D. Remove all existing roofing material(s), insulation, flashing, metal and deteriorated wood blocking and legally dispose off-site.

E. Remove only enough roofing to accommodate the days work and ensure the exposed area can be made 100% watertight at the end of the day or first sign of inclement weather

F. All rotted and/or deteriorated decking shall be removed and replaced with like kind.

G. All decking shall be inspected for proper attachment and excessive deflection that would compromise the uplift performance of the new roofing system.

H. Attachment and deflection deficiencies shall be repaired and brought into compliance with current, local building code requirements.

I. Wood Deck
1. Wood decking shall conform to Factory Mutual (FM) guidelines for Class-1 impregnated wood decking. FM Class-1 decking consists of a minimum 2 inches thick wood plank or minimum ¾ inch plywood.
2. Wood decking that is less than 0.75 inch will be considered for application by Seaman Corporation. Fastener withdrawal tests shall be performed on all "Non-FM Approved" wood decking (wood plank less than 2 inches thick or plywood less than 0.75 inch thick) to determine suitability and appropriate fastener patterns for the components of the new FiberTite Roofing System.
3. Wood decking shall be sound, well seasoned or kiln dried and of proper thickness to accommodate design loads (including wind up-lift) according to specified design criteria and/or local building code requirements.
4. Wood decking should be installed to provide positive slope and subsequent positive drainage of the new FiberTite Roofing System.

3.5 INSTALLATION – GENERAL

A. Perform all related work specified in other sections of the contract documents necessary for the proper installation of the high performance high performance.

B. Ensure mechanical fasteners do not penetrate items located within or secured to the bottom of the deck: i.e. electrical conduit, post tension cables or other miscellaneous items.

C. Outside ambient air temperatures must be 40°F and rising during the use of any and all adhesives.

3.6 INSTALLATION OF WOOD NAILERS

A. Install treated lumber at the same heights as insulation layer or adjacent construction ± 1/4 inch Continuous treated wood nailers are to be installed at all perimeters, around roof projections and penetrations as shown in approved details.

B. Where wood nailers are installed directly on the substrate, the substrate shall be carefully examined to confirm that the entire area provides a suitable fastening surface. All defects shall be repaired by the appropriate trade prior to installation.

C. Nailers shall be at least 3½ inches wide and 1 1/2 inches high and installed and anchored in such a manner to resist a force of 250 lbs. per linear foot of wood blocking in any direction.

3.7 INSTALLATION OF INSULATION AND/OR COVERBOARD

A. Roof insulation and/or coverboard shall be installed where by the long dimension of the board(s) run in parallel alignment and the short dimensions are staggered.

B. Insulation and/or coverboard shall be installed with minimum joint dimensions and shall be tightly butted where possible. Maximum joint widths shall be 3/8 inch. Damaged corners shall be cut out and replaced with an insulation piece a minimum of 12 inch x 12 inch pieces which are cut from larger panels and are smaller than one square foot are not acceptable.

C. Install no more than can be covered during the same working day.

D. When a cover board and/or multiple layers of installation are installed each layer shall be offset from the previous layer a minimum of 12 inch on center.

E. At the end of each working day, provide a watertight cover on all unused insulation as to avoid moisture penetration

3.8 INSULATION SECUREMENT

A. Insulation shall be applied to and installed over properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.

B. FTR-601
1. Adhesive shall be applied only to properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.
2. The minimum product temperature at time of application shall be 70°F.
3. Adhesives shall not be applied when surface or ambient temperatures are below 40° or above 110° F.
4. Insulation shall be fully bonded to the substrate with a maximum board size of 4 feet x 4 feet.
5. Insulation shall be set into a continuous 1/2 inch bead of adhesive at a minimum rate of one linear foot of adhesive for every one square foot of insulation board.
6. Adhesive rates are to be increased in roof perimeter and corner zones according to specific project requirements and manufacturer's design recommendations.
7. Place the boards onto the adhesive beads and walk on the boards, spreading the adhesive for maximum contact.
8. A second walking will be required after ten (10) minutes to ensure maximum contact and bond strength.

3.9 COVER BOARD SECUREMENT

A. Cover Board shall be applied to and installed over properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.

B. FTR-601
1. Adhesive shall be applied only to properly prepared and pre-approved substrates, free of any debris, dirt, grease, oil or moisture.
2. The minimum product temperature at time of application shall be 70°F.
3. Adhesives shall not be applied when surface or ambient temperatures are below 40° or above 110° F.
4. Insulation shall be fully bonded to the substrate with a maximum board size of 4 feet x 4 feet.
5. Insulation shall be set into a continuous 1/2 inch bead of adhesive at a minimum rate of one linear foot of adhesive for every one square foot of insulation board.
6. Adhesive rates are to be increased in roof perimeter and corner zones according to specific project requirements and manufacturer's design recommendations.
7. Place the boards onto the adhesive beads and walk on the boards, spreading the adhesive for maximum contact.
8. A second walking will be required after ten (10) minutes to ensure maximum contact

and bond strength.

