

PROJECT MANUAL
for
ADMINISTRATION BUILDING
ROOF RESTORATION

GREGORY PORTLAND
INDEPENDENT SCHOOL DISTRICT

PORTLAND, TEXAS

CSP#2324-01

PROJECT NUMBER: 2319



November 03, 2023

Set No. _____

TITLE & LOCATION OF THE WORK

ADMINISTRATION BUILDING ROOF RESTORATION
GREGORY PORTLAND INDEPENDENT SCHOOL DISTRICT
1200 BROADWAY BLVD., PORTLAND, TEXAS 78374

NAME & ADDRESS OF THE OWNER

CHRIS CASAREZ, PURCHASING COORDINATOR
GREGORY PORTLAND INDEPENDENT SCHOOL DISTRICT
1200 BROADWAY BLVD.
PORTLAND, TEXAS 78374

NAME & ADDRESS OF THE ARCHITECT

LAMARR WOMACK & ASSOCIATES, LP
711 N. CARANCAHUA, SUITE 404
CORPUS CHRISTI, TX 78401
361/884-7442 FAX: 361/226-4548

TITLE OF DOCUMENTS BOUND HEREWITH

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PROJECT NUMBER: 2319



11/03/2023

DATE: November 03, 2023

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SUPPLEMENTAL GENERAL CONDITIONS

Article 1. Construing the Contract Documents:

In the event of ambiguity or conflict in the Contract Documents: Supplemental General Conditions take precedence over General Conditions; Specifications take precedence over Drawings; figures take precedence over scale dimensions; and descriptive notes take precedence over general notes or code indications; unless the contrary intention is apparent.

Where a project engineer rather than a project architect is serving as the design professional for the project, any reference in the contract documents to the “architect” for the project shall be understood to mean the project “engineer.”

Except as provided above, changes in Contract Documents made with the consent of all parties in ink control those printed or typed, and typewritten provisions control over printed, multilithed, or photocopied provisions.

In the event errors, conflicts, omissions or discrepancies are noted in the Contract Documents or in the work done by others affecting his work, Contractor shall notify Architect at once and Architect will issue instructions to correct such errors, conflicts or discrepancies. This includes typographical errors in the Specifications and notational errors on the Drawings, where doubtful of interpretation. If, after such errors, conflicts, omissions or discrepancies have been noted, Contractor proceeds with the work so affected without instructions from the Architect, he shall make good any resulting damage or defect.

Article 2. Drawings and Specifications:

There are certain intricacies of construction which are impracticable to specify in detail or to fully cover on the Drawings, but all such details are to be worked out along the lines of good practice, and in compliance with the ordinances covering such work.

Contractor, upon completion of the Project, shall furnish Architect with record drawings showing actual location in line and elevation of all new exterior utility lines within the limits of the site and of any relocation from that shown on the Drawings of concealed piping, wiring, cable or conduit within the lines of the building.

Article 3. Laying out Building:

Contractor shall employ an experienced and competent licensed surveyor or civil engineer to establish a permanent bench mark to which easy access may be had during the progress of the Work, determine all lines and grades, and verify same from time to time during the progress of the Work.

Article 4. Materials:

Unless otherwise indicated in the Contract Documents, all materials shall be new, in strict compliance with the Specifications and the best of their respective kinds.

Before ordering any materials or doing any work, Contractor shall verify all measurements at the site and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of any difference between actual dimensions and the measurements indicated on the Drawings. Any differences which may be found shall be submitted to Architect for his consideration and instructions before ordering material or proceeding with the work.

Materials shall be furnished at such times and in such quantities as to insure the uninterrupted progress of the work according to schedule. Materials stored shall be properly protected from weather or damage.

Upon receipt of notice from Architect that any material placed in the Project or on the site is not of the quality specified or has been improperly placed, Contractor shall remove same from the site or have same replaced, as the case may be, within seventy two (72) hours after receipt of such notice.

Article 5. Inspection and Testing of Materials:

All testing of materials and equipment used in the construction of the Project shall be conducted at the discretion of Owner and at Owner's expense, unless otherwise specifically provided in the Contract Documents. Any retesting of material or equipment that fails to meet the requirements of the specifications will be at Contractor's expense.

Article 6. Handling Materials:

Contractor shall be responsible for the proper care and protection of all materials, tools and equipment delivered to the site for his use.

When any room of the Project is used as a shop, storeroom, or otherwise, the Contractor will be held responsible for any repairs, patching or cleaning arising from such use.

Contractor shall protect and be responsible for any damage to his work or material, from the date of the Contract until the date of acceptance, and shall make good without cost to Owner, any damage or loss that may occur during this period.

Cement, lime, gypsum and other materials affected by the weather shall be covered and protected to keep them free from damage at all times.

Contractor shall store all materials as directed, in a manner that will allow the Architect or Owner's representative to inspect them. Should any material be found defective or in any way not in accordance with the Contract, such material, without regard to the stage of completion, may be rejected by Architect and, if so rejected, shall be removed at once from the premises by Contractor installing same.

Article 7. Substituted Materials, Products, Methods or Services:

In certain instances specific materials, products, methods and services have been specified by brand or trade-name partly for the purpose of establishing the effect or standard of quality desired. Upon the prior written approval of Architect, substitutions for such specifically named materials, products, methods or services may be made provided the materials, products, methods or services desired to be substituted have been proven to Architect to provide the effect or standard of quality desired. The decision of the Architect is absolute and final.

Article 8. Salvaged Materials:

Used materials belonging to Owner or obtained from demolition or excavation operations at the site of the Project and reconditioned for incorporation into the Project are hereafter termed "salvaged materials". Similar materials, owned by parties other than Owner and purchased, or to be purchased, for incorporation into the Project, are termed "second hand material".

Salvaged materials may be incorporated into the Project only if allowed in the Contract Documents.

Article 9. Temporary Facilities:

Contractor shall make temporary connections for all utilities necessary during construction and shall remove them after completion of the Project.

Contractor shall provide and maintain sanitary facilities for workmen at the job in accordance with the laws of Texas and the code and ordinances of the City of Portland. Contractor shall completely remove such facilities when the Project is completed.

All or a portion of the work necessary to complete the Project may be done on or near buildings which presently are in use as schools, or will be so used before the completion of such Project, and the Contractor must take all precautions necessary to protect students, employees and the public during the term of such Construction Contract.

In conjunction with, but not in lieu of the requirements of Article 10.2.3 of the General Conditions, the contractor may provide temporary construction fencing generally 4' tall and orange in color as necessary to protect the public and work. The Contractor is responsible for taking necessary precautions to protect the public from hazards associated with his construction site and protect his work from damage by the public.

The Contractor shall maintain protection measures in a state of good repair at all times for the duration of the project. Any condition of the protection measures which the engineer or owner deems hazardous will be corrected immediately. If such conditions are not corrected immediately upon verbal or written notice, the owner will correct the hazardous conditions and the cost of the corrective action will be deducted from the contractor's payment.

Article 10. Cooperation with Owner and City Building Officials:

When required, Contractor shall notify the proper official of the City of Portland in advance of all stopping and starting of construction. Contractor shall cooperate with City officials at all times. If any authorized City official, or authorized representative of Owner, should deem an inspection necessary, Contractor shall provide the proper facilities to insure that such official, or representative, can conveniently examine and inspect the work. The Contractor shall document all City inspections by recording the date and time of the inspection and the name of the inspector. This information shall be submitted by the Contractor to the Architect on a monthly basis along with Contractor's request for payment.

The contractor shall submit copies of all City permits, interim inspections, and final inspections, including a Certificate of Occupancy where required, for the project showing compliance with code requirements of the entities with jurisdiction with the Record Documents for the Project.

Article 11. Insurance:

A. Contractor's Liability Insurance

Contractor shall purchase and maintain the liability insurance required by Paragraph 11.1 of the General Conditions with minimum limits as follows:

1.	General Aggregate Limit Applies to all bodily injury and property damage (other than products/completed operations) personal injury and advertising injury.	\$2,000,000
2.	Products/Completed Operations Aggregate Applies to all bodily injury and property damage included in products/completed operations. Completed operations insurance coverage must be for a policy period of not less than three years.	\$2,000,000
3.	Personal and Advertising Injury Applies to all claims by one person or organization.	\$1,000,000
4.	Each Occurrence Limit Applies to all bodily injury and property damage incurred in one occurrence.	\$1,000,000
5.	Umbrella (excess liability policy) or additional limits on all risks.	\$5,000,000
6.	Automobile Liability Insurance (with a minimum combined single limit)	\$1,000,000

All insurance must be written by insurance companies which are rated in the A.M. Best Key Rating Guide -- Property & Casualty with a policyholder's rating of A and a financial size category of Class VII. A Designated Project or Premises Endorsement (CG 25 01 11 85) which applies the general aggregate to the project must be provided. The Owner is to be named as additional insured in the policy and a waiver of subrogation shall be provided to the Owner. Completed operations insurance coverage must be for a policy period of not less than three years. No policy shall contain any exclusion for explosion, collapse, or underground coverage. The required motor vehicle liability insurance shall provide coverage for all owned, non-owned and hired vehicles.

B. Builder's Risk Insurance

Contractor shall purchase and maintain until the Project has been accepted by Owner broad form builder's risk insurance covering replacement cost of the Project (including additions and modifications) together with Contractor's equipment, materials and supplies relating to the Project which are on the job site, in transit to the job site or at a temporary storage location pending delivery to the job site. In addition, soft cost coverage for Architect's fees shall be included. Owner shall be named as an insured, loss payee on the policy.

C. Workers' Compensation Insurance Certificate

1. Definitions:

Certificate of coverage ("certificate"). A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Workers' Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project - includes the time from the beginning of the work on the project until the Contractor's/person's work on the Project has been completed and accepted by the Owner.

Persons providing services on the Project ("subcontractor" in §406.096, Texas Labor Code) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the

Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

2. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.
3. The Contractor must provide a certificate of coverage to the Owner prior to being awarded the contract.
4. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.
5. The Contractor shall obtain from each person providing services on the Project, and provide to the Owner:
 - (a) a certificate of coverage, prior to that person beginning work on the Project, so the Owner will have on file certificates of coverage showing coverage for all persons providing services on the Project; and
 - (b) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.
6. The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.
7. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.
8. The Contractor shall post on the Project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
9. The Contractor shall contractually require each person with whom it contracts to provide services on the Project, to:

(a) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;

(b) provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;

(c) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(d) obtain from each other person with whom it contracts, and provide to the Contractor:

(1) a certificate of coverage, prior to the other person beginning work on the Project; and

(2) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(e) retain all required certificates of coverage on file for the duration of the Project and for one year thereafter;

(f) notify the Owner in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

(g) contractually require each person with whom it contracts, to perform as required by paragraphs a-f, with the certificates of coverage to be provided to the person for whom they are providing services.

10. By signing the Construction Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the

commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

11. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Owner.
12. The coverage requirement recited above does not apply to sole proprietors, partners, and corporate officers who are excluded from coverage in an insurance policy or certificate of authority to self-insure that is delivered, issued for delivery, or renewed on or after January 1, 1996. 28 TAC 110.110(i).

Article 12. Damages:

If the Project is not completed in accord with the Contract Documents within the Contract Time then Owner shall be entitled to recover from Contractor, at Owner's sole election: (a) all loss or damage incurred or sustained by Owner of every kind and nature whatsoever; or (b) liquidated damages in the amount of Four Hundred Dollars (\$400) per day for each calendar day thereafter until the Project is completed.

"General Decision Number: TX20230288 01/06/2023

Superseded General Decision Number: TX20220288

State: Texas

Construction Type: Building

Counties: Aransas, Nueces and San Patricio Counties in Texas.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023

BOIL0074-003 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 29.47	24.10

ELEC0278-002 08/28/2022

	Rates	Fringes
ELECTRICIAN.....	\$ 27.00	8.76

ENGI0178-005 06/01/2020

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
(1) Tower Crane.....	\$ 32.85	13.10
(2) Cranes with Pile Driving or Caisson Attachment and Hydraulic Crane 60 tons and above.....	\$ 28.75	10.60
(3) Hydraulic cranes 59 Tons and under.....	\$ 32.35	13.10

IRON0084-011 06/01/2022

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 26.76	7.88

SUTX2014-068 07/21/2014

	Rates	Fringes
BRICKLAYER.....	\$ 20.04	0.00
CARPENTER.....	\$ 15.21 **	0.00
CEMENT MASON/CONCRETE FINISHER...	\$ 15.33 **	0.00
INSULATOR - MECHANICAL (Duct, Pipe & Mechanical System Insulation).....	\$ 19.77	7.13
IRONWORKER, REINFORCING.....	\$ 12.27 **	0.00
IRONWORKER, STRUCTURAL.....	\$ 22.16	5.26
LABORER: Common or General.....	\$ 9.68 **	0.00
LABORER: Mason Tender - Brick...	\$ 11.36 **	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 10.58 **	0.00
LABORER: Pipelayer.....	\$ 12.49 **	2.13
LABORER: Roof Tearoff.....	\$ 11.28 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 14.25 **	0.00

OPERATOR: Bobcat/Skid

Steer/Skid Loader.....	\$ 13.93 **	0.00
OPERATOR: Bulldozer.....	\$ 18.29	1.31
OPERATOR: Drill.....	\$ 16.22	0.34
OPERATOR: Forklift.....	\$ 14.83 **	0.00
OPERATOR: Grader/Blade.....	\$ 13.37 **	0.00
OPERATOR: Loader.....	\$ 13.55 **	0.94
OPERATOR: Mechanic.....	\$ 17.52	3.33
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 16.03 **	0.00
OPERATOR: Roller.....	\$ 12.70 **	0.00
PAINTER (Brush, Roller, and Spray).....	\$ 14.45 **	0.00
PIPEFITTER.....	\$ 25.80	8.55
PLUMBER.....	\$ 25.64	8.16
ROOFER.....	\$ 13.75 **	0.00
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 22.73	7.52
SHEET METAL WORKER, Excludes HVAC Duct Installation.....	\$ 21.13	6.53
TILE FINISHER.....	\$ 11.22 **	0.00
TILE SETTER.....	\$ 14.74 **	0.00
TRUCK DRIVER: Dump Truck.....	\$ 12.39 **	1.18
TRUCK DRIVER: Flatbed Truck.....	\$ 19.65	8.57
TRUCK DRIVER: Semi-Trailer Truck.....	\$ 12.50 **	0.00
TRUCK DRIVER: Water Truck.....	\$ 12.00 **	4.11

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher
minimum wage under Executive Order 14026 (\$16.20) or 13658
(\$12.15). Please see the Note at the top of the wage
determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave
for Federal Contractors applies to all contracts subject to the
Davis-Bacon Act for which the contract is awarded (and any
solicitation was issued) on or after January 1, 2017. If this
contract is covered by the EO, the contractor must provide
employees with 1 hour of paid sick leave for every 30 hours
they work, up to 56 hours of paid sick leave each year.

Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion

date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the

interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

GREGORY-PORTLAND INDEPENDENT SCHOOL DISTRICT
Portland, Texas

PAYMENT BOND

THE STATE OF TEXAS §

COUNTY OF SAN PATRICIO § KNOW ALL MEN BY THESE PRESENTS:

That we, _____, Contractor, as Principal, and _____, as Surety, are hereby held and firmly bound unto the GREGORY-PORTLAND INDEPENDENT SCHOOL DISTRICT (hereafter called "Owner") in the full and just sum of _____ Dollars (\$ _____) for the payment of which the said Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that: WHEREAS the Principal entered into a certain Contract, which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein, with the Owner acting by and through its Board of Trustees, dated _____, 2023, for the construction of the Gregory-Portland ISD Administration Building Roof Restoration Project, in accord with the Drawings, Specifications and other Contract Documents pertaining thereto, prepared or compiled by LaMarr Womack & Associates, LP.

NOW, THEREFORE, if the Principal shall promptly make payment to all claimants as defined in Chapter 2253, Government Code, as amended, supplying labor and materials in the prosecution of the work provided for in said Contract, as well as any changes, extensions, deletions or modifications thereof which may be made by Owner, with or without notice to Surety, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

PROVIDED that any additions, deletions, alterations or changes which may be made in the terms of the Contract or in the Drawings, Specifications or other Contract Documents, or in the work to be done thereunder, or the making by the Owner of any payment or pre-payment under the Contract, or the giving by the Owner of any extension of time for the performance of the Contract, or the granting of any other forbearance on the part of either the Owner or the Principal to the other shall not in any way release the Principal or the Surety, or either of them, their heirs, executors, administrators, successors or assigns, from their liability or the liability of any of them hereunder, notice to the Surety of any such addition, deletion, alteration, change, payment, pre-payment, extension or forbearance being hereby expressly waived.

PROVIDED FURTHER, that this bond is made and entered into solely for the protection of all claimants as defined in Chapter 2253, Government Code, as amended, supplying labor and material in the prosecution of the work provided for in said Contract, and each such

claimant shall have a direct right of action under the bond as provided in such Chapter 2253, Government Code, as amended.

EXECUTED on _____, 2023.

PRINCIPAL

SURETY

Contractor

(Corporate Name)

By _____

Name: _____

Title: _____

Attorney-in-Fact

Name: _____

ATTEST:

*Name: _____

*Title: _____

Address of Contractor:

Address of Surety:

*Typed or clearly printed

hereunder, notice to the Surety of any such addition, deletion, alteration, change, payment, pre-payment, extension or forbearance being hereby expressly waived.

PROVIDED FURTHER, that this bond is made and entered into solely for the protection of the Owner pursuant to the provisions of Chapter 2253, Government Code, as amended, and all liabilities on this bond are to be determined in accord with the provisions thereof.

EXECUTED on _____, 2023.

PRINCIPAL

SURETY

Contractor

(Corporate Name)

By _____
Name: _____
Title: _____

Attorney-in-Fact
Name: _____

ATTEST:

*Name: _____
*Title: _____

Address of Contractor:

Address of Surety:

*Typed or clearly printed

CERTIFICATE OF AUTHORITY AND INCUMBENCY

I, _____, the undersigned, hereby certify that:

1. I am the duly elected and currently acting Secretary of _____, a Texas corporation (hereafter called "Corporation").
2. I keep and maintain custody of the minutes and other records of the Corporation.
3. The Corporation is currently existing and in good standing with the State of Texas on the date of this Certificate.
4. The Board of Directors of the Corporation has duly and properly authorized _____, who is currently the President of the Corporation, to enter into and to execute on behalf of the Corporation that certain Construction Contract between the Gregory-Portland Independent School District, as Owner, dated _____, 2023, relating to the construction of the Gregory-Portland ISD Administration Roof Restoration Project, in accord with the Drawings, Specifications and other Contract Documents prepared or compiled for the Owner by LaMarr Womack & Associates LP., and to execute, furnish and deliver to Owner on behalf of the Corporation, the required Performance Bond and Payment Bond and any documentation which may be necessary or required to effect the provisions of such Construction Contract.

Executed on this the ____ day of _____, 2023.

Printed Name: _____

Secretary of the Corporation

SUBSCRIBED AND SWORN TO before me by _____, on _____,
2023.

Notary Public, State of Texas

SECTION 00020 - INVITATION TO OFFERORS

PROJECT: ADMINISTRATION BUILDING ROOF RESTORATION
GREGORY PORTLAND INDEPENDENT SCHOOL DISTRICT
PORTLAND, TEXAS

PROJECT NUMBER: 2319

DEADLINE FOR RECEIPT OF THE COMPETITIVE SEALED PROPOSAL: December 14, 2023 at 2:00 P.M. CST.

ARCHITECT: LAMARR WOMACK & ASSOCIATES, LP
711 N. CARANCAHUA, SUITE 404
CORPUS CHRISTI, TX 78401
(361) 884-7442 Fax #: (361) 226-4548

Competitive sealed proposals for the above referenced project will be received by Christopher Casarez, Purchasing Coordinator located at 1200 Broadway Blvd, Portland, Texas 78374.

All Competitive Sealed Proposals must be on a lump sum basis including General Contract. Competitive sealed proposals received after the required time will not be accepted.

Contract documents may be examined at:
PlanWell Enterprise order.e-arc.com/arcEOC/ARCPlanRoom.aspx# and at:
AGC Plan Room: Corpus Christi, Texas
ABC Plan Room: Corpus Christi, Texas
ABC Plan Room: Victoria, Texas
Virtual Builder's Exchange: San Antonio, Texas
ConstructConnect: Cincinnati, Ohio
Dodge Data & Analytics Plan Room: San Antonio, Texas
ARC: Corpus Christi, Texas

Copies of the above documents may be obtained from ARC, 822 Leopard Street, Corpus Christi, TX 78401, 361-882-7471 or online at order.e-arc.com/arcEOC/ARCPlanRoom.aspx# in accordance with the Instructions to Offerors upon the deposit of **\$100.00** for each set of documents. Deposit of bona-fide offerors will be returned in full, if complete Contract Documents (including all addenda, if any) are returned to the Architect in good condition within 10 days after award of contract. "The shipping and/or postage expense of the delivery and return of Contract Documents shall be at the offeror's expense."

Proposal security in the amount of 5% of the largest possible total of competitive sealed proposals submitted must accompany each bid in accordance with the Instruction to Offerors.

Statutory Bonds for performance of the contract and for payments of mechanics and materials will be required in an amount equal to 100% of the accepted competitive sealed proposal, in accordance with Texas law.

The Owner reserves the right to hold all competitive sealed proposals for 45 days from date of receipt without action, to reject any and all competitive sealed proposals, to waive irregularities, and to require statements or evidence of offerors qualifications, including financial statements.

END OF SECTION

SECTION 00100 - INSTRUCTIONS TO OFFERORS

PROJECT: ADMINISTRATION BUILDING ROOF RESTORATION
GREGORY PORTLAND INDEPENDENT SCHOOL DISTRICT
PORTLAND, TEXAS

ARCHITECTS: LAMARR WOMACK & ASSOCIATES, LP
711 N. CARANCAHUA, SUITE 404
CORPUS CHRISTI, TX 78401
361/884-7442 FAX # 361/226-4548

- 1. Receipt of Competitive Sealed Proposals:** The Owner invites competitive sealed proposals on the form indicated in Section 00300 for the above referenced project. The Owner may consider informal any competitive sealed proposal not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all competitive sealed proposals. Any competitive sealed proposal may be withdrawn prior to the scheduled time for the receipt of the competitive sealed proposals or authorized postponement thereof. Any competitive sealed proposal received after the time and date specified shall not be considered. No offeror may withdraw a competitive sealed proposal within 45 days after the actual date of the opening thereof.
- 2. Preparation of Competitive Sealed Proposals:** Each competitive sealed proposal must be submitted on the prescribed form. All blank spaces for competitive sealed proposal prices must be filled in legibly, in ink or typewritten, in both words and figures. Do not modify competitive sealed proposal form or qualify proposal. Competitive sealed proposal forms will be furnished by the Architect; do not use sample forms bound in the specifications.

Each competitive sealed proposal must be submitted in a sealed envelope addressed to the Owner and designated ***Competitive Sealed Proposal – Administration Building Roof Restoration***, bearing on the outside the name of the offeror, his address, the name of the project for which the competitive sealed proposal is submitted, and the date and hour the proposal is due. If forwarded by mail, the sealed envelope containing the competitive sealed proposal must be enclosed in another envelope addressed to the Owner at the designated location for receipt of the competitive sealed proposals.

- 3. Electronic Modification:** An offeror may modify his proposal by electronic or facsimile communication at any time prior to the closing time for receipt of competitive sealed proposals, provided such electronic or facsimile communication is received by the Owner prior to the closing time, and provided further, the Owner is satisfied that a written confirmation of the electronic modification over the signature of the offeror was mailed prior to closing time. The electronic or facsimile communication should not reveal the competitive sealed proposal price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the competitive sealed proposal is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the electronic or facsimile modification.
- 4. Method of Procurement:** The Owner invites the following competitive sealed proposal(s):

BASE PROPOSAL: Administration Building Roof Restoration

All labor, materials, equipment, services, etc. and all related work for the Administration Building Roof Restoration as indicated by the Contract Documents.

ALTERNATES:

ALTERNATE No. A-1 – PRE – FINISHED STANDING SEAM ROOF AT ENTRY

All labor, materials, equipment, services, etc. and all related work to provide pre – finished standing seam roof at entry as indicated in the Contract Documents.

ALTERNATE No. A-2 – 20 YEAR NDL MODIFIED ROOF IN LIEU OF COATING

All labor, materials, equipment, services, etc. and all related work to provide 20-year NDL modified roof in lieu of coating as indicated in the Contract Documents.

ALTERNATE No. A-3 – 1.5” POLYISO BOARD INSULATION ORDER STANDING SEAM ROOF

All labor, materials, equipment, services, etc. and all related work to provide 1.5” polyiso board insulation order standing seam roof as indicated in the Contract Documents.

