

- 1 1.01 DESCRIPTION OF WORK  
2  
3 A. It is the intent of the specification that the new work will provide a watertight facility. The  
4 attached specifications describe the minimum acceptable standards of construction and  
5 finish.  
6  
7 B. Provide a white Elvaloy® based thermoplastic fleece backed sheet roof system as  
8 indicated in these specifications for the Houston Community College System Facility  
9 known as 3100 Main. The roof shall be installed in accordance with the attached  
10 specifications and in strict accordance with the manufacturer's recommended procedures.  
11
- 12 1.02 CHANGES  
13  
14 A. Changes to specifications and drawings will not be acceptable unless approved in writing  
15 by the manufacturer and the Owner.  
16
- 17 1.03 TAXES  
18  
19 A. Except as otherwise provided in the Contract Documents the Contract Price includes all  
20 applicable federal, state and local taxes. The purchase, lease, rental, storage, use or  
21 other consumption of tangible personal property, for the performance of this Contract by  
22 the Contractor, is exempted from state and local sales tax pursuant to the provisions of  
23 Article 20.04 (Y) of the TX Limited Sales Excise and Use Tax Act. To claim the benefit of  
24 this exemption, the Contractor must comply with such procedures as may be prescribed  
25 by the State Comptroller of Public Accounts.  
26
- 27 1.04 WORKING TIME  
28  
29 A. A working day is defined as a calendar day, not including Saturdays, Sundays, or legal  
30 holidays, in which weather or other conditions not under the control of the company will  
31 permit the performance of the principal units of work underway for a continuous period of  
32 not less than seven (7) hours between 6:00 A.M. and 6:00 P.M. For every Saturday on  
33 which the company chooses to work, one day will be charged against the working time  
34 when weather conditions will permit seven (7) hours of work as delineated above. A  
35 principal unit of work shall be that unit which controls the completion time of the  
36 agreement. Nothing in this item shall be construed as prohibiting the company from  
37 working on Saturdays if it so desires.  
38
- 39 1.05 INSPECTION  
40  
41 A. An inspection shall be made by a representative of the material manufacturer of the  
42 completed project to ensure that said project was installed in accordance with the  
43 manufacturer's specifications and illustrated details. Upon this approval of the project, the  
44 specified warranty or warranties shall be written.  
45
- 46 1.06 BASE PROPOSAL  
47  
48 A. The Contractor will furnish all labor and materials, and all of the collective costs applicable  
49 will be shown as a total Base Proposal costs.  
50

- 1 1.07 QUALITY ASSURANCE  
2  
3 A. All work and materials hereinafter specified shall be best of kind described and, unless  
4 specified otherwise, shall be new and of best quality. The specified roofing system shall  
5 have been used successfully in the United States for a minimum of ten (10) years.  
6  
7 B. All materials will be securely fastened in place in a watertight, neat and workmanlike  
8 manner. All workmen shall be thoroughly experienced in the particular class of work upon  
9 which employed. All work shall be done in accordance with these specifications and shall  
10 meet the approval in the field of the Owner's representative. Contractor's representative  
11 and/or job supervisor shall have a complete copy of specifications and drawings on job  
12 site at all times.  
13  
14 C. Contractor shall plan and conduct the operations of the work so that each section started  
15 on one day is complete, details installed and thoroughly protected before the close of work  
16 for that day.  
17  
18 D. Where any material is specified by proprietary name, trade name, name of manufacturer,  
19 generic name, or catalog number with the addition of such expressions as "or equal"/"or  
20 approved equal", it is understood that the material named is intended and no substitution  
21 will be allowed without written approval by the Owner's representative three (3) calendar  
22 days prior to proposal due date.  
23  
24 E. Should a specified material not be available, a substitution shall require approval (in  
25 writing) of the Owner's representative and the roof system manufacturer issuing the  
26 warranty before being utilized on this project.  
27  
28 F. Unless otherwise indicated, the materials to be used in this specification are those  
29 specified and denote the type, quality, performance, etc. required. All proposals shall be  
30 based upon the use of specified material.  
31  
32 G. A Contractor who proposes to quote on the basis of an "or equal"/"or approved equal"  
33 alternate material or system shall submit to the Owner's representative the following  
34 information, at least five (5) calendar days prior to scheduled proposal opening. Only one  
35 request for substitution will be considered for each material or system. When substitution  
36 is not accepted, specified product or system shall be used.  
37 1. A one (1) gallon sample of any adhesive, coating, mastic, or sealant and a three foot  
38 by five foot (2' x 2') sample of any sheeting or rolled goods as may be specified.  
39 2. A certificate from an accredited testing laboratory comparing the physical and  
40 performance attributes of the proposed material with those of the specified materials.  
41 3. A list of at least three (3) local jobs where the proposed alternate material was used  
42 under similar conditions and written documentation showing successful installation in  
43 the United States of similar size and scope for a minimum of ten (10) years. These  
44 jobs must be available for inspection by the Owner's representative.  
45 4. In the event a substitution is acceptable by the Owner, all contractors shall be  
46 notified of the acceptable alternate within three (3) calendar days prior to proposal  
47 opening.

1                   5.    During the course of work, the Owner's representative may secure from the  
2                   containers at the job site, samples of the materials being used and submit the  
3                   samples to an independent testing laboratory for comparison. If the results of the  
4                   independent testing laboratory prove that the materials are not comparable and  
5                   equal to the specified materials, the Contractor shall pay for the testing and the  
6                   Owner reserves the right to reduce the amount of the proposal by twenty percent  
7                   (20%) if all work has already been completed before the test results become known.  
8                   If the contract work is not completed when the test results become known, the  
9                   Owner shall impose a penalty in proportion to the amount of work already  
10                  completed, and all remaining work shall be completed with the specified materials.

11  
12                H.    Application of materials shall be in strict accordance with the manufacturer's  
13                recommendations. In the instance of a conflict between these specifications and those of  
14                the manufacturer, the most stringent shall take precedence.

15  
16                I.    Roofing system manufacturer shall have approval for FM Global wind uplift requirements  
17                and shall meet Underwriter's Laboratory fire rating.

18  
19                J.    Roof system shall be installed in accordance with FM Global requirements.

20  
21   1.08   PROCEDURE FOR USE OF SUBSTITUTION REQUEST FORM

22  
23                A.    Substitution request **including all required documentation** must be delivered to the  
24                Owner's Representative's office no later than the date indicated in the specifications.  
25                Requests submitted late will not be considered.

26  
27                B.    The Individual or Firm requesting a substitution must document that the requested  
28                substitution is equal or superior to the specified product. Failure to provide clear,  
29                accurate, and adequate documentation will be grounds for rejection.

30  
31                C.    Required documentation shall consist of applicable information which would aid the  
32                Architect in making an informed decision. Include **side by side product comparisons**,  
33                technical data, laboratory test results, product drawings, etc.

34  
35                D.    If use of the proposed product would result in changes to the design of the building, the  
36                submittal shall describe fully the changes required to the drawings or specifications. Any  
37                cost differences resulting from modifications to the drawings and specifications and the  
38                cost of making the changes shall be borne by the Product Supplier.

39  
40                E.    **No** product will be considered "as equal" to the product specified until it has been included  
41                as an allowable substitution, in a written Addendum to the project.

42  
43   1.09   EXAMINATION OF PREMISES

44  
45                A.    Before submitting proposals for his work, each contractor shall be held to have examined  
46                the premises and satisfied himself as to the existing conditions under which he will be  
47                obliged to work.

48

1 1.10 PROTECTION OF WORK AND PROPERTY  
2

- 3 A. Work: The contractor shall maintain adequate protection of all his work from damage and  
4 shall protect the Owner's and adjacent property from injury or loss arising from this  
5 contract. He shall provide and maintain at all times any OSHA required danger signs,  
6 guards, and/or obstructions necessary to protect the public and his workmen from any  
7 dangers inherent with or created by the work in progress. All federal, state, and city rules  
8 and requirements pertaining to safety and all EPA standards, OSHA standards, NESHAP  
9 regulations pertaining to asbestos as required shall be fulfilled by the contractor as part of  
10 his bid.  
11
- 12 B. Property: Protect existing planting and landscaping as necessary or required to provide  
13 and maintain clearance and access to the work of this contract. Examples of two  
14 categories or degrees of protection are generally as follows:  
15 1. Removal, protection, preservation, or replacement and replanting of plant materials.  
16 2. Protection of plant materials in place, and replacement of any damage resulting from  
17 the contractor's operations.  
18
- 19 C. Twenty-four Hour Call: The contractor shall have personnel on call twenty-four (24) hours  
20 per day, seven (7) days per week for emergencies during the course of a job. The  
21 Owner's project manager is to have the twenty-four (24) hour numbers for the contact.  
22 Contractor must be able to respond to any emergency call and have personnel on-site  
23 within two (2) hours after contact. Numbers available to the Owner's project manager are  
24 to be both home and office numbers for:  
25 1. Job Foreman  
26 2. Job Superintendent  
27 3. Owner or Company Officer  
28

29 1.11 PROTECTION OF PERSONS AND PROPERTY  
30

- 31 A. Safety Precautions and Programs: The contractor shall be responsible for initiating,  
32 maintaining and supervising all safety precautions and programs in connection with the  
33 performance of the Contract.  
34
- 35 B. Safety of Persons and Property: The contractor shall take reasonable precautions for  
36 safety of, and shall provide reasonable protection to prevent damage, injury or loss to:  
37 1. Employees on the work and other persons who may be affected thereby.  
38 2. The work, materials and equipment to be incorporated therein, whether in storage on  
39 or off the site, under care, custody or control of the contractor or the contractor's  
40 Subcontractors or Sub-subcontractors.  
41 3. Other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks,  
42 pavements, roadways, structures and utilities not designated for removal, relocation  
43 or replacement in the course of construction.  
44
- 45 C. The contractor shall give notices and comply with applicable laws, ordinances, rules,  
46 regulations and lawful orders of public authorities bearing on safety of persons or property  
47 or their protection from damage, injury or loss.  
48
- 49 D. The contractor shall erect and maintain, as required by existing conditions and  
50 performance of the contract, reasonable safeguards for safety and protection, including  
51 posting danger signs and other warnings against hazards, promulgating safety regulations  
52 and notifying owners and users of adjacent sites and utilities.

- 1 E. The contractor shall comply to all OSHA requirements and any other local, state or federal  
2 regulations pertaining to protection and safety of persons or property.  
3
- 4 F. The contractor and all Subcontractors shall take all necessary precautions to keep the  
5 premises free of fire and safety hazards. The contractor shall prevent all agents,  
6 employees, licensees and invitees of the contractor from smoking on the Owner's  
7 premises and from operating or using any flame, sparks or explosion hazard producing  
8 devices anywhere on or about the premises without the written approval of the Owner's  
9 representative.  
10
- 11 G. The contractor shall designate a responsible member of the contractor's organization at  
12 the site whose duty shall be the prevention of accidents. This person shall be the  
13 contractor's superintendent unless otherwise designated by the contractor in writing to the  
14 Owner's representative.  
15
- 16 H. The contractor shall not load or permit any part of the construction or site to be loaded so  
17 as to endanger its safety.  
18

19 1.12 PRE-CONSTRUCTION CONFERENCE  
20

- 21 A. A conference shall be scheduled by the Owner's representative and conducted at the work  
22 site prior to start of work. The Contractor's project supervisor or foreman and the Owner's  
23 representative shall attend. Job schedule, submittals, existing conditions, and  
24 specifications shall be reviewed and any questions arising shall be resolved to the  
25 satisfaction of all parties prior to start of work. Contractor shall begin work within five (5)  
26 calendar days following Owner's signing of contract and/or issuance of the written notice  
27 to proceed with work, weather permitting.  
28

29 1.13 SUBMITTALS  
30

- 31 A. Upon receipt of Notice of Acceptance of this proposal, the Contractor shall submit the  
32 following items. All submittals shall be submitted to the Owner/Owner's representative  
33 within ten (10) calendar days of the date on the Notice of Acceptance and prior to the  
34 award of contract.
- 35 1. Contractor's executed insurance certificate.
  - 36 2. Material manufacturer's approval/acceptance of the specifications and details as  
37 written or noted for this project, fastener pattern layout, insulation, fasteners and all  
38 related materials.
  - 39 3. Contractor's executed payment and performance bonds as required.
  - 40 4. Shop drawings of all perimeter and projection details, and sheet metal details  
41 approved by manufacturer, for Owner's approval if proposed details differ from those  
42 included with this proposal package. These drawings shall be approved by the  
43 membrane manufacturer and submitted at the preconstruction conference for Owner  
44 review and approval prior to work start.
  - 45 5. Approved applicator must submit a roof drawing which will be employed in the  
46 project if proposed drawing differs from that included with this proposal package.
  - 47 6. Shop Drawings and Product Data:
    - 48 a) Manufacturer's Details: All termination details and other details normally required  
49 by the membrane manufacturer's Technical Specifications, including both  
50 standard details and special details, shall be furnished by the Contractor and  
51 shall be approved in writing by the manufacturer, the company project manager,  
52 and the Owner's representative prior to final installation.