3.10 KEE MEMBRANE INSTALLATION

A. Quality Control
1. It will be the responsibility of the roofing contractor to initiate and maintain a QC program to govern all aspects of the installation of the Membrane Roofing System.
2. The project foreman and or supervisor will be responsible for the daily execution of the QC program which will include but is not limited to the supervision, inspection and probing of all heat welding incorporated within the Membrane Roofing System.
3. If inconsistencies in the quality of the application of the composite, membrane and/or welds are found, all work shall cease until corrective actions are taken to ensure the continuity the installation.

B. General
1. Work shall be coordinated to ensure that sequencing of the installation promotes a 100% watertight installation at the end of each day.
2. Restrictions regarding outside ambient air temperature are relative only to the exposure limits of the workers and/or adhesives.
3. When using adhesives outside ambient air temperature shall be above 40°. Curing or drying time of the adhesive will be affected by ambient temperatures and must be taken into consideration when determining flashing lengths.
4. Humidity can affect the drying time of solvent borne adhesives and/or cause condensation to form on the newly applied adhesive.
5. Moisture may not be present on the adhesive prior to mating or application of Membrane Roofing System.
6. New Membrane Roofing Systems shall only be installed over properly prepared and sound substrates, free from excessive surface roughness, dirt, debris and moisture.

3.11 KEE MEMBRANE SECUREMENT

A. FTR-490
1. Un-roll approximately 30 feet of the KEE-FB membrane and position the roll over the properly installed/prepared substrate. Pull the tail back over the roll to expose a workable area (approx. 30') of substrate. (Do not utilize the "butterfly method".
2. Apply a 100% continuous coat of adhesive to the substrate
3. The amount of substrate that can be coated with a workable amount of adhesive will be determined by application method, ambient temperature, humidity, and available manpower.
4. To ensure proper application and curing of the adhesive, the outside air temperature shall be above 40°F and rising.
5. FTR-490 adhesive is to be applied by spraying and "back" rolling or just rolling. (Do not "dump" adhesive or pour from the cans)
6. Roller applied adhesive shall utilize a solvent resistant 3/8 inch nap roller.
7. Adhesive must be rolled out to ensure a smooth, even 100% coverage of the substrate with no voids, skips, globs, puddles, or similar irregularities.
8. Allow the adhesive to set up only to the point that the adhesive is slightly cured but still wet. Do not allow adhesive to skin "dry out".
9. Water borne adhesives (FTR-490) can be directly affected by moisture. Water based adhesives shall not to be installed over/on substrates that are moist or wet or on systems or substrates that have residual moisture.
10. Broom the adhered portion of the membrane to ensure full contact and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam-covered, lawn roller.
11. Repeat the process for the remaining un-bonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum of 3 inches, ensuring proper

shingling of the membrane to shed water along the laps.
12. No adhesive shall be applied to the lap "seam" areas of the membrane. Areas contaminated with adhesive are difficult to clean, will impair proper welding of the seams and require a membrane patch.
13. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect.

B. CR-20
1. For *all* FB membranes, unroll and position two rolls of FiberTite-FB over the properly installed/prepared substrate.
2. Ensure rolls are straight and the minimum 3 inch overlap between rolls is maintained.
3. Peel (butterfly) the rolls back in the long direction, half way upon themselves to expose the substrate and the underlying polyester fleece backing.
4. Apply continuous spatter pattern of FiberTite CR-20 adhesive to the substrate between the rolls; dispensing the adhesive in a spattered pop-corn spray pattern.
5. Spatter pattern shall achieve a nominal 80% coverage of textured coating at approximately 0.25 of an inch nominal thickness. The balance of the substrate will get coated as the adhesive spreads during the brooming and rolling process.
6. Avoid spattering the back of the fleeceback membrane.
7. Do not allow adhesive to contaminate membrane overlaps. Use a sheet of insulation board to mask the spray area if required along adjoining membrane areas.
8. Overspray may be cleaned immediately with acetone while the adhesive is still wet.
9. Fold/maneuver the FB membrane into the wet adhesive, (approximate open time for the
10. FTR SMRP 08/17 – Page - 22
11. adhesive is 5 to 10 minutes depending on environmental conditions) avoiding wrinkles or air pockets in the FB membrane.
12. Broom the membrane into the wet adhesive and complete the bonding process by firmly pressing the bonded membrane into place with a weighted, foam covered lawn roller.
13. Repeat the process for the remaining unbonded portion of the membrane, lapping subsequent, adjacent rolls of membrane a minimum 3 inches, ensuring proper shingling of the membrane to shed water along the laps.
14. No adhesive shall be applied to the lap seam areas of the membrane. Areas contaminated with adhesive are difficult to clean, may impair proper welding of the seams and may require a membrane patch or strip.
15. FiberTite CR-20 adhesive is designed for use only when the substrate and ambient temperatures are a minimum 40°F and rising and the chemical cylinders are at least 70°F.
16. Do not use bad or marginal adhesives. Contact FTCS if the quality of the adhesive is suspect

3.12 HOT AIR WELDING

A. General
1. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder.
2. All field seams must be clean and dry prior to initiating any field welding.
3. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld.