5. **Selection Criteria:** The criteria for evaluation and selection of the successful Offeror will be based on the following:
- A. **(40 Pts.)** The Offeror’s monetary proposal.
 - B. **(20 Pts.)** Ability to meet Districts needs.
 - C. **(15 Pts.)** Quality of Vendors.
 - D. **(15 Pts.)** Reputation of Vendors Services.
 - E. **(10 Pts.)** Quality of Vendor’s Proposal Packet.
 - F. If required by the Owner, after receipt of competitive sealed proposals, additional project cost modifications may be requested for further negotiations.
6. **Liquidated Damages for Failure to Enter into Contract:** The successful offeror, upon his failure or refusal to execute and deliver the contract, insurance and bonds required within 10 days after he has received notice of the acceptance of his competitive sealed proposal, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his competitive sealed proposal.
7. **Inability to Negotiate a Contract:** If the District is unable to negotiate a contract with the selected offeror, the District shall, formally and in writing, end negotiations with that offeror and proceed to the next offeror in the order of the selection ranking until a contract is reached or all proposals are rejected.
8. **Time of Completion:** Time of completion of this Contract is of importance to the Owner and will be considered in the award of the Contract. The Contractor shall state on his proposal the number of calendar days he will require to complete the project in its entirety. Payments on the Contract will be made as provided by the Contract. No payment will be made on the Contract after the completion date set by the Contractor, until final completion and acceptance by the Architect and Owner. If there is an extended unforeseen delay, over which the Contractor has no control, such as material delivery delay, severe or unseasonable weather, it shall be the Contractor’s responsibility to request any extensions in time within two weeks after the delay occurs; and his failure to make such request within

the above time limit shall void any possible extension of the Contract time of completion. The Architect will be the judge as to whether a time extension is to be granted and so notify the Contractor.

Liquidated damages shall be assessed the Contractor at the rate of FOUR HUNDRED DOLLARS (\$400.00) per calendar day that actual substantial completion exceeds the Contract completion date.

9. **Conditions of Work:** Each offeror must inform himself fully of the conditions relating to the completion of the project and the employment of labor thereon. Failure to do so will not relieve a successful offeror of his obligation to furnish all material and labor necessary to carry out the provisions of his contract.
10. **Addenda and Interpretations:** No interpretation of the meaning of the plans, specifications or other pre-competitive sealed proposal documents will be made to any offeror orally. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the specifications which, if issued, will be mailed, emailed, or faxed to all prospective offerors. Failure of any offeror to receive any such addendum or interpretation shall not relieve such offeror from any obligation under his competitive sealed proposal as submitted. All addenda so issued shall become part of the contract documents.
11. **Laws and Regulations:** The offeror's attention is directed to the fact that all applicable Federal Laws, State Laws, Municipal Ordinances, and the rules and regulations of all authorities have jurisdiction over construction of the project and shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.
12. **Obligation of Offeror:** At the time of the opening of the competitive sealed proposals, each offeror will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any offeror to examine any form, instrument or document shall in no way relieve the offeror from any obligation in respect of this competitive sealed proposal.
13. **Failure of Timely Order:** The contractor is responsible for assuring the timely order of all materials specified. If a specified material or color of material cannot be delivered by the contract completion date, due to failure to order the material in a timely manner, the contractor will be responsible for supplying an equal or better material. The Architect will be the sole determinant of the approved substitute material. The Contractor will also be charged an amount equal to 5% of the value of the specified material. This amount will be credited to the owner through a change order to the contract. The word "material", as used in this section, includes all items specified in the specifications or shown on the drawings.
14. **Sub-Bid Time Limit:** So that Contractors may have adequate opportunity to evaluate sub-competitive sealed proposals, it is recommended that the "Time Limit Plan" be honored; sub and material proposals must have been submitted to Contractors four (4) hours prior to the time set for receipt of competitive sealed proposals.
15. **Pre-Construction Conference:** A pre-construction conference will be held prior to beginning any work on this project. After full execution of the contract, performance and payment bonds, and insurance certificate, the Contractor shall contact the Architect and set up a date, time and place to meet on site with the Contractor, the Owner and the Architect.

The purpose of this meeting will be to discuss schedules, procedures, special considerations, and any other pertinent items related to this project.

16. **Point of Contact:** The contractor shall make all correspondence through the architect's office and shall refrain from corresponding directly with members of school staff, custodial and maintenance personnel, and district administration.
17. **Protection of Premises:** It is the Contractor's responsibility to protect the Owner's property against damage by the construction process, both inside and outside of the building. If the site is damaged by the construction process, it shall be repaired by the Contractor, at no cost to the Owner.

If the Contractor has any concern over the existing condition of any area, he shall meet with the Architect to properly record this concern via photographs and field notes prior to beginning demolition.

18. **Tobacco/Alcohol on School Property:** Smoking or use of tobacco products or use of alcoholic beverages on school property is prohibited.
19. **Concealed Weapons:** No concealed weapons will be allowed on school property.
20. **Notification of Criminal History of Contractor:** Prior to entering into a contract or agreement with the school district, the contractor will be required to complete and submit to the Owner a "Felony Conviction Notice" which furnishes the following information in accordance with the TEXAS EDUCATION CODE, Section 44.034:
 - (a) A person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.
 - (b) A school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract.
 - (c) This section does not apply to a publicly held corporation.

A copy of the "Felony Conviction Notice" may be obtained from the Architect's office.

21. **Criminal History Background Check:** General contractor, subcontractors, their agents, and all others who are to perform work on District property shall be required to comply with Specification Section 01525 – Criminal History Background Check.
22. **Contractor's Qualification Statement:** Submit Contractor's Qualification Statement on AIA Form A305 with your proposal. Submit Qualification Statements on each of your major subcontractors, after notice of award of contract.
23. **Tax Exempt Status:** Contractor shall cooperate with Owner, take such action and execute such documents as may be necessary so Owner may utilize its exemption from the Texas Sales and Use Tax for materials used in this project. Contractor shall contact Owner to obtain Owner's tax exemption number.

END OF SECTION

SECTION 00300 - COMPETITIVE SEALED PROPOSAL

PROJECT: ADMINISTRATION BUILDING ROOF RESTORATION
GREGORY PORTLAND INDEPENDENT SCHOOL DISTRICT
PORTLAND, TEXAS

PLACE: ADMINISTRATION BUILDING
1200 BROADWAY BLVD.
PORTLAND, TEXAS 78374

DATE & TIME FOR RECEIPT OF THE COMPETITIVE SEALED PROPOSAL: December 14, 2023 at 2:00 P.M. CST.

TO: CHRISTOPHER CASAREZ, PURCHASING COORDINATOR

1. Pursuant to and in compliance with the Invitation to Offerors and the proposed Contract Documents dated November 03, 2023, prepared by LAMARR WOMACK & ASSOCIATES, LP relating to the above referenced project, the undersigned, hereby proposes and agrees to fully perform the work within the time stated and in strict accordance with the Contract Documents, and addenda thereto, for the following sum of money:

A. BASE PROPOSAL: ADMINISTRATION BUILDING ROOF RESTORATION

All labor, materials, services, and equipment necessary for completion of the work in accordance with the Contract Documents and Addenda thereto for the sum of:

_____ DOLLARS (\$ _____)

B. ALTERNATE A-1: PRE-FINISHED STANDING SEAM ROOF AT ENTRY

All labor, materials, services, and equipment necessary for completion of the pre – finished standing seam roof at entry. If the Owner elects to proceed with Alternate No. A-1 add the sum of:

_____ DOLLARS (\$ _____)

C. ALTERNATE A-2: 20 YEAR NDL MODIFIED ROOF IN LIEU OF COATING

All labor, materials, services, and equipment necessary for completion of the 20-year NDL modified roof in lieu of coating. If the Owner elects to proceed with Alternate No. A-2 add the sum of:

_____ DOLLARS (\$ _____)

D. ALTERNATE A-3: 1.5” POLYISO BOARD INSULATION ORDER STANDING SEAM ROOF

All labor, materials, services, and equipment necessary for completion of the 1.5” polyiso board insulation order standing seam roof. If the Owner elects to proceed with Alternate No. A-3 add the sum of:

_____ DOLLARS (\$ _____)

2. If awarded this contract, the undersigned will execute a satisfactory Payment and Performance Bond, and proof of insurance coverage with the Owner for the entire work as per the Contract Documents within 10 calendar days after notice of award. It is agreed that this proposal is subjected to the Owner's acceptance for a period of 45 days from the above date.
3. Enclosed is a Certified Check or Proposal Bond in the amount of 5% of the highest amount bid, in compliance with the specification requirements. **(Personal or company checks are not allowed.)**

The above Check or Security Bond is to become the property of the Owner in the event the Construction Contract (when offered by the Owner) and the bonds and proof of insurance coverage are not executed within the time set forth above.

4. Extra Work: The undersigned agrees that should any change in the work or extra work be ordered, the allowance for overhead and profit combined shall be as scheduled below, but in no case shall it exceed 14%. The following applicable percentages shall be added to the extra work cost as defined by Article 7 of the General Conditions.
 - A. Allowance to the Contractor for overhead and profit for extra work provided by his own forces _____. **(Do not exceed 10%)**
 - B. Allowance to the Contractor for overhead and profit for extra work provided by a subcontractor and supervised by the Contractor _____. **(Do not exceed 4%)**
 - C. The General Contractor shall not be allowed to charge the Owner for "extended overhead" charges relating to change orders or weather delays.

5. The undersigned agrees to the following:

- A. To furnish all work as shown and specified.
- B. To complete work in _____ days.
- C. To work _____ days per week.
- D. To start work _____ days after notice of award of contract.

6. The full amount of all allowances as specified in the General Requirements, Division I, Section 01020, of the Specifications, is included in the Base Offer price shown.

7. Receipt is acknowledged of the following addenda:

No. _____	Dated _____
No. _____	Dated _____
No. _____	Dated _____

8. Offeror declares that he will not withhold more retainage from the subcontractor and/or suppliers than the Owner withholds from the Contractor as per Article 9.6.2 of the General Conditions.

Initials

Date

9. Offeror acknowledges and understands Section 00100, paragraph 5, Selection Criteria and that any unanswered Selection Criteria will receive "0" points. ALL Selection Criteria is required at the time of the Receipt of Proposals.

Initials

Date

10. Offeror agrees that the Owner has the right to accept or reject any or all competitive sealed proposals, to accept the competitive sealed proposal providing the best value for the Owner, and to waive all informalities.
11. If the district is unable to negotiate a contract with the selected offeror, the district shall, formally and in writing, end negotiations with that offeror and proceed to the next offeror in the order of the selection ranking until a contract is reached or all proposals are rejected.
12. The Offeror has attached to this Proposal the information required in Section 00100, Paragraph 5, of the Instructions to Offerors.

Respectfully submitted,

By _____
Signature/Title

Printed Name/Title

Company

Address

City, State, Zip Code

Phone Number

(Seal-if Offeror is a corporation)

END OF SECTION

SECTION 00400 - SUPPLEMENTS TO COMPETITIVE SEALED PROPOSAL FORMS

PROPOSAL SECURITY

Each competitive sealed proposal must be accompanied by a Proposal Security in the amount of 5% of the largest possible total of the competitive sealed proposal submitted.

The Proposal Security may be by cash, certified check, or a Proposal Bond. **(PERSONAL OR COMPANY CHECKS ARE NOT ALLOWED.)** The Proposal Bond must be executed by the Offeror as principal. The Proposal Bond form and security company are subject to approval by the Owner and the surety must comply with requirements noted in Article 11 of the General Conditions.

The proposal security will be returned to all except the three lowest offerors within ten days after opening of the competitive sealed proposals, if requested by the Contractor.

The remaining proposal securities will be returned after the Owner and the accepted offeror have executed the Contract, or, if no award has been made within 45 days after the date of the opening of the competitive sealed proposals, upon demand of the offeror anytime thereafter so long as he has not been notified of the acceptance of his proposal.

END OF SECTION

SECTION 00600 - BONDS AND CERTIFICATES

The Contractor shall furnish the following Bonds, as required by the State of Texas, and Certificates to be delivered simultaneously with the executed contract:

- A. Performance Bond
- B. Labor and Materials Payment Bond
- C. Certificates of Insurance

The Performance, Labor and Materials Bond shall be provided on Bonds, which comply with Texas law.

The Surety on such bonds shall be a surety company satisfactory to the Owner. See Article 11 of the General Conditions.

Costs of the above stated bonds and insurance are to be included in the competitive sealed proposal.

Attorneys-in-Fact who sign bonds must file with each bond a certified and effective dated copy of their Power of Attorney.

The Performance Bond shall guarantee the repair and maintenance of all defects due to faulty materials and workmanship that appear within one (1) year from date of substantial completion.

END OF SECTION

SECTION 01010 - SUMMARY OF WORK

PART 1. GENERAL

1.1 Work Covered by Contract Documents

- A. Work covers the Re-Roofing and wall panel replacement at Gregory Portland Administration Building located at 1200 Broadway Blvd, Portland, Texas 78374.
- B. Contractors Duties:
 - 1. Except as specifically noted, provide and pay for:
 - a. Labor, materials and equipment.
 - b. Tools, construction equipment and machinery
 - c. Other facilities and services necessary for proper execution and completion of the Work.
 - 2. Since the Owner is a governmental entity or an organization which may be exempted from the sales and use taxes on certain tangible personal property, the Contractor shall be responsible for:
 - a. Determining whether such governmental entity or organization is exempt from such taxes under the Contract Documents.
 - b. Determining whether your purchase of any tangible personal property for use in the performance of this contract is exempt.
 - c. Obtaining any sales tax exemption certificate from the Owner.
 - d. Properly issuing any sales tax exemption certificate to a seller or supplier that the sale of any item of tangible personal property qualifies for an exemption.
 - e. Maintaining any records required by the laws of the State of Texas or by any valid rules and/or regulations of the Comptroller of Public Accounts of the State of Texas.
 - f. Properly submitting any monthly pay requests.
 - g. Payment of any legally assessed penalties or fines for improper use of any exemption Certificate.
 - 3. Securing and paying for, as necessary for execution and completion of the Work, any:
 - a. Permits
 - b. Licenses
 - c. Taxes
 - 4. Complying with all applicable laws, codes ordinances, rules, regulations, orders and/or other requirements of public authorities in connection with performance of the work.
 - 5. Promptly submitting written notice to the Architect of any observed variances in the Contract Documents from known requirements of any public authority.
 - a. It is not the Contractor's responsibility to make certain that Contract Documents comply with codes and regulations.
 - b. Appropriate modifications to the Contract Documents will be made to reflect any changes necessary because of such variances.
 - 6. Assuming responsibility for the Work known to be contrary to such requirements, without notice.
 - 7. Enforcing strict discipline and good order among employees and not employing on the Work:
 - a. Persons not skilled in the task to be performed.

8. Checking Dimensions on Site:
 - a. Verify all measurements before bidding and ordering any materials or doing any work.
 - b. Report any discrepancies to Architect for instructions before proceeding.
 - c. No extras will be allowed for variations from drawings in existing conditions.
9. Approval of Working Surface:
 - a. Notify the Architect of any unsatisfactory condition before performing work over work of other contractors.
 - b. Beginning of work by any Contractor shall constitute his acceptance of previous work or existing conditions.

1.2 Contracts: Construct work under lump sum contract.

1.3 Contractor use of Premise

- A. Confine operations at site to areas permitted by:
 1. Law
 2. Ordinance
 3. Permits
 4. Contract Documents
- B. Do not unreasonably encumber site with materials or equipment.
- C. Do not load structure with weight that will endanger structure. Heavy construction equipment, or vehicles, or excessive concentrations of loads will not be allowed on structure except with prior written approval of the Architect/Engineer.
- D. Assume full responsibility for protection and safekeeping of products stored on premises.
- E. Obtain and pay for use of additional storage or work areas needed for operations.

1.4 Hazardous Materials

- A. Do not bid or provide or install hazardous materials or products containing hazardous materials in this project such as asbestos, polychlorinated biphenyl (PCB), lead, etc.
- B. The Contractor, and all of his subcontractors, shall submit a letter stating that no hazardous materials or products containing materials, such as asbestos, polychlorinated biphenyl (PCB), lead, etc. were used in the construction of this project.

END OF SECTION

SECTION 01020 - ALLOWANCES

PART 1. GENERAL

1.1 Contingency Allowances:

- A. Use monies in Contingency Allowance only on issuance of written directive.
- B. Contingency Allowance Amounts: Include in Competitive Sealed Proposal for inclusion in contract sum the following:
 - 1. Base Proposal, Contingency Allowance of **\$10,000.00**
 - 2. Signage Allowance of **\$4,000.00**
- C. The Contractor's proposal shall include overhead, profit, and insurance for the Contingency Allowance. Contingency Allowance requests shall include only the following costs:
 - 1. Products
 - 2. Labor
 - 3. Transportation
 - 4. Equipment rental
 - 5. Other direct expenses
- D. Monies remaining in allowance at close of project will be credited to Owner by Change Order or transferred to other allowances as directed by Architect.

1.2 Allowances for Products:

- A. Purchase products under each Allowance as directed by Architect.
- B. Include the allowance amounts in the Competitive Sealed Proposal, for inclusion in contract sum.
- C. Amount of the Allowance includes:
 - 1. Net cost of product
 - 2. Delivery and unloading at site
 - 3. Applicable taxes
- D. In addition to amounts of allowances, include in Competitive Sealed Proposal, for inclusion in contract sum, Contractor's cost for:
 - 1. Handling at site, including uncrating and storage.
 - 2. Protection from damage from elements.
 - 3. Labor, installation, and finishing.
 - 4. Other expenses required to complete installation.
 - 5. Contractor's overhead, profit, and insurance.
- E. Monies remaining in allowance at close of project, will be credited to Owner by Change Order or transferred to other allowances as directed by Architect.

1.3 Selection of Products

- A. Architects duties:
 - 1. Consult with contractor in considerations of products and supplies.
 - 2. Make selection, designate products to be used.

3. Notify Contractor, in writing, designating:
 - a. Product model and finish
 - b. Accessories and attachments
 - c. Approved Supplier
 - d. Cost, delivered and unloaded at site

- B. Contractor's duties:
 1. Assist Architect in determining qualified suppliers.
 2. Obtain proposals from suppliers when requested by Architect.
 3. Make recommendations for consideration by Architect.
 4. Notify Architect of any effect anticipated by selection of product or supplier under consideration:
 - a. Construction schedule
 - b. Contract sum
 5. On notice of approval, enter Purchase Agreement with designated supplier.

1.4 Delivery

- A. Contractor's responsibility:
 1. Arrange for delivery and unloading.
 2. Promptly inspect products for damage or defects.
 3. Submit claims for transportation damage.

1.5 Installation: Comply with requirements of referenced specification section.

1.6 Adjustment of Costs

- A. Do not exceed allowance without Owner's approval.

- B. Should actual approved purchase cost be more or less than specified amount of allowance, contract sum will be adjusted by Change Order equal to amount of difference if approved by the Owner and Architect.

- C. For products specified under "Allowance for Products", the unit cost applies to quantity actually used.
 1. Submit invoices or other data to substantiate quantity actually used.

END OF SECTION

SECTION 01070 - CUTTING AND PATCHING

PART 1. GENERAL

1.1 Descriptions:

- A. Execute cutting (including excavating), fitting, or patching of work required to:
 - 1. Make several parts fit properly
 - 2. Uncover work to provide for installation of ill-timed work
 - 3. Remove and replace defective work
 - 4. Remove and replace work not conforming to requirements of contract documents.
 - 5. Remove sample of installed work as specified for testing
- B. Do not endanger any work by cutting or altering work or any part of it.
- C. Do not cut or alter work of another contractor without written consent of Architect.
- D. Do not cut structural members without written consent of Architect.

PART 2. PRODUCTS

- 2.1 **Materials:** For replacement of work removed: Comply with specifications for type of work to be done.

PART 3. EXECUTION

3.1 Inspection:

- A. Inspect existing conditions of work, including elements subject to movement or damage during:
 - 1. Cutting and patching
 - 2. Excavating and backfilling
- B. After uncovering of work, inspect conditions affecting installation of new product.

3.2 Preparation Prior To Cutting:

- A. Provide shoring, bracing and support as required to maintain structural integrity of project.
- B. Provide protection for other portions of project.
- C. Provide protection from elements.

3.3 Performance:

- A. Execute fitting and adjustment of products to provide finished installations to comply with acceptable tolerances and finishes.
- B. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repaired and new work.

- C. Restore work which has been cut or removed; install new products to provide completed work.
- D. Refinish entire surfaces as necessary to provide an even finish matching adjoining work.
 - 1. Continuous surfaces: to nearest intersections
 - 2. Assembly: entire refinishing

END OF SECTION

SECTION 01090 - ALTERATIONS

PART 1. GENERAL

1.1 Description:

- A. Summary: The procedures and administrative requirements of this Section apply to all of the Specifications which are involved in alterations to the existing building.
- B. Extent Notes: Cut into or partially remove portions of the existing building as necessary to make way for new construction. Include such work as:
 - 1. Cutting, moving, or removal of items or work shown to be cut, moved, or removed.
 - 2. Cutting, moving, or removal of items not shown to be cut, moved, or removed to allow new work to proceed. Work or items which are to remain in the finished work shall be patched or reinstalled after their cutting, moving or removal, and their joints and finishes made to match adjacent or similar work.
 - 3. Removal of existing surface finishes as needed to install new work and finishes.
 - 4. Removal of abandoned items and removal of items serving no useful purpose, such as abandoned piping or wiring.
 - 5. Repair or removal of dangerous or unsanitary conditions.
 - 6. Removal of unsuitable or extraneous materials not marked for salvage such as abandoned furnishings, debris, and rotted wood.

1.2 Scheduling And Access:

- A. Outages: Utility and service outages shall be kept to a minimum and will be permitted only with permission from Owner.
- B. Security: When keys to locked areas are needed to perform work, obtain from Owner. Return keys at end of each day's work or make special arrangements with Owner.
- C. Access by Owner: The Owner shall have access to the project at all times during construction.

1.3 Alterations, Cutting And Protection:

- A. Extent: Cutting and removal work shall be performed so as not to damage adjacent work.
- B. Responsibility and Assignment to Trades:
 - 1. Contractor shall assign the work of moving, removal, cutting, patching, and repair to trades under his supervision so as to cause the least damage to each type of work encountered and so as to return the building as much as possible to the appearance of new work.
 - 2. Patching of finish materials shall be assigned to mechanics skilled in the work of the finish trade involved.
- C. Protection: Protect remaining finishes, equipment, and adjacent work from damage caused by cutting, moving, removal, and patching operations. Protect surfaces which will remain a part of the finished work.

- D. Discoveries: Construction, furnishings, and articles of a historic or private nature, which are encountered during cutting, removal, and new construction shall be turned over to the Owner or the Owner's desires for their disposition shall be sought and followed.
- E. Salvage:
 - 1. Salvage sufficient quantities of cut or removed material to replace damaged work or patch new work, where the material cannot be readily obtained in today's market.
 - 2. In addition to items specified above or indicated on the drawings to be salvaged, items marked or listed for salvage shall remain the property of the Owner and shall be carefully removed and stored in a dry, secure place.
 - 3. Do not incorporate salvaged or used material in new construction, except for small quantities of finish material which are difficult to match.
- F. Debris: Remove debris promptly from the site each day. Removed material becomes property of the Contractor. Load removed material directly on trucks for removal from site. Dispose of removed material legally. Do not burn on site. Do not allow debris to enter sewers.
- G. Hazardous Materials:
 - 1. Do not bid or provide or install hazardous materials or products containing hazardous materials in any portion (alterations or new construction) of this project, such as asbestos, polychlorinated biphenyl (PCB), etc.
 - 2. If asbestos is located in any areas of existing buildings being renovated, the Owner will take appropriate abatement action prior to any construction in these areas. The Contractor will not be required to perform any work regarding removal of asbestos containing material.

1.4 Patching, Extending, And Matching:

- A. Skill: Patch and extend existing work using skilled mechanics who are capable of matching the existing quality of workmanship. The quality of patched or extended work shall not be less than that specified in the Sections of the product and execution of the Specifications which follow these General Requirements.
- B. Patching:
 - 1. In areas where any portion of an existing finished surface is damaged, lifted, stained or otherwise made imperfect by work of this contract, patch, or replace the imperfect portion of the surface with matching material.
 - 2. Provide adequate support or substrate for patching of finishes.
 - 3. If the imperfect surface was painted or coated, repaint, or recoat the patched portion in such a way that uniform color and texture over the entire surface results.
 - 4. If the surrounding surface cannot be matched, repaint or recoat the entire surface.
- C. Quality:
 - 1. In the Sections of the product and execution specifications which follow these General Requirements, no concerted attempt has been made to describe each of the various existing products that must be used to patch, match, extend, or

replace existing work. Obtain all such products in time to complete the Work on schedule. Such products shall be provided in quality which is in no way inferior to the existing products.