- 1 b) Date and mark shop drawings to show name of project, Owner, Contractor,  
2 origination Subcontractor, manufacturer or supplier, and separate details as  
3 pertinent.
- 4 c) Shop drawings shall completely identify specification sections and locations at  
5 which materials or equipment are to be installed.
- 6 d) Minimum drawing size shall be eight and one-half inches by eleven inches  
7 (8-1/2" x 11").
- 8 e) Submit sufficient copies of manufacturer's descriptive data including catalog  
9 sheets for materials, equipment and fixtures, showing dimensions, performance  
10 characteristics and capacities, diagrams and controls, schedules, and other  
11 pertinent information required.
- 12 f) Submit brochures and other submittal data that cannot be reproduced  
13 economically, in such quantities to allow the Owner to retain four copies of each  
14 after review. Mark product data to show the name of project, Owner, Contractor,  
15 originating Subcontractor, manufacturer or supplier, and separate details if  
16 pertinent.
- 17 g) Product data shall completely identify specification sections and locations at  
18 which materials or equipment are to be installed.
- 19 h) Accompany each submittal with a separate transmittal letter in duplicate,  
20 containing date, project title and number, Contractor's name and address,  
21 number of each shop drawing, product data and samples submitted, and  
22 notification of deviations from Contract Documents.
- 23 i) Three sets of prints from the final sepias will be returned to the Owner for record.  
24 The cost of printing all sepias and all prints is the responsibility of the Contractor.
- 25 7. Detailed project sequencing, staging, material loading, manpower plans, and  
26 detailed project construction schedule for approval.
- 27 8. Sample of warranty that is to be issued upon project completion.
- 28 9. Submit list of all mechanical, electrical, rigging, sheet metal, and other  
29 Subcontractors with evidence of Subcontractor's insurance coverage in compliance  
30 with contract requirements.
- 31 10. Project superintendent's resume and project experience list for proposed system.
- 32 11. Contractor shall submit written statement that their company or any Subcontractor  
33 they may use is not employing workers classified as undocumented workers on this  
34 project.
- 35 12. Samples of all materials not supplied or prior approved by the roofing membrane  
36 manufacturer shall be submitted to the manufacturer for written approval prior to  
37 installation start.

38  
39 1.14 USE OF PREMISES

- 40 A. The Contractor is advised that the Owner will occupy the building at all times, and the  
41 Contractor must provide all safeguards required to protect personnel and to keep noise  
42 levels as low as reasonably possible for each operation.
  - 43 B. The Contractor shall:
    - 44 1. Coordinate work in such a manner as to not interfere with the normal operation of  
45 the building.
    - 46 2. Assume full responsibility for protection and safekeeping of products stored on  
47 premises.
- 48  
49

3. Agree to hold the Owner harmless in any and all liability of every nature and description that may be suffered through bodily injuries, including death of any persons by reason of negligence of the Contractor, agents, employees, or Subcontractors.
4. The Contractor and all Subcontractors shall take all necessary precautions to prevent the use of alcoholic beverages on the Owner's premises.

C. Temporary Sanitary Facilities:

1. The contractor shall furnish and maintain temporary sanitary facilities for employees use during this project, including temporary toilets, wash facilities, and drinking water fixtures.
2. Toilet units shall be self-contained, single-occupant, of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
3. Facilities shall be installed where they will best service the project's needs, with Owner's/Owner's Representative's approval.
4. Contractor shall provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.
5. All portable facilities shall comply with local laws, codes, and regulations.
6. Contractor shall be responsible to see that the units are removed in a timely manner after the completion of the project.

1.15 SAFETY

- A. The contractor and all Subcontractors shall take all necessary precautions to keep the premises free of fire and safety hazards. The contractor shall prevent all agents, employees, licensees and invitees of the contractor from smoking on the Owner's premises and from operating or using any flame, spark or explosion hazard producing devices anywhere on or about the premises without the written approval of the Owner's representative.

1.16 INSPECTION OF WORK IN PROGRESS

- A. The Owner's representative will require the material manufacturer's representative to periodically examine the work in progress, as well as on completion, in order to assist in ascertaining the extent the materials and labor procedures conform to the requirements of the specifications.
- B. The authorized material manufacturer's field representative shall be responsible for:
1. Keeping the Owner's representative informed after periodic inspections as to the progress and quality of the work observed.
  2. Calling to the attention of the Contractor those matters observed which are considered to be in violation of the contract requirements.
  3. Reporting to the Owner's representative, in writing, any failure or refusal of the Contractor to correct unacceptable practices called to his attention.
  4. Confirming, after completion of the work and based on his observation and test, that he has observed no application procedures in conflict with these specifications. Final payment will not be released until all specified warranties have been received by the Owner.

1 1.17 FIELD INSPECTION AND CONTRACTOR RESPONSIBILITY

- 2
- 3 A. The Owner's representative shall at all times have access to the job site and work areas.  
4 The Contractor will provide proper and safe facilities for such access and inspection.  
5
- 6 B. Any time during the course of the project, an inspection may be deemed necessary by the  
7 Owner/Owner's representative to have one or all of the following members of the  
8 Contractor's organization present in person to inspect the work along with the  
9 Owner/Owner's representative: Owner, a Majority Stockholder, President and/or Chief  
10 Executive Officer of the contracting firm.  
11
- 12 C. The Owner/Owner's representative, if deemed necessary, will notify in writing who in the  
13 Contractor's organization they want to inspect the work on the roof in addition to the  
14 Contractor's normal inspection. If the designated person or persons requested by the  
15 Owner/Owner's representative fails to respond within forty-eight (48) hours to the request,  
16 the work may be suspended, payment withheld and/or liquidated damages outlined in the  
17 specifications assessed until such time the individual(s) inspect(s) the work with the  
18 Owner/Owner's representative.  
19
- 20 D. Neither the presence nor absence of the Owner's representative nor the manufacturer's  
21 representative, nor an inspection by the manufacturer of the work or operation of the  
22 Contractor, nor any failure by the manufacturer to detect, pinpoint, or object to any defect  
23 in the work completed, nor any deviation from these specifications, nor the acceptance by  
24 the manufacturer of any such defect or the approval of the manufacturer of any such  
25 deviation shall relieve the Contractor, or reduce, or in any way limit or divide, his full  
26 responsibility for the full performance of the work required of him under these  
27 specifications.  
28
- 29 E. It shall be understood that such field inspection as the Owner's representative may cause  
30 to be performed by the material manufacturer will be performed by the material  
31 manufacturer solely for the benefit of the Owner and in an attempt to assist with the  
32 requirements of this specification. These requirements bind the Contractor even without  
33 such inspection.
- 34 F. No inspection or any act or omission of either the Owner's representative or the  
35 manufacturer's representative in connection with such inspection shall prejudice the  
36 Owner's right to strict conformance, or under any circumstances be construed to excuse  
37 or mitigate any mistake or non-conformance by the Contractor.  
38

39 1.18 ON-SITE SUPERVISION

- 40
- 41 A. The Contractor is responsible for the management and control of the work. He shall give  
42 his personal superintendence of the work or have a competent resident manager or  
43 superintendent satisfactory to the Owner on the job site at all times while work is in  
44 progress, with full authority to act for the Contractor as his agent.  
45

46 1.19 CHANGES OR EXTRA WORK

- 47
- 48 A. No change or addition shall be made except upon receipt by the Contractor of a signed  
49 order from the Owner authorizing such a change. No claims for an extra to the contract  
50 price shall be valid unless so authorized.  
51



1 1.20 ROOFTOP EQUIPMENT  
2

- 3 A. All equipment shall be moved by the roofing Contractor as required to install roofing  
4 materials complete and in accordance with the plans and specifications. When units or  
5 equipment are to be moved, they shall be disconnected and moved by the roofing  
6 Contractor to a protected area so as not to damage any part or component thereof, and  
7 shall be reset by the roofing Contractor and reconnected at the Contractor's expense, all  
8 according to local building codes. All disconnection and reconnection shall be performed  
9 by a mechanical and/or electrical company licensed to perform such work.  
10  
11 B. Where mechanical items, conduits, cables, raceways, piping or any other roof-top  
12 mounted item must be moved in any manner, or disconnected and reconnected as made  
13 necessary by the reroofing of the specified areas at the facility, all roof-top equipment,  
14 piping, insulation, wires, fiber optic cable, any information systems components, conduits,  
15 panels, motor starters, raceways, switches, antennas, satellite components, etc. shall be  
16 replaced or renewed to match existing if damaged by Contractor. NOTE: It is the  
17 responsibility of the Contractor to review the condition of any and all of the above noted, or  
18 similar, items with authorized Owner personnel to determine condition of said items  
19 PRIOR TO START OF WORK. If this review is not completed as prescribed, any and all  
20 damage found at the end of the work will be repaired solely at the contractor's expense.  
21  
22 C. Any action by roofing contractor personnel which causes interruption of the ongoing works  
23 of the Owner's facility will be repaired at the sole expense of the roofing contractor. Upon  
24 interruption of the Owner's ability to meet required tasks, Owner may immediately, and  
25 without the contractor's permission, take such action as necessary to repair said damage  
26 so that the Owner's work may be resumed. The Owner has the obligation to notify the  
27 contractor of such action as soon as possible, but in all cases must notify the contractor in  
28 writing within 48 hours of the occurrence of the incident.  
29

30 1.21 FINAL INSPECTION  
31

- 32 A. Upon job completion, a final inspection will be made by Owner's representative. Final  
33 payment will not be authorized for the work done until such inspection has been made and  
34 all work is found to have been performed in accordance with the specifications and to the  
35 satisfaction of the building Owner, and the specified warranties are issued.  
36  
37 B. The Contractor shall promptly remove any work that does not meet the requirements of  
38 the plans and specifications or is incorrectly installed or otherwise disapproved by the  
39 Owner as failing to meet with the plans and specifications. The Contractor shall promptly  
40 replace any such work without expense to the Owner and shall bear the cost of making  
41 good all work of other contractors or the Owner, destroyed or damaged by such removal  
42 or replacement.  
43

44 1.22 WAGES AND OVERTIME  
45

- 46 A. Overtime: Work that the Contractor performs on overtime for the Contractor's benefit is  
47 not billable to the Owner. The work that the Owner requests in writing to be performed  
48 during off hours is billable to Owner by the Contractor at the rate as proposed under unit  
49 cost.  
50

1 B. Wage Rates:

2  
3 1. Requirements:

4  
5 a) Pay not less than the minimum wage scale and benefits indicated on the  
6 "Minimum Wage Schedule" provided herein.

7  
8 b) Wages listed are minimum rates only.

9  
10 c) No claims for additional compensation will be considered by the Owner because  
11 of payments of wage rates in excess of the applicable rate contained herein.

12  
13 2. Applicable Statutes: Vernon's Civil Statutes, Section 2 of Article 5159a, which states  
14 as follows:

15  
16 "...The Contractor shall forfeit as a penalty to the State, County, City and County,  
17 City, Town, District or other political subdivision on whose behalf the contract is  
18 made or awarded, ten dollars (\$10.00) for each laborer, workman or mechanic, for  
19 each working day, or portion thereof, such laborer, workman or mechanic is paid less  
20 than the said stipulated rates for any work done under said contract, by him, or by  
21 any Subcontractor under him, and the public body awarding the contract shall cause  
22 to be inserted in the contract a stipulation to this effect..."

23  
24 3. Payroll: In compliance with Article 5159a, Sections 2 and 3, of the Revised Civil  
25 Statute referenced above, the Owner reserves the rights as defined by Section 3  
26 which states as follows:

27  
28 "Sec. 3. The Contractor and each Subcontractor shall keep, or cause to be kept, an  
29 accurate record showing the names and occupations of all laborers, workmen and  
30 mechanics employed by him, in connection with the said public work, and showing  
31 also the actual per diem wages paid to each of such workers, which record shall be  
32 open at all reasonable hours to the inspection of the public body awarding the  
33 contract, its officers and agents."

34  
35 4. Minimum Wage Rates:

36  
37 a) Pay prevailing basic wage listed, plus any applicable fringe benefits.

38  
39 PREVAILING WAGE SCALE NOTICE

40  
41 i. Prevailing wages shall not be construed to prohibit the payment of more than  
42 the rates named. Under no condition shall any laborer, workman or  
43 mechanic employed on this job be paid less than the minimum wage scale.

44  
45 ii. In execution of this contract, the Contractor must comply with all applicable  
46 state and federal laws, including, but not limited to, laws concerned with  
47 labor, equal employment opportunity, safety, and minimum wage.

1                                   iii. The following wage rates have been represented to the Owner as being  
 2                                   relatively current and accurate. Anyone knowing these wage rates to be in  
 3                                   error shall bring this to the attention of the Owner's representative so an  
 4                                   Addendum can be issued, if the new rates can be substantiated. The Owner  
 5                                   and Owner's representative shall not be held responsible for errors in these  
 6                                   wage rates.  
 7

8                   b) Basic Rates:

<u>Classification (Trade/Craft)</u>	<u>Basic Wage Rates</u>
12                   Asbestos Worker/Insulator (Including Application of All 13                                   Insulating Materials, Protective Coverings, Coatings 14                                   and Finishing to All Type of Mechanical Systems)	\$ 20.75
15                   Boilermaker	23.14
16                   Carpenter (Including Acoustical Ceiling Work)	22.50
17                   Electrician (Including Pulling Wire and Low Voltage 18                                   Wiring and Installation of Fire Alarms, Security 19                                   Systems, Telephones, and Computers)	27.65
20                   Elevator Mechanic	38.52
21                   Plasterer	19.42
22                   Plumbers (Excluding HVAC Pipe)	31.30
23                   Pipefitters (HVAC Pipe Only)	29.39
24                   Sprinkler Fitter (Fire Sprinklers)	25.40
25                   Sheet Metal Worker (Including HVAC Duct and 26                                   System Installation)	25.67
27                   Asbestos Abatement Worker (Ceilings, Floors, and Walls Only)	17.27
28                   Bricklayer	18.87
29                   Cement Mason/Concrete Finisher	13.93
30                   Drywall Finisher/Taper	16.27
31                   Drywall Hanger, Including Metal Studs Installation	17.44
32                   Formbuilder/Formsetter	12.77
33                   Glazier	22.02
34                   Insulator-Batt and Foam	14.87
35                   Ironworkers:	
36                                   Reinforcing	12.14
37                                   Structural	22.02
38                   Laborers:	
39                                   Common	11.76
40                                   Mason Tender (Brick)	13.47
41                                   Mason Tender (Cement)	10.48

1	Pipelayer	12.92
2	Plaster Tender	12.94
3	Lather	1973
4	Painter (Brush, Roller and Spray)	17.24
5	Pipefitters (Excluding HVAC Pipe)	29.39
6	Power Equipment Operator:	
7	Asphalt Paver	16.03
8	Backhoe	13.94
9	Crane	34.85
10	Forklift	16.00
11	Slab and Wall Saw	16.03
12	Roofer	15.40
13	Tile Finisher	12.00
14	Tile Setter	16.17
15	Truck Driver	14.18

16 Welders: Receive rate prescribed for craft performing operation  
17 to which welding is incidental.

18  
19 c) Apprentice Pay - All Trades and Crafts: The minimum rate for apprentices shall  
20 be in accordance with the scale determined by an approved apprenticeship  
21 program or \$1.00 per hour less than journeyman's rates, whichever is lower. An  
22 approved apprenticeship program is one approved by the U.S. Department of  
23 Labor, Bureau of Apprenticeship Training, and only apprentices enrolled in an  
24 approved program may be paid apprenticeship rates.