B. Hand Welding
1. The lap or seam area of the membrane should be intermittently tack welded to hold the membrane in place.
2. Properly hand welded seams shall utilize a 1-1/2 inch wide nozzle, to create a homogeneous weld, a nominal 1-1/2 inches in width.

C. Automatic Machine Welding
   1. Follow all manufacturers' instructions for the safe operation of the automatic welder.
   2. Follow local code requirements for electric supply, grounding and surge protection.
   3. Properly Automatic Machine welded seams shall utilize a 1-1/2 inch wide nozzle, to create a homogeneous weld, a nominal 1-1/2 inches in width.

3.13 INSPECTION

A. The job foreman and/or supervisor shall initiate daily inspections of all completed work which shall include, but is not limited to the probing of all field welding with a dull pointed instrument to assure the quality of the application and ensure that any equipment or operator deficiencies are immediately resolved.

B. Ensure that all aspects of the installation (sheet layout, attachment, welding, flashing details, etc.) are in strict accordance with the most current MRSM Specifications and Details.

C. Excessive patching of field seams because of inexperienced or poor workmanship will not be accepted at time of FINAL INSPECTION FOR WARRANTY ACCEPTANCE.

3.14 KEE MEMBRANE FLASHING

A. Clean all vents, pipes, conduits, tubes, walls, and stacks to bare metal. All protrusions must be properly secured to the roof deck with approved fasteners.

B. Flash all curbs, parapets and interior walls in strict accordance with approved MRSM details.

C. The base flange of all membrane flashing shall extend out on to the plane of the deck, beyond the wood nailers to a maximum width of 8 inches.

D. Vertical flashing shall be terminated no less than 8 inch above the plane of the deck with approved termination bar and counter-flashing or metal cap flashing.

E. Complete all inside and outside corner flashing details with MRSM pre-formed corners or an approved field fabrication detail.

F. Probe all seams with a dull, pointed probe to ensure the weld has created a homogeneous bond.

3.15 METAL FLASHING

A. All perimeter edge details are to be fabricated from Polymeric-Clad Metal or utilize a prefabricated Fascia System.

B. Fasten all metal flashing to wood nailers or approved substrate with approved fasteners 8 inches on center.

C. Install metal flashing in accordance with MRSM Published Specifications and Construction Details.

3.16 ROOF DRAINS

A. Flash all roof drains in accordance with MRSM roof drain details.

B. Minimum 60-mil non-reinforced membrane shall be used for flashing the drain assembly.

C. The drain target sheet should be sized and installed to provide for a minimum of 12 inch of exposed 60-mil on all sides of the drain

3.17 PITCH PANS

A. EVERY REASONABLE effort shall be made to eliminate the need for pitch pans including the removal of all existing pans.

B. In the event of no alternative, fabricate pitch pans from Polymeric-Clad metal, installed in accordance with MRSM details.

C. Pitch Pans and the sealant will require periodic maintenance by the building owner's maintenance personnel.

3.18 EXPANSION JOINTS

A. Flash all expansion joints in accordance with authorized/approved details. Fasten all expansion joint material according to MRSM specifications. Ensure the expansion material has sufficient material to expand to the widest point in expansion without causing undue stress on the expansion joint material.

B. If the expansion joint is a "pre-formed" system, the manufacturer, description and a drawing illustrating the method of installation must be included in the contractor's submittals.

3.19 SEALANTS

A. Apply authorized sealant(s) to all surface mounted reglets and per project requirements. Sealant(s) are to shed water. Follow all manufacturer's instructions and installation guides.

B. Use primer when recommended by the manufacturer.

C. Sealants will require periodic maintenance by the building owner's maintenance personnel.

3.20 TEMPORARY SEALS

A. At the end of each working day or at the sign of rain, install temporary, 100% watertight seal(s) where the completed new roofing adjoins the uncovered deck.

B. If water is allowed to enter beneath the newly completed roofing, the affected area(s) shall be removed and replaced at no additional expense to the building owner.

C. Prior to the commencement of work, cut out and remove all contaminated membrane, insulation, roof cement or sealant and properly dispose off site.

3.21 WALKWAYS

A. Walkways and protection pads shall be installed at staging areas for roof top equipment maintenance or areas subject to regular foot traffic as designated by contract and/or drawings.

3.22 COMPLETION

A. Remove any and all debris, excess materials and scrap of any kind from the roof and surrounding premises prior to demobilization.

B. Inspect all field welds, detailing and terminations to ensure a 100% the watertight installation.

3.23 WARRANTY INSPECTION

A. Upon completion of the project, the authorized roofing contractor shall complete and submit the MRSM Project Completion Notice.

B. Upon receipt of the notice of completion, a Technical Representative of the MRSM shall schedule an inspection with a representative of the authorized roofing contractor to thoroughly review the installation and verify compliance with MRSM specifications.

C. Any corrections or modifications necessary for compliance with the specifications and acceptance for warranty (punch list) will be noted on the Final Inspection for Warranty Form.

D. Upon completion of all punch list items and final acceptance of the installation, a warranty as authorized by the MRSM will be issued.

END OF SECTION 07 54 16