2. The quality of the products that exist in the building, as apparent during pre bid site visits, shall serve as the Specification requirement for strength, appearance, and other characteristics.

D. Transitions:

1. Where new work abuts or finishes flush with existing work, make the transition as smooth and workmanlike as possible. Patched work shall match existing adjacent work in texture and appearance so as to make the patch or transition invisible to the eye at a distance of 3 ft.
2. Where masonry, tile, plaster, metal, or other finished surface is cut in such a way that a smooth transition with new work is not possible, terminate the existing surface in a neat fashion along a straight line at a natural line of division and provide trim appropriate to the finished surface.

E. Matching:

1. Restore existing work that is damaged during construction to a condition equal to its condition at the time of the start of the Work.
2. At locations in existing areas where partitions are removed, patch the floors, walls, and ceilings with finish materials to match adjacent finishes.

F. Overall requirement that the Work be completed:

1. Where a product or type of construction occurs in the existing project and it is not specified as a part of the new work, provide such products or types of construction as needed to patch, extend or match the existing work.
2. These Specifications will generally not describe existing products or standards of execution, nor will they enumerate products which are not a part of the new construction. The existing product is its own specification.
3. The presence of any product or type of construction in the old work shall cause its patching, extending, or matching to be performed, as necessary to make the work complete and consistent, to identical standards of quality.

1.5 Repair:

- A. Replace work damaged in the course of alterations, except at areas approved for repair.
- B. Where full removal of extensive amounts of almost-suitable work would be needed to replace damaged portions, then filling, spackling, straightening, and similar repair techniques, followed by full painting or other finishing, will be permitted.
 1. Examples of work that will frequently be approved for repair rather than replacement: pitting in concealed concrete surfaces, slightly bent ceiling runners, hairline cracks in plaster.
- C. If the repaired work is not brought up to the standard for new work, it shall be cut out and replaced with new work.

1.6 Cleaning:

- A. Each successive trade:

1. As each trade finishes its work on each part of the alterations work and related new work, it shall clean up its work area and make work surfaces ready for the work of the succeeding trades.
 2. Spillage, overspray, collections of dust or debris, and damage to Owner-occupied spaces shall be cleaned or remedied immediately by the responsible trade.
- B. Each Area as it is Completed: Clean up all surfaces, remove equipment, salvage and debris, and return in condition suitable for use by the Owner as quickly as possible

END OF SECTION

SECTION 01310 - CONSTRUCTION SCHEDULES

PART 1. GENERAL

1.1 Summary:

- A. Related Requirements Specified Elsewhere:
 - 1. Section 01010 - Summary of Work
 - 2. Section 01340 - Shop Drawings, Product Data and Samples
- B. Provide projected construction schedules for entire work and revise periodically.
- C. Coordination:
 - 1. Coordinate schedules with reviewed schedules of other prime contractors.
 - 2. General Contractor will resolve conflicts among schedules of various prime contractors.

1.2 Form of Schedules: Prepare in form of Horizontal Bar Chart or Network Analysis System.

1.3 Contents of Schedule:

- A. Provide complete sequence of construction by activity.
 - 1. Shop drawings, product data, and samples:
 - a. Submittal dates
 - b. Dates reviewed copies will be required
 - 2. Decision dates for:
 - a. Products specified by allowances
 - b. Selection of finishes
 - 3. Product procurement and delivery dates
 - 4. Dates for beginning and completion of each element of construction.
- B. Show projected percentage of completion for each item of work as of first day of each month.
- C. Provide separate sub-schedule, showing submittals, review times, procurement schedules, and delivery dates.
- D. Provide sub-schedules to define critical portions of entire schedule.

1.4 Updating:

- A. Show all changes occurring since previous submission.
- B. Indicate progress of each activity, show completion dates.
- C. Include:
 - 1. Major changes in scope.
 - 2. Activities modified since previous updating.
 - 3. Revised projections due to changes.
 - 4. Other identifiable changes.

- D. Provide narrative report, including:
 - 1. Discussion of problem areas and proposed corrective action.
 - 2. Effect of changes of schedule or on other contractors.
 - 3. Description of revisions.

1.5 Submittals:

- A. Submit initial schedules within 15 days after date of notice to proceed.
- B. Submit two (2) copies of updated schedules depicting progress to first day of each month with each monthly Pay Request. **Monthly payments will not be made until the updated project schedule is submitted and approved.**

END OF SECTION

SECTION 01312 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Related Requirements:
 - 1. Section 01310 "Construction Schedules" for preparing and submitting Contractor's construction schedule.
 - 2. Section 01700 "Contract Closeout" for coordinating closeout of the Contract.
 - 3. Section 01720 "Project Record Documents" for coordinating project record documents.

1.3 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications on the Project.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Roofing Contractor shall coordinate all construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. General Contractor shall coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation. General Contractor shall also coordinate his work with the other Contractors performing work under separate contracts with the owner to insure that the project phasing requirements are met.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each subcontractor involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required. Submit these to the Architect for review and distribution.
- C. Administrative Procedures: Roofing Contractor shall coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Roofing Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- D. Conservation: Roofing Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.6 COORDINATION DRAWINGS

- A. As required, the Roofing Contractor shall prepare and compile coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Use applicable drawings as a basis for preparation of coordination drawings. Prepare drawings as needed to describe relationships of various systems and components.
2. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components.
3. Coordinate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
4. Coordinate and study required installation sequences.
5. Review and study indicated dimensions shown on the Drawings. Note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. If required provide alternate sketches to Architect indicating proposed resolution of such conflicts.

B. Suggested Coordination Drawing Organization:

1. Floor Plans and Reflected Ceiling Plans: Coordinate architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Coordinate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Identify areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Coordinate mechanical room components such as mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment and identify/resolve conflicts.
4. Structural Penetrations/Recesses: Coordinate penetrations, openings and required slab recesses for all disciplines.
5. Slab Edge and Embedded Items: Coordinate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Coordinate the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
7. Electrical Work: Coordinate the following:
 - a. Runs of vertical and horizontal conduits.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes.
8. Fire-Protection System: Coordinate the following:

- a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads with all other trades.
9. The Architect may request to review the coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Roofing Contractor's responsibility.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, the Roofing Contractor shall prepare and submit an RFI in the form specified to the Architect.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 6. RFI number, numbered sequentially.
 7. RFI subject.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Roofing Contractor's suggested resolution. If the Roofing Contractor's suggested resolution impacts the Contract Time or the Contract Sum the Roofing Contractor shall state impact in the RFI.
 12. Roofing Contractor's signature.
 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716 Form or Software-generated form with substantially the same content as indicated above, acceptable to Architect.
 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following Roofing Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.

- c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
- E. RFI Log: Roofing Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log to Architect weekly and include the following:
- 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Architect.
 - 4. RFI number including RFIs that were returned without action or withdrawn.
 - 5. RFI description.
 - 6. Date the RFI was submitted.
 - 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Roofing Contractor disagrees with response.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
- 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to the Architect, but no later than 15 days after execution of the Agreement.
- 1. Conduct the conference to review responsibilities and personnel assignments.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Roofing Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.

- b. Phasing.
- c. Critical work sequencing and long-lead items.
- d. Designation of key personnel and their duties.
- e. Lines of communications.
- f. Procedures for processing field decisions and Change Orders.
- g. Procedures for RFIs.
- h. Procedures for testing and inspecting.
- i. Procedures for processing Applications for Payment.
- j. Distribution of the Contract Documents.
- k. Submittal procedures.
- l. Preparation of record documents.
- m. Use of the premises.
- n. Work restrictions.
- o. Working hours.
- p. Owner's occupancy requirements.
- q. Responsibility for temporary facilities and controls.
- r. Procedures for moisture control.
- s. Procedures for disruptions and shutdowns.
- t. Construction waste management and recycling.
- u. Parking availability.
- v. Office, work, and storage areas.
- w. Equipment deliveries and priorities.
- x. First aid.
- y. Security.
- z. Progress cleaning.

4. Minutes: Roofing Contractor shall record and distribute meeting minutes.

C. Preinstallation Conferences: Roofing Contractor shall conduct a preinstallation conference at Project site before each construction activity that requires any coordination with other construction/work.

- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
- 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.

- m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
3. Roofing Contractor shall record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Roofing Contractor shall prepare and distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Roofing Contractor shall not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to the Architect, but no later than 45 days prior to the scheduled date of Substantial Completion.
1. Roofing Contractor shall conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Architect, and their consultants; Roofing Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - i. Submittal procedures.
 - j. Coordination of separate contracts.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 4. Minutes: Roofing Contractor shall record and distribute meeting minutes.

- E. Progress Meetings: Roofing Contractor shall conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of the Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Roofing Contractor shall review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Roofing Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Progress cleaning.
 - 10) Quality and work standards.
 - 11) Status of correction of deficient items.
 - 12) Field observations.
 - 13) Status of RFIs.
 - 14) Status of proposal requests.
 - 15) Pending changes.
 - 16) Status of Change Orders.
 - 17) Pending claims and disputes.
 - 18) Documentation of information for payment requests.
 4. Minutes: Roofing Contractor shall record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Roofing Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- F. Coordination Meetings: At conclusion of the weekly Progress Meeting, the Roofing Contractor shall conduct a project coordination meeting to discuss specific coordination

issues, phasing of work, coordination of other Contractors and trades, coordination of trades and project schedule as it relates to coordination of all the work and any issues directly related the construction phasing.

1. Attendees: In addition to representatives of the Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Roofing Contractor shall review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Roofing Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to overall construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise combined Roofing Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
3. Reporting: Roofing Contractor shall record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1. GENERAL

1.1 Summary:

- A. Submit to Architect/Engineer, Shop Drawings, Product Data, and Samples required by Specification Sections.
- B. Related Requirements Specified Elsewhere:
 - 1. Construction Schedule - Section 01310
 - 2. Project Record Documents - Section 01720
- C. Prepare and submit, with Construction Schedule, a separate schedule listing dates for submission and review of Shop Drawings. Product Data and Samples will be needed for each product.

1.2 Shop Drawings:

- A. Original drawings, prepared by Roofing Contractor, Subcontractor, Supplier or Distributor, which illustrate some portion of the work; showing fabrication, layout, setting, or erection details. No portion of the Contract Documents shall be reproduced for use as a part of the Shop Drawings.
- B. Prepared by a qualified detailer.
- C. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
- D. Reproductions for submittals: Reproducible Transparency with one Opaque Diazo Print.

1.3 Product Data:

- A. Manufacturer's Standard Schematic Drawings: Modify drawings to delete information not applicable to project.
- B. Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations, and other descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products, or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show wiring diagrams and controls.

1.4 Samples:

- A. Physical examples to illustrate materials, equipment, or workmanship and to establish standards by which completed work is judged.
- B. Office Samples: Of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of product or material.
 - 2. Full range of color samples.

- C. Field Samples and Mock-Ups:
 - 1. Erect at Project Site at location acceptable to Architect.
 - 2. Construct each complete, including work of all trades required in finished work.

1.5 Contractors Responsibilities:

- A. Review and Approve Shop Drawings, Product Data and Samples prior to submission and so indicate over his signature.
- B. Verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
- C. Coordinate submittals with requirements of work and Contract Documents.
- D. Contractor's responsibility for coordination of the overall work, coordinating of various trades involved, coordination of documents/drawings and various details is not relieved by the Architect/Engineer's review of the submittals.
- E. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect/Engineer's review of submittal.
- F. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect/Engineer's review of submittals, unless Architect/Engineer gives written acceptance of specific deviations.
- G. Notify Architect/Engineers, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- H. Begin no work which requires submittals until return of submittals with Architect/Engineer's stamp and initials or signature indicating review.
- I. After Architect/Engineer's review, distribute copies.

1.6 Submission Requirements:

- A. Schedule submissions at time of proposal due date.
- B. Shop Drawings: Submit number of copies of Shop Drawings which Contractor requires for distributions plus two (2) copies which will be retained by the one (1) Architect/Engineer.
- C. Product Data: Submit number of copies of Product Data which Contractor requires for distribution plus two (2) copies which will be retained by Architect/Engineer.
- D. Samples: Submit number of Samples specified in each Specification Section.
- E. Accompany submittals with transmittal letter in duplicate, containing:
 - 1. Date
 - 2. Project Title and number

3. Contractor's name and address
 4. The number of each Shop Drawing, Product Data, and Sample submitted.
 5. Notification of deviation from Contract Documents
 6. Other pertinent data
- F. **For work designed by consultants, make submission directly to consultant, and simultaneously submit duplicate of transmittal letter and one copy of complete submission to Architect. Architect will not forward submittals to consultants.**
- G. Submittals shall include:
1. Date and Revision Dates
 2. Project Title and Number
 3. The names of:
 - a. Architect/Engineer
 - b. Contractor
 - c. Subcontractor
 - d. Supplier
 - e. Manufacturer
 - f. Separate detailer when pertinent
 4. Identification of product or material
 5. Relation to adjacent structure or materials
 6. Field dimensions, clearly identified as such
 7. Specification Section number
 8. Applicable Standards, such as ASTM or Federal Specification
 9. A blank space 3"x3" for the Architect/Engineer's stamp
 10. Identification of deviations from Contract Documents
 11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents
- H. If Shop drawings which have been previously submitted for review are resubmitted, they shall clearly note any changes or additions that have been made to the previous submittal.

1.7 Resubmission Requirements:

- A. Shop Drawings:
1. Revise initial drawings as required and resubmit as specified for initial submittal.
 2. Indicate on drawings any changes which have been made other than these requested by Architect/Engineer.
- B. Product Data and Samples: Submit new data and samples as required for initial submittal.

1.8 Distribution of Submittals after Review:

- A. Distribute copies of Shop Drawings and Product Data which carry Architect/Engineer's/Consultant's Stamp to:
1. Contractor's File
 2. Job-Site File
 3. Record Documents File

4. Other Prime Contractors
5. Subcontractors
6. Supplier
7. Fabricator
8. Architect (if shop drawings are submitted directly to Consultant).

B. Distribute Samples as Directed.

1.9 Architect/Engineer's Duties:

A. Review Submittals with reasonable promptness.

B. Review for:

1. Design concept
2. Information given in Contract Documents

C. Review of separate item does not constitute review of an assembly in which item functions.

D. Affix stamp and initials or signature certifying review of submittal.

E. Notify Contractor when submittals have been reviewed.

1.10 Mailing and Shipping of Shop Drawings: All mailing and shipping of shop drawings will be at the expense of the Contractor.

END OF SECTION

SECTION 01370 - SCHEDULE OF VALUES

PART 1. GENERAL

1.1 Submittals:

- A. Submit to the Architect a Schedule of Values at least ten (10) days prior to submitting first Application for Payment.
- B. Upon request by Architect, support values given with data that will substantiate their correctness.
- C. Use Schedule of Values only as basis for Contractor's Application for Payment.

1.2 Form of Submittal:

- A. Submit typewritten Schedule of Values on 8-1/2" x 11" white paper.
- B. Use Table of Contents of this Specification as basis for format for listing costs of work for sections under Divisions 2-16.
- C. Identify each line item with number and title as listed in Table of Contents of this Specification.

1.3 Preparing Schedule of Values:

- A. Itemize separate line item cost for work required by each section of this Specification except as specifically authorized otherwise.
 - 1. For example, the following is suggested:
 - a) Set up charges (Include temporary facilities)
 - b) Insurance bonds
 - c) Excavation
 - d) Filling and Grading
 - e) Storm Drainage
 - f) Paving
 - g) Masonry
 - h) Etc.
 - 2. Show labor and materials as separate line item.
 - 3. Show each allowance as a separate line item.
- B. Make sum of cost items listed in schedule equal to contract sum.

1.4 Review by Architect:

- A. Architect will review schedule.
- B. Any objection will be transmitted to Contractor for revision and re-submittal.
- C. Schedule will become the basis for Progress Payments.

END OF SECTION

SECTION 01410 – TDI WINDSTORM INSPECTION PROGRAM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes performance, submittal, product, and installation requirements for all exterior building envelope components. TDI Engineer shall be provided by Roof Contractor. Owner shall receive a WPI-8.

1.3 DEFINITIONS AND ABBREVIATIONS

- A. Aluminum Association (AA): Entity who publishes standards for the design of aluminum components.
- B. American Architectural Manufacturers Association (AAMA): Entity who utilizes standards to provide product certification programs. These certifications are a tool to prove that envelope components meet specified windstorm criteria.
- C. American Institute of Steel Construction (AISC): Entity who publishes standards for the design of structural steel components.
- D. American National Standards Institute (ANSI): Entity who oversees the creation, dissemination, and use of norms and guidelines.
- E. American Society for Testing and Materials (ASTM): Entity who develops and delivers consensus standards. These standards are used to create testing reports that prove envelope components meet specified windstorm criteria.
- F. “Appointed Engineer”: Individual structural engineer appointed by the Commissioner of Insurance to perform TDI windstorm inspections. The “Complete List of Appointed Engineers” is available at <http://www.tdi.texas.gov/wind/Engappointment.html>.
- G. Canadian General Standards Board (CGSB): Entity who publishes material standards.
- H. Canadian Standards Association (CSA): Entity who utilizes standards to provide product certification programs. These certifications are a tool to prove that envelope components meet specified windstorm criteria.
- I. Concrete Masonry Unit (CMU): Material as specified in the Structural Notes.
- J. Consumer Product Safety Commission (CPSC): Entity who sets guidelines with the purpose of protecting the public from hazards, such as windstorm events.
- K. Engineer of Record (EOR): For these Specifications, shall be provided by roofer.
- L. Factory Mutual (FM): Entity who develops and delivers consensus standards. These standards are used to create testing reports that prove envelope components meet specified windstorm criteria.
- M. International Building Code (IBC): A widely-recognized collection of standards. Often, the Authority Having Jurisdiction will adopt these standards as the building code.

- N. International Code Council Evaluation Service (ICC-ES): Entity who develops acceptance criteria and issues technical reports over envelope components. These evaluation reports help determine code compliance and provide evidence that envelope components meet code requirements.
- O. Masonry Standards Joint Committee (MSJC): Joint committee sponsored by The Masonry Society (TMS), the American Concrete Institute (ACI), and the Structural Engineering Institute of the American Society of Civil Engineers (SEI/ASCE). It maintains the *Building Code Requirements for Masonry Structures* (TMS 402/ACI 530/ASCE 5) and *Specification for Masonry Structures* (TMS 602/ACI 530.1/ASCE 6), which publishes standards for the design of masonry components.
- P. Notice of Acceptance (NOA): Testing report issued by the Miami-Dade County (Florida) Building Code Compliance Office proving that envelope components meet specified windstorm criteria.
- Q. Single-Ply Roofing Institute (SPRI): Entity who provides standards for Low-slope Roofs.
- R. Testing Application Standard (TAS): Standard used by the Florida Building Code to prove that envelope components meet specified windstorm criteria.
- S. Texas Department of Insurance (TDI): Entity who certifies that windstorm requirements have been met so that windstorm insurance can be provided.
- T. Underwriters Laboratories (UL): Entity who develops and delivers consensus standards. These standards are used to create testing reports that prove envelope components meet specified windstorm criteria.
- U. Window and Door Manufacturers Association (WDMA): Entity who utilizes standards to provide product certification programs. These certifications are a tool to prove that envelope components meet specified windstorm criteria.

1.4 CONFLICTING REQUIREMENTS

- A. These Specifications are intended to illustrate what is required on this Project for Windstorm Certification by the Texas Department of Insurance (TDI). They are a minimum set of requirements and do not provide direction on any Project necessities other than Windstorm Certification by the TDI. Therefore, all other Specifications in this Project Manual must also be coordinated and adhered to by the General Contractor.
 - 1. The Engineer of Record who signed these Drawings and Specifications is **NOT** the TDI “Appointed Engineer” assigned by the Commissioner of Insurance to perform windstorm inspections for this Project. Therefore, this Specification provides minimum criteria for bidding purposes only. Final decision regarding acceptability of all exterior components shall be made by the TDI “Appointed Engineer”. Final performance criteria may be stricter than the General Building Code minimums provided in these Specifications, but in no case shall the criteria be less stringent.
- B. Referenced Standards: If compliance with two or more standards is specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to the TDI “Appointed Engineer” for a decision before purchasing the components in question.
 - 1. If different or conflicting requirements are provided in the Construction Documents and Specifications, comply with the most stringent requirement. Any deviations or

questions shall be brought to the immediate attention of the TDI "Appointed Engineer".

- C. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to the TDI "Appointed Engineer" for a decision before proceeding.

1.5 PERFORMANCE REQUIREMENTS

- A. General: Windstorm certification by the TDI is required on this project. Product data for the required items shall meet the requirements for Inland I Zone.
 - 1. All exterior components of the building envelope shall meet the project wind loads shown on the Wind Load Plans of the Structural Notes.
 - 2. Protection of openings: For structures located in the Inland I Zone as adopted by the TDI, glazed exterior openings in buildings shall be impact resistant or protected with an impact-resistant covering [ref. *2006 Texas Revisions to the 2006 International Building Code* sec. 1609.1.2].
 - a. Exterior openings include exterior windows, exterior doors, and garage doors. Exterior opening protection for windborne debris shall meet the requirements of ASTM E1996 and ASTM E1886 referenced therein as follows:
 - 1) Exterior openings located within 30 feet of grade shall meet the requirements of the Large Missile Test of ASTM E1996 under Missile Level "C" for Wind Zone 2. Impact protective systems that contain openings larger than 3/16 inches projected horizontally shall also meet the requirements of the Small Missile Test of ASTM E1996 under Missile Level "A".
 - 2) Exterior openings located more than 30 feet above grade shall meet the provisions of the Small Missile Test of ASTM E1996 under Missile Level "A" for Wind Zone 2.
 - 3) Exterior opening protection shall be installed in accordance with the manufacturer's reviewed installation instructions for the manner in which they were tested for uniform static wind pressure resistance and for windborne debris resistance. Removable windborne debris protection shall have installation instructions provided.
 - b. Garage (overhead) doors containing glazing shall meet the requirements of ASTM E1886 and ASTM E1996 [ref. *2006 Texas Revisions to the 2006 International Building Code* sec. 1609.1.2.2].
 - 3. All envelope components and their fasteners must comply with both the *2006 Texas Revisions to the 2006 International Building Code* and the General Building Code.
 - a. Testing reports shall be developed by facilities complying with one of the following [ref. *TDI Submittal Requirements for Product Evaluation* sec. 4.1]:
 - 1) UL (Underwriters Laboratories) or FM (Factory Mutual).
 - 2) Recognized by the ICC-ES as specified in ICC-ES AC85.
 - 3) Accredited by AAMA or WDMA.
 - 4) Recognized by Miami-Dade County, Florida.

- 5) Accepted by the TDI through compliance with ISO/IEC Standard 17025 by the International Accreditation Service (IAS) or the International Laboratory Accreditation Cooperative (ILAC) Mutual Recognition Agreement (MRA).
 - b. Engineered design calculations and drawings shall be signed, sealed, and dated by a Professional Engineer licensed in the State of Texas.
- B. Alternative Testing Methods and Protection Systems
1. Alternative Testing Method – Preconstruction load test: In evaluating the physical properties of materials and methods of construction that are not capable of being designed by an engineering analysis, do not comply with material design standards, or do not have recognized testing standards, the structural adequacy shall be predetermined based on load test criteria established in this section [ref. *IBC* sec. 1714.1; *IBC* sec. 1715.1].
 - a. Test assembly shall be subjected to at least 2 times the superimposed design load for 24 hours. Test assembly shall recover at least 75% of the maximum deflection within 24 hours after removal of the load, or it fails the test. Test assembly shall then be reloaded. Allowable design load is the least of: load at deflection limitation, failure load divided by 2.5, or maximum applied load divided by 2.5 [ref. *IBC* sec. 1714.3.1; *IBC* sec. 1715.3.1].
 2. Alternative Protection Systems – Shutters
 - a. Tests for uniform static load resistance under wind loads indicated on the Load Plans of the Structural Notes shall be in accordance with ASTM E330. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure [ref. *IBC* sec. 1714.5.2; *IBC* sec. 1715.5.2].
 - 1) If project wind loads are less than 25 psf, the assembly must have a minimum design pressure rating of 25 psf [ref. *TDI Submittal Requirements for Product Evaluation – Shutters* sec. 2.3].
 - b. Tests for windborne debris impact resistance requirements shall be in accordance with ASTM E1886 and ASTM E1996 under the appropriate Missile Level defined in ASTM E1996 [ref. *TDI Submittal Requirements for Product Evaluation – Shutters* sec. 4.3].
 3. Alternative Protection Systems – Wood Structural Panels: For structures located in the Inland I Zone, plywood panels with a minimum thickness of 15/32” and maximum span of 8 feet shall be permitted for opening protection in one- and two-story buildings. Panels shall be pre-cut and attached to framing surrounding the opening. Panels shall be labeled for location and secured on the exterior side of the building with provided hardware using the installation instructions. Attachments shall be engineered to resist wind loads indicated on the Load Plans of the Structural Notes [ref. *2006 Texas Revisions to the 2006 International Building Code* sec. 1609.1.2 (Exception 1)].
 - a. For building in Inland I Zone with mean roof height of 33 feet or less and wind speed of 130 mph or less, the following securement is permitted [ref. *2006 Texas Revisions to the 2006 International Building Code* Table 1609.1.2]:
 - 1) For a panel span up to 4 feet, use #6 or #8 screws at 16” on center.
For a panel span up to 6 feet, use #6 screws at 12” or #8 screws at 16” on center. For a panel span up to 8 feet, use #6 screws at 9” or #8 screws at 12” on center.