25  
26 d) Base Per Diem Rate: Hours worked per day, times base hourly rate.

27  
28 e) Multipliers for Overtime Rates:

29 i. Over 40 hours per week: Base hourly rate times 1.5.

30 ii. Holidays: Base hourly rate times 1.5.

31

32 1.23 PERMITS

33

34 A. The Contractor shall obtain and pay for all permits required, give all legal notices and pay  
35 all fees required for the work. Contractor shall comply with all ordinances and laws. Any  
36 and all work done which does not meet requirements of any local authorities must be  
37 properly redone, and incidental work replaced by the Contractor, without cost to the  
38 Owner.

39

40 1.24 SUBCONTRACTING OF WORK

41

42 A. The Owner shall have the right to accept or reject the use of any subcontractor. The  
43 Contractor shall submit a list of proposed Subcontractors with his proposal.

1 1.25 REJECTION OF PROPOSALS

- 2  
3 A. The Owner reserves the right to reject any one or all proposals, to waive any formalities or  
4 irregularities, and to award the contract in the best interest of the College System.  
5

6 1.26 SELECTION CRITERIA FOR QUALIFYING ROOFING PROPOSALS

- 7  
8 A. It is not the policy of the Houston Community College System to purchase on the basis of  
9 low price alone. In evaluating proposals submitted, HCCS has the right under the TX  
10 Education Code, Section 44, to take several items into consideration before entering into a  
11 contract. These considerations can include, but are not limited to:  
12 1. Specified physical properties of the materials/membrane utilized.  
13 2. Total proposal price.  
14 3. Suitability for the intended use.  
15 a) Proposed system shall follow NRCA guidelines and the system manufacturer's  
16 published specifications, and be installed in accordance with governing building  
17 codes, FM Global, Underwriter's Laboratories, SMACNA, etc.  
18 b) Is lap integrity dependent upon: 1) hot-air fusion monolithic weld, membrane to  
19 membrane;  
20 c) To substantiate Quality Assurance, please submit:  
21 i. Sample of field report.  
22 ii. Number of weekly jobsite visits to be performed.  
23 iii. Sample of job manifest.  
24 d) Warranty Comparison  
25 i. Warranty must be provided by manufacturer of membrane.  
26 ii. Submit disclaimers that affect proposed warranty. Does the published  
27 warranty list an exclusion for hail; i.e., is the warranty voided by hail? If  
28 there is no disclaimer in the published warranty, submit documentation  
29 stating what size hail the system is warranted up to, including historical  
30 supporting data and testing.  
31 iii. Submit documentation stating who is responsible for maintaining the  
32 integrity of laps in proposed system after contractor warranty expires.  
33 iv. Submit documentation to designate what specifically constitutes Owner's  
34 responsibilities concerning roof maintenance and what maintenance is  
35 specifically manufacturer's responsibility.  
36 v. Submit documentation stating that standard warranty shall cover all base  
37 flashing, parapet wall flashing, and top of parapet wall flashing.  
38 4. Attendance at Pre-Proposal Conference  
39 5. Probability of continuous availability and total long-term prices to acquire the  
40 vendor's goods and services.  
41 6. The reputation of the vendor and the vendor's goods and services.  
42 7. The quality of the vendor's goods and services.  
43 8. The extent to which the goods or services meet the HCCS needs.  
44 9. The vendor's past relationship and past performance with HCCS.  
45 10. Date of proposed delivery and placement.  
46 11. Safety record of vendor.  
47 12. Financial and technical resources of contractor adequate to service contract.  
48 13. Any relevant factor that a private business entity would consider in selecting a  
49 vendor.  
50 14. Qualification of insurance and bonds.  
51

1 1.27 ADDENDA  
2

3 A. Any verbal statement or inference prior to the proposal opening regarding modification of  
4 specifications is invalid unless so stated on an officially issued addendum.  
5

6 1.28 DEMOLITION  
7

8 A. All abandoned pitch pans, equipment, vents, curbs, and other such debris shall be  
9 removed by the Contractor. Abandoned items that require deck placement shall be  
10 marked by the Owner prior to proposal due date and/or the commencement of work.  
11 Contractor shall install new decking of like dimensions to provide a suitable substrate in  
12 areas where penetrations through the deck are removed.  
13

14 1.29 CREWS AND EQUIPMENT  
15

16 A. Contractor shall provide sufficient crews and equipment so that the project may progress  
17 without interruption or unnecessary delay.  
18

19 1.30 FUTURE REPAIRS  
20

21 A. Contractor certifies by acceptance of this project that any future repairs or alterations he  
22 might be called upon to execute after the project is complete, will be performed in  
23 accordance with the manufacturer's recommended procedures so as to not void the  
24 warranty.  
25

26 1.31 NAILERS AND ROOF DECK  
27

28 A. Contractor shall notify the Owner's representative of unforeseen areas of damaged  
29 decking. Where the damage is serious and extensive, it will be the Owner's prerogative to  
30 authorize removal and replacement.  
31

32 B. Any areas of unusual deck deflection noticed by the Contractor during the course of the  
33 job that will cause an area of ponding water should be brought to the attention of the  
34 Owner's representative by the Contractor.  
35

36 1.32 CONTRACT DOCUMENTS  
37

38 A. In the event of a conflict between the reroofing specifications and the Owner's contract  
39 documents, the Owner's contract documents shall take precedence.  
40

41  
42  
43  
44

**END OF SECTION 01100**

SECTION 07535  
FULLY ADHERED MULTI-PLY ROOF SYSTEM

PART 1 - GENERAL

1.01 AREAS COVERED

A. This specification is for all eyebrow roof areas located on 3100 Main.

1.02 INSTALLER QUALIFICATIONS

A. Roofing Installer must be:

1. Currently prequalified with the Owner in accordance with Owner's prequalification requirements.
2. Currently in good standing with the manufacturer.

B. It shall remain each Contractor's responsibility to determine his current status with the manufacturer's certification plan.

1.03 QUALITY ASSURANCE

A. Applicator/Installer:

1. Acceptable to roof material manufacturer for the manufacturer's warranty requirements.
2. Five (5) years successful experience on projects similar in size and scope.
3. Experienced in the type of roofing work required.
4. Successfully completed previous projects warranted by the manufacturer.

B. Testing Laboratory Services: Test results shall meet or exceed established standards.

C. Underwriters Laboratory (Roofing Covering): Class A fire hazard classification.

D. Comply with governing local, state, and federal regulations, safety standards, and codes.

1.04 REFERENCES (INCLUDING LATEST REVISIONS)

A. American Society for Testing and Materials:

1. ASTM B 209 - 90, Specification for Aluminum and Aluminum Alloy Sheet and Plate
2. ASTM C 719 - 86, Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cycle Movement (Hockman Cycle)
3. ASTM C 794 - 80 (1986), Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
4. ASTM C 920 - 87, Specification for Elastomeric Joint Sealants
5. ASTM D 312 - 89, Specification for Asphalt Used in Roofing
6. ASTM D 1863 - 86, Specification for Mineral Aggregate Used on Built-up Roofs
7. ASTM D 2178 - 89, Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
8. ASTM D 2824 - 85, Specification for Aluminum - Pigmented Asphalt Roof Coatings
9. ASTM D 4586 - 86, Specification for Asphalt Roof Cement, Asbestos Free
10. ASTM A 361 - 90, Sheet Steel, Zinc-Coated (Galv.) by the Hot-Dip Process for Roofing and Siding

- 1                    11. ASTM C 177, Test for Thermal Laboratory Services  
2                    12. ASTM C 728, Perlite Thermal Insulation Board  
3  
4                    B. Industry Standards:  
5                    1. The National Roofing Contractors Association (NRCA) - Roofing and Waterproofing  
6                    Manual  
7                    2. Single-ply Roofing Institute (SPRI) - A Professional Guide to Specifications Manual  
8                    3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) -  
9                    Architectural Sheet Metal Manual  
10                   4. American Society of Civil Engineers – ASCE 7  
11

12                   1.05 SUBMITTALS  
13

- 14                   A. Samples and Manufacturer's Submittals: Submit prior to delivery or installation.  
15                   1. Samples of all roofing system components including all specified accessories.  
16                   2. Submit samples of proposed warranty complete with any addenda necessary to  
17                   meet the warranty requirements as specified.  
18                   3. Submit latest edition of manufacturer's specifications and installation procedures.  
19                   Submit only those items applicable to this project.  
20                   4. A written statement from the roofing materials manufacturer approving the installer,  
21                   specifications and drawings as described and/or shown for this project and stating  
22                   the intent to guarantee the completed project.  
23                   5. Manufacturer's Equiviscous Temperatures (EVT) for the specified bitumens.  
24  
25                   B. Shop Drawings: Provide manufacturer's approved details of all perimeter conditions,  
26                   projection conditions, and any additional special job conditions which require details other  
27                   than indicated in the drawings.  
28  
29                   C. Maintenance Procedures: Within ten days of the date of Substantial Completion of the  
30                   project, deliver to the Owner three copies of the manufacturer's printed instructions  
31                   regarding care and maintenance of the roof.  
32

33                   1.06 DELIVERY, STORAGE, AND HANDLING  
34

- 35                   A. Deliver materials in manufacturer's original, unopened containers and rolls with all labels  
36                   intact and legible including labels indicating appropriate warnings, storage conditions, lot  
37                   numbers, and usage instructions. Materials damaged in shipping or storage shall not be  
38                   used.  
39  
40                   B. Deliver materials requiring fire resistance classification to the job with labels attached and  
41                   packaged as required by labeling service.  
42  
43                   C. Deliver materials in sufficient quantity to allow continuity of work.  
44  
45                   D. Handle and store material and equipment in such a manner as to avoid damage. Liquid  
46                   products shall be delivered sealed, in original containers.  
47  
48                   E. Handle rolled goods so as to prevent damage to edge or ends.  
49  
50                   F. Select and operate material handling equipment so as not to damage existing construction  
51                   or applied roofing.  
52



- 1 G. Moisture-sensitive products shall be maintained in dry storage areas and properly  
2 covered. Provide continuous protection of materials against wetting and moisture  
3 absorption. Store roofing and flashing materials on clean raised platforms with weather  
4 protective covering when stored outdoors.
- 5
- 6 H. Store rolled goods on end.
- 7
- 8 I. Protect materials against damage by construction traffic.
- 9
- 10 J. The proper storage of materials is the sole responsibility of the contractor and any wet or  
11 damaged roofing materials shall be discarded, removed from the project site, and replaced  
12 prior to application.
- 13
- 14 K. Comply with fire and safety regulations, especially with materials which are extremely  
15 flammable and/or toxic. Use safety precautions indicated on labels.
- 16
- 17 L. Products liable, such as emulsions, to degrade as a result of being frozen shall be  
18 maintained above 40° F in heated storage.
- 19
- 20 M. No storage of materials shall be permitted on roof areas other than those materials that  
21 are to be installed the same day.

22  
23 1.07 SITE CONDITIONS

- 24
- 25 A. Job Condition Requirements:
  - 26 1. Apply roofing in dry weather.
  - 27 2. Do not apply roofing when ambient temperature is below 40° F (4° C).
  - 28 3. Coordinate the work of the contractor with the work to be performed by the Owner's  
29 personnel, to ensure proper sequencing of the entire work. The Owner's personnel  
30 will be erecting interior protection for equipment, if required. The contractor is to  
31 schedule his work so that adequate time is allowed for the Owner's personnel to  
32 perform the work. No roof work shall be performed until the Owner's personnel have  
33 completed erection of the interior protection in that area.
  - 34 4. Proceed with roofing work only when weather conditions are in compliance with  
35 manufacturer's recommended limitations, and when conditions will permit the work to  
36 proceed in accordance with specifications.
  - 37 5. Schedule the work so the building will be left watertight at the end of each day. Do  
38 not remove more roofing material than can be reinstalled in any working day.
  - 39 6. All surfaces to receive new roofing shall be smooth, dry, and free from dirt, debris,  
40 and foreign material before any of this work is installed. Competent operators shall  
41 be in attendance at all times equipment is in use. Materials shall be stored neatly in  
42 areas designated by the Owner. Load placed on the roof at any point shall not  
43 exceed the safe load for which the roof is designed.
  - 44 7. The contractor shall take all necessary precautions to protect the roof mat and deck  
45 from damage. The contractor shall be responsible for repairing all new areas of  
46 damage caused by the negligence of the contractor, at the contractor's expense.  
47 The Owner's on-site representative shall determine damage caused by contractor  
48 negligence.
  - 49 8. The contractor shall follow local, state, and federal regulations, safety standards, and  
50 codes for the removal, handling, and disposal of asbestos containing materials, if  
51 present. When a conflict exists, use the stricter document.

- 1 9. Follow insurance underwriter's requirements acceptable for use with specified
- 2 products or systems.
- 3 10. Due caution should be exercised so as not to alter the structural integrity of the deck.
- 4 When cutting through any deck, care should be taken so as not to damage the deck
- 5 or any part of the deck, such as post tension cables, etc.
- 6 11. All kettles shall have an automatic thermostat control, and temperature gauge, all in
- 7 working order.
- 8 12. The contractor is to verify the location of all interior ducts, electrical lines, piping,
- 9 conduit, and/or similar obstructions. The contractor is to perform all work in such a
- 10 manner as to avoid contact with the above mentioned items.
- 11 13. Surface and air temperatures should be a minimum 45° F during applications of
- 12 cleaner and waterproof coating and remain above 45° F for a minimum of four (4)
- 13 hours following applications. Verify compatibility of cleaner with coatings, paints,
- 14 primers and joint sealers specified. Advise Owner's representative of any problems
- 15 in this regard prior to commencing cleaning operations.
- 16 14. Temporary Sanitary Facilities: The contractor shall furnish and maintain temporary
- 17 sanitary facilities for employees use during this project. These will be removed after
- 18 the completion of the project. All portable facilities shall comply with local laws,
- 19 codes, and regulations.
- 20
- 21 B. Protection of Work and Property:
- 22 1. Work: The contractor shall maintain adequate protection of all his work from
- 23 damage and shall protect the Owner's and adjacent property from injury or loss
- 24 arising from this contract. He shall provide and maintain at all times any OSHA
- 25 required danger signs, guards, and/or obstructions necessary to protect the public
- 26 and his workmen from any dangers inherent with or created by the work in progress.
- 27 All federal, state, and city rules and requirements pertaining to safety and all EPA
- 28 standards, OSHA standards, NESHAP regulations pertaining to asbestos as
- 29 required shall be fulfilled by the contractor as part of his proposal.
- 30 2. Property: Protect existing planting and landscaping as necessary or required to
- 31 provide and maintain clearance and access to the work of this contract. Examples of
- 32 two categories or degrees of protection are generally as follows: a) removal,
- 33 protection, preservation, or replacement and replanting of plant materials; b)
- 34 protection of plant materials in place, and replacement of any damage resulting from
- 35 the contractor's operations.
- 36 3. Twenty-four Hour Call: The contractor shall have personnel on call 24 hours per
- 37 day, seven (7) days per week for emergencies during the course of a job. The
- 38 Owner's Project Manager is to have the 24 hour numbers for the contact. Contractor
- 39 must be able to respond to any emergency call and have personnel on-site within
- 40 two (2) hours after contact. Numbers available to the Owner's Project Manager are
- 41 to be both home and office numbers for:
- 42 a) Job Foreman
- 43 b) Job Superintendent
- 44 c) Owner or Company Officer
- 45
- 46 C. Damage to Work of Others: The contractor shall repair, refinish, and make good any
- 47 damage to the building or landscaping resulting from any of his operation. This shall
- 48 include, but is not limited to, any damage to plaster, tile work, wall covering, paint, ceilings,
- 49 floors, or any other finished work. Damage done to the building, equipment, or grounds
- 50 must be repaired at the successful contractor's expense holding the Owner harmless from
- 51 any other claims for property damage and/or personal injury.
- 52

- 1 D. Measurements: It will be the contractor's responsibility to obtain and/or verify any  
2 necessary dimensions by visiting the job site, and the contractor shall be responsible for  
3 the correctness of same. Any drawings supplied are for reference only.  
4
- 5 E. Use of Premises:  
6 1. The contractor is advised that the Owner will occupy the building at all times, and the  
7 contractor must provide all safeguards required to protect personnel and to keep  
8 noise levels as low as reasonably possible for each operation.  
9 2. The contractor shall:  
10 a) Coordinate work in such a manner as to not interfere with the normal operation of  
11 the building.  
12 b) Assume full responsibility for protection and safekeeping of products stored on  
13 premises.  
14 c) Agree to hold the Owner harmless in any and all liability of every nature and  
15 description which may be suffered through bodily injuries, including death of any  
16 persons by reason of negligence of the contractor, agents, employees, or  
17 subcontractors.  
18
- 19 F. Cleaning and Disposal of Materials:  
20 1. Contractor shall keep the job clean and free from all loose materials and foreign  
21 matter. Contractor shall take necessary precautions to keep outside walls clean and  
22 shall allow no roofing materials to remain on the outside walls.  
23 2. All waste materials, rubbish, etc., shall be removed from the Owner's premises as  
24 accumulated. Rubbish shall be carefully handled to reduce the spread of dust. A  
25 suitable scrap chute or hoist must be used to lower any debris. At completion, all  
26 work areas shall be left broom clean and all contractor's equipment and materials  
27 removed from the site.  
28 3. All bituminous or roofing related materials shall be removed from ladders, stairs,  
29 railings, and similar parts of the building.  
30 4. Debris shall be deposited at an approved disposal site.  
31

32 1.08 WARRANTY  
33

- 34 A. Twenty (20) Year NDL Warranty: The complete roofing system shall be guaranteed for a  
35 minimum of twenty (20) years from the date of Substantial Completion for this project.  
36 Guarantee responsibilities shall be as follows:  
37 1. Roofing contractor shall guarantee the entire roofing system for a period of two (2)  
38 years from the date of Substantial Completion.  
39 2. The materials manufacturer shall guarantee the entire roofing system for a total  
40 period of twenty (20) years from the date of substantial completion. Warranty to  
41 include hail impact up to and including two (2) inch in diameter hail and 120 mph  
42 three second gust riders  
43 3. Membrane manufacturer shall provide the written warranty as specified.  
44 4. The entire roofing system shall be guaranteed to be watertight and against any  
45 failures of workmanship and materials. Repair of the system, including materials  
46 and labor, shall be done at no cost to the Owner.  
47 5. Warranty repairs shall be performed by a certified installer. The repairs shall be  
48 performed in accordance with the manufacturer's written instructions and  
49 recommended procedures so as to not void the warranty.  
50

- 1 B. During the proposal period each Contractor shall make arrangements with the materials  
2 manufacturer to provide the required warranty. Refer to SUBMITTALS paragraph in this  
3 section for requirements concerning submittals of warranty.  
4  
5

6 **PART 2 - PRODUCTS**

7  
8 2.01 GENERAL  
9

- 10 A. Compatibility: Provide materials that are recommended by manufacturers to be fully  
11 compatible with indicated substrates, or provide separation materials as required to  
12 eliminate contact between incompatible materials.  
13  
14 B. Materials herein specified are the basis of design and shall be supplied or approved in  
15 writing by the roof system manufacturer.  
16  
17 C. The white polyester reinforced fleece backed adhered Elvaloy® roofing system shall only  
18 be applied by manufacturer approved and trained roofing contractors.  
19  
20 D. The manufacturer shall have 15 years UL listing for the membrane to be used on the  
21 project. Membrane manufacturer shall have a minimum of 15 years FM approval, and  
22 15 years manufacturing experience with the roofing membrane specified for this project.  
23  
24 E. All roofing and roof accessories shall be installed in compliance with manufacturer's  
25 current specifications and details.  
26  
27 F. All materials used on the project shall be asbestos free.  
28  
29 G. BASIS OF DESIGN: Flex Membrane International, 2670 Leisch's Bridge Road, Suite 400  
30 Leesport, PA 19533.  
31

32 **ALTERNATE MANUFACTURERS:**

33 Fibertite: 1000 Venture Boulevard • Wooster, Ohio 44691 • Phone 800-927-8578  
34 60 mil FiberTite-XTreme FB  
35 Tremco: US: 1.800.852.6013  
36 TPA FB 80  
37

38 2.02 ROOFING MEMBRANE  
39

- 40 A. The white 67 mil polyester reinforced fleece backed Elvaloy membrane shall have the  
41 following minimum physical properties.  
42

<u>Property</u>	<u>Test Procedure</u>	<u>Physical Properties</u>
Color		White
Thickness	ASTM D 751	.067" Nominal
Breaking Strength	ASTM D 751	632 x 511 lbf
Tearing Strength	ASTM D 751	85 x 83 lbf
Elongation	ASTM D 751	45% x 42%
Heat Aging	ASTM D 3045	≥90% of Original
Low Temperature Bend	ASTM D 2136	-40° C
Water Vapor Permeability	ASTM E 96	3.5g/m2/day
Wt. Change After Immersion	ASTM D 570	0.41% max.
Seam Strength	ASTM D 751	≥ 90 % of sheet
Puncture Resistance	FTMS 101C	448 lbs

1	Static Puncture Resistance	ASTM D 5602	Pass @ 33 lbs
2	Dynamic Puncture Resistance	ASTM D 5635	Pass @ 20 J
3	Dimensional Stability	ASTM D 1204	0.2%
4	Accel. Weathering (Xenon Arc)	ASTM D 2565	10M hrs. (No Change)
5	Fungi Resistance	ASTM G 21	pass no growth
6	Underwriters Laboratory		Class A
7	Factory Mutual		Class 1-90
8	Solar Reflectivity	ASTM E 903	0.811
9	Solar Emissivity	ASTM E 903	0.919
10	Solar Reflectance Index (SRI)	ASTM E 1980	109

11

12 **2.03 FLASHING MEMBRANE**

13

14 A. The flashing membrane shall be a white Elvaloy® polyester reinforced flexible sheet

15

	<u>Property</u>	<u>Test Procedure</u>	<u>Physical Properties</u>
16	Color		White
17	Thickness	ASTM D 751	.063" Nominal
18	Breaking Strength	ASTM D 751	412 x 538 lbf
19	Tearing Strength	ASTM D751	111 x 110 lbf
20	Elongation	ASTM D 751	29% x 31%
21	Heat Aging	ASTM D 3045	≥90% of Original
22	Low Temperature Bend	ASTM D 2136	Pass @ -40°C
23	Seam Strength	ASTM D 751	100 %
24	Accel. Weathering	ASTM D 2565	10M hrs. (No Change)
25	Linear Dimensional Change	ASTM D 1204	0.5% maximum
26	Wt. Change after Immersion	ASTM D 570	0.41% maximum
27	Static Puncture Resistance	ASTM D 5602	Pass @ 33 lbs
28	Dynamic Puncture Resistance	ASTM D 5635	Pass @ 20 J
29	Underwriters Laboratory		Class A
30	Factory Mutual		Class 1-90
31	Solar Reflectivity	ASTM E 903	0.811
32	Solar Emissivity	ASTM E 903	0.919
33	Solar Reflectance Index (SRI)	ASTM E1980	109

34

35

36 **2.04 NON-REINFORCED MEMBRANE**

37

38 A. The non-reinforced membrane shall have the following minimum properties

39

40 1. Description: Non-reinforced thermoplastic white membrane, thickness

41

42 approximately 45 mils.

43

44 2. Use: Inside/outside corners, multiangled intersections, sealant pockets and other

45

46 conditions where molding of the membrane is required.

47

48 **2.05 CAULKS**

49

50 A. Sealant for use at coping joints, reglet joints, etc., shall be a one-component urethane

51

52 non-sag, gun grade sealant designed for use in active exterior joints, and shall meet or

53

54 exceed Federal Specification No. 1 TT-S-00230C, Type II, Class A, ASTM C 920. Where

55

56 joint surfaces are contained or are contaminated with bituminous materials, provide

57

58 manufacturer's modified-type sealant (modified with coal-tar or asphalt as required

59

- 1 B. To seal the leading edge of the membrane, to bond membrane at terminations with metal,  
2 and for open seam repair, sealant shall be a thermosetting, solvent free, non-slump, self-  
3 fixturing, multipurpose structural sealant which shall meet the following physical and  
4 performance properties,

5  
6 Properties

7 Specific Gravity 1.62 (13.5 lbs./gallon)  
8 Viscosity 800,000 cps Brookfield RTV, TF spindle, 4 rpm 70° F.  
9 Shear Strength (ASTM D-1002) 300 psi+ (7 day ambient cure)  
10 Elongation @ break (ASTM D-412) 300% (7 day ambient cure)  
11 Hardness Shore A (ASTM C-661) 50 – 55 (14 day ambient cure)  
12 Tack free time (ASTM C-679) 35 minutes  
13 Low temperature flex Minus 20° F: PASS  
14 Slump (sag) (ASTM C-639) Zero slump  
15 Shrinkage (ASTM D-2453) No measurable shrinkage (14 day cure)  
16 Service temperature -40° F to 200° F

17  
18 2.06 FASTENERS AND PLATES

- 19  
20 A. General: All fasteners and plates for the installation of insulation, and for the installation of  
21 the membrane, shall be supplied and warranted by the membrane manufacturer for the  
22 specific application.  
23  
24 B. Membrane attachment toggles, if required, shall be provided and warranted by the  
25 membrane manufacturer.  
26  
27 C. All fasteners and plates shall be FM Global approved corrosion resistant screws or  
28 anchors supplied and warranted by the membrane manufacturer. Fasteners shall be of a  
29 type and length recommended by the manufacturer for fastening the insulation and/or  
30 protection layer (through the existing roof in reroofing) to the structural roof deck.

31  
32 2.07 FASTENERS

- 33  
34 A. Fasteners and fastening plates or bars shall be listed in the FM Global Approval Guide,  
35 and be as recommended by the fastener manufacturer for the specific application.  
36  
37 B. Fastener for concrete Deck: Shall be a #14 fastener, fluorocarbon coated, with CR-10  
38 coating. A minimum .200 diameter shank and .250 diameter thread. To be used with  
39 round pressure plates or bar, and having a fluorocarbon CR-10 coating, when subjected to  
40 thirty (30) Kesternich cycles (DIN 50018) shows less than ten percent (10%) red rust  
41 which surpasses FM Global Approval Standard 4470. Fasteners, plates, and/or bars shall  
42 be listed in the FM Global Approval Guide.  
43  
44 C. Structural Concrete Nail: Shall be a spiral fluted for concrete, hot dipped galvanized, Con  
45 Tite nail with a minimum .210 diameter shank. To be used with round, plastic pressure  
46 plates, as manufactured by Olympic Manufacturing Group, Inc., or approved equal.  
47 Fasteners, plates, and/or bars shall be listed in the FM Global Approval Guide.  
48

2.08 ROOFING INSULATION ADHESIVE

- A. Shall be a dual component, reaction cure polyurethane adhesive, meeting the following physical properties.

Density	ASTM D-1622	Free Rise	3.2 lb/cf
Compressive Strength	ASTM D-1621	Parallel	38 psi @ 6% deflection
Tensile Strength	ASTM D 1623		35 psi
Water Absorption	ASTM D 2843		5.1%
Closed Cell Content	ASTM D 2856	90% min.; R-value=	3.8 new
Weight/Gallon (Liquid Components)		"Part 1" Component =	10.32 lbs.
		"Part 2" Component =	8.54 lbs.
		"Part 1" Component =	225 cps
		"Part 2" Component =	275 cps

2.09 COLD APPLIED FIELD ADHESIVE

- A. Shall have the following minimum properties.