- 2) Fasteners shall be located a minimum of 1" from the edge of the panel and penetrate at least 1 3/4" into wood framing, 1 1/4" into concrete or CMU, and 3 threads into steel framing.
 - a) Fasteners into concrete or masonry shall be located a minimum of 2 1/2" from the edge of the framing, resistant to vibration, and have a minimum withdrawal capacity of 490 lbs.
- C. Structural Systems must be engineered to resist wind loads indicated on the Load Plans of the Structural Notes in accordance with the following:
1. Cold-formed Steel Light-frame Construction – Wall Studs
 - a. The design and installation of cold-formed steel studs for walls shall be in accordance with ASI-WSD [ref. *IBC* sec. 2210.4] and either AISI S210 or AISI S100 [ref. *IBC* sec. 2210.4].
 - b. Studs shall be spaced so that fasteners can meet the Performance Requirements of all Exterior Coverings for wall stud backup. If framing member spacing exceeds that required for Exterior Coverings, the wall stud designer shall also design all necessary infill and stiffeners to ensure that each Exterior Covering is properly fastened in accordance with its applicable Performance Requirements.
 - c. Out-of-plane deflection for stud backup must be no greater than H/180 for metal wall panels under 0.7 times the component and cladding loading.
 - d. Members shall be ASTM A1003 with a minimum G90 hot-dipped galvanized finish.
 2. Prefabricated Canopies and Awnings
 - a. Metal panels shall be tested in accordance with UL 580, ASTM E 1592, UL 1897, or FM 4474 for the design pressures indicated on the Load Plans of the Structural Notes. Framing shall be engineered to resist wind loads indicated on the Load Plans of the Structural Notes
- D. Roof Coverings must be tested to resist wind loads indicated on the Load Plans of the Structural Notes in accordance with the following. For requirements for field, perimeter, and corner zones, analyses to increase the design pressure rating of a product by increasing the fastener density or by modifying the fastener attachment of a tested assembly is not permitted [ref. *TDI Submittal Requirements for Product Evaluation – Roof Coverings* sec. 3.4].
1. General: Low-slope Roofs (roof slope less than 2V:12H) shall be either tested or engineered to resist wind loads indicated on the Load Plans of the Structural Notes.
 - a. Low-slope roof edge securement (except for gutters) shall be tested for resistance in accordance with ANSI/SPRI ES-1 [ref. *IBC* sec. 1504.5].
 - 1) Membrane attachment: Design of edge flashing, when used for terminating the roof system, shall provide minimum holding power specified in SPRI Test RE-1.
 - 2) Wind resistance of edge flashing: The vertical face of edge flashing shall be tested according to SPRI Test RE-2 for design wind pressures.
 - 3) Wind resistance of coping: Copings shall be tested according to SPRI Test Method RE-3 for both horizontal and vertical design wind pressures.
 - 4) Fasteners shall be galvanically compatible with the edge device, which shall have a minimum thickness as follows:

- a) Exposed face up to 4 inches: 24 ga galvanized steel, 16 oz cold rolled copper, 0.040" formed aluminum, or 26 ga stainless steel.
 - b) Exposed face up to 8 inches: 24 ga galvanized steel, 16 oz cold rolled copper, 0.050" formed aluminum, or 26 ga stainless steel.
 - c) Exposed face up to 10 inches: 22 ga galvanized steel, 20 oz cold rolled copper, 0.063" formed aluminum, or 24 ga stainless steel.
 - d) Exposed face up to 16 inches: 20 ga galvanized steel, 20 oz cold rolled copper with stiffening ribs, 0.080" formed aluminum, or 22 ga stainless steel.
 - b. Low-slope roof coverings shall demonstrate physical integrity over the working life of the roof based upon 2000 hours of exposure to accelerated weathering tests conducted in accordance with ASTM G152, ASTM G155, or ASTM G154 [ref. *IBC* sec. 1504.6].
 - c. Low-slope roof coverings shall resist impact damage based on the results of tests conducted in conformance with ASTM D3746, ASTM D4272, CGSB 37-GP-52M, or the "Resistance to Foot Traffic Test" in Section 5.5 of FM 4470 [ref. *IBC* sec. 1504.7].
 - 2. Formed Metal Panels shall be tested to resist wind loads indicated on the Load Plans of the Structural Notes. Minimum 7/16" OSB or 15/32" plywood is required for products secured to roof sheathing [ref. *TDI Submittal Requirements for Product Evaluation – Roof Coverings* sec. 3.2].
 - a. Metal panel roof systems shall be tested in accordance with UL 580, ASTM E1592, UL 1897, or FM 4474 [ref. *IBC* sec. 1504.3.2].
 - b. Materials used for metal-sheet roof coverings shall be naturally corrosion resistant or provided with corrosion resistance by the following [ref. *IBC* Table 1507.4.3(2)]:
 - 1) 55% aluminum-zinc alloy coated steel (ASTM A792 AZ 50) or 5% aluminum alloy-coated steel (ASTM A875 GF60)
 - 2) Aluminum-coated steel (ASTM A463 T2 65), galvanized steel (ASTM A653 G-90), or prepainted steel (ASTM A755 to be applied over steel products with corrosion resistant coatings of ASTM A792, ASTM A875, ASTM A463, or ASTM A653)
 - 3. Gutters and Downspouts (and Flashing and Coping Caps on roofs with slopes greater than or equal to 2V:12H) shall be installed in accordance with the manufacturer's printed installation instructions.
 - a. Flashing made of metal shall be corrosion resistant with a minimum thickness of 0.019 inches (No. 26 galvanized sheet) [ref. *IBC* sec. 1503.2.1].
- E. Windows must be tested to resist wind loads indicated on the Load Plans of the Structural Notes, and glazed exterior openings must be tested for windborne debris impact resistance in accordance with the following:
 - 1. General: Glass and glazing shall be designed and tested as follows:
 - a. Framing members for each individual pane of glass shall be designed so that the deflection of the edge of the glass perpendicular to the glass pane shall not exceed 1/175 of the glass edge length or 3/4 inches, whichever is less [ref. *IBC* sec. 2403.3].
 - b. The load resistance of glass under uniform load shall be determined in accordance with ASTM E1300 [ref. *IBC* sec. 2404.1].

- c. Glazing shall be tested for impact resistance in accordance with CPSC 16 CFR 1201 – Category I and II [ref. *IBC* sec. 2406.1.1].
 - 2. Operable Unit Windows shall be tested as follows:
 - a. Tests for design pressure requirements under wind loads indicated on the Load Plans of the Structural Notes shall be in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 [ref. *IBC* sec. 1714.5.1].
 - 1) If project wind loads are less than 25 psf, the assembly must have a minimum design pressure rating of 25 psf [ref. *TDI Submittal Requirements for Product Evaluation – Windows* sec. 2.3].
 - b. Tests for windborne debris impact resistance requirements shall be in accordance with ASTM E1886 and ASTM E1996 under the appropriate Missile Level defined in ASTM E1996.
 - c. Assemblies must be tested with the header, sill, and jamb framing, and any bucks/blocking intended to be installed on the Project.
 - 3. Curtain Wall and Storefront Systems shall be tested as follows:
 - a. Tests for design pressure requirements under wind loads indicated on the Load Plans of the Structural Notes shall be in accordance with ASTM E330. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure [ref. *IBC* sec. 1714.5.2; *IBC* sec. 1715.5.2].
 - 1) If project wind loads are less than 25 psf, the assembly must have a minimum design pressure rating of 25 psf [ref. *TDI Submittal Requirements for Product Evaluation Curtain Wall and Storefront Systems* sec. 2.3].
 - b. Tests for windborne debris impact resistance requirements shall be in accordance with ASTM E1886 and ASTM E1996 under the appropriate Missile Level defined in ASTM E1996.
 - c. Assemblies must be tested with the hardware (lock, hinges, frame, ect.), header and jamb framing, orientation (inswing or outswing), any bucks/blocking, and panic gear that is intended to be installed on the Project.
 - d. For site-assembled Curtain Wall Systems, framing members connecting individual lites or panes shall be designed to resist the design pressure requirements under wind loads indicated on the Load Plans of the Structural Notes.
- F. Doors must be tested to resist wind loads indicated on the Load Plans of the Structural Notes, and glazed exterior openings must be tested for windborne debris impact resistance, in accordance with the following:
- 1. Hinged Doors shall be tested as follows:
 - a. Tests for design pressure requirements under wind loads indicated on the Load Plans of the Structural Notes shall be in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 or ASTM E330 (tested for 10 seconds at a load equal to 1.5 times the design pressure) [ref. *IBC* sec. 1714.5.1; *IBC* sec. 1715.5.1].
 - 1) If project wind loads are less than 25 psf, the assembly must have a minimum design pressure rating of 25 psf [ref. *TDI Submittal Requirements for Product Evaluation – Doors* sec. 2.3].
 - b. For the glass portion of glazed doors, tests for windborne debris impact resistance requirements shall be in accordance with ASTM E1886 and ASTM E1996 under the appropriate Missile Level defined in ASTM E1996.

- c. Assemblies must be tested with the hardware (lock, hinges, frame, ect.), header and jamb framing, orientation (inswing or outswing), any bucks/blocking, and panic gear that is intended to be installed on the Project.
 - 2. Garage (Overhead) Doors shall be tested as follows:
 - a. Tests for uniform static air pressure requirements under wind loads indicated on the Load Plans of the Structural Notes shall be in accordance with ASTM E330. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure [ref. *IBC* sec. 1714.5.2; *IBC* sec. 1715.5.2].
 - 1) Doors with more than 25% of the door area containing ventilation are not permitted [ref. *TDI Submittal Requirements for Product Evaluation Garage Doors and Rolling Doors* sec. 4.2 & 4.4].
 - b. For garage doors containing glazing, tests for windborne debris impact resistance requirements shall be in accordance with ASTM E1886 and ASTM E1996 under the appropriate Missile Level defined in ASTM E1996 [ref. *2006 Texas Revisions to the 2006 International Building Code* sec. 1609.1.2.2].
 - c. Assemblies must be tested with the hardware (lock, hinges, frame, ect.), header and jamb framing, and any bucks/blocking that is intended to be installed on the Project.
 - 1) Where wood bucks are used, products shall be tested and installed with spruce-pine-fir lumber [ref. *TDI Submittal Requirements for Product Evaluation Garage Doors and Rolling Doors* sec. 3.2].
- G. Exterior Coverings must be tested to resist wind loads indicated on the Load Plans of the Structural Notes in accordance with the following:
 - 1. Exterior metal veneer (formed metal panels) shall be tested resist wind loads indicated on the Load Plans of the Structural Notes (with a minimum design pressure rating of 20 psf) [ref. *IBC* sec. 1405.10.1; *IBC* sec. 1405.11.1]. Minimum 7/16" OSB or 15/32" plywood is required for products secured to wall sheathing [ref. *TDI Submittal Requirements for Product Evaluation – Exterior Coverings* sec. 3.2].
 - a. Metal panel veneer shall be tested in accordance with UL 1897, UL 580, ASTM E1592, FM 4450, or FM 4470 [ref. *TDI Submittal Requirements for Product Evaluation – Exterior Coverings* sec. 4.8].
 - b. Aluminum shall conform to AAMA 1402, cold-rolled copper shall conform to ASTM B370, and lead-coated copper shall conform to ASTM B101 [ref. *IBC* sec. 1405.10.1].
 - c. Metal veneers shall be corrosion-resistant or protected front and back with porcelain enamel and have at least 0.0149-inch nominal thickness [ref. *IBC* sec. 1405.10].
 - 1) Fastener spacing shall not exceed 24 inches vertically or horizontally (with at least four attachments per unit). Metal attachments shall have a cross-sectional area not less than provided by W1.7 wire [ref. *IBC* sec. 1405.10.1].
- H. Mechanical, Electrical, and Plumbing Equipment must be either tested or engineered to resist wind loads indicated on the Load Plans of the Structural Notes in accordance with the following:
 - 1. Louvers shall be tested for the Large Missile Test of ASTM E1996. In addition, louvers shall tested for design pressure requirements under wind loads indicated

- on the Load Plans of the Structural Notes in accordance with ASTM E 330 (tested for 10 seconds at a load equal to 1.5 times the design pressure) [ref. *IBC* sec. 1609.1.2.1].
2. Rooftop Vents, Fans, and other equipment shall be tested to resist wind loads indicated on the Load Plans of the Structural Notes. Minimum 7/16" OSB or 15/32" plywood is required for roof deck construction [ref. *TDI Submittal Requirements for Product Evaluation – Roof Vents* sec. 3.2]. Securement of equipment to bases, base construction, and base securement to the structure shall be engineered by the contractor.
 - a. Rooftop Vents and Fans shall be tested to the wind loads indicated on the Load Plans of the Structural Notes in accordance with ASTM E 330 (tested for 10 seconds at a load equal to 1.5 times the design pressure) [ref. *TDI Submittal Requirements for Product Evaluation – Roof Vents* sec. 4.2].
 3. Securement of Exterior Light Fixtures shall be either tested or engineered to resist wind loads indicated on the Load Plans of the Structural Notes.
 - a. Fastening patterns shall be engineered to resist both moment and all gravity loads indicated on the Load Plans of the Structural Notes.
 - b. As an alternative, the assembly can be tested to resist wind loads indicated on the Load Plans of the Structural Notes in accordance with ASTM E 330 (tested for 10 seconds at a load equal to 1.5 times the design pressure).

1.6 SUBMITTALS

- A. General: Windstorm certification by the TDI is required on this project. Product data for the required items shall meet the requirements of Inland I Zone.
 1. Each submittal shall include:
 - a. The location of each component superimposed onto the scaled wind load plan from the Structural Notes to illustrate to which wind zone it belongs.
 - b. The overall dimensions of each component.
 - c. Both the maximum and minimum possible weight of each component.
 - d. Material properties of all components and fasteners, along with any corrosion-resistant coatings.
 2. Submittals requiring testing reports shall include the actual assembly to be installed in the field (along with all fasteners. Furthermore, the attachment shall be into the substrate indicated in the Contract Documents. Submittals should include current TDI Product Evaluation Reports along with all referenced manufacturer's printed installation instructions. Other acceptable testing report submittals may include:
 - a. International Code Council Evaluation Service (ICC-ES) reports.
 - b. International Association of Plumbing and Mechanical Officials Uniform Evaluation Service (IAPMO-UES) reports.
 3. Submittals for all envelope components and fasteners shall comply with the following:
 - a. Submittals requiring testing reports shall include credentials of the testing facility indicating that the testing report is in compliance with the Performance Requirements.
 - b. Submittals requiring engineered analyses shall include drawings and calculations sealed by a Professional Engineer licensed in the State of Texas.
- B. Alternative Testing Methods and Protection Systems

1. For assemblies using the alternative preconstruction load test in accordance with the Performance Requirements, the submittal shall include the actual assembly to be installed in the field (along with all fasteners). Furthermore, the attachment shall be into the substrate indicated in the Contract Documents. The testing report shall be from an acceptable facility and sealed by a Professional Engineer licensed in the State of Texas.
 2. Alternative Protection Systems – Shutters submittals shall include a testing report from an acceptable source indicating:
 - a. The assembly meets the Performance Requirements for uniform static load resistance.
 - b. The assembly meets the Performance Requirements for windborne debris impact resistance.
 3. Alternative Protection Systems – Wood Structural Panels submittals shall include sealed calculations and drawings illustrating that both the components and fasteners (along with the attachment to the substrate indicated in the Contract Documents) meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
 - a. For building in Inland I Zone with mean roof height of 33 feet or less and wind speed of 130 mph or less, submit the allowable fastening pattern with selected fasteners.
- C. The following submittals are required for Structural Systems on the Project.
1. Cold-formed Steel Light-frame Construction – Wall Studs submittals shall include:
 - a. Sealed calculations and drawings illustrating that both the components and fasteners (along with the attachment to the substrate indicated in the Contract Documents) meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
 - b. Sealed calculations and drawings illustrating that stud size and spacing is coordinated with required Exterior Covering fastening patterns. Calculations and details shall illustrate that furring, stiffeners, and other infill also meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
 - c. Sealed calculations and drawings illustrating that serviceability (deflection) criteria for metal stud backup meet the Performance Requirements for each type of veneer. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
 - d. Material properties (ASTM designations) of all components (along with any corrosion-resistant coatings) meeting the Performance Requirements along with the fastening patterns intended to be installed on the Project.
 2. Prefabricated Canopies and Awnings submittals shall include:
 - a. Sealed calculations and details illustrating that both the components and fasteners (along with the attachment to the substrate indicated in the Contract Documents) meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.

- 1) All submittals shall include the material properties (ASTM designations) of all components (along with any corrosion-resistant coatings) meeting the Performance Requirements along with the fastening patterns intended to be installed on the Project.
 - 2) All submittals shall include the testing reports for the roof panels at spans that meet or exceed project conditions.
- D. The following submittals are required for Roof Coverings on the Project.
1. General submittals for low-slope roof edge securement shall include:
 - a. Testing report from an acceptable source indicating that membranes, flashing, and coping caps can resist wind loads indicated in the Structural Notes.
 - b. Testing report from an acceptable source indicating that the roof coverings meet physical integrity Performance Requirements.
 - c. Testing report from an acceptable source indicating that the roof coverings meet impact Performance Requirements.
 2. Formed Metal Panel submittals shall include:
 - a. Testing report from an acceptable source indicating that the metal panels and fasteners can resist loads indicated in the Performance Requirements.
 - b. Material properties (ASTM or CGSB designations) of all components (along with any corrosion-resistant coatings) meeting the Performance Requirements.
 3. Gutters and Downspouts (and Flashing and Coping Caps on roofs with slopes greater than or equal to 2:12) submittals shall include the manufacturer's printed installation instructions, complete with fasteners into the appropriate substrate. In addition, the submittals shall include:
 - a. Material thicknesses and properties (ASTM designations) of all components (along with any corrosion-resistant coatings) meeting the Performance Requirements along with the fastening patterns intended to be installed on the Project.
- E. The following submittals are required for Windows on the Project.
1. General submittals for all glass and glazing shall include:
 - a. Sealed calculations and drawings illustrating that serviceability (deflection) criteria meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
 - 1) Submittal shall include material properties (ASTM designations) of all components (along with any corrosion-resistant coatings) meeting the Performance Requirements.
 - b. Testing report from an acceptable source indicating that load resistance under uniform loads meets the Performance Requirements.
 - c. Testing report from an acceptable source indicating that load resistance under uniform loads meets the Performance Requirements.
 2. Operable unit window submittals shall include a testing report from an acceptable source indicating the following:
 - a. The assembly meets the Performance Requirements for design pressure.
 - b. The assembly meets the Performance Requirements for windborne debris.
 - c. The assembly was tested with the components, fasteners, and substrates that will be installed in the field.

3. Curtain Wall and Storefront System submittals shall include:
 - a. Testing report indicating that the assembly meets the wind load Performance Requirements.
 - b. Testing report indicating that the assembly meets the windborne debris impact resistance Performance Requirements.
 - c. Testing report indicating that the assembly was tested with components, fasteners, and substrates that will be installed in the field.
 - d. Sealed calculations and drawings illustrating that site-assembled framing members meet the Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas.
- F. The following submittals are required for Doors on the Project.
 1. Hinged Door submittals shall include a testing report from an acceptable source indicating the following:
 - a. The assembly meets the Performance Requirements for design pressure.
 - b. The assembly meets the Performance Requirements for windborne debris.
 - c. The assembly was tested with the components, fasteners, and substrates that will be installed in the field.
 2. Garage (Overhead) Door submittals shall include a testing report from an acceptable source indicating the following:
 - a. The assembly meets the Performance Requirements for design pressure.
 - b. The assembly meets the Performance Requirements for windborne debris.
 - c. The assembly was tested with the components, fasteners, and substrates that will be installed in the field.
- G. The following submittals are required for Exterior Coverings on the Project.
 1. External metal veneer submittals shall include a testing report from an acceptable source indicating the following:
 - a. The assembly meets the Performance Requirements for design pressure.
 - b. The assembly meets the Performance Requirements for material standards.
 - c. The assembly meets the Performance Requirements for corrosion resistance.
- H. The following submittals are required for Mechanical, Electrical, and Plumbing Equipment on the Project.
 1. Louvers submittals shall include a testing report from an acceptable source indicating that the assembly meets the Performance Requirements with the components and fasteners that will be installed to the substrate indicated in the Contract Documents. Fastener patterns and material properties (along with any corrosion-resistant coatings) meeting the Performance Requirements shall also be submitted.
 2. Rooftop Vents, Fans, and other equipment submittals shall include:
 - a. Testing report from an acceptable source indicating that the assembly meets the Performance Requirements, along with engineering calculations and signed and sealed drawings for the securement of the equipment to the base, the base design, and securement of the base to the structure.
 3. Securement of Exterior Light Fixture submittals shall include:
 - a. Sealed calculations and drawings illustrating tie-down or curb attachments (fastened to the substrate indicated in the Contract Documents) meet the

Performance Requirements. The designer responsible for the drawings and calculations shall be a Professional Engineer licensed in the State of Texas. Fastener patterns and material properties (along with any corrosion-resistant coatings) meeting the Performance Requirements shall also be submitted.

- b. As an alternative, submittals may include a testing report from an acceptable source indicating that the assembly meets the Performance Requirements, along with the assembly (both components and fasteners) that will be installed in the field to the substrate indicated in the Contract Documents.

PART 2 - PRODUCTS

2.1 GENERAL: Windstorm certification by the TDI is required on this project. Product data for the required items shall meet the requirements of Inland I Zone. All products, materials, and installation systems for building envelope systems shall be reviewed by the TDI "Appointed Engineer" prior to purchase.

- A. It is preferred that all products, materials, and installation systems be evaluated and approved by the TDI Windstorm Inspection Program and be listed in the TDI Product Evaluation Index here: <http://www.tdi.state.tx.us/wind/prod/>. All reports shall be submitted to the TDI "Appointed Engineer". Other products, materials, and installation systems not listed shall meet one of the following:
 1. Tested to meet the Performance Requirements and any other requirements of the TDI Windstorm Inspection Program here: http://www.tdi.state.tx.us/wind/submittal_requi.html. All reports shall be submitted to the TDI "Appointed Engineer".
 2. Engineered to meet the Performance Requirements, and sealed calculations and drawings shall be submitted to the TDI "Appointed Engineer".

2.2 CORROSION RESISTANCE: The following are requirements for all fasteners of building envelope systems for Inland I Zone. All fasteners shall be reviewed by the TDI "Appointed Engineer" prior to purchase.

- A. Fasteners in open areas shall be stainless steel (ASTM A 167), hot-dipped galvanized after fabrication (ASTM A 123 or ASTM A 153), hot-dipped galvanized or galvanized prior to fabrication (ASTM A 653), hot-dipped galvanized or electrogalvanized (ASTM A 641), mechanically deposited zinc coatings (ASTM B 659), or have electrodeposited zinc coatings (ASTM A 641).
 1. Open areas include porches, decks, carports, exterior wall coverings, roof coverings, metal ties for stone veneer, underside of elevated structures, anchors securing mechanical equipment, garage door attachments, roof vent attachments, skylight attachments, and impact protective systems (shutters).
 2. Exception: Corrosion resistance is not required for ½"Ø or greater steel bolts.
- B. Fasteners in vented or enclosed areas may either meet the provisions for open areas or be epoxy-coated (ASTM A 899).
 1. Vented or enclosed areas include attics, exterior wall stud cavities, crawl spaces, window and door attachments, roof sheathing, and wall sheathing.
 2. Exception: Corrosion resistance is not required for ½"Ø or greater steel bolts.
- C. Fasteners in conditioned areas are not required to be corrosion resistant.