<u>Property</u>	<u>Characteristics</u>
Type	Rubber, asphalt, resin dispersion; Water vehicle
Color Dried Film	Black
Viscosity	Approximately 18,000 cps. (Brookfield at 77° F) Heavy paint consistency -- readily pourable
Solids, Wt. %	Approximately 75%
Application Procedure	Brush, squeegee or roller
Working Period	Remains tacky permitting wet or dry combining over wide range of conditions.
Application Limits (Temp.)	Between 50 and 100° F. However apply at near mid-temperature range whenever possible.
Service After Application	Not affected by extremes in atmospheric conditions. Maintains good bond over range minus 20° F to plus 200° F. Excellent water and moisture resistance.
Caution	Keep from freezing. Store above 40° F
Weight per Gallon Net	Approximately 8.4 lbs.
Container Sizes	5 gallon
Primer Use	When the product is used over cementitious surfaces, the surface must first be primed 24 hours before adhesive applications. The primer should be a solvent base asphalt cut back. The application rate is approximately 3/4 gallon per 100 square feet.

2.10 BONDING ADHESIVE FOR FLASHING

- A. Description: Adhesive is a bonding cement of synthetic rubber for fully adhering membranes to various substrates, produced by Ashland Chemical, or approved equal.

Typical Liquid Properties (Room Temperature)	
Color	Amber/Yellow
Base Product	Neoprene
Solids	25%
Specific Gravity	.87
Pounds/Gallon	7.25
Viscosity (CPS)	2500
Solvents	Ketone, Toluene, Aliphatic Hydrocarbon, Zylene
Estimated Coverage	
2 Sided Application	55/70 sq. ft. (2/2.5 mils dry)
DOT Label Required	Flammable Liquid
Code - 584661	

- 1 B. Handling: Contains ingredients which could be harmful if mishandled. Contact with skin  
2 and eyes should be avoided and necessary protective equipment and clothing should be  
3 worn.  
4
- 5 2.11 ASPHALT ROOF PRIMER  
6
- 7 A. Quick-dry asphalt-based primer for priming of asphalt roof surfaces.  
8
- |                                    |              |
|------------------------------------|--------------|
| 9 Applicable Federal Specification | SS-A-701B    |
| 10 ASTM                            | D 41         |
| 11 Flash Point                     | 105° F       |
| 12 Viscosity at 80° F (ASTM D 217) | 50-60 K.U.   |
| 13 Weight per gallon               | 7.4 pounds   |
| 14 Drying time (to touch)          | Min. 4 hours |
- 15
- 16 2.12 WOOD  
17
- 18 A. All nailers, cants and wooden curbs shall be fire rated, treated lumber as required by  
19 NRCA, FM Global and Underwriters Laboratory guidelines.  
20
- 21 2.13 TRIM STRIP  
22
- 23 A. The trim strip shall have the following minimum properties  
24 1. Six inch (6") wide non-reinforced 45 mil thermoplastic used for capping butted ends  
25 of rolls.  
26 2. The trim strip is seamed with the use of hot-air welding.  
27
- 28 2.14 CORNERS  
29
- 30 A. Inside and outside corners shall be supplied by the membrane manufacturer and shall be  
31 of the same base material as the roof membrane.  
32
- 33 2.15 PIPE BANDS  
34
- 35 A. Stainless steel bands with self-locking heads.  
36
- 37 B. Tighten with hand tool for tension control and flush cut off.  
38
- 39 2.16 PRE-MOLDED BOOTS  
40
- 41 A. Non-reinforced thermoplastic tapered molds for various pipes, heat welded to field  
42 membrane and sealed at top with stainless steel pipe bands and seam sealer.  
43
- 44 2.17 PITCH PAN SEALANT  
45
- 46 A. Shall be one-part, self-leveling polyurethane sealant meeting Federal Specification No.  
47 TT-S-00230C, Type I, Class A, ASTM C 920, Type S, Grade P, Class 25, for use in new  
48 pitch pans.  
49



2.18 PIPESTANDS (6" OR SMALLER - LESS THAN 9" OFF ROOF SURFACE)

- A. Black, polycarbonate construction with stainless steel roller pin assembly suitable for gas lines and conduit set in finished roof assemblies, Model No. 24R, sized accordingly, as manufactured by Miro Industries, Inc.

2.19 LEAD FLASHING DRAINS

- A. Shall be four pound (4#) lead, minimum thirty-six inches by thirty-six inches (36" x 36"), used for flashing of internal drains.

2.20 WALKWAY PAD

- A. The walkway pad shall have the following minimum physical properties, and be applied with edges heat or solvent welded.

<u>Property</u>	<u>Test Procedure</u>	<u>Physical Properties</u>
Color		Gray/Yellow
Size		36" wide x 60' long
Thickness	ASTM D 638	.080" nominal
Reinforcement		1000 Denier Polyester
Tear Strength	ASTM D 751	210 X 200 lbf
Puncture Resistance		96 lbs
Cold Resistance	ASTM D 1043	-40° C
Shore A Durometer		85
Hydrostatic Resistance		400 psi
Dimensional Stability	ASTM D 1240	≤ 1%
Ultraviolet Stability		12,000 hrs. Excellent

2.21 TERMINATION/PRESSURE BARS

- A. Aluminum strip shall be extruded channel bar with a mill finish, width one inch (1"), thickness 0.100" ± .008", leg height one-fourth inch (1/4") top and bottom, leg angle ninety degrees (90°), for perimeter and curb anchorage, having predrilled holes six inches (6") on center, as manufactured by Olympic Fasteners, or approved equal.

2.22 VERTICAL WALL SHIMMING MATERIAL

- A. Shall be one of the following unless otherwise accepted by Owner's representative: OSB, exterior grade plywood, gypsum core board or concrete core board. Proper selection of material is required to achieve FM Global and UL guidelines.

2.23 SELF-ADHERING UNDERLAYMENT FOR TEMPORARY WATERPROOFING

- A. A premium heavyweight, minimum 60 mil, self-adhering underlayment, to use as a temporary waterproofing barrier.

2.24 DELIVERY AND STORAGE

- A. All materials shall be delivered with appropriate carton and can labels indicating appropriate warnings, storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.

1 2.25 PRECAUTIONS  
2

- 3 A. Some of the indicated materials are extremely flammable and/or toxic. Use precautions  
4 indicated on can and carton labels.  
5

6 2.26 MISCELLANEOUS MATERIALS  
7

- 8 A. Other materials shall be as specified or of the best grade for the proposed use as  
9 recommended by the manufacturer.  
10

11  
12 **PART 3 - EXECUTION**  
13

14 3.01 REFERENCE  
15

- 16 A. The manufacturer's Technical Specifications shall be considered a part of this  
17 specification and should be referred to for more specific application procedures and  
18 recommendations.  
19
- 20 B. Application of materials shall be in strict accordance with the manufacturer's  
21 recommendations except where more stringent requirements are shown or specified. In  
22 the instance of a conflict between these specifications and those of the manufacturer, the  
23 more stringent specifications shall take precedence.  
24
- 25 C. General Installation:  
26 1. Protect adjacent areas with tarpaulin or other durable materials.  
27 2. Contractor shall prevent overspray, and be responsible for parking lot areas and/or  
28 adjoining areas not part of this contract.  
29 3. Contractor shall be responsible for sealing, as required, all openings that may allow  
30 bitumen migration or drippage, i.e. pitch dams, envelopes, and filler strips.  
31 4. Prepare surfaces according to manufacturer's or applicator's published instructions.  
32 All metal that is to receive bitumen, or come in contact with bitumen or adhesive,  
33 shall be first primed with appropriate primer. Any prefinished sheet steel that is to  
34 receive bitumen, or come in contact with bitumen or adhesive, shall be scored,  
35 scuffed or abraded prior to receiving primer.  
36 5. Use cleaning materials or primers necessary to render an acceptable  
37 surface/substrate.  
38 6. All surfaces/substrates shall be clean and dry prior to application of materials.  
39 7. Prior to application of felts and membrane, all foreign matter, gravel, etc., shall be  
40 removed from the insulation and/or substrate. Gravel or debris between the  
41 insulation/substrate and plies is not acceptable.  
42 8. Wrinkles, buckles, kinks, and fishmouths are not acceptable when laying membrane.  
43 9. Where deteriorated base flashing is removed, primed cant strips shall be installed at  
44 the intersection of the deck and the vertical surfaces. All flashings shall be  
45 mechanically top-fastened with a termination bar a minimum of six inches (6") on  
46 center at the top leading edge, and be a minimum of eight inches (8") in height from  
47 finished membrane.  
48 10. Provide a water test of each roof section prior to substantial completion. The test  
49 should simulate rainfall of one inch (1") per hour minimum.  
50 11. On slopes greater than one inch (1") in twelve inches (12"), refer to NRCA and/or  
51 manufacturer's guidelines for backnailing procedures and follow the more stringent  
52 guidelines for all specified materials.

1 3.02 SUBSTRATE PREPARATION  
2

- 3 A. Remove existing roof membrane to the existing substrate. On areas where the existing  
4 membrane cannot be removed due to adhesion only, contractor shall Layover Existing.  
5 Remove and layover shall have all loose aggregate, dust, dirt, and debris by use of  
6 enclosed vacuum. Substrate shall be smooth and free of debris, sharp edges, and other  
7 surface irregularities prior to work starting. Existing surface shall be leveled, blisters cut,  
8 excessive aggregate removed prior to installation of approved insulation board. Remove  
9 and replace all wet fill materials as required to minimum of NRCA standards.

10  
11 3.03 CATEGORY II (NON-FRIABLE) ASBESTOS CONTAINING MATERIALS (ACM) REMOVAL  
12

13 NOTE: Asbestos removal procedures are required (if asbestos is present) while removal of  
14 ACM roof materials takes place. The following procedures are to be followed as a minimum:  
15

- 16 A. Roofing contractors who perform asbestos roof tear-off shall use hand tools such as axes,  
17 picks, shovels or mechanical equipment such as a "roof warrior" that uses a reciprocating  
18 wedge to tear roofing materials. Breaking and/or slicing of material is permitted. Sanding,  
19 grinding or abrading during handling is not permitted.  
20  
21 B. Wrap all rooftop ducts, vents or exhaust openings with 6 mil poly and tape.  
22  
23 C. Provide an Asbestos Hazard Control Supervisor (competent person) to oversee  
24 demolition.  
25  
26 D. Ensure employees have received OSHA required training in asbestos removal and health  
27 hazards associated with exposure to airborne asbestos fibers.  
28  
29 E. Roof will be sufficiently wetted down before removal to prevent dust, using pump-up  
30 garden sprayer or water hose with spray nozzle.  
31  
32 F. Perform personal and area air monitoring for at least the first three (3) days of the project  
33 in accordance with 29 CFR 1910.1001. Monitoring shall be done by either: 1) in-house  
34 certified abatement personnel; or 2) certified asbestos monitoring personnel from a  
35 certified outside source.  
36  
37 G. Asbestos Warning signs and tape shall be posted in tear-off area.  
38  
39 H. Based on air monitoring results, the contractor **MUST** execute a Written Negative  
40 Exposure Assessment Determination and keep on file at the project site along with air  
41 monitoring results.  
42  
43 I. Use airtight chutes or mechanical means to lower ACM from the roof. The ACM must be  
44 wrapped in poly and removed daily. If ACM is NOT wrapped, the disposal container must  
45 be enclosed.  
46  
47 J. Disposal: Can be disposed of as construction debris at any approved landfill.

48 3.04 NAILERS  
49

- 50 A. Wooden nailers shall be installed at outside perimeter of building according to NRCA,  
51 Underwriters Laboratory and IBC guidelines.

- 1 B. All Construction: Nailers shall be the same height as the new recovery board being  
2 installed where required. Nailers shall be raised if necessary by anchoring an additional  
3 nailer of appropriate height to the existing nailer if the existing nailer is not to be replaced.  
4 Nailers shall be anchored to resist a pull-out force of one hundred seventy-five pounds  
5 (175#) per foot. Fasteners shall be no less than two (2) per nailer, and be spaced at three  
6 feet (3') on center maximum. Expansion joint nailers shall extend upward a minimum of  
7 eight inches (8") above finish roof height.  
8

9 3.05 APPLICATION OF FLEECE BACKED MEMBRANE

- 10  
11 A. Fully Adhered Application: Fully adhere membrane to acceptable substrate with cold  
12 process adhesive applied at the rate specified by the manufacturer.  
13 1. The roof surface must be clean, dry and free of foreign material.  
14 2. Position sheets as indicated on approved shop drawings.  
15 3. Fold one end of the Elvaloy® sheet on top of itself until both ends meet. Apply  
16 manufacturers adhesive to the manufacturers required prepared roof surface. The  
17 sheet can then be pulled and laid into the bonding material using care not to create  
18 any wrinkles.  
19 4. Carefully push into place from fold line to overlap, avoiding wrinkles and air pockets.  
20 Roll membrane flat.  
21 5. Repeat procedure for other sheet half.  
22 6. Lap seams shall be done by lapping the two inch (2") selvedge edge over the  
23 non-selvedge edge of the previous roll. The selvedge edge seam shall be made  
24 with the heat gun method.  
25 7. Roll ends are butted together and capped with a six inch (6") wide trim strip. The  
26 trim strip is then seamed with the heat gun.  
27 8. Seam sealer shall be applied to all non-factory edges.  
28  
29 B. Lap Seaming Procedure: Overlap membrane for attachment method specified and hot-air  
30 welded with manufacturer's approved equipment.  
31 1. All surfaces to be weld shall be clean, dry and free of foreign material.  
32 2. All seams must then be checked with a needle probe and any voids repaired with the  
33 heat gun.  
34

35 3.06 FLASHING

- 36  
37 A. Flash all penetrations, metal edge systems, walls, curbs, expansion joints, drains as  
38 shown on details and approved shop drawings with white reinforced Elvaloy® flashing  
39 membrane.  
40 1. Use prefabricated flashing accessories or components such as sealant pockets,  
41 premolded vent/pipe flashing.  
42 2. Mechanically fasten flashing at terminations according to approved details.  
43 3. Fastening membrane flashing through metal counterflashing is not acceptable.  
44  
45 B. Any lumber or shimming required for attachment or to make material flashing flush or level  
46 with offsets and/or transitions shall be incorporated in the flashing specifications.  
47