1. Conditioned areas include heated and cooled living areas.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The TDI "Appointed Engineer" shall be notified to observe the installation of all building envelope items listed in this Specification. The TDI "Appointed Engineer" must be notified at least 48 hours in advance of the installation, and the assemblies and all attachments must be clearly visible during the observation. If items are covered prior to the observation, the coverings shall be removed.
 1. During the observation, the Contractor shall provide a set of shop drawings with all comments showing all products, materials, and installation procedures for the Work to be performed.
 2. Fastenings shall be in accordance with either the testing report or engineered details indicated the shop drawings with all comments, unless a stricter fastening pattern is required by the Specifications, the Construction Documents, the Building Code, the manufacturer's printed installation instructions, or the TDI "Appointed Engineer" requirements. The General Contractor shall coordinate all fastening patterns prior to installation and any questions shall be sent to the Architect prior to the observation.
- B. For other Structural items that are not observed by the Structural EOR, the Owner's Special Inspector shall inspect framing and connections in accordance with the appropriate Specification. Documentation for the inspection shall include:
 1. Date that test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Any applicable photographs or videos of the Work.
 4. Date that test or inspection results were transmitted to Architect.
 5. Identification of Special Inspector conducting test or inspection.

END OF SECTION

SECTION 01510 - TEMPORARY FACILITIES

PART 1. GENERAL

1.1 Storage Sheds: (Only as required by Contractor)

- A. Provide at location directed.
- B. Construction: Suitable, substantial, waterproof.
- C. Maintain in good order and remove at completion of construction.
- D. Store therein all materials needing protection from elements.

1.2 Toilets:

- A. Provide in approved location.
- B. Provide one toilet for each 30 employees.
- C. Maintain in clean, sanitary condition and remove from site at completion of construction.

END OF SECTION

SECTION 01525 – CRIMINAL HISTORY BACKGROUND CHECK

PART 1. GENERAL

- 1.1 Related Documents:** General provisions of the Contract, including General and Supplementary Conditions, and Division 01 Specification Sections apply to this section.
- 1.2 Summary:**
- A. This section includes the Criminal History Background Check of all employees, subcontractors, their agents, and all others who perform work on District property.
- 1.3 Requirements:**
- A. The Roofing Contractor, subcontractors, their agents, and all others who perform work on District property shall be required to observe and meet the requirements of this Section.
- B. The Roofing Contractor will obtain full criminal background check and finger printing of all workers onsite.
1. Senate Bill 9 (FACT) directs School District Contractors to obtain state and national criminal history background searches on all employees who will be on the job site and to receive those results through the DPS Criminal History Clearinghouse (Fingerprint – Based Applicant Clearinghouse of Texas – FACT).
2. Contractors must establish an account with the DPS for FACT Clearinghouse access.
- a. Access and Dissemination Bureau
Texas Department of Public Safety
Crime Records Service
P.O. Box 149322
Austin, Texas 78714-9322
Email: FACT@TXDPS.STATE.TX.US
Phone: (512) 424-2365
- C. Persons with felony convictions, criminal background, or convictions for crimes of sexual misconduct will **NOT** be allowed on the job site.
- D. Once approved, The General Contractor shall provide a photo identification badge to all employees, subcontractors, their agents, and all others who will perform work on District property. These badges shall be worn in plain sight at all times. **ANYONE** found on District property without a proper badge will be escorted off the property immediately.
- 1.4 Code of Conduct:**
- A. All must wear proper dress attire (working) at all times including safety items, etc.
- B. Photo ID badges must be worn in plain sight at **ALL TIMES**.
- C. Interaction with students, faculty, and staff is not permitted. The District will not tolerate “cat-calling”, “whistling”, profanity, or derogatory remarks.

END OF SECTION

SECTION 01640 - SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1. GENERAL

1.1 Products List:

- A. Within 30 days of Contract date submit to Architect/Engineer five (5) copies of complete list of all products which are proposed for installation. **No substitutions will be allowed unless prior approval is acquired during the bidding process and approved by Addendum in accordance with Paragraph 1.3.**
- B. Tabulate list by each specification section.
- C. For products specified under Reference Standards, include with listing of each product:
 - 1. Name and Address of Manufacturer
 - 2. Trade Name
 - 3. Manufacturer's Data
 - 4. Model or Catalog Designation.

1.2 Roofing Contractor's Options:

- A. For products specified only by Reference Standards, select any product meeting standards, by any listed manufacturer.
- B. For products specified by naming several products or manufacturers, select any product and/or manufacturer meeting standards.
- C. For products specified by naming only one product and manufacturer, **there is no option**, and substitution will be allowed only by approval prior to submitting competitive sealed proposal in accordance with Paragraph 1.3.

1.3 Substitutions:

- A. Prior to submitting proposal, Architect/Engineer will consider written requests from prime offerors for substitutions, received at least **SEVEN (7) DAYS PRIOR TO PROPOSAL DATE**; requests received after that time will not be considered. **No substitutions will be granted after this deadline.**
- B. Submit five copies of request for substitution, include in request:
 - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 - 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature:
 - 1. Product Description
 - 2. Performance and Test Data
 - 3. Reference Standards
 - c. Physical Samples
 - d. Name and address of similar projects on which products were used, and date of installation.

3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
 4. Itemized detailed comparison of proposed substitution with product or method specified.
 5. Accurate cost data on proposed substitution in comparison with product or method specified.
 6. Provide any information/products required by the specific specification sections.
- C. In making request for substitution, Offeror/Bidder/Contractor represents:
1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
 2. He will provide the same guarantee for substitution, if approved, as for product or method specified.
 3. He will coordinate installation of accepted substitution, if approved, in work, making such changes as may be required for work to be complete in all respects.
 4. He waives all claims for additional costs related to substitution, if approved, which consequently becomes apparent.
 5. He will reimburse the Owner for any redesign costs by the Architect/Engineer for accommodation of the substitution.
- D. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or Project Data Submittals without formal request submitted and approved prior to Bidding in accordance with Paragraph 1.3.
 2. Acceptance will require substantial revision of Contract Documents.

END OF SECTION

SECTION 01700 - CONTRACT CLOSEOUT

PART 1. GENERAL

1.1 Summary:

- A. Comply with requirements stated in the General Conditions and Supplementary Conditions of the Contract and in these Specifications for administrative procedures in closing out the Work.
- B. Related Requirements in the General Conditions and Supplementary Conditions of the Contract.
 - 1. Fiscal provision, legal submittals and additional administrative requirements
- C. Related requirements specified in other Sections.
 - 1. Allowances: Section 01020.
 - 2. Cleaning: Section 01710.
 - 3. Record Documents: Section 01720.
 - 4. Operating and Maintenance Data: Section 01730.
 - 5. Warranties and Bonds: Section 01740.

1.2 Substantial Completion:

- A. When Contractor considers the Work is substantially complete, he shall submit to Architect:
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
 - 3. Project Record Documents.
 - 4. Operating and Maintenance Data per Section 01730.
 - 5. Warranties and Bonds per Section 01740.
 - 6. Report by A.H.C to requirements of Section 08700 Finish Hardware.
 - 7. Letter from Contractor and each subcontractor stating that no hazardous materials or products containing hazardous materials, such as asbestos, polychlorinated biphenyl (PCB), lead, etc. were used in the construction of the project.
- B. Within a reasonable time after receipt of such notice, Architect and Owner's Representative will do an inspection to determine the status of completion.
- C. Should Architect and Owner's Representative determine that the Work is not substantially complete:
 - 1. Architect will promptly notify the Contractor in writing, giving the reasons therefore.
 - 2. Roofing Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Architect.
 - 3. Architect and Owner's Representative will re-inspect the work.
- D. When Architect and Owner's Representative concur that the Work is substantially complete, the Architect will:

1. Prepare a Certificate of Substantial Completion on AIA Form G704, accompanied by Roofing Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
2. Submit the Certificate to Owner and Contractor for their written acceptance of the responsibility assigned to them in the Certificate.
3. The Contractor will have thirty (30) calendar days to complete the remaining work listed/detailed in the Certificate of Substantial Completion.
 - a. If the work is not completed by the deadline stipulated in the Certificate of Substantial Completion, liquidated damages will be assessed until the work is complete.
 - b. If the work is not completed by the deadline stipulated in the Certificate of Substantial Completion, the Roofing Contractor shall be responsible for paying re-inspection fees as detailed in Paragraph 1.4.

1.3 Final Inspection:

- A. When the Roofing Contractor considers the Work is complete, he shall submit written certification that:
 1. Contract documents have been reviewed.
 2. Work has been inspected in compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 5. Work is completed and ready for final inspection.
- B. Architect and Owner's Representative will make an on-site observation with reasonable promptness after receipt of such certification. If Architect and Owner's Representative find that the Work is acceptable under the Contract Documents, the Contractor shall make closeout submittals.
- C. Should Architect and Owner's Representative consider that work is incomplete or defective:
 1. Architect will promptly notify the contractor in writing, listing the incomplete or defective work.
 2. Roofing Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Architect that the Work is complete.

1.4 Re-inspection Fees and Delayed Closeout:

- A. Should Architect perform reinspections due to failure of the Work to comply with the claims of status of completion made by the Contractor, or Contractor does not properly execute closeout submittals:
 1. Owner will compensate Architect for such additional services.
 2. Owner will deduct the amount of such compensation from the final payment to the Roofing Contractor.

1.5 Contractor's Closeout Submittals to Architect:

- A. All closeout submittals (listed below) shall be presented to and approved by Architect prior to final acceptance and prior to final payment. If all closeout

submittals are not submitted and approved within 30 days after substantial

completion, the re-inspection and delayed closeout fees in Paragraph 1.4 above will be activated and the Contractor will be assessed liquidated damages until this portion of work is complete.

- B. Evidence of compliance with requirements of governing authorities:
 - 1. Certificate of Occupancy.
 - 2. Certificate of Inspection.
 - 3. If a Certificate of Occupancy or a Certificate of Inspection is not issued by the governing authority where the project is located, submit to the Architect an officially signed letter from the governing authority stating these certificates are not required.
- C. Evidence of Payment: To requirements of General and Supplementary Conditions.
- D. Evidence of Release of Liens: To requirements of General and Supplementary Conditions.
- E. Consent of Surety to Final Payment.
- F. Certification of Insurance for Products and Completed Operations.

1.6 Final Adjustment of Accounts:

- A. Submit a final statement of accounting to Architect.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. previous change orders
 - b. allowances
 - c. unit prices
 - d. deductions for uncorrected work
 - e. deductions for re-inspection payments
 - f. other adjustments
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. Architect will prepare a final Change Order, reflecting approved adjustments to Contract Sum which were not previously made by Change Orders.

- 1.7 Final Application for Payment:** Roofing Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

END OF SECTION

SECTION 01710 - CLEANING

PART 1. GENERAL

1.1 Description:

- A. Related Requirements Specified Elsewhere:
 - 1. Cutting and Patching: Section 01070
 - 2. Cleaning for Specific Products or Work: Specification Section for that Work.
- B. Maintain premises and public properties free from accumulation of waste, debris, and rubbish caused by operations.
- C. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials and clean all sight exposed surfaces; leave project clean and ready for occupancy.

1.2 Safety Requirements:

- A. Standards: Maintain project in accord with applicable safety and insurance standards.
- B. Hazard Control:
 - 1. Store volatile wastes in properly covered containers and remove from premises daily.
 - 2. Prevent accumulation of wastes, which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.
- C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on project site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.

PART 2. PRODUCTS

2.1 Materials:

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3. EXECUTION

3.1 During Construction:

- A. Execute daily cleaning to ensure buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

- C. During progress of work, clean site and public properties, and dispose of waste materials, debris, and rubbish on a daily basis.
- D. Provide on-site containers for collection of waste materials, debris and rubbish.
- E. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.
- F. Broom clean interior building areas and continue cleaning on an as-needed basis until building is ready for occupancy.
- G. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.2 Final Cleaning:

- A. The Roofing Contractor shall provide a thorough cleaning prior to the Substantial Completion inspection. He shall also provide a final cleaning prior to the final inspection and the Owner's acceptance of the project.
- B. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
- C. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed interior or exterior finished surfaces; polish surfaces so designated for shine finish.
- D. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- E. Broom clean paved surface; rake clean other surfaces of grounds.
- F. Clean site with magnetic machine to remove all nails, tacks, metal scraps, etc. prior to substantial completion.
- G. Replace air conditioning filters if units were operated during construction.
- H. Clean ducts, blowers and coils, if air conditioning units were operated without filters during construction.
- I. Owner will assume responsibility for cleaning as of time designated on Certificate of Substantial Completion for Owner's acceptance of project, or portion thereof.

END OF SECTION

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1. GENERAL

1.1 Related Requirements Specified Elsewhere:

- A. Shop Drawings, Product Data and Samples: Section 01340

1.2 Maintenance of Documents:

- A. Maintain at Job Site, one copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Other Modifications to Contract
 - 7. Field Test Records
- B. Store Documents in temporary Field Office, apart from Documents used for construction.
- C. Provide files and racks for storage of Documents.
- D. Maintain Documents in clean, dry legible condition.
- E. Do not use Record Documents for construction purposes.
- F. Make Documents available at all times for inspection by Architect/Engineer and Owner.
- G. Maintain records even though no changes are made from original documents.

1.3 Marking Devices:

- A. Provide colored pencil for marking, conforming to follow color code:
 - 1. Red for Architectural Work
 - 2. Blue for Structural Work
 - 3. Green for Plumbing Work
 - 4. Orange for HVAC Work
 - 5. Brown for Electrical Work
 - 6. Black for other written notations

1.4 Project Records Documents:

- A. The Roofing Contractor will be furnished with one (1) complete set of Contract Documents (plans, specifications, addendum, etc.) for use as record documents. Label each document "Project Record" in 2 inch high printed letters.
- B. Keep Record Documents current. Contractor shall segregate and apply all Addendum "Plan" Items to the Construction Documents. (Example: Addendum Plan Items for Sheet A2 shall be applied to the backside of Sheet A1.) Addendum "Specification" Items shall be handled in a similar fashion in the specification book.

- C. Do not permanently conceal any work until required information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction:
 - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 3. Field changes of dimension and detail.
 - 4. Changes made by change order or written directive.
 - 5. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each Section to record:
 - 1. Manufacturer, Trade Name, Catalog Number, and Supplier of each product and item of equipment actually installed.
 - 2. Changes made by change order or written directive.
 - 3. Other matters not originally specified.
- F. Shop Drawings: Maintain as Record Documents; legibly annotate the following drawings to record changes made after review:
 - 1. Structural Steel
 - 2. Reinforcing Steel
 - 3. Millwork

1.5 Submittal:

- A. At substantial completion of the project, Contractor shall compile all information and complete the Record Documents. Contractor shall obtain two (2) copies of the Record Plans and two (2) copies of the Record Specifications for submittal to the Architect. Printing costs to be paid by the Contractor.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date
 - 2. Project Title and Number
 - 3. Contractor's Name and Address
 - 4. Title and Number of Each Record Document (original and two (2) copies)
 - 5. Certification that each Document as submitted is complete and accurate.
 - 6. Signature of Contractor or his Authorized Representative.
- C. **Submittal is required at the date of Substantial Completion for the project. Progress Payments to the contractor will be delayed until documents are submitted.**

END OF SECTION

SECTION 01730 - OPERATING AND MAINTENANCE DATA

PART 1. GENERAL

1.1 Summary:

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under the Contract.
 - 1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- B. Instruct Owner's personnel in the maintenance of products and in the operation of equipment and systems.
- C. Related requirements specified in other Sections:
 - 1. Shop Drawings, Product Data, and Samples - Section 01340
 - 2. Contract Closeout - Section 01700
 - 3. Project Record Documents - Section 01720
 - 4. Warranties and Bonds - Section 01740

1.2 Submittals:

- A. Assemble Operating and Maintenance Data for Owner's maintenance and operation of equipment and products furnished under the contract.
- B. Prepare three (3) copies of the Operating and Maintenance Data booklet.
- C. Roofing Contractor shall accompany submittals with a transmittal letter in triplicate containing:
 - 1. Date
 - 2. Project Title and Number
 - 3. Contractor's Name and Address
 - 4. Certification that each Document as submitted is complete and accurate.
 - 5. Signature of Contractor or his Authorized Representative.
- D. **Submittal is required at the date of Substantial Completion for the Project. Progress Payment to the Roofing Contractor will be delayed until the documents are submitted.**

1.3 Format:

- A. Prepare data in the form of an instructional manual for use by Owner's personnel.
- B. Format:
 - 1. Size: 8-1/2" x 11".
 - 2. Paper: 20 pound, minimum, white, for typed pages.
 - 3. Text: Manufacturer's printed data or neatly typewritten.
 - 4. Drawings:
 - a. Provide reinforced punched binder tab, bind in with text.
 - b. Fold larger drawings to the size of the text pages.
 - 5. Provide fly-leaf for each separate product, or each piece of operating equipment

- a. Provide typed description of product, and major component parts of equipment.
 - b. Provide indexed tabs.
 - 6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE DATA". List the following:
 - a. Title of Project
 - b. Name of Contractor
- C. Binders:
 - 1. Commercial quality three-ring binders with durable and cleanable plastic covers.
 - 2. Maximum ring size: 3 inches.
 - 3. When multiple binders are used, correlate the data into related consistent groupings. Mark binders in sequence.

1.4 Content of Manual:

- A. Table of Contents: Neatly typewritten table of contents for each volume. Base table of contents of Operating and Maintenance Data on table of contents of these specifications.
- B. Product Data:
 - 1. Include only those sheets which are pertinent to the specific product.
 - 2. Annotate each sheet to:
 - a. Clearly identify the specific product or part installed.
 - b. Clearly identify the data applicable to the installation.
 - c. Delete references to inapplicable information.
 - 3. List, with each product, the name, address, and telephone number of:
 - a. Subcontractor and/or Supplier including name of responsible principal, address and telephone number.
 - b. Maintenance contractor, as appropriate.
 - c. Identify the area of responsibility of each.
 - d. Include a local source of supply for replacement parts and material.
- C. Drawings:
 - 1. Supplement product data with drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installations.
 - 3. **Do not use Project Record Documents as maintenance drawings.**
- D. Written text, as required to supplement product data for the particular installation.
 - 1. Organize in a consistent format under separate headings for different procedures.
 - 2. Provide a logical sequence of instructions for each procedure.
- E. Mechanical and Electrical Systems: See M-E-P specifications.
- F. Description of Plumbing System: See M-E-P specifications.
- G. Description of Heating and Air Conditioning System: See M-E-P specifications.

- H. Finish Schedule: Provide a copy of the room finish schedule. Schedule shall identify each room by name and number, identify each type finish and color of floors, base, wainscot, walls, ceiling, and all other finishes. Where applicable, pattern or design identification numbers shall be included.

END OF SECTION

SECTION 01740 - WARRANTIES AND BONDS

PART 1. GENERAL

1.1 Description: Work Included:

- A. Compile specified warranties and bonds and submit to Architect. Warranties shall not commence earlier than the date of Substantial Completion.
- B. Related Requirements Described Elsewhere:
 - 1. Bid Security - Section 00400
 - 2. Performance Bond and Labor and Material Payment Bond - As required by Texas law
 - 3. Contract Closeout - Section 01700
 - 4. Operating and Maintenance Data - Section 01730
 - 5. Full Coverage 2-Year General Warranty of Construction - General Conditions
 - 6. Other warranties as required by each specification section.

1.2 Submittals:

- A. Assemble warranties, bonds and service, and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Provide three original signed copies of each submittal.
- C. Make submittals within ten (10) days after date of Substantial Completion, prior to final request for payment.

1.3 Format:

- A. Size: 8-1/2" X 11", punch sheets for 3 ring binder. Fold larger sheets to fit into binder. Paper to be 20 pound, minimum, white, for typed pages.
- B. Cover: Identify each packet with typed title "Warranties and Bonds". List title of project and name of Contractor on cover.
- C. Binders: Commercial quality, three-ringed with durable and cleanable plastic covers.
- D. Table of Contents: Neatly typewritten table of contents for each volume. Base table of contents of Warranties and Bonds on table of contents of these specifications.
- E. Contents:
 - 1. Product of work item.
 - 2. Firm of origination of warranty, with name of Principal, address and telephone number.
 - 3. Scope
 - 4. Date of beginning of warranty, bond or service and maintenance contract.
 - 5. Duration of warranty, bond or service maintenance contract.
 - 6. Provide information for Owner's personnel
 - a. Proper procedure in case of failure
 - b. Instances which might affect the validity of warranty or bond.
 - 7. Contractor, name of responsible principal, address, and telephone number.

1.4 Submittals List: The following is **partial** listing of guarantees required by various sections of these specifications. This listing is not intended to be all inclusive and the Contractor shall insure that each warranty shall be consistent with those listed in each specification section.

- A. Section 075213 – Atactic Polypropylene (APP) Modified Bituminous Roofing – 2 year and 20 year no dollar limit warranty.
- B. Section 076200 – Sheet Metal Flashing and Trim – 20 year finish warranty.

END OF SECTION

SECTION 070150.73 - REHABILITATION OF MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Thermal Scan (REQUIRED)
 - 2. Roof re-coating preparation.
 - 3. Roof insulation crickets and saddles
 - 4. Application of fluid-applied roof membrane and flashings over existing modified bituminous membrane roofing.
- B. Related Information:
 - 1. Division 07 Section "Sheet Metal Flashing and Trim" for formed metal flashings and counterflashings.
- C. Allowances: Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.
- D. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.
- E. Alternates: Refer to Division 01 Section "Alternates" for description of Work in this Section affected by alternates.

1.2 ROOFING CONFERENCES

- A. Roofing Rehabilitation Preinstallation Conference: Conduct conference at Project site to review methods and procedures related to roofing system.
 - 1. Meet with Owner; roofing re-coating materials manufacturer's representative; roofing re-coating Installer including project manager and foreman; and installers whose work interfaces with or affects re-coating including installers of roof accessories and roof-mounted equipment requiring removal and replacement as part of the Work.
 - 2. Review methods and procedures related to re-coating preparation, including membrane roofing system manufacturer's written instructions.
 - 3. Procedures for salvaging and recycling of demolition and construction waste
 - 4. Review temporary protection requirements for existing roofing system that is to remain, during and after installation.
 - 5. Review roof drainage during each stage of re-coating and review roof drain plugging and plug removal procedures.
 - 6. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 7. Review base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect re-coating.
 - 8. Review HVAC shutdown and sealing of air intakes.
 - 9. Review shutdown of fire-suppression, -protection, and -alarm and -detection systems.
 - 10. Review procedures for asbestos removal or unexpected discovery of asbestos-containing materials.
 - 11. Review governing regulations and requirements for insurance and certificates if applicable.
 - 12. Review existing conditions that may require notification of Owner before proceeding.

1.3 MATERIALS OWNERSHIP

- A. Demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 "Standard Terminology Relating to Roofing and Waterproofing" and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" for definition of terms related to roofing work in this Section.
- B. Roofing Coating Preparation: Existing roofing that is to remain and be prepared to accept restorative coating application.
- C. Patching: Removal of a portion of existing membrane roofing system from deck or removal of selected components and accessories from existing membrane roofing system and replacement with compatible similar materials.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.
- F. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- G. Demolition Waste: Building and site improvement materials resulting from re-roofing preparation, demolition, or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
 - 1. Letter written for this Project indicating manufacturer approval of Installer to apply specified products and provide specified warranty.
- B. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.
- C. Warranties: Unexecuted sample copies of special warranties.
- D. Existing Conditions Photographs: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, which might be misconstrued as having been damaged by re-coating operations. Submit before Work begins.
- E. Inspection Reports: Reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions required and carried out.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.

- B. Warranties: Executed copies of approved warranty forms.

1.8 SUBSTITUTIONS

A. General:

1. ONLY Substitutions approved in writing by the Owner or Owner's Representative prior to the scheduled bid date will be considered.
2. Notification of approvals will be issued at least five (5) days before the scheduled bid date.
3. Architect/Owner reserves the right to be final authority on acceptance or rejection of any substitution request.

- B. When a make or trade name is specified, it shall be indicative of standard required. Bidders proposing substitutes shall submit the following ten (10) days prior to bid date to the Owner or Owner's Representative; requests received after that time will not be considered.

1. Written application with explanation of why it should be considered.
2. Independent laboratory certification providing written confirmation that the physical and performance characteristics of the substitute material/system will meet the physical and performance characteristics of the specified materials and or system.

- C. Submit five copies of request for substitution. Items to be included in the request:

1. Complete data substantiating compliance of proposed substitution.
2. Product identification, including manufacturer's literature and manufacturer's name.
3. Current certificate from an accredited testing laboratory comparing the physical and performance attributes of the proposed material with those of the specified materials. Test results must be dated, notarized, and on testing laboratory stationary.
4. Material Safety Data Sheets providing all pertinent data as to flammability, combustibility.
5. List of at least (5) five jobs as described under the requirements where the proposed alternate material was used under similar conditions. These jobs must be available for inspection by the Owner or Owner's Representative. Names and phone numbers are required for verification. Submit a minimum of 200,000 square feet for review. Submitted projects must be a minimum of (5) years old.
6. Notarized statement from the Roof System Manufacturer, signed by a corporate officer of the corporation stating that:
 - a. All Documents have been reviewed and are approved.
 - b. The Project site has been inspected.
 - c. The Roofing System Manufacturer will provide two (2) field inspections weekly; during, and until all construction work is complete and accepted by the owner. A full-time employee of the manufacturer must perform inspections.
 - d. Provide documentation of the proposed alternate system passing the specified regulatory requirements. Documentation must be on the specified regulatory requirements letterhead or approval guide. No third-party testing will be accepted.