48 3.07 BASE FLASHING (APPROXIMATELY 8" IN HEIGHT MINIMUM)

- 49  
50 A. Base flashings shall be installed using the flashing membrane, with length of run not to  
51 exceed twenty linear feet (20').  
52

- 1 B. Wooden nailers or curbs shall be installed at all edges and openings in the roof,  
2 mechanically fastened to the deck.  
3  
4 C. Cant strips shall be installed at the intersection of the deck and all vertical surfaces.  
5  
6 D. The roofing field membrane shall extend up over and two inches (2") above the top of cant  
7 strips at all vertical intersections or out to the roof's edge.  
8  
9 E. All existing substrates receiving flashing membrane shall be clean and primed with primer,  
10 prior to application as required.  
11  
12 F. All flashings shall be mechanically fastened with a termination bar a maximum of six  
13 inches (6") on center, be a maximum of eight inches (8") above finished roof height,  
14 extend a minimum of four inches (4") onto the field of horizontal roof membrane, and not  
15 exceed twenty linear feet (20') of run in length.  
16  
17 G. After proper termination of the base flashing at a minimum eight inch (8") height (or  
18 maximum eighteen inch (18") height), a saw cut reglet with counterflashing shall be  
19 installed according to NRCA and SMACNA guidelines.  
20  
21 H. All vertical flashing lap seams of the flashing membrane shall be hot-air welded.  
22  
23 I. All flashing membrane shall be adhered with flashing bonding adhesive to the vertical  
24 substrate and hot-air welded to the field of roof membrane; hot-air weld vertical laps.  
25  
26 J. Flashing laps shall be minimum two inch (2") width, no maximum. Hot-air weld of flashing  
27 lap shall be minimum two inch (2") width, no maximum.  
28  
29 K. Hot-Air Welding of Flashing Laps:  
30 1. When using a hand-held hot-air welder, the seams should be pressed together using  
31 a hand-held roller. The speed and temperature settings of the welding equipment  
32 can be affected by the weather conditions at the site of application, therefore, these  
33 parameters should be set by trial and error using two (2) pieces of the flashing  
34 membrane. Minimum width of hot-air weld two inches (2"), no maximum.  
35 2. Lay the laps together and apply pressure to the welded seam to ensure full  
36 adhesion.  
37 3. Allow the seams to set fully, and probe the entire length for voids. Reseam voids  
38 immediately with a hot-air gun and roller.  
39  
40 L. All hot-air welded seams/laps shall be tested daily with a probe for integrity, no variance.  
41

42 3.08 PERIMETER FASTENING

- 43  
44 A. Wood nailers are required for perimeter stops or edges. Field membrane and all plies  
45 shall be mechanically fastened to nailer on twelve inch (12") centers maximum.  
46

47 3.09 EDGING FLASHINGS

- 48  
49 A. An NRCA-approved gravel stop/fascia system shall be installed in strict accordance with  
50 published instructions.  
51

- 1 3.10 ROOF DRAINS  
2  
3 A. All drains are to be inspected by use of a camera to verify drains are open to the point of  
4 roof drain lines entering the underground storm drain. Contractor is to water test drain and  
5 drain lines prior to start of work in contact area.  
6  
7 B. In the event a drain line is blocked and cannot be unblocked by means of an auger or  
8 broken pipe is identified. Owner must be notified prior to roof work beginning. Roof work  
9 started indicates that the contractor accepts the drains, drain lines and connections. After  
10 roof work begins the contractor will be responsible for any clogged or damaged drain or  
11 drain line. Verify in writing that all drains and lines are free flowing and watertight prior to  
12 substantial completion. Comply with local plumbing codes.  
13  
14 C. Remove strainer and clamping ring. Repair (or replace if damaged) and reset. Replace  
15 any missing drain strainers with like kind of the existing adjacent drains.  
16  
17 3.11 WALKWAY PADS  
18  
19 A. Fully adhere and heat weld walkway pads (6 feet wide) where shown on drawings or  
20 where required to provide protected pathways from rooftop access points to mechanical or  
21 other equipment requiring rooftop maintenance.  
22  
23 3.12 CLEANING  
24  
25 A. Clean exposed surfaces of excess cement, adhesive, sealants, mortar and paint  
26 associated with the new work.  
27  
28 B. Clean work area of excess roofing materials and installation debris daily.  
29  
30 C. Repair or replace defaced or disfigured finishes caused by the work.  
31  
32 3.13 MEMBRANE CLEANING  
33  
34 A. After all membrane has been installed, it shall be cleaned with a cleaning agent  
35 compatible with the membrane to return the membrane to like new appearance.  
36  
37 3.14 PROTECTION  
38  
39 A. Protect all building surfaces against damage from roofing work.  
40  
41 B. Where traffic must continue over finished, installed roofing system, protect membrane,  
42 underlayment accessories and finishes from damage.  
43  
44 3.15 MEMBRANE PROTECTION  
45  
46 A. Where equipment pads, wood sleepers, or walkway slabs are to be installed over the  
47 roofing membrane, an additional layer of the roofing membrane shall be installed between  
48 the roofing membrane and the pad, sleeper, or slab. Due caution shall be exercised to  
49 prevent roofing membrane damage during placement. Where required, membrane shall  
50 be welded to field membrane to prevent slippage.  
51

- 1 3.16 PIPING/CONDUIT
- 2
- 3 A. Piping/conduit shall be raised to NRCA recommended heights, and new supports
- 4 furnished. Permanent supports shall be installed upon pads approved by membrane
- 5 manufacturer. Coordinate work with Owner's representative. Supports shall be rubber
- 6 based adhered to the roof system. Supports shall have clamping devices to hold all piping
- 7 in place to the support
- 8
- 9 B. All gas lines, piping, and conduits shall be coated with industrial grade yellow paint.

- 10
- 11 3.17 OVERNIGHT SEAL
- 12
- 13 A. Shall be performed according to accepted roofing practice as outlined in the NRCA
- 14 Roofing Manual, SPRI and membrane manufacturer's recommended procedure.
- 15
- 16 B. The roofing membrane shall be sealed to the roof deck or existing roof at the end of the
- 17 day or at the onset of inclement weather to prevent water from flowing into the completed
- 18 roofing system. Temporary seals shall be removed upon resumption of work.
- 19
- 20
- 21
- 22

**END OF SECTION 07535**

SECTION 07600  
SHEET METAL AND MISCELLANEOUS ACCESSORIES  
FOR FULLY ADHERED MULTI-PLY ROOF SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Provide flashing and sheet metal components for moisture protection.
2. Related accessories.

1.02 SUBMITTALS

A. Product Data:

1. Submit shop drawings, product data and mockups of all sheet metal.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers in satisfactory use in similar service for five (5) years. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer's instructions.

- B. Reference Standards: Applicable portions of ASCE, SMACNA, ASTM and NAAMM publications.

1.04 WARRANTIES

- A. Manufacturer's Product Warranty: Submit manufacturer's standard limited warranty signed by the manufacturer's authorized official, guaranteeing to correct failures in product which may occur during the warranty period, without reducing or otherwise limiting any other rights to correction which the Owner/Project Consultant may have under the contract documents. Failure is defined to include product failure which leads to interruption of a watertight installation. Correction may include repair or replacement of failed product.

- B. Contractor's Warranty Period: For roofing flashing and sheet metal, provide a written warranty which shall warrant work to be free of leaks and defects in materials and workmanship for two (2) years, starting from date of substantial completion.

- C. Defects of the sheet metal occurring during the warranty period shall be promptly corrected by the contractor, and defects of the roofing shall be promptly corrected by the manufacturer at no additional cost to the Owner. Upon notification from the Owner or the Owner's representative that evidence of a defect exists, the responsible party shall immediately inform the Owner's representative of the date on which corrective work will be scheduled, and shall notify the Owner's representative when the corrective work has been completed.



1 **PART 2 - PRODUCTS**

2  
3 2.01 SHEET METAL MATERIAL

- 4  
5 A. Prefinished Galvanized Sheet Steel (where visible from the ground): Shall be 24-gauge  
6 flat stock, prefinished with Kynar finish meeting ASTM A 446, forty-five and one-half  
7 inches to forty-eight inches width by one hundred twenty inches in length (45-1/2" - 48" x  
8 120") for use as new metal edge gravel guard, downspouts, gutters, coping and  
9 miscellaneous metal.  
10  
11 B. Elvaloy® Cladded Metal: Shall be G-90 galvanized steel with 25 mil Elvaloy® membrane  
12 lamination; width shall be four feet (4'), length shall be eight feet (8') or ten feet (10').  
13  
14 C. Stainless Steel: QQ-S-766, Class 301, 302, 304, or 316; or ASTM A 167, Type 301, 302,  
15 304, or 316; form and condition most suitable for the purpose.  
16  
17 D. All existing sheet metal shall be replaced with new metal of like gauge and type, or as  
18 specified on drawings.  
19  
20 E. All prefinished metal color shall be as selected by Owner/Architect from manufacturer's full  
21 range of colors, including metallics.  
22

23 2.02 FASTENERS

- 24  
25 A. Fasteners shall be same metal as flashing/sheet metal, or other non-corrosive metal as  
26 recommended by sheet manufacturer for the specific application. Match finish of exposed  
27 heads with material being fastened.  
28  
29 B. Fasteners and fastening plates or bars shall be listed in the FM Global Approval Guide.  
30  
31 C. Screws: Self-taping sheet metal type with neoprene washer, as appropriate.  
32  
33 D. Pop Rivets: Full stainless steel Series 42 or 44, as appropriate.  
34  
35 E. Continuous Clip: Concealed hold-down clip type; of same materials as coping, gravel  
36 guard, sized to suit application. Use a continuous clip, minimum 20-gauge G-90  
37 galvanized.  
38

39 2.03 RELATED MATERIAL

- 40 A. Sealant (for Sheet Metal): One-component polyurethane, conforming to requirements of  
41 FS TT-S-230C, non-staining and non-bleeding.  
42  
43

44 **PART 3 - EXECUTION**

45  
46 3.01 INSPECTION

- 47  
48 A. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set,  
49 cant strips and reglets in place, substrates are smooth and clean and nailing strips  
50 located.

1 B. Verify membrane termination and base flashings are in place, sealed and secure.

2  
3 C. Beginning of installation means acceptance of conditions.

4  
5 3.02 PREPARATION

6  
7 A. Field measure site conditions prior to fabricating work. Provide all shop drawings and  
8 mock-ups one month prior to installation to the Owner/Project Consultant for approval.

9  
10 B. Install starter and edge strips and cleats before starting installation.

11  
12 3.03 FABRICATION - GENERAL

13  
14 A. Shop-fabricate work to greatest extent possible. Comply with details shown, and with  
15 applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other  
16 recognized industry practices. Fabricate for waterproof and weather-resistant  
17 performance; with expansion provisions for running work, sufficient to permanently prevent  
18 leakage, damage or deterioration of the work. Form work to fit substrates. Comply with  
19 material manufacturer's instructions and recommendations. Form exposed sheet metal  
20 work without excessive oil-canning, buckling, and tool marks, true to line and levels as  
21 indicated, with exposed edges folded back to form hems.

22  
23 B. Fabricate copings with new galvanized sheet metal as specified. Fabricate light metal  
24 coping, gutters and downspouts as indicated.

25  
26 C. Fabricate pitch pans with Elvaloy® clad metal as specified.

27  
28 D. Form sheet metal on bending brake.

29  
30 E. Form materials with straight lines, sharp angles and smooth curves.

31  
32 F. Fold back edges on concealed side of exposed edge to form hem (1/2" minimum).

33  
34 G. Weld or solder joints on parts that are to be permanently and rigidly assembled.

35  
36 H. Limit single-piece lengths to ten feet (10').

37  
38 I. Fabricate corner pieces with eighteen inch (18") extensions, mitered and sealed by  
39 forming as one piece.

40  
41 J. Where installing flashing directly to masonry or dissimilar materials, backpaint with  
42 bituminous paint

43  
44 K. Install new metal rooftop projections. New rooftop projection details shall be as  
45 recommended in NRCA or SMACNA handbooks. All rooftop projections shall be cleaned,  
46 all joints sealed, and painted with a rust inhibitive paint.

47  
48 L. All sheet metal shall be sealed and watertight.