- D. In making substitution request, Bidder/Contractor represents:

1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified. Additionally, he will have a technical service representative of the proposed manufacturer attend the pre-bid meeting.
2. He will provide the same guarantee for substitution as for those specified.

3. He will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 4. Advise the owner of any credit savings or additional costs as opposed to the system type specified.
- E. Substitutions will not be considered if:
1. Product or method to be considered does not have a minimum of (5) five years of successful performance in roofing and re-roofing of similar applications.
 2. Any discrepancies in the test data, or if the tests or submittals are incomplete.
 3. They are indicated or implied on Shop Drawings or Project Data Submittals without formal request submitted in accordance with the specification document.
 4. Acceptance requires significant revision of documents.
 5. Only substitutes approved in writing by prior to scheduled cutoff date will be considered.
 6. Notification of approvals will be mailed at least 3 days before bid opening.
 7. The Owner will not incur any additional costs for design or construction costs.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of three years' experience installing products comparable to those specified, able to communicate verbally with Contractor, and employees, and the following:
1. Installer must provide (2) manufacturer inspections each week. Noncompliance may result in an \$850 per day fee for missing inspections.
 2. Roofing Contractors included in the following list are to the owner's knowledge, the only pre-approved installers that can install and provide the system and warranty for this specified system. A list of additional certified contractors for the specified system can be obtained by contacting the system manufacturer.
 - a. American Contracting USA, Inc., Mr. Eddie Fuentes; (956) 748-4030.
 - b. Argio Roofing Inc., Mr. Rojerio Escobedo, (956) 748-9507.
 - c. Sechrist Hall Roofing, Mr. Bill McBride; (956) 423-3359
 - d. Rio Roofing Inc., Mr. Tom Gonzalez; (956) 423-3359
 - e. Haeber Roofing Company, Mr. Don Rucker; (361) 851-8142.
 - f. Port Enterprises, Inc., Mr Cody Comstock; (361) 289-2944.
 - g. Rain King, Inc; Mr. Jared Cain; (361) 576-0606
 - h. Rain Seal Master Roofing & Sheet Metal, Mr. Ramon Gonzalez; (361) 576-0926
 - i. American Roofing & Metal, Mr. Toby Cargile; (210) 224-5463
 - j. Tadco Roofing, Mr. Javier Ramos; (956) 227-4339
- B. Manufacturer Qualifications: Primary product manufacturer that is UL listed for roofing system identical to that specified for this Project with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
1. An authorized full-time technical employee of the manufacturer.

D. Random Sampling

1. During course of work, the Architect may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
2. Should test results prove that material is not equal to specified material:
 - a. Contractor shall pay for all testing.
 - b. Roofing installed and found not to comply with the specifications shall be removed and replaced with no change in the contract price.
3. Installation quality control
 - a. The roofing inspector shall provide written and photographic reports, to be submitted to the architect, owner, roof system installation contractor, appraising the installation of the roof system at each of the project progress stages. The installation contractor shall make all necessary corrections, additions or remedial actions to resolve any issues raised in the reports.
 - b. The roofing inspector shall have the authority to have any and all roofing work corrected, as required, to insure the proper installation and weather-tightness of the roof system, in accordance with the manufacturer's specifications.

E. Windstorm Certification:

1. Windstorm is not applicable with restoration coating of existing systems.

F. Preinstallation Roofing Conference: Conduct conference at Project Site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review drawings and specifications.
3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
5. Review temporary protection requirements for roofing system during and after installation.

1.10 DELIVERY STORAGE AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.11 FIELD CONDITIONS

- A. Weather Limitations: Proceed with rehabilitation work only when existing and forecasted weather conditions permit Work to proceed without water entering into existing roofing system or building.
 - 1. Store all materials prior to application at temperatures recommended by manufacturer.
 - 2. Apply coatings within range of ambient and substrate temperatures recommended by manufacturer.
 - 3. Do not apply roofing in snow, rain, fog, or mist.
- B. Protect building to be rehabilitated, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from rehabilitation operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
- E. Owner will occupy portions of building immediately below re-coating area. Conduct re-coating so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.

1.12 WARRANTY

- A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 12 years from date of completion.
- B. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
 - 1. Inspections to occur in following years: 2, 5, and 10 following completion.
- C. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco, Inc., Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.
 - 1. Manufacturers of comparable products: Approved by Architect prior to bid.

- B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Rehabilitated roofing shall withstand exposure to weather without failure or leaks due to defective manufacture or installation.
 - 1. Accelerated Weathering: Roofing system shall withstand 5000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- C. Wind uplift Compliance: Provide roofing membrane, base flashing, and component materials that comply with the requirements to acquire a certificate of wind storm from the State of Texas. Basis of Compliance: NEMO Evaluation Report 11425.04.16-1-R7 For FL20324-R7 Construction R-40.

WINSTORM CERTIFICATION IS ONLY APPLICABLE PROVIDED THE EXISTING SYSTEM MEETS, CARRIES, OR IS TESTED TO MEET THE REQUIREMENT OF THE BUILDING AS DETERMINED BY A WINDSTORM ENGINEER.

- D. Exterior Fire-Test Exposure: Roofing system exterior fire-test exposure performance following application of rehabilitation coating shall be not be less than that of the pre-rehabilitated roof performance when tested in accordance with ASTM E108, based upon manufacturer's tests of identical applications.
- E. Energy Performance: Provide roof coating with initial solar reflectance index not less than 78 when calculated according to ASTM E1980, based upon testing of identical products by a qualified testing agency.
- F. Three-year, aged solar reflectance index of not less than 64 when calculated according to ASTM E1980.
- G. Bio-Based Content: Provide roofing rehabilitation coating materials meeting requirements of USDA Bio-based Affirmative Procurement Program, with not less than 20 percent bio-based content.

2.3 MATERIALS

- A. General: Re-coating materials recommended by roofing system manufacturer for intended use and compatible with components of existing membrane roofing system.
- B. Infill Materials: Where required to replace test cores and to patch existing roofing, use infill materials matching existing membrane roofing system materials, unless otherwise indicated.
- C. Temporary Roof Drainage: Design and selection of materials for temporary roof drainage are responsibilities of the Contractor.

2.4 FLUID-APPLIED ROOFING MEMBRANE

- A. Polyurethane Elastomeric Fluid-Applied System: Two-coat fluid-applied roofing membrane formulated for application over prepared existing roofing substrate.
 - 1. Polyurethane Roof Coating System Base Coat: Bio-based, low-odor low-VOC two-part, for use with a compatible top coat.
 - a. Basis of design product: Tremco, AlphaGuard BIO Base Coat.

- b. Combustion Characteristics, UL 790: Maintains combustion characteristics of existing roof system.
 - c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 1 g/L.
 - d. Accelerated Weathering, 5000 hours, ASTM G154: Pass.
 - e. Hardness, Shore A, minimum, ASTM D2240: 80.
 - f. Solids, by volume, ASTM D2697: 100 percent.
 - g. Bio-Based Content, Minimum: 70 percent.
 - h. Minimum Thickness, Base Coat non-reinforced over Granular Surfaced MB: 48 mils (1.22 mm) wet.
2. Polyurethane roof coating system top coat, bio-based low-odor low-VOC two-part, for application over compatible base coat.
- a. Basis of design product: Tremco, AlphaGuard BIO Top Coat.
 - b. Combustion Characteristics, UL790: Maintains combustion characteristics of existing roof system.
 - c. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 6 g/L.
 - d. Solar Reflectance Index (SRI), ASTM E1980: For white, not less than 103.
 - e. Accelerated Weathering, 5000 hours, ASTM G 154: Pass.
 - f. Hardness, Shore A, minimum, ASTM D2240: 81.
 - g. Solids, by volume, ASTM D2697: 100 percent.
 - h. Bio-Based Content, Minimum: 60 percent.
 - i. Minimum Thickness, non-reinforced system: 16 mils (0.40 mm) wet.
 - j. Minimum Thickness, Slip-Resistant Coat: 24 mils (0.60 mm) wet.
 - k. Color: White.
- B. Primers:
- 1. Primer for Asphaltic and Single-Ply Membranes: Water-based, polymer-modified quick-dry low odor primer.
 - a. Basis of design product: Tremco, AlphaGuard WB Primer.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 1 g/L.
 - c. Solids, by weight: 70 percent.

2.5 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with existing roofing system and fluid-applied roofing system.
- B. Seam Sealer: Waterproof seam and patching material compatible with applied coating.
 - 1. Seam Sealer: Aliphatic polyurethane sealer, single-component, moisture curing, high solids, low-VOC, formulated for compatibility and use with specified roofing substrates.
 - a. Basis of design product: Tremco, SOLARGARD Seam Sealer.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 75 g/L.
 - c. Tensile Strength, ASTM D412: 270 psi (1860 kPa).
 - d. Tear Strength, ASTM D412: 35 pli (6 kN/m).
 - e. Elongation, ASTM D412: 700 percent.
 - f. Color: White.
- C. Seam and Detail Reinforcing Fabric for reinforcing at laps only:
 - 1. Polyester Reinforcing and Protection Fabric: 100 percent stitch-bonded mildew-resistant polyester fabric intended for reinforcement of compatible fluid-applied membranes and flashings and as a protection layer under pavers or stone aggregates.

- a. Basis of design product: Tremco, Permafab.
 - b. Tensile Strength, Minimum, ASTM D1682: 50 lbf (23 kg) avg..
 - c. Elongation, Minimum, ASTM D1682: 60 percent.
 - d. Tear Strength, Minimum, ASTM D1117: 16 lbf (7.3 kg) avg..
 - e. Weight: 3 oz./sq. yd (102 g/sq. m).
- D. Joint Sealant: Elastomeric joint sealant compatible with applied coating, with movement capability appropriate for application.
1. Joint Sealant, Polyurethane: ASTM C920, Type S, Grade NS, Class 50 single-component moisture curing sealant, formulated for compatibility and use in dynamic and static joints; paintable.
 - a. Basis of design product: Tremco, TremSEAL Pro.
 - b. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 40 g/L.
 - c. Hardness, Shore A, ASTM C661: 40.
 - d. Adhesion to Concrete, ASTM C794: 35 pli.
 - e. Tensile Strength, ASTM D412: 350 psi (2410 kPa).
 - f. Color: Closest match to substrate.
- E. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.
- F. Metal Flashing Sheet: Provide metal flashing sheet matching type, thickness, finish, and profile of existing metal flashing and trim.
1. Vents and/or Stacks:
 - a. Stainless: Type 316, Finish.
 - b. Gage: Twenty-four (24).
 - c. Solder: ASTM B32-89, alloy grade 60A. Neutralize flux after soldering.
 2. Termination Bar for top edge of all base flashings:
 - a. Extruded aluminum, pre-punched 8" o.c.
 3. Fascia, Coping, Collector Heads, Gutters, Downspouts, Counter Clashing Slip Flashing and other Visible Sheet Metal Flashing:
 - a. Aluminum: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - b. Gage: .040 minimum thickness
 4. Pitch pans with hoods:
 - a. Stainless Steel, Type 304 or 316: Twenty-four (24) gauge minimum, stainless steel; commercial quality, Fed. Spec. QQ-S-775, Type I, Class D or ASTM A 526 or lock forming quality ASTM A 527, G90 coating in accordance with ASTM A 525
- G. Primer for previously coated walls above roof membrane (ABOVE ROOF STUCCO WALLS):
1. Acrylic polymer emulsion, stain resistant, fast drying, flexible base primer for elastomeric latex coatings.
 2. Basis of Design: Tremco Solargard Masonry Primer.
- H. Coating for previously coated walls above roof membrane (ABOVE ROOF STUCCO WALLS):
1. Acrylic polymer emulsion wall coating with fiber reinforcement.
 2. Tinted to match existing.

3. Basis of Design: Tremco Solargard HY-BUILD
- I. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing roofing substrates, with Installer present, for compliance with requirements and for other conditions affecting application and performance of roof coatings.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
 2. Verify compatibility of approved re-coating system with and suitability of substrates.
 3. Verify that substrates are visibly dry and free of moisture.
 4. Verify that roofing membrane surfaces have adequately aged to enable proper bond with re-coating system base coat.
 5. Verify that existing roofing membrane is free of blisters, splits, open laps, indications of shrinkage, and puncture damage or other indications of impending roof system failure.
 6. Commencing application of fluid-applied re-coating membrane indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Protect existing roofing system that is indicated not to be rehabilitated, and adjacent portions of building and building equipment.
 1. Mask surfaces to be protected. Seal joints subject to infiltration by coating materials.
 2. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
 3. Maintain temporary protection and leave in place until replacement roofing has been completed.
- B. Pollution Control: Comply with environmental regulations of authorities having jurisdiction. Limit spread of dust and debris.
 1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 2. Remove debris from building roof by chute, hoist, or other device that will convey debris to grade.
- C. Shut down air intake equipment in the vicinity of the Work in coordination with the Owner. Cover air intake louvers before proceeding with re-coating work that could affect indoor air quality or activate smoke detectors in the ductwork.
 1. Verify that rooftop utilities and service piping affected by the Work have been shut off before commencing Work.
- D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

3.3 ROOFING COATING PREPARATION

- A. Removal of Wet Insulation: Remove portions of roofing membrane with underlying wet insulation. Remove wet insulation, fill in tear-off areas to match existing insulation and membrane, and prepare patched membrane for roof coating application specified below.
- B. Repair of Ponding Areas: Repair areas indicated as ponding areas or areas of inadequate drainage by removing roof membrane, adding additional insulation as required to provide minimum slopes to drain required by roofing rehabilitation coating manufacturer, and replace membrane with material matching existing. Submit photographic report indicating compliance.
- C. Membrane Surface Preparation:
 1. Remove loose granular aggregate from granular aggregate-surfaced built-up bituminous roofing with a power broom.
 2. Remove pavers and walkway pads from roofing membrane.
 3. Remove blisters, ridges, buckles, roofing membrane fastener buttons projecting above the membrane, and other substrate irregularities from existing roofing membrane that would inhibit application of uniform, waterproof coating.
 4. Broom clean existing substrate.
 5. Substrate Cleaning: Clean substrate of contaminants such as dirt, debris, oil, and grease that can affect adhesion of coating by power washing at maximum 2,000 psi. (13,800 kPa).
 - a. Dispose of wastewater in accordance with requirements of authorities having jurisdiction.
 6. Verify that existing substrate is dry before proceeding with application of coating. Spot check substrates with an electrical capacitance moisture-detection meter.
 7. Verify adhesion of new products.
- D. Existing Flashing and Detail Preparation: Repair flashings, gravel stops, copings, and other roof-related sheet metal and trim elements. Reseal joints, replace loose or missing fasteners, and replace components where required to leave in a watertight condition.
 1. Do not damage metal counter flashings that are to remain. Replace metal counter flashings damaged during removal with counter flashings of same metal, weight or thickness, and finish.
 2. Roof Drains: Remove drain strainer and clamping ring. Grind metal surfaces down to clean, bare, metal. Replace missing or damaged strainers or clamping rings.
- E. Surface Priming: Prime surfaces to receive fluid-applied coating using coating manufacturer's recommended product for surface material. Apply at application rate recommended by manufacturer.
 1. Ensure primer does not puddle and substrate has complete coverage.
 2. Allow to cure completely prior to application of coating.
- F. Membrane Repair: Repair membrane at locations with irregularities using seam sealer mastic and reinforcing fabric.
- G. Membrane Seam Reinforcement: Reinforce membrane seams using seam sealer mastic and reinforcing fabric overlapping onto field of existing membrane not less than width required by roof coating manufacturer.

3.4 FLUID-APPLIED FLASHING APPLICATION

- A. Fluid-Applied Flashing and Detail Base Coat Application: Complete base coat and fabric reinforcement at parapets, curbs, penetrations, and drains prior to application of field of fluid-applied membrane. Apply base coat in accordance with manufacturer's written instructions.
1. Apply base coat on prepared and primed surfaces and spread coating evenly. Extend coating minimum of 8 inches (200 mm) up vertical surfaces and 4 inches (100 mm) onto horizontal surfaces.
 2. Back roll to achieve not less than minimum coating thickness indicated in Part 2 product listing, unless greater thickness is recommended by manufacturer. Verify thickness as work progresses.
 3. Fabric Reinforcement: Embed fabric reinforcement into wet base coat. Lap adjacent flashing pieces of fabric minimum 3 inches (75 mm) along edges and 6 inches (150 mm) at end laps.
 - a. Roll surface of fabric reinforcing to completely embed and saturate fabric. Leave finished base coat with fabric free of pin holes, voids, or openings.
 - b. Install full fabric reinforcement at all base flashings.
 - c. Apply polyester reinforcement fabric at all field laps of existing membrane only.
 4. Roof Drains: Allow for a minimum of 3'x3' full fabric reinforcement at all drain locations. Install base coat onto surrounding membrane surface and metal drain bowl flange. Install target piece of fabric reinforcement immediately into wet base coat and roll to fully embed and saturate fabric. Reinstall clamping ring and strainer following application of top coat. Replace broken drain ring clamping bolts. Replace missing or damaged strainers or clamping rings.
 5. Allow base coat to cure prior to application of top coat.

3.5 FLUID-APPLIED MEMBRANE APPLICATION

- A. Fluid-Applied Membrane Base Coat: Apply base coat to field of membrane in accordance with manufacturer's written instructions.
1. Apply base coat on prepared and primed surfaces and spread coating evenly.
 2. Back roll to achieve not less than minimum coating thickness indicated in Part 2 product listing, unless greater thickness is recommended by manufacturer. Verify thickness as work progresses.
- B. Top Coat Application: Apply top coat to field of membrane and flashings uniformly in a complete, continuous installation.
1. Allow base coat to cure prior to application of top coat.
 2. Following curing of base coat and prior to application of top coat, sand raised or exposed edges of fabric reinforcement.
 3. Prime base coat prior to application of top coat if top coat is not applied within 72 hours of the base coat application, using manufacturer's recommended primer.
 4. Apply top coat extending coating up vertical surfaces and out onto horizontal surfaces. Install top coat over field base coat and spread coating evenly.
 5. Back roll to achieve not less than minimum coating thickness indicated in Part 2 product listing, unless greater thickness is recommended by manufacturer. Verify thickness as work progresses.

6. Avoid foot traffic on new fluid-applied membrane for a minimum of 24 hours.

3.6 WALL TREATMENT AND COATING INSTALLATION

- A. Wall coating at previously coated walls above the roof membrane:
 1. Clean previously coated wall sections above new surface mounted counterflashing and prime with specified primer.
 2. Apply two coats of the specified elastomeric wall coating as recommended by the manufacturer.

3.7 FIELD QUALITY CONTROL

- A. Roofing Inspector: Owner will engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
- B. Roof Inspection: Engage roofing system manufacturer's technical personnel to inspect roofing installation, and submit report. Notify Owner 48 hours in advance of dates and times of inspections. Inspect work as follows:
 1. Upon completion of preparation of roof coating substrate, prior to application of coating materials.
 2. Following application of coating to flashings and application of base coat to field of roof.
 3. Upon completion of coating but prior to re-installation of other roofing components.
- C. Repair fluid-applied membrane where test inspections indicate that they do not comply with specified requirements.
- D. Arrange for additional inspections, at Contractor's expense, to verify compliance of replaced or additional work with specified requirements.

3.8 DISPOSAL

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

3.9 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period.
- B. Correct deficiencies in or remove coating that does not comply with requirements, repair substrates, and reapply coating.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 070150.73

SECTION 074113.06 - METAL ROOF PANELS, STANDING SEAM OVER STEEL DECK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 1. Architectural standing-seam metal roof panels.
 2. Metal roof accessories.
 3. Roof insulation.
 4. Miscellaneous metal framing.

1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 1. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, substrate Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
 4. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 5. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
 6. Review temporary protection requirements for metal roof panel assembly during and after installation.
 7. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and end lap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details specific to project, signed and sealed by the qualified professional engineer responsible for their preparation. Distinguish between factory- and field-assembled work.
- C. Accessory Details: Include details of the following items:
 - 1. Flashing and trim.
 - 2. Gutters.
- D. Delegated-Design Submittal: For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the metal roof panel manufacturer's qualified professional engineer responsible for their preparation. Include the following:
 - 1. Structural analysis data indicating compliance with Performance Requirements Article.
- E. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.
- F. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Manufacturer color chart or metal 2"x4" color samples

1.6 INFORMATIN SUBMITTALS

- A. Qualification Data: For manufacturer, Installer, professional engineer, and manufacturer's technical representative.
 - 1. Submit Installer qualifications in the form of an original letter on manufacturer's letterhead signed by authorized manufacturer representative.
- B. Material Certificates: For thermal insulation, from manufacturer.
- C. Field Quality Control Reports.
- D. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal roof panels to include in maintenance manuals.

1.8 SUBSTITUTIONS

- A. ONLY Substitutions approved in writing by the Owner or Owner's Representative prior to the scheduled bid date will be considered.
 - 1. Notification of approvals will be issued at least five (5) days before the scheduled bid date.

2. Architect/Owner reserves the right to be final authority on acceptance or rejection of any substitution request.
- B. When a make or trade name is specified, it shall be indicative of standard required. Bidders proposing substitutes shall submit the following ten (10) days prior to bid date to the Owner or Owner's Representative; requests received after that time will not be considered.
1. Written application with explanation of why it should be considered.
 2. Independent laboratory certification providing written confirmation that the physical and performance characteristics of the substitute material/system will meet the physical and performance characteristics of the specified materials and or system.
- C. Submit five copies of request for substitution. Items to be included in the request:
1. Complete data substantiating compliance of proposed substitution.
 2. Product identification, including manufacturer's literature and manufacturer's name.
 3. Current certificate from an accredited testing laboratory comparing the physical and performance attributes of the proposed material with those of the specified materials. Test results must be dated, notarized, and on testing laboratory stationary.
 4. Material Safety Data Sheets providing all pertinent data as to flammability, combustibility.
 5. List of at least (5) five jobs as described under the requirements where the proposed alternate material was used under similar conditions. These jobs must be available for inspection by the Owner or Owner's Representative. Names and phone numbers are required for verification. Submit a minimum of 200,000 square feet for review. Submitted projects must be a minimum of (5) years old.
 6. Notarized statement from the Roof System Manufacturer, signed by a corporate officer of the corporation stating that:
 - a. All Documents have been reviewed and are approved.
 - b. The Project site has been inspected.
 - c. The Roofing System Manufacturer will provide two (2) field inspections weekly; during, and until all construction work is complete and accepted by the owner. A full-time employee of the manufacturer must perform inspections.
 - d. Provide documentation of the proposed alternate system passing the specified regulatory requirements. Documentation must be on the specified regulatory requirements letterhead or approval guide. No third-party testing will be accepted.
- D. In making substitution request, Bidder/Contractor represents:
1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified. Additionally, he will have a technical service representative of the proposed manufacturer attend the pre-bid meeting.
 2. He will provide the same guarantee for substitution as for those specified.
 3. He will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 4. Advise the owner of any credit savings or additional costs as opposed to the system type specified.

- E. Substitutions will not be considered if:
1. Product or method to be considered does not have a minimum of (5) five years of successful performance in roofing and re-roofing of similar applications.
 2. Any discrepancies in the test data, or if the tests or submittals are incomplete.
 3. They are indicated or implied on Shop Drawings or Project Data Submittals without formal request submitted in accordance with the specification document.
 4. Acceptance requires significant revision of documents.
 5. Only substitutes approved in writing by prior to scheduled cutoff date will be considered.
 6. Notification of approvals will be mailed at least 3 days before bid opening.
 7. The Owner will not incur any additional costs for design or construction costs.

1.9 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer of plant-fabricated metal roof panel systems listed in this Section and meeting performance requirements, with a minimum of five years' experience providing metal roof panel systems for projects of similar type and scope, offering engineering, warranty, technical inspection, and maintenance inspection services specified.
1. Installer must provide (2) manufacturer inspections each week. Noncompliance may result in an \$850 per day fee for missing inspections.
 2. Roofing Contractors included in the following list are to the owner's knowledge, the only pre-approved installers that can install and provide the system and warranty for this specified system. A list of additional certified contractors for the specified system can be obtained by contacting the system manufacturer.
 - a. American Contracting USA, Inc., Mr. Eddie Fuentes; (956) 748-4030.
 - b. Argio Roofing Inc., Mr. Rojerio Escobedo, (956) 748-9507.
 - c. Sechrist Hall Roofing, Mr. Bill McBride; (956) 423-3359
 - d. Rio Roofing Inc., Mr. Tom Gonzalez; (956) 423-3359
 - e. Haeber Roofing Company, Mr. Don Rucker; (361) 851-8142.
 - f. Port Enterprises, Inc., Mr Cody Comstock; (361) 289-2944.
 - g. Rain King, Inc; Mr. Jared Cain; (361) 576-0606
 - h. Rain Seal Master Roofing & Sheet Metal, Mr. Ramon Gonzalez; (361) 576-0926
 - i. American Roofing & Metal, Mr. Toby Cargile; (210) 224-5463
 - j. Tadco Roofing, Mr. Javier Ramos; (956) 227-4339
 - k. JJ Flores Roofing & Construction, Mr JJ Flores; (956) 722-7688
- B. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing similar work, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to furnish warranty of type specified.

1. Manufacturer's On-Site Roll Former Operators: Experienced full-time employees of metal roof panel manufacturer.
- C. Professional Engineer Qualification: A qualified professional engineer licensed in the project state, and experienced in metal roof panel system design similar to that required for Project.
- D. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
- E. Manufacturer's Technical Representative Qualifications: An authorized full-time employee representative of manufacturer, certified as a Registered Roof Observer by the Roof Consultants Institute, and experienced in the installation and maintenance of the specified roof panel system and qualified to determine Installer's compliance with the requirements of this Project.
- F. Source Limitations: Obtain metal roof panels and accessories and related engineered structural support members from a single source supplied or approved by metal roof panel manufacturer.
- G. Random Sampling
 1. During course of work, the Architect may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
 2. Should test results prove that material is not equal to specified material:
 - a. Contractor shall pay for all testing.
 - b. Roofing installed and found not to comply with the specifications shall be removed and replaced with no change in the contract price.
 3. Installation quality control
 - a. The roofing inspector shall provide written and photographic reports, to be submitted to the architect, owner, roof system installation contractor, appraising the installation of the roof system at each of the project progress stages. The installation contractor shall make all necessary corrections, additions or remedial actions to resolve any issues raised in the reports.
 - b. The roofing inspector shall have the authority to have any and all roofing work corrected, as required, to insure the proper installation and weather-tightness of the roof system, in accordance with the manufacturer's specifications.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

- D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.
- E. Protect foam-plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.11 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.12 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of substrate, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.13 WARRANTY

- A. Manufacturer's Warranty: Roof System Manufacturer's standard form in which Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period, as follows.
 - 1. Form of Warranty: Manufacturer's standard warranty form.
 - 2. Scope of Warranty: Work of this Section and including sheet metal details and termination details installed by the roof system Installer and approved by the Roof System Manufacturer.
 - 3. Warranty Period: 20 years from date of completion.
- B. Installer Warranty: Installer's warranty signed by Installer, as follows.
 - 1. Form of Warranty: Form acceptable to Roofing Manufacturer and Owner.
 - 2. Scope of Warranty: Work of this Section.
 - 3. Warranty Period: 2 years from date of completion.
- C. Manufacturer Inspection Services: By manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's inspections is included in the Contract Sum.
 - 1. Inspections to occur in following years: 2, 5, 10, and 15 following completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Manufacturers/Products: Subject to compliance with requirements, provide products by one of the following manufacturers comparable to the Basis of Design product specified:
1. Tremco CPG, Inc., Beachwood, OH, (800) 562-2728, www.tremcoroofing.com.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Delegated Design: Design metal roof panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Structural Performance: Provide metal roof panel assemblies withstanding the effects of the following loads, based on testing according to ASTM E 1592:
1. Wind Loads: As indicated on Drawings.
- D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 90.
- E. Hail Resistance: Provide metal roof panel assemblies listed with UL as Class 4 hail resistant panels.
- F. Air Infiltration: Air leakage through assembly of not more than the following when tested according to ASTM E 1680, based upon 16 inch (406 mm) wide panel:
1. Maximum 0.0001 cfm/sq. ft. (0.001 L/s x sq. m) of roof area at test-pressure difference of 1.57lbf/sq. ft.(-75.2 Pa).
 2. Maximum 0.0028 cfm/sq. ft.(.014 L/sx sq. m) of roof area at test-pressure difference of 20.00lbf/sq. ft.(-958 Pa).
- G. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:
1. Test-Pressure Difference: 20.00 lbf/sq. ft. (958Pa).
- H. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- I. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.3 ARCHITECTURAL STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically

attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Factory-formed symmetrical panels with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation in either direction by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and mechanically seaming panels together utilizing a seam cap, and configured to enable future replacement of individual panels without disturbing adjacent panels.
1. Basis-of-Design Product: Tremco, Inc., TremLock T-238.
 2. Aluminum: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - a. Thickness: 0.040.
 - b. Surface: Smooth, flat finish.
 - c. Exposed Coil-Coated Finish: 2-Coat Fluoropolymer.
 - d. Exposed Finish: Exposed metallic coating.
 - e. Color: As selected by Architect from manufacturer's standard colors.
 3. Clips: Low-movement floating clips to accommodate thermal movement; fixed clips where design permits; intermittent or continuous clips as required to meet performance requirements; and with 6" clip bearing plate where required.
 - a. Material: Aluminum, .040, Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 4. Joint Type: Field mechanically seamed.
 5. Seam Cap: Match panel material and finish; provide with two rows of integral factory hot-applied sealant.
 6. Panel Pan Configuration: Striated.
 7. Panel Seam Height: Not less than 2-3/8 inch .
 8. Panel Coverage: 16 inches.

2.4 METAL ROOF ACCESSORIES

- A. Metal Roof Accessories, General: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.

2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
- B. Panel Sealants: Provide one of the following identical to that used in test panels meeting performance requirements:
 1. Sealant Tape: Pressure-sensitive, 99 percent solids, gray polyisobutylene or butyl rubber compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1 inch (25 mm) wide and 1/8 inch (3 mm) thick, with nylon spacer beads to prevent over compression of the sealant tape.
 2. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311, with nylon spacer beads to prevent over compression of the sealant tape.
- C. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 0.028 inch (0.71 mm) thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.
- D. Pipe Penetration Flashings: Flexible boot type, with stainless steel compression ring, and stainless steel pipe strap. Use silicone-type boot at hot pipes.
- E. Gutters: Formed from same material roof panels. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2400-mm-) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches (900 mm) o.c., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.
- F. Downspouts: Formed from same material as roof panels. Fabricate in 10-foot- (3-m-) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- G. Pipe Penetration Flashing: Premolded EPDM pipe collar with flexible aluminum ring bonded to base and stainless steel pipe clamp to secure collar to pipe.
- H. Roof Curbs: Fabricated from aluminum sheet, minimum 0.080 inch (1.2 mm) thick; with bottom of skirt profiled to match roof panel profiles, and welded top box, integral internal fastener flange, and water diverter. Fabricate curb subframing of minimum 0.0598-inch- (1.5-mm-) thick, angle-, C-, or Z-shaped galvanized steel sheet. Fabricate curb and subframing to withstand indicated loads, of size and height indicated. Finish roof curbs to match metal roof panels.
 1. Insulate roof curb with 1-inch- (25-mm-) thick, rigid insulation.

2.5 FIELD-INSTALLED THERMAL INSULATION

- A. Faced, Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2 glass-fiber mat, Grade 3, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, based on tests performed on unfaced core. FM Approvals 4450/4470 approved. CFC-, HCFC-, and HFC- free.
 1. Minimum thickness: 1.5 inches.
 2. Available manufacturer's:
 - a. Tremco: Trisotech

- b. Atlas: AC Foam II

2.6 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: 30 to 40 mils (0.76 to 1.0 mm) thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
 - 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
 - 3. Available Manufacturer's
 - a. Tremco
 - b. McElroy

2.7 MISCELLANEOUS METAL FRAMING

- A. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized or coating with equivalent corrosion resistance unless otherwise indicated.
- B. Zee Clips: 0.079-inch (2.01-mm) nominal thickness.
- C. Base or Sill Channels: 0.079-inch (2.01-mm) nominal thickness.
- D. Hat-Shaped, Rigid Furring Channels:
 - 1. Nominal Thickness: As required to meet performance requirements, but not less than 0.025 inch (0.64 mm).
 - 2. Depth: As indicated.
- E. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), and depth required to fit insulation thickness indicated.
 - 1. Nominal Thickness: As required to meet performance requirements.
- F. Fasteners for Miscellaneous Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten miscellaneous metal framing members to substrates.

2.8 MISCELLANEOUS MATERIALS

- A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

2.9 FABRICATION

- A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.
- E. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 3. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

2.10 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof substrate to verify that substrate joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
3. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
- B. Remove existing metal roofing materials. Existing plywood over steel decking is to remain.
- C. Miscellaneous Framing: Install subpurlins, eave angles, furring, and other miscellaneous roof panel support members and anchorage according to metal roof panel manufacturer's written instructions. Add additional wood blocking as required to accommodate added insulation thickness.

3.3 THERMAL INSULATION INSTALLATION

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Extend insulation in thickness indicated to cover entire roof. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Seal all joints and penetrations air- and vapor-tight.
- C. Rigid Board Insulation: Install 1.5" insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 1. Where overall insulation thickness is 2 inches (50 mm) or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
 2. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
 3. Secure insulation to metal panel per FM-1-29 Table 6.

3.4 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less

than 3-1/2 inches (90 mm). Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over. entire roof surface
- B. Install flashings to cover underlayment to comply with requirements specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.5 METAL ROOF PANEL INSTALLATION, GENERAL

- A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
- B. Thermal Movement. Rigidly fasten metal roof panels to structure at one and only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction. Predrill panels for fasteners.
 1. Point of Fixity: Fasten each panel along a single line of fixing located at ridge.
 2. Avoid attaching accessories through roof panels in a manner that will inhibit thermal movement.
- C. Install metal roof panels as follows:
 1. Commence metal roof panel installation and install minimum of 300 sq. ft. (27.8 sq. m.) in presence of factory-authorized representative.
 2. Field cutting of metal panels by torch or abrasive saw is not permitted.
 3. Locate and space fastenings in uniform vertical and horizontal alignment.
 4. Provide metal closures at rake edges, rake walls, and each side of ridge and hipcaps.
 5. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.
 6. Install ridge and hip caps as metal roof panel work proceeds.
 7. Install metal flashing to allow moisture to run over and off metal roof panels.
- D. Fasteners:
 1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.
- E. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- F. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
 1. Use slip sheet where roof panels will contact wood, ferrous metal, or cementitious construction.
- G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.

1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.6 METAL ROOF PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
1. Install clips to supports with self-tapping fasteners.
 - a. Clip spacing at insulated roof areas: 3.5 ft.
 - b. Continuous multispan clip at open canopy area.
 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 3. Erection Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet (1:960) on slope and location lines as indicated and within 1/8-inch (3 mm) offset of splices and alignment of matching profiles.
 4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged. ()
 5. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.

3.7 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. Flashing and Trim: Comply with performance requirements and manufacturer's written installation instructions. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Form trim and transition joints using compressed joints with captive butyl sealant capable of resisting static water pressure. Cleated joints and exposed joint sealants do not meet this requirement.
 2. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.

3. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- C. Gutters: Join sections with riveted and soldered or lapped, riveted, and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c. in between.
 1. Provide elbows at base of downspouts to direct water away from building.
 2. Connect downspouts to underground drainage system indicated.
- E. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.
- F. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform substrate examination, interim observations, and final roof inspections, and to prepare reports.
- B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113.06

SECTION 074213 - METAL WALL PANELS**PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes:
 - 1. Concealed-fastener, metal wall panels.
- B. Related Sections:
 - 1. Division 07 Section "Metal Roof Panels, Standing Seam" for factory-formed metal roof panels, gutters and downspouts.
 - 2. Division 07 Section "Metal Soffit Panels" for factory-formed metal soffit panels.

1.2 DEFINITIONS

- A. Metal Wall Panel Assembly: Metal wall panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight wall system.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site, in conjunction with roofing preinstallation conference.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, metal wall panel Installer, metal wall panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal wall panels, including installers of doors, windows, and louvers.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal wall panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
 - 6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 7. Review temporary protection requirements for metal wall panel assembly during and after installation.
 - 8. Review wall panel observation and repair procedures after metal wall panel installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of wall panel and accessory.
- B. Sustainable Design Submittals:
- C. Shop Drawings: Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

1. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
- D. Samples for Initial Selection: For each type of metal wall panel indicated with factory-applied color finishes.
 1. Include similar Samples of trim and accessories involving color selection.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer's technical representative.
 1. Submit Installer qualifications in the form of an original letter on manufacturer's letterhead signed by authorized manufacturer representative.
- B. Material Certificates: For thermal insulation, from manufacturer.
- C. Product Test Reports: When required by authorities having jurisdiction, furnish product test reports: based on evaluation of current comprehensive tests performed by a qualified independent testing agency, for each product. Indicate compliance with requirements in Performance Requirements Article:
 1. Air Infiltration.
 2. Water Penetration.
- D. Field quality-control reports.
- E. Warranties: Sample of special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal wall panels to include in maintenance manuals.
- B. Warranties: Executed copies of warranties.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer of plant-fabricated metal wall panel systems listed in this Section and meeting performance requirements, with a minimum of five years' experience providing metal wall panel systems for projects of similar type and scope, offering warranty and technical inspection specified.
- B. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing similar work, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to furnish warranty of type specified.
- C. Manufacturer's Technical Representative Qualifications: An authorized full-time employee representative of manufacturer experienced in the installation and maintenance of the specified wall panel system and qualified to determine Installer's compliance with the requirements of this Project.
- D. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing and inspection indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal wall panels, and other manufactured items so as not to be damaged or deformed. Package metal wall panels for protection during transportation and handling.
- B. Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.

- C. Stack metal wall panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal wall panels to ensure dryness, with positive slope for drainage of water. Do not store metal wall panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal wall panel for period of metal wall panel installation.

1.9 PROJECT / FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal wall panels to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before metal wall panel fabrication, and indicate measurements on Shop Drawings.

1.10 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The roof system specified in this Section is based upon products of Tremco CPG Inc, Beachwood, OH, (800) 562-2728, www.tremcoroofing.com that are named in other Part 2 articles. Provide specified products.
 - 1. Manufacturers of comparable products: Approved by Owner, Architect, or Owner's Consultant prior to bid.
- B. Source Limitations: Obtain components for wall panel system from manufacturer listed in this section or from a manufacturer approved by roofing/wall panel manufacturer specified in other Division 07 section(s).

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal wall panel assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E1592.
 - 1. Wind Loads: Calculated in accordance with ASCE-7 and applicable code.
 - a. Uniform pressure as indicated on Drawings.
 - 2. Deflection Limits: Metal wall panel assemblies shall withstand wind loads with horizontal deflections no greater than 1/180 of the span.
- D. Air Infiltration: Air leakage through assembly of not more than 0.06cfm/sq. ft. (0.3L/s per sq. m) of wall area when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft (75 Pa).
 2. Test-Pressure Difference: 6.24 lbf/sq. ft (300 Pa).
- E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 2.86 lbf/sq. ft (137 Pa).
 2. Test-Pressure Difference: 6.24 lbf/sq. ft (300 Pa).
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.3 METAL PANEL MATERIALS

- A. Metallic-Coated Steel Sheet: Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, Class AZ50 coating designation, Grade 50 (Class AZM150 coating designation, Grade 340); structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
1. Surface: Smooth, flat.
 2. Finish: High-performance organic coating.
 - a. Color: As selected by Owner/Architect from manufacturer's full range.
 3. Exposed Finish: Exposed metallic coating.

2.4 CONCEALED-FASTENER METAL WALL PANELS

- A. General: Provide factory-formed metal wall panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Asymmetrical Tapered-Rib-Profile, Concealed-Fastener Metal Wall Panels: Formed with four raised, asymmetrical tapered ribs. For fixed, horizontal installation.
1. Basis-of-Design Product: Tremco, TremLock Flexx Panel.
 2. Panel Coverage: 16 inches (406 mm).
 3. Panel Depth: 0.75 inch
 4. Panel Material: Metallic-coated steel sheet; 22 ga. thick.

2.5 ACCESSORIES

- A. Panel Accessories: Provide components required for a complete metal panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels, unless otherwise indicated.
1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal wall panels.
 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- B. Flashing and Trim: Provide flashing and trim formed from same material as metal panels, and as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.
1. Basis of Design Product: Tremco, TremLock Sheet.
- C. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.6 MISCELLANEOUS METAL FRAMING

- A. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized or coating with equivalent corrosion resistance unless otherwise indicated.
- B. Base or Sill Angles and Channels: 0.079-inch (2.01-mm) nominal thickness.
- C. Hat-Shaped, Rigid Furring Channels:
1. Nominal Thickness: 0.025 inch (0.64 mm).
 2. Depth: 7/8 inch (22 mm).
- D. Fasteners for Miscellaneous Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten miscellaneous metal framing members to substrates.

2.7 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal wall panels by means of plastic caps or factory-applied coating. Provide EPDM sealing washers.

2.8 FABRICATION

- A. General: Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated

performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

1. Site-rolled fabrication of panels or shop-rolling of panels using fixed equipment designed for site-rolling applications does not meet the requirements of this Section.
- B. Fabricate metal wall panels in a manner that eliminates condensation on interior side of panel and with joints between panels designed to form weathertight seals.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal wall panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, and that will minimize noise from movements within panel assembly.
- E. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Seams and Sealed Joints for Sheet Metal Accessories:
 - a. Seams for Steel: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - b. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - c. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
 3. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 4. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal wall panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. High-Performance Organic Coating for Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621 (steel) / AAMA 2605 (aluminum), Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of work.
 1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
 2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
 3. Verify that air- or weather-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.
- B. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

3.3 METAL PANEL INSTALLATION

- A. General: Install metal wall panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to subframing unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Commence metal wall panel installation in presence of factory-authorized representative.
 2. Shim or otherwise plumb substrates receiving metal wall panels.
 3. Flash and seal metal wall panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather barrier and flashings that will be concealed by metal wall panels are installed.
 4. Install screw fasteners in predrilled holes.
 5. Locate and space fastenings in uniform vertical and horizontal alignment.

6. Install flashing and trim as metal wall panel work proceeds.
 7. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 8. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
 9. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 10. Provide weathertight escutcheons for pipe and conduit penetrating exterior walls.
- B. Fasteners:
1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized steel fasteners for surfaces exposed to the interior.
 2. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by metal wall panel manufacturer.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal wall panel manufacturer.
1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer.
 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- E. Metal Wall Panels: Fasten metal wall panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
1. Lap ribbed or fluted sheets one full rib corrugation. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal wall panels.
 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
 5. Provide sealant tape at lapped joints of metal wall panels and between panels and protruding equipment, vents, and accessories.
 6. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps; on side laps of nesting-type panels; on side laps of corrugated nesting-type, ribbed, or fluted panels; and elsewhere as needed to make panels weathertight.
 7. At panel splices, nest panels with minimum 6-inch- (150-mm-) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal wall panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (605 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Technical Representative: Engage a qualified manufacturer's technical representative acceptable to Owner for a minimum of 2 full-time days on site, per 40-hour crew week to perform substrate examination, interim observations, and final roof inspections, and to prepare reports.
- B. Remove and replace metal wall panels where inspections indicate that they do not comply with specified requirements.
- C. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- D. Additional tests and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.
- B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 0742

SECTION 075213 - APP MODIFIED BITUMINOUS MEMBRANE ROOFING, TORCH-APPLIED

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Atactic-Polypropylene (APP) modified bituminous membrane roofing system on metal deck, including but not limited to:
 - a. Thermal Scan (REQUIRED).
 - b. Roof insulation crickets and saddles.
 - c. Roof membrane and membrane base flashings.
 - d. Roof surfacing consisting of mineral granulated cap sheet.
 - 2. Removal of all abandoned piping, equipment and supports as required and patching or repair of the existing deck, structure and interior as required.
 - 3. Install proper pipe supports under all pipes and conduit on the roof. Install proper pads under all pipe supports.
 - 4. All existing roof penetration flashings will be replaced with new roof penetration flashings; including but not limited to lead plumbing vent flashings, heater vents, gravity vents, pitch pans, and any other miscellaneous roof penetration flashings.
- B. Related Sections:
 - 1. Division 06 carpentry section for wood nailers, wood cants, curbs, and blocking.
 - 2. Division 07 Section "Preparation for Re-Roofing" for existing roofing tear off, patching, and substrate preparation for rehabilitation of roofing membrane.
 - 3. Division 07 Section "Sheet Metal Flashing and Trim" for custom metal roof penetration flashings, flashings, and counter flashings.
- C. Alternates: Refer to Division 01 Section "Alternates" for description of Work in this Section affected by alternates.
- D. Allowances: Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.
- E. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.
- B. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
 - 1. Include letter from Manufacturer written for this Project indicating approval of Installer.
- C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Indicate that proposed system components are compatible.
- D. Warranties: Unexecuted sample copies of special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: To include in maintenance manuals.
- B. Warranties: Executed copies of warranties.

1.7 SUBSTITUTIONS

- A. General:
 - 1. ONLY Substitutions approved in writing by the Owner or Owner's Representative prior to the scheduled bid date will be considered.
 - 2. Notification of approvals will be issued at least five (5) days before the scheduled bid date.
 - 3. Architect/Owner reserves the right to be final authority on acceptance or rejection of any substitution request.
- B. When a make or trade name is specified, it shall be indicative of standard required. Bidders proposing substitutes shall submit the following ten (10) days prior to bid date to the Owner or Owner's Representative; requests received after that time will not be considered.
 - 1. Written application with explanation of why it should be considered.
 - 2. Independent laboratory certification providing written confirmation that the physical and performance characteristics of the substitute material/system will meet the physical and performance characteristics of the specified materials and or system.
- C. Submit five copies of request for substitution. Items to be included in the request:
 - 1. Complete data substantiating compliance of proposed substitution.
 - 2. Product identification, including manufacturer's literature and manufacturer's name.
 - 3. Current certificate from an accredited testing laboratory comparing the physical and performance attributes of the proposed material with those of the specified materials. Test results must be dated, notarized, and on testing laboratory stationary.
 - 4. Material Safety Data Sheets providing all pertinent data as to flammability, combustibility.
 - 5. List of at least (5) five jobs as described under the requirements where the proposed alternate material was used under similar conditions. These jobs must be available for inspection by the Owner or Owner's Representative. Names and phone numbers are required for verification. Submit a minimum of 200,000 square feet for review. Submitted projects must be a minimum of (5) years old.

6. Notarized statement from the Roof System Manufacturer, signed by a corporate officer of the corporation stating that:
 - a. All Documents have been reviewed and are approved.
 - b. The Project site has been inspected.
 - c. The Roofing System Manufacturer will provide two (2) field inspections weekly; during, and until all construction work is complete and accepted by the owner. A full-time employee of the manufacturer must perform inspections.
 - d. Provide documentation of the proposed alternate system passing the specified regulatory requirements. Documentation must be on the specified regulatory requirements letterhead or approval guide. No third-party testing will be accepted.
- D. In making substitution request, Bidder/Contractor represents:
 1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified. Additionally, he will have a technical service representative of the proposed manufacturer attend the pre-bid meeting.
 2. He will provide the same guarantee for substitution as for those specified.
 3. He will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 4. Advise the owner of any credit savings or additional costs as opposed to the system type specified.
- E. Substitutions will not be considered if:
 1. Product or method to be considered does not have a minimum of (5) five years of successful performance in roofing and re-roofing of similar applications.
 2. Any discrepancies in the test data, or if the tests or submittals are incomplete.
 3. They are indicated or implied on Shop Drawings or Project Data Submittals without formal request submitted in accordance with the specification document.
 4. Acceptance requires significant revision of documents.
 5. Only substitutes approved in writing by prior to scheduled cutoff date will be considered.
 6. Notification of approvals will be mailed at least 3 days before bid opening.
 7. The Owner will not incur any additional costs for design or construction costs.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing products comparable to those specified, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.
 1. For torch-applied applications, employ workers certified under NRCA's Certified Roofing Torch Applicator (CERTA) program.
 2. Installer must provide (2) manufacturer inspections each week. Noncompliance may result in an \$850 per day fee for missing inspections.
 3. Roofing Contractors included in the following list are to the owner's knowledge, the only pre-approved installers that can install and provide the system and warranty for this specified system. A list of additional certified contractors for the specified system can be obtained by contacting the system manufacturer.
 - a. American Contracting USA, Inc., Mr. Eddie Fuentes; (956) 748-4030.