- 1 M. Metal work should be secured so as to prevent damage from buckling or wind. Where  
2 clips are shown, these are to be continuous.  
3  
4 N. All metal to receive bitumen or adhesive shall be first primed with asphalt primer.  
5  
6 O. All prefinished metal shall be sanded and/or abraded prior to receiving primer.  
7  
8 P. Separations: Provide for separation of metal from non-compatible metal or corrosive  
9 substrates by coating concealed surfaces at locations of contact, with bituminous coating  
10 or other permanent separation as recommended by manufacturer/fabricator.  
11  
12 Q. Bed flanges of work in a thick coat of bituminous roofing cement where required for  
13 waterproof performance.  
14

15 3.04 INSTALLATION  
16

- 17 A. General: All sheet metal termination to vertical wall shall have a through-wall with receiver  
18 installed on masonry walls or prefabricated "Z" bar flashing pre-installed to fluid applied  
19 wall finished prior to installation of sheet metal termination. This applies to edge metal,  
20 base flashing closures and all vertical surface intersections. Refer to NRCA, SMACNA,  
21 and metal manufacturer's guidelines.  
22  
23 B. Elvaloy® cladded metal shall be fabricated as needed; follow these specifications and  
24 standard sheet metal practice for attachment to roof details.  
25  
26 C. Coping:  
27 1. Install new pre-manufactured metal coping for a permanent watertight installation.  
28 2. All coping shall be pre-manufactured to include  
29 cover plate.  
30 3. Shall be minimum 24-gauge prefinished Kynar installed in ten foot (10') sections  
31 maximum.  
32 4. Vertical fascia shall extend minimum two and one-half inches (2-1/2") or be minimum  
33 one and one-half inches (1-1/2") below bottom of nailer, whichever is greater.  
34 5. Fabricate corner pieces with minimum eighteen inch (18"), maximum forty-eight  
35 inch (48") extensions, formed and sealed with rivets and sealant, as one piece.  
36 6. Hem exposed edges one-fourth inch (1/4") minimum.  
37 7. Provide and install continuous clip, minimum 22-gauge.  
38 8. Shall be fabricated in accordance with published details.  
39  
40 D. Counterflashing:  
41 1. Provide and install new metal counterflashing as required for a permanent watertight  
42 installation.  
43 2. Saw cut brick mortar joint to receive friction fit reglet and removable counterflashing  
44 as detailed in SMACNA Figure 4-3E.  
45

E. Pitch Pans:

1. Install pitch pans of 24-gauge, G-90 galvanized steel with a 25 Mil Elvaloy® Kee membrane lamination according to NRCA standards, minimum of six inches by six inches (6" x 6").
2. Pitch pans shall be fabricated to a minimum of six inches (6") above the finished roof membrane. The top vertical edge of the thermoplastic clad metal must be folded over to conceal the uncoated side of the metal inside the pitch pan. The pitch pan flange must be a minimum of three and one half inches (3.5") wide in contact with the horizontal roof plain or field of roof membrane.
3. Approved caulking or water block shall be applied under the pitch pan flange prior to securing the flange to the deck with approved fasteners a minimum of 4" on center.
4. All projections enclosed in pitch pans shall be cleaned in any manner suitable and coated with a rust inhibitive coating as approved by the Owner/Project Consultant. Coating shall be allowed to dry prior to pitch pan fill.
6. Base of pitch pans shall be filled with grout or cementitious binder to proper height and allowed to cure.
7. Top finish fill shall be self-leveling, one-part urethane, with maximum fill to within three-eighths inch (3/8") of top of pitch pan sides.
8. Strip the thermoplastic clad metal flange of the pitch pan to the field membrane with one strip of flashing membrane. The flashing membrane must extend from the outer edge of the pitch pan flange onto the field membrane a minimum of three inches (3") and butt to the vertical sides of the pitch pan on all 4 sides. The flashing membrane shall be hot air welded to the thermoplastic clad metal pitch pan and to the field membrane. Hot air welds shall be a minimum of two inches (2") wide.
9. Install preformed outside corners by hot air welding in place at all four (4) corners of the pitch pan.
10. Apply seam sealer to the edges of the flashing membrane.

F. Bonnets/Hoods:

1. Fabricate and install above all pitch pans, where necessary, or reinstall as applicable, metal bonnets over all pitch pans, NO EXCEPTIONS.
2. Bonnets/Hoods shall be manufactured with metal compatible with metal to which bonnet is to be attached.
3. On beams and other steel, weld in place bonnets fabricated from one-fourth inch (1/4") steel plate.
4. Draw band bonnets fabricated from 22-gauge galvanized steel may be used on circular projections.

3.05 FINISH

- A. Backpaint concealed metal surfaces with bituminous paint where expected to be in contact with cementitious materials or dissimilar metals. Exposed surfaces to be provided with a factory applied fluorocarbon Kynar finish meeting ASTM A 446 and AAMA specification 605.2 for high performance coating.

**END OF SECTION 07600**

**DETAIL DRAWINGS/ROOF PLANS**

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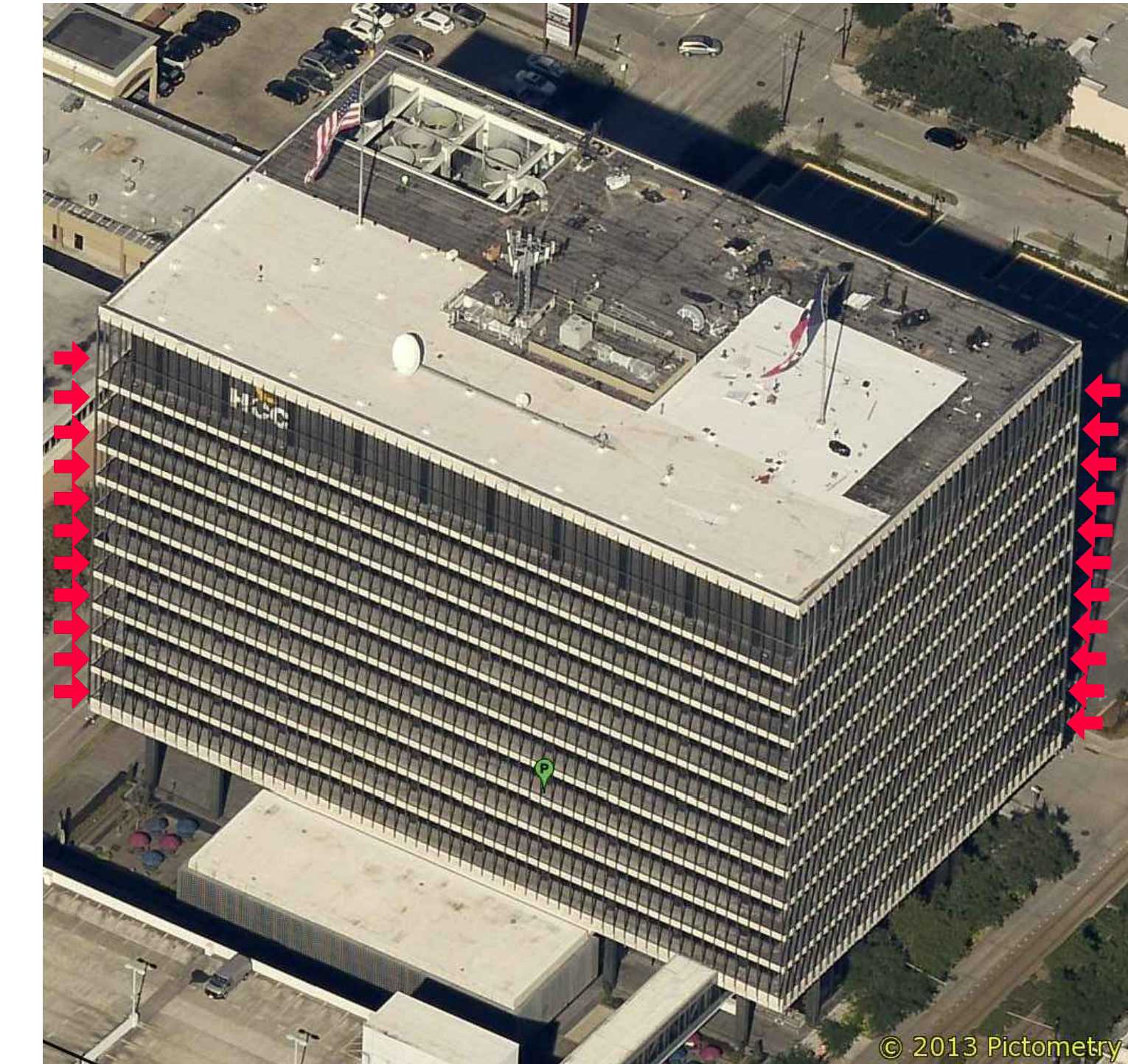
1.01 DETAIL DRAWINGS

- A. The enclosed details for this project are intended primarily to present the proper installation of the membranes used for waterproofing at flashings, perimeter closures, roof projections, etc. Specific underlying construction configurations, such as walls, nailers, wood backing, structural steel, etc., which may currently be in place may or may not be accurately depicted on the attached details. Unless specifically called out in the accompanying written specifications, or where a detail is noted "AS DRAWN", and/or proper roofing and construction practices are not being followed, underlying construction configurations are to remain unchanged from those in place on the building prior to this reroofing.

1.02 ROOF PLANS

- A. Any drawings supplied are for reference purposes only. Dimensions, penetrations, curbs, etc. must be field verified. Those shown are typical but may not be all inclusive, and contractor shall be responsible for the correctness of same. Any existing insulation thickness, deck type or other details shown on the drawings shall be subject to contractor confirmation.

**END OF SECTION**



**HOUSTON COMMUNITY COLLEGE SYSTEM  
OVERHANG RESTORATION  
HOUSTON, TEXAS**



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Flower Mound, TX



Contractor shall verify all  
substrates, dimensions,  
penetrations, curbs, etc.  
those shown are typical  
but may not be all  
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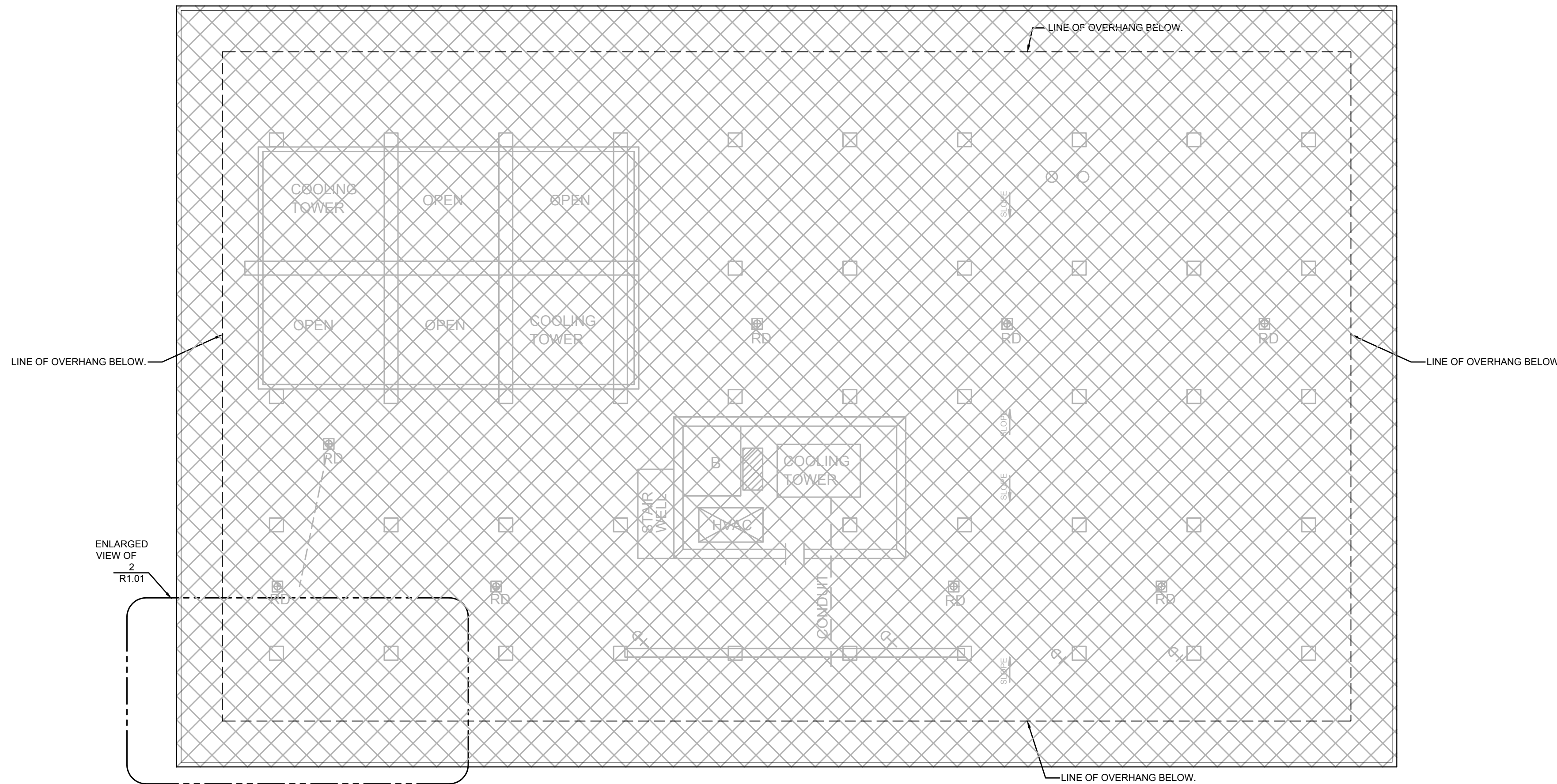
**ISSUES**

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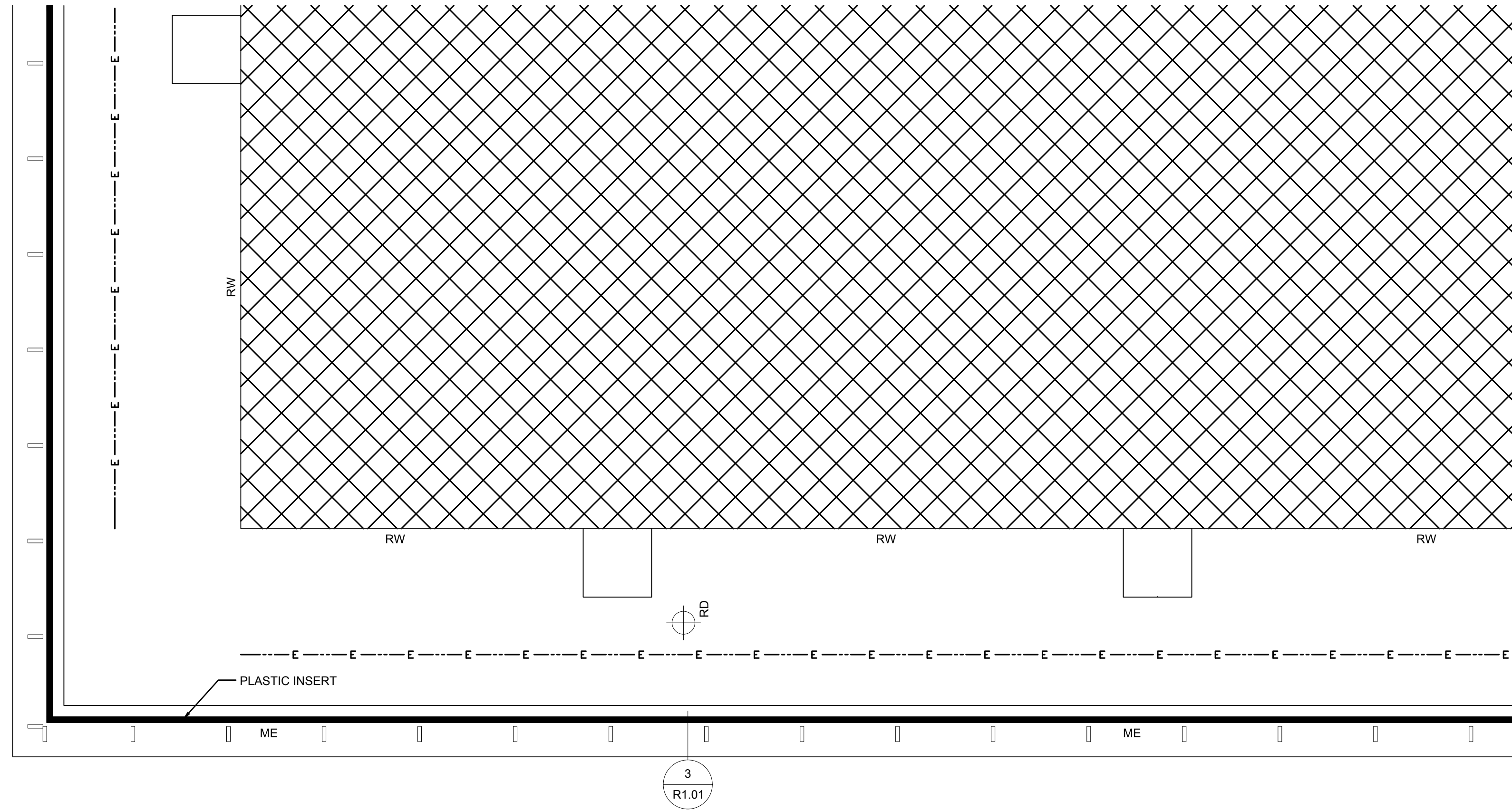
PROJECT FOR  
HOUSTON COMMUNITY COLLEGE  
SYSTEM  
3100 MAIN BUILDING  
HOUSTON, TX

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1 **OVERALL ROOF PLAN**  
NOT TO SCALE



2 **ENLARGED OVERHANG ROOF PLAN**  
NOT TO SCALE

GENERAL ROOF NOTES

- A. PROVIDE ALL REQUIRED UTILITY / STRUCTURAL COMPONENTS AND/OR CONNECTIONS FOR THE FUNCTIONAL USE OF ALL CONTRACTOR SUPPLIED EQUIPMENT OR APPLIANCES, REGARDLESS OF ANY OMISSIONS OR INCONSISTENCIES ENCOUNTERED IN THE CONSTRUCTION DOCUMENTS.
- B. THE WORD 'PROVIDE' SHALL MEAN 'FURNISH AND INSTALL COMPLETE AND READY TO USE.'
- C. IF DISCREPANCIES APPEAR BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE HIGHER QUALITY, QUANTITY, AND PRICE SHALL SUPERSEDE.
- D. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL BECOME FAMILIAR WITH THE PROJECT AND THE ON-SITE / OFF-SITE CONDITIONS PRIOR TO BIDDING OR COMMENCING WORK.
- E. PROVIDE METAL END CLOSURE ON EXPANSION JOINTS WHERE THEY OCCUR AT THE EDGE OF THE ROOF.
- F. ROOF SLOPES SHOWN ON DRAWING ARE GENERAL AND CONCEPTUAL ONLY. PROVIDE POSITIVE DRAINAGE TO ALL ROOF DRAINS. VERIFY TAPER IN SHOP DRAWINGS. REFER TO STRUCTURAL DOCUMENTS FOR EXACT POSITIVE ELEVATIONS.
- G. PROVIDE TAPERED INSULATION CRICKETS (1/2" FT. MIN. SLOPE) AT HIGH SIDE OF ALL MECHANICAL UNITS SMOKE VENTS, ROOF HATCHES & OTHER MISC. ROOF PENETRATIONS, TO SHED WATER AROUND & TO ENSURE POSITIVE ROOF DRAINAGE.
- H. PROVIDE ADDITIONAL FULLY ADHERED MEMBRANES AS PROTECTION AT "SERVICE SIDE" OF ALL MECH. EQUIPMENT - FIELD VERIFY LOCATIONS, AS WELL AS PROTECTION AT "ACCESS SIDE" OF ALL ROOF HATCHES AND ROOF ACCESS LADDERS FIELD VERIFY LOCATIONS AND AT DOWNSPOUT LOCATIONS.
- I. ALL WOOD BLOCKING AT ROOF EDGES ARE TO BE FABRICATED FROM CONT. 2X6 FR-WD BOARDS. PROVIDE LARGER 2X FR-WD AS REQUIRED PER DIMENSIONED DETAILED OR AS FIELD CONDITIONS DICTATE. ALL COPING TO BE SLOPED TOWARD THE INTERIOR.
- J. ALL EXPOSED FLASHING, COPING (IF APPLICABLE) AND THEIR ACCESSORIES SHALL BE AS SPECIFIED. PAINT ALL METAL FLASHING THAT IS NOT PRE-FINISHED (TYP) AND VISIBLE FROM THE GROUND.
- K. HEIGHT OF ALL NAILERS SHALL BE FLUSH WITH NEW INSULATION THICKNESS.
- L. ALL THROUGH WALL FLASHING SYSTEMS TO ACCOMMODATE 8" MINIMUM FLASHING HEIGHT FROM FINISHED ROOF SURFACE. PROVIDE END DAMS AS CONDITIONS ALLOW. ALL FLASHING TO HAVE 4" LAP MINIMUM AND OR STEP.
- M. ALL PITCH PANS SHALL BE DOUBLE SOLDERED STAINLESS STEEL AND RECEIVE EITHER MECHANICALLY ATTACHED GOOSENECK OR METAL BONNETS. METAL BONNETS SHALL BE SECURED WITH CLAMPING RING AND SEALANT. SPECIAL CARE GIVEN TO WASH ALL METAL PRIOR TO INSTALLATION.
- N. ALL INFIELD EXPANSION JOINTS SHALL HAVE LOW SLOPED STANDING SEAM JOINTS AND SHALL BE CHAMFERED AT TERMINATION AT ROOF EDGE TO MEET PROFILE OF PERIMETER.
- O. ANY CRACKS OR VOIDS IN RISE WALLS ABOVE COUNTER FLASHING SHALL BE REPAIRED WITH COMPATIBLE SEALANT.
- P. ALL VERTICAL MEMBRANE FLASHING SHALL BE MECHANICALLY FASTENED AND INSTALLED WITH NEW METAL COUNTER FLASHING UTILIZING A CONTINUOUS CLIP. SLIDE METAL COVER PLATE DOWN OVER VERTICAL CLIP AND SEAL.
- Q. PROVIDE NEW CONCRETE SPLASH BLOCKS ON ROOF ELEVATION SUPPORTED BY A WALK PAD WHERE DOWNSPOUTS OCCUR.
- R. ALL PIPE AND CONDUIT SHALL RECEIVE PIPE SUPPORTS AND RELATED SHIMS, AND SHALL BE PLACED ON AN ADDITIONAL FULLY ADHERED ROOF MEMBRANE UNDER SPECIFIED WALK PAD PRIOR TO SURFACE APPLICATION. SUPPORTS TO OCCUR AT 10'-0" O.C. AND WITHIN 2'-0" OF ALL SLOPES, TEES AND CORNERS. ALL PIPE TO BE PAINTED PER BUILDING CODE REQUIREMENTS.
- S. ALL METAL FLASHING SHALL EXTEND BEYOND ROOF EDGE MIN. 8" WHERE FLASHING ABUTS VERTICAL WALL SURFACE AS DETAILED. ALL FLASHING SHALL BE INSTALLED IN SHINGLE FASHION. AT ALL LOCATIONS WHERE CONVERGENCE OF MULTIPLE PLANE OF ROOFING TO WALL OCCURS, FIELD FABRICATE THERMOPLASTIC BOOT TO BE INSTALLED OVER NEW ROOFING, COMPLETELY OVERLAYING THE TRANSITIONS OF ALL ROOF TO WALL, ELEVATIONS, INSIDE / OUTSIDE 90'S ETC. PRIOR TO METAL INSTALLATION.
- U. ALL EQUIPMENT CURBS TO BE RAISED AS NECESSARY TO MAINTAIN 10" MINIMUM HEIGHT ABOVE FINISHED ROOF SURFACE.
- V. MECHANICAL, ELECTRICAL, AND PLUMBING ROOF EQUIPMENT SHOWN ON THIS PLAN IS FOR GENERAL ARCHITECTURAL INFORMATION ONLY. REFER TO MEP DOCUMENTS FOR ROOFTOP EQUIPMENT NOT SHOWN, AND FOR ADDITIONAL REQUIREMENTS AND COORDINATION.
- W. FLASHING AND STRIPPING MATERIALS, BASE PLY SHEETS, MEMBRANES, INSULATION, AND ACCESSORIES SHOULD BE RECOMMENDED BY THE ROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND COMPATIBILITY WITH THE MEMBRANE ROOFING SYSTEM.
- X. WHERE WOOD BLOCKING EXCEEDS 6" IN VERTICAL THICKNESS AT TAPERED INSULATION, PROVIDE STEM WALL CONSTRUCTED OF 6" GALVANIZED COLD FORMED METAL FRAMING AT 18" O.C. WITH CONL. TRACK AT TOP AND BOTTOM AND WITH 3/4" FR-EXT GRADE PLYWOOD AT EACH SIDE, TOP TO SLOPE WITH TAPERED INSULATION.
- Y. ALL VERTICAL MEMBRANE FLASHING SHALL BE MECHANICALLY FASTENED AND INSTALLED WITH NEW METAL COUNTER FLASHING UTILIZING A CONTINUOUS CLIP. SLIDE METAL COVER PLATE DOWN OVER VERTICAL CLIP AND SEAL.
- Z. REFER TO MEP DOCUMENTS FOR THE PIPE SUPPORT LOCATIONS, TYPE, AND DETAILS. PAD SHALL BE MIN 2" WIDER THAN SUPPORT IN ALL DIRECTIONS.
- AA. PROVIDE STEP FLASHING AND COVER PLATE AT SLOPED ROOF HI/LOW CONDITIONS.
- AB. GUTTERS SHALL BE PRE-FINISHED GALVANIZED STEEL, SIZE PER ROOF PLAN, UNO. PROVIDE PRE-FINISHED 1/4"x1 1/2" GALVANIZED STEEL BENT PLATE BRACKETS AND PRE-FINISHED 1" GALVANIZED STEEL SPACERS AT 36" O.C. MAX. STAGGER WITH EACH OTHER AT 18" O.C.
- AC. PROVIDE PRE-FINISHED GUTTER EJS 30'-0" O.C. MAX.
- AD. DOWNSPOUTS SHALL BE 5"x8" PRE-FINISHED GALVANIZED STEEL UNO AS INDICATED ON ROOF PLAN. PROVIDE PRE-FINISHED 2" GALVANIZED STEEL HANGERS AT 36" O.C. PROVIDE VANDAL PROOF STAINLESS STEEL STRAINERS AT EACH OUTLET. COORDINATE LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
- AE. PROVIDE CAST IRON BOOT PER TYP AT ALL DOWNSPOUTS THAT ARE TO GRADE. CONNECT TO STORM SEWER.
- AF. PROVIDE SPLASH BLOCKS AT ALL ROOF LEADER NOZZLES THAT SPILL ONTO GROUND.
- AG. VERIFY ELEVATION OF ROOF DRAIN RELATIVE TO OVERFLOW SCUPPER PRIOR TO INSTALLATION OF SCUPPERS.
- AH. LOCATE SCUPPERS AS INDICATED ON ELEVATIONS, EITHER CENTERED OVER WINDOWS/OPENINGS, OR CENTERED BETWEEN WINDOWS/OPENINGS, UNO. ADJUST PLACEMENT TO MEET MASONRY COURSING MODULES.
- AI. ROOF PLAN SHOWS TAPERED INSULATION CONCEPTUALLY AND FOR INTENT ONLY. TAPERED INSULATION IS NOT SHOWN TO SCALE AND IS SHOWN AS GRAPHIC REPRESENTATION ONLY IN ORDER TO SHOW SLOPE AND APPROXIMATE LOCATIONS OF MATERIAL. VERIFY INSULATION REQUIRED TO MAINTAIN SLOPE PRIOR TO INSTALLATION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SOIL/PLUMBING VENT	FLANGE MOUNTED EQUIPMENT	HOT STACK	CURB MOUNTED VENT	A/C UNIT	CURB MOUNTED EQUIPMENT	MISCELLANEOUS EQUIPMENT ON PP	PRIMARY ROOF DRAIN	OVERFLOW ROOF DRAIN	PRIMARY AND OVERFLOW ROOF DRAIN	DOWNSPOUT/ SPLASHBLOCK	EXPANSION JOINT	METAL EDGE W/GUTTER	METAL EDGE	RISE WALL	RAISED METAL EDGE	RISE WALL W/EXPANSION JOINT
PITCH PAN	PROCESS VENT STACK	VENT STACK	FLANGE MOUNTED VENT	PLENUM A/C ON PITCH PANS	MISCELLANEOUS EQUIPMENT	ROOF HATCH	THROUGH WALL SCUPPER	OVERFLOW SCUPPER	EDGE SCUPPER	DOWNSPOUT/ COLLECTOR HEAD	DOWNSPOUT	ROOF ACCESS LADDER	PARAPET	EXPANSION JOINT AT PARAPET	SLOPE DIRECTION	SKYLIGHT

**ROOF LEGEND**

- ROOF SYSTEM AS SPECIFIED
- NOT IN CONTRACT



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PROJECT FOR  
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HOUSTON, TX

**OVERALL ROOF PLAN AND GENERAL NOTES**

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NO.	DESCRIPTION

**PROJECT FOR**  
**HOUSTON COMMUNITY COLLEGE**  
**SYSTEM**  
**3100 MAIN BUILDING**  
**HOUSTON, TX**

**ROOFING**  
**DETAILS**

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