- b. Argio Roofing Inc., Mr. Rojerio Escobedo, (956) 748-9507.
 - c. Sechrist Hall Roofing, Mr. Bill McBride; (956) 423-3359
 - d. Rio Roofing Inc., Mr. Tom Gonzalez; (956) 423-3359
 - e. Haeber Roofing Company, Mr. Don Rucker; (361) 851-8142.
 - f. Port Enterprises, Inc., Mr Cody Comstock; (361) 289-2944.
 - g. Rain King, Inc; Mr. Jared Cain; (361) 576-0606
 - h. Rain Seal Master Roofing & Sheet Metal, Mr. Ramon Gonzalez; (361) 576-0926
 - i. American Roofing & Metal, Mr. Toby Cargile; (210) 224-5463
 - j. Tadco Roofing, Mr. Javier Ramos; (956) 227-4339
- B. Manufacturer Qualifications: Approved manufacturer with UL listed roofing systems comparable to those specified for this Project, with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.
- 1. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
 - 2. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
- 1. An authorized full-time technical employee of the manufacturer.
- D. Random Sampling
- 1. During course of work, the Architect may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
 - 2. Should test results prove that material is not equal to specified material:
 - a. Contractor shall pay for all testing.
 - b. Roofing installed and found not to comply with the specifications shall be removed and replaced with no change in the contract price.
 - 3. Installation quality control
 - a. The roofing inspector shall provide written and photographic reports, to be submitted to the architect, owner, roof system installation contractor, appraising the installation of the roof system at each of the project progress stages. The installation contractor shall make all necessary corrections, additions or remedial actions to resolve any issues raised in the reports.
 - b. The roofing inspector shall have the authority to have any and all roofing work corrected, as required, to insure the proper installation and weather-tightness of the roof system, in accordance with the manufacturer's specifications.
- E. Windstorm Certification:
- 1. Contractor will provide the Owner with certification by a Registered Professional Engineer that the new roofing construction described within these specifications and

installed on the referenced project complies with the current Windstorm resistance requirements prescribed by the State Board of Insurance.

- F. Manufacturer's Installation Instructions: Obtain and maintain on-site access to manufacturer's written instructions for installation of products.
- G. Preinstallation Roofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review drawings and specifications.
 - 3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 5. Review temporary protection requirements for roofing system during and after installation.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing and insulation with a course of roofing sheet securely in place with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
 - 3. Remove temporary plugs from roof drains at end of each day.
 - 4. Remove and discard temporary seals before beginning work on adjoining roofing.

1.11 FIRE WATCH

- A. When torch applied materials are installed the Contractor shall provide a fire watch.
- B. Provide fire watch during torch application and continue for TWO hour after torch work has been completed. All roof areas worked on should be checked for hot spots and signs of smoldering. Check areas with Non-Contact Digital Laser Infrared Thermometer during watch. If available, infrared roof scanners should be used. The inside of the building should also be inspected for signs of fire and smoke
- C. Provide at least two 10lb (4.5 kg) multipurpose dry chemical portable extinguisher within 20 ft. (6.1 m) horizontal travel distance of torch-applied roofing equipment.
- D. No full-time torch shall be used under any circumstances.

1.12 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Manufacturer's Warranty: Manufacturer's standard or customized form, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
 - 1. Manufacturer's warranty includes roofing membrane, base flashings, fasteners, roofing membrane accessories and other components of roofing system specified in this Section.
 - 2. Warranty Period: 20 years from date of Substantial Completion.
- C. Installer's Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.
- D. Extended Roof System Warranty: Warranties specified in this Section include the following components and systems specified in other sections supplied by the roofing system Manufacturer, and installed by the roofing system Installer:
 - 1. Sheet metal flashing and trim, including roof penetration flashings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by a manufacturer meeting qualification requirements in Quality Assurance Article.
- B. Basis-of-Design Manufacturer/Product: The roof system specified in this Section is based upon products of Tremco, Inc., www.tremcoroofing.com, named in other Part 2 articles. Subject to compliance with requirements, provide the named product or an approved comparable product by one of the following:
- C. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer. All components must be part of specified windstorm assembly.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Roofing shall withstand exposure to weather without failure or leaks due to defective manufacture or installation.
 - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. Wind uplift Compliance: Provide roofing membrane, base flashing, and component materials that comply with the requirements to acquire a certificate of wind storm from the State of Texas. Basis of Compliance: NEMO Evaluation Report 11425.04.16-2-R16 For FL20325-R16 Construction S-290.

IT IS THE CONTRACTORS RESPONSIBILITY TO READ AND FOLLOW THE PROVIDED TESTED ASSEMBLY. A LIST OF THE BASIS OF DESIGN ASSEMBLIES MAY BE LOCATED FROM THE NEMO WEBSITE OR THE SYSTEM MANUFACTURER.

- D. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures.
 - 1. All Zones (Corner, Perimeter, and Field-of-Roof) Uplift Pressures: Verify specified system meets all uplift requirements with project windstorm engineer prior to installation.
- E. SPRI Wind Design Standard: Manufacture and install copings tested according to SPRI ES-1 and capable of resisting the following design pressures:
 - 1. Design Pressure: As indicated on Drawings. Verify installation methods are acceptable to project windstorm engineer prior to installation.
- F. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
 - 2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.
 - 3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
 - 4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.
- G. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

2.3 ROOFING MEMBRANE MATERIALS

- A. APP Modified Bituminous Membrane Ply Sheets:
 - 1. ASTM D 6222 APP-modified asphalt polyester reinforced membrane sheet, smooth-surfaced.
 - a. Basis of design product: Tremco, POWERply APP Smooth.
 - b. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6222: Machine direction, 180 lbf/in (31.5 kN/m); Cross machine direction, 120 lbf/in (21.0 kN/m).

- c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6222: Machine direction, 170 lbf (750 N); Cross machine direction, 140 lbf (620 N).
 - d. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D 6222: 40 percent.
 - e. Low Temperature Flexibility, minimum, ASTM D 6222: 10 deg. F (-12 deg. C).
 - f. Thickness, minimum, ASTM D 6222: 0.160 inch (4.0 mm).
- B. APP Modified Bituminous Cap Sheet:
- 1. ASTM D 6222 Grade G Type I high-elongation fire-resistive APP-modified asphalt polyester-reinforced membrane sheet; mineral-granular surfaced.
 - a. Basis of design product: Tremco, POWERply APP FR.
 - b. Breaking Strength, 77 deg. F, ASTM D 4830: 150 lbf machine direction; 130 lbf cross machine direction.
 - c. Elongation, 77 deg. F, ASTM D 4830: 30 percent.
 - d. Trapezoid Tear Strength, ASTM D 4830: 60 lbf.
 - e. Weight, ASTM D 3776: 190 g/m².
 - f. Thickness, ASTM D 1777: 0.035 in.
- C. Base Flashing Backer Sheet:
- 1. ASTM D 6222 APP-modified asphalt polyester reinforced membrane sheet, smooth-surfaced.
 - a. Basis of design product: Tremco, POWERply APP Smooth.
 - b. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 6222: Machine direction, 180 lbf/in (31.5 kN/m); Cross machine direction, 120 lbf/in (21.0 kN/m).
 - c. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 6222: Machine direction, 170 lbf (750 N); Cross machine direction, 140 lbf (620 N).
 - d. Elongation at 0 deg. F (-18 deg. C), minimum, ASTM D 6222: 40 percent.
 - e. Low Temperature Flexibility, minimum, ASTM D 6222: 10 deg. F (-12 deg. C).
 - f. Thickness, minimum, ASTM D 6222: 0.160 inch (4.0 mm).
- D. Base Flashing Sheet:
- 1. ASTM D 6222 Grade G Type I high-elongation fire-resistive APP-modified asphalt polyester-reinforced membrane sheet; mineral-granular surfaced.
 - a. Basis of design product: Tremco, POWERply APP FR.
 - b. Breaking Strength, 77 deg. F, ASTM D 4830: 150 lbf machine direction; 130 lbf cross machine direction.
 - c. Elongation, 77 deg. F, ASTM D 4830: 30 percent.
 - d. Trapezoid Tear Strength, ASTM D 4830: 60 lbf.
 - e. Weight, ASTM D 3776: 190 g/m².
 - f. Thickness, ASTM D 1777: 0.035 in.
- E. Detailing Fabric:
- 1. Woven Glass Fiber Mesh, Vinyl-Coated: Non-shrinking, non-rotting, vinyl-coated woven glass mesh for reinforcing flashing seams, membrane laps, and other roof system detailing.
 - a. Basis of design product: Tremco, BURmesh.
 - b. Tensile strength, 70 deg. F, ASTM D 146: Warp, 65 lbf/in (289 N); fill, 75 lbf/in (311 N).

2.4 ASPHALT MATERIALS

- A. Asphalt primer, water-based, polymer modified.

1. Basis of design product: Tremco, TREMprime QD.
 2. Flash Point, minimum, ASTM D 3278: 100 deg F.
- B. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

2.5 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.
1. Reinforcement membrane:
 - a. A non-shrinking, non-rotting, vinyl coated, woven glass mesh.
 - b. Basis of Design: Tremco Burmesh - 6".
 2. Asphalt mastic for miscellaneous sealing and waterproofing:
 - a. An asphalt-based, heavily fibrated, asbestos free mastic.
 - b. Basis of Design: Tremco ELS.
 3. Vertical base flashing striping mastic:
 - a. High performance single component solvent free roof elastomer
 - b. Basis of Design: Tremco POLYroof LV
 4. Pitch pan mastic:
 - a. High performance single component roof elastomer.
 - b. Basis of Design: Tremco POLYroof LV
 5. Metal Joint Sealant:
 - a. Asbestos-free, moisture cured, one-component polyurethane sealant.
 - b. Basis of Design: TremSEAL PRO
 6. Reglet Joint Sealant
 - a. One-part, bituminous polyurethane sealant.
 - b. Basis of Design: Tremco Reglet Joint Sealant.
 7. Vertical Striping Coating
 - a. Basis of design product: Tremco, Alumanation 301.
 - b. Cold-Applied Reflective Aluminum Roof Coating: ASTM D 2824 Type III metallic-pigmented, fibrated asphalt-based roof coating.
 8. Vents and/or Stacks:
 - a. Stainless: Type 316, Finish.
 - b. Gage: Twenty-four (24).
 - c. Solder: ASTM B32-89, alloy grade 60A. Neutralize flux after soldering.
 9. Termination Bar for top edge of all base flashings:
 - a. Extruded aluminum, pre-punched 8" o.c.
 10. Fascia, Coping, Collector Heads, Gutters, Downspouts, counter flashing, slip flashing and other Visible Sheet Metal Flashing:
 - a. Aluminum: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - b. Gage: .040 minimum thickness
 11. Pitch pans with hoods:

- a. Stainless Steel, Type 304: Twenty-four (24) gauge minimum, stainless steel; commercial quality, Fed. Spec. QQ-S-775, Type I, Class D or ASTM A 526 or lock forming quality ASTM A 527, G90 coating in accordance with ASTM A 525
- 12. Walkway Pads for all access panels at all A/C units:
 - a. Mineral-surfaced asphaltic composition panels, factory formed, nonporous, with a slip-resisting surface texture, manufactured specifically for adhering to built-up roofing as a protection course for foot traffic:
 - b. Basis of Design: Tremco, Same As Cap Sheet.
- B. Roof Repair Membrane: ASTM D 4601 Type II nonperforated asphalt-coated SBS-modified fiberglass/fiberglass/ polyester reinforced sheet dusted with fine mineral surfacing on both sides.
 - 1. Basis of design product: Tremco, BURmastic Composite Ply HT.
- C. Roof Repair Cold-Applied Adhesive: One-part, cold-applied adhesive specially formulated for compatibility and use with specified roofing membranes and flashings.
 - 1. Basis of design product: Tremco, POWERply Standard Cold Adhesive.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Global 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
 - 1. Available Manufacturers
 - a. Trufast - #14 HD Fastener with 3" plate
 - b. Tremco - #14 HD Fastener with 3" plate
- E. Metal Flashing Sheet: Metal flashing sheet is specified in Division 07 Section "Sheet Metal Flashing and Trim."
- F. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer.

2.6 ROOF INSULATION

- A. Roof Insulation, General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
 - 1. Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
 - 2. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Roof Insulation Cover Board:
 - 1. Cellulosic fiber reinforced water-resistant gypsum panel, ASTM C 1278/C 1278M.
 - a. Basis of design product: Tremco/USG Securock.
 - b. Thickness: 1/2 inch (13 mm).
- C. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.
- D. Tapered Edge Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

2.7 WALL TREATMENT AND COATING MATERIALS (STUCCO FINISHES ABOVE ROOF LINE)

- A. Primer for previously coated walls above roof membrane:
 - 1. Acrylic polymer emulsion, stain resistant, fast drying, flexible base primer for elastomeric latex coatings.
 - 2. Basis of Design: Tremco Solargard Masonry Primer.
- B. Coating for previously coated walls above roof membrane:
 - 1. Acrylic polymer emulsion wall coating with fiber reinforcement.
 - 2. Tinted to match existing.
 - 3. Basis of Design: Tremco Solargard HY-BUILD

2.8 WALKWAYS

- A. Walkway pads, ceramic-granule-surfaced reinforced asphaltic composition slip-resisting pads, manufactured as a traffic pad for foot traffic, 1/2 inch (13 mm) thick minimum.
 - 1. Basis of design product: Tremco, POWERply APP FR.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Provide Thermal Scan of all recover and restoration areas. It is the contractors responsibility to investigate all anomalies as discovered by scan. Remove all wet insulation as discovered by scan and field verification. Provide new insulation to match existing heights. All replaced insulations may be gang fastened to existing metal deck per new assembly requirements. Dry in new insulations with 2 plies of specified repair materials in cold process.
 - 3. Verify that, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation. wood cants
 - 4. Verify that existing insulation and substrate is sound and dry.
 - 5. Remove existing wet insulation as marked by thermal scan. Prove new insulation to match existing heights. Mechanically fasten new insulation to metal deck.
 - 6. Removed and repaired insulation areas are to be dried in with 2 plies specified modified bitumen membrane in cold process.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections. Removal of existing Gravel Surfacing.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION, GENERAL

- A. Install roofing system in accordance with manufacturer's recommendations.
- B. Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations; modify as required to comply with requirements of FM Global references above:
 - 1. Metal Parapet Cap (Coping) and Base Flashing: Plates MB-1 and MB-1S.
 - 2. Surface-Mounted Counterflashing for Concrete Walls (at Parapet Wall): Plates MB-4 and MB-4S.
 - 3. Base Flashing for Wall-supported Deck: Plates MB-5 and MB-5S.
 - 4. Base Flashing for Non-wall-supported deck (Movement Joint): Plates MB-6 and MB-6S.
 - 5. Base and Surface-mounted Counterflashing: Plates MB-4 and MB-4S.
 - 6. Base Flashing for Vented Base Sheet: Plates MB-5A and MB-5AS.
 - 7. Raised Perimeter Edge with Metal Flashing (Fascia Cap): Plates MB-2 and MB-2S.
 - 8. Embedded Edge Metal Flashing Edge (Gravel-stop): Plates MB-3 and MB-3S.
 - 9. Scupper Through Raised Perimeter Edge: Plates MB-21 and MB-21S.
 - 10. Gutter at Draining Edge: Plates MB-22 and MB-22S.
 - 11. Expansion Joint with Metal Cover: Plates MB-7 and MB-7S and Division 07 Section "Sheet Metal Flashing and Trim."
 - 12. Expansion Joint with Premanufactured Cover: Plates MB-7A and MB-7AS and Division 07 Section "Roof Expansion Assemblies."
 - 13. Area Divider in Roof System: Plates MB-8 and MB-8S.
 - 14. Equipment Support Curb: Plates MB-9 and MB-9S.
 - 15. Equipment Support Stand: Plates MB-10.
 - 16. Equipment Support Stand and Typical Rain Collar Penetration Detail: Plates MB-11 and MB-11S.
 - 17. Raised Curb Detail at Rooftop HVAC Units, Premanufactured: Plates MB-12 and MB-12S and Division 7 Section "Roof Accessories."
 - 18. Raised Curb Detail at Rooftop HVAC Units (Job site constructed wood curb): Plates MB-13 and MB-13S and Division 06 Section "Miscellaneous Rough Carpentry."
 - 19. Skylight, Scuttle (Roof Hatch), and Smoke Vents: Plates MB-14 and MB-14S and Division 07 Section "Roof Accessories."
 - 20. Penetration, Structural Member through Roof Deck: Plates MB-15 and MB-15S.
 - 21. Penetration, Sheet Metal Enclosure for Piping Through Roof Deck: Plates MB-16 and MB-16S
 - 22. Penetration, Isolated Stack Flashing: Plates MB-17 and MB-17S.
 - 23. Penetration, Isolated Stack Flashing: Plates MB-17A and MB-17AS.
 - 24. Penetration, Plumbing Vent: Plates MB-18 and MB-18S.
 - 25. Penetration, Pocket: Plates MB-19 and MB-19S.
 - 26. Roof Drain: Plates MB-20 and MB-20S.
 - 27. Roof Drain: Plates MB-20A and MB-20AS.
 - 28. Guide for Clearances between Pipes / Walls / Curbs - Table 4

29. Guide for Crickets and Saddles - Table 5
30. Guide for Edge Scuppers with Tapered Saddles - Table 6

3.4 INSULATION INSTALLATION

- A. Comply with built-up roofing manufacturer's written instructions for installing roof insulation.
- B. Cant Strips: Install and secure preformed 45-degree cant strips at junctures of built-up roofing with vertical surfaces or angle changes greater than 45 degrees.
- C. Rurf existing roofing prior to installation of any roofing insulations. Minimum of 6" wide strips removed at 3 foot center rows.
- D. Install field insulation over field of roof. Minimum thickness: None, Not applicable.
- E. Install tapered insulation under area of roofing to conform to slopes indicated. Provide tapered sumps at roof drain locations. Replace missing or damaged strainers or clamping rings.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- G. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inch (70 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
 1. Install tapered insulation as shown on plan. It is the contractors responsibility to provide or enhance tapered crickets, saddles, or backslope towards drain locations to ensure positive drainage.
 2. Flat Insulation System on Sloped Roof Deck: Install insulation at minimum thickness as follows:
 - a. Minimum total thickness of Continuous Insulation: None, Not applicable
- H. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- I. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- J. Cover Board Installation: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together. Tape joints if required by roofing manufacturer.
 1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof. Secure coverboard through all insulations to the metal deck per wind uplift assembly. Provide for a minimum of 24 fasteners per 4x8 board of insulation or as directed by project windstorm engineer.

3.5 TORCH-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing" and as follows:
 1. Deck Type: Metal deck.
 2. Number of Smooth-Surfaced APP-Modified Asphalt Sheets: One.

- a. Adhering Method: Torch.
3. Granular-Surfaced APP-Modified Asphalt Cap Sheet:
 - a. Adhering Method: Torch.
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- D. Coordinate installation of roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
 1. Provide tie-offs at end of each day's work configured as recommended by NRCA Roofing Manual Appendix: Quality Control Guidelines - Insulation to protect new and existing roofing.
 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing.
 3. Remove temporary plugs from roof drains at end of each day.
 4. Remove and discard temporary seals before beginning work on adjoining roofing.

3.6 APP-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 1. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
 2. Torch apply to substrate in accordance with manufacturer's written instructions and NRCA CERTA guidelines.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Install roofing membrane sheets so side and end laps shed water. Completely bond and seal laps, leaving no voids.
 1. Repair tears and voids in laps and lapped seams not completely sealed.
 2. Apply roofing granules to cover exuded bead at laps while bead is hot.

3.7 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 1. Extend base flashing up walls or parapets a minimum of 12 inches (300 mm) above built-up roofing and 6 inches (150 mm) onto field of roof membrane.
 2. Prime substrates with asphalt primer if required by roofing system manufacturer.
 3. Backer Sheet Application: Torch apply to substrate in accordance with manufacturer's written instructions and NRCA CERTA guidelines. Mechanically-fasten to vertical substrate where required.
 4. Flashing Sheet Application: Torch-apply flashing sheet to substrate.
- B. Seal top termination of base flashing with a metal termination bar.

- C. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- D. Roof Drains: Set 30 by 30 inch (760 by 760 mm) square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inches beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.
 - 1. Install stripping according to roofing system manufacturer's written instructions.
- E. Vertical Base Flashing Laps:

3.8 WALKWAY INSTALLATION

- A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
 - 1. Sweep away loose aggregate surfacing.
 - 2. Set walkway pads in cold-applied adhesive.

3.9 WALL TREATMENT AND COATING INSTALLATION

- A. Wall coating at previously coated walls above the roof membrane:
 - 1. Clean previously coated wall sections above new surface mounted counterflashing and prime with specified primer.
 - 2. Apply two coats of the specified elastomeric wall coating as recommended by the manufacturer.

3.10 FIELD QUALITY CONTROL

- A. Roofing Inspector: Owner will engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation at commencement and upon completion.
 - 1. Notify Architect and Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of built-up roofing where test results or inspections indicate that they do not comply with specified requirements.
 - 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 PROTECTING AND CLEANING

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

END OF SECTION 075213

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Roof drainage sheet metal fabrications.
 - 2. Low-slope roof sheet metal fabrications.
 - 3. Manufactured reglets and counterflashings.
 - 4. Miscellaneous sheet metal flashing and trim.
- B. Related Requirements:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Section " 07 52 16.11 " for warranty requirements for sheet metal flashing and trim items integral with roofing.
 - 3. Division 07 Section " 07 52 16.13 " for requirements for sheet metal flashing and trim items integral with roofing repairs.
 - 4. Division 07 Section " 07 41 13.06 & 07 41 13.07" for warranty requirements for sheet metal flashing and trim items integral with metal roofing.
 - 5. Division 07 Section " 07 54 19" for warranty requirements for sheet metal flashing and trim items integral with single ply hybrid roofing.

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak proof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site in coordination with roofing Preinstallation conference.
 - 1. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
 2. Include identification of material, thickness, weight, and finish for each item and location in Project.
 3. Indicate details meet requirements of SMACNA, NRCA and FMG required by this Section.
- C. Samples for Verification: For each type of exposed finish.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Contractor's Product Certificates: For each type of coping and roof edge flashing that is SPRI ES-1 tested.
- C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.
- B. Warranties: Manufacturer's executed warranty documents. Submit prior to acceptance of Work.

1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
 1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

- A. Refer to warranty requirements of Division 07 Section Modified Bitumen Roofing, and Metal Roof Panels Standing Seam for terms and conditions of warranties covering work of this Section.
- B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to

defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Flashings and Fastening: Comply with requirements of Division 07 roofing sections. Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. FM Global 1-49: "Property Loss Prevention Data Sheet for Perimeter Flashings."
 - 2. FM Global 1-29: "Property Loss Prevention Data Sheet for Above Deck Roof Components."
 - 3. NRCA: "The NRCA Roofing Manual" for construction details and recommendations.
- D. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:
 - 1. Design Pressure: As indicated on Drawings.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - 1. Finish: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - 2. Color Finish: As selected by owner
- C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
 - 1. Finish: 2B (bright, cold rolled).
- D. Aluminum Sheet: Coil-coated sheet, ASTM B209 (ASTM B209M), alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - 1. Surface: Smooth, flat.
 - 2. Color: Match Architect's sample Match color selection for Section 007 52 16.101 "Modified Bitumen Roofing" and Section 07 41 13.06 "Metal Panels. Standing Seam".
 - 3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or

SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

1. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C) or lower.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- C. Solder:
 1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 2. Obtain field measurements for accurate fit before shop fabrication.
 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
- C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
- G. Seams, Soldered: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- I. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
1. Expansion Joints: Butt type with cover plate.
- B. Built-in Gutters: Fabricate to cross section required, with riveted and soldered joints, complete with end pieces, outlet tubes, and other special accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Fabricate expansion joints and accessories from same metal as gutters unless otherwise indicated.
1. Fabricate gutters with built-in expansion joints.
- C. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

- D. Parapet Scuppers for Modified Bitumen: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch- (100-mm-) wide wall flanges to interior, and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof. Fabricate from the following materials:
 - 1. Stainless Steel: 24ga thick.
- E. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes built-in overflows. Fabricate from the following materials:
 - 1. Aluminum: .040.
- F. Rooftop Splash Pans: Fabricate to dimensions and shape required and from the following materials:
 - 1. Aluminum: 0.040 inch (1.02 mm) thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop) and Fascia Cap for Modified Bitumen: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.
 - 1. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, exposed cover plate.
 - 2. Fabricate from the Following Materials:
 - a. Prefinished Aluminum: .040.
- B. Thru-wall Reglet Flashing: Fabricate from the following materials;
 - 1. Stainless Steel: .24ga thick
- C. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight.
 - 1. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, exposed cover plate.
 - 2. Fabricate from the Following Materials:
 - a. Prefinished Aluminum: .040.
- D. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Prefinished Aluminum: .040.
- E. Flashing Receivers: Fabricate from the following materials:
 - 1. Stainless Steel: 24ga thick.
- F. Roof-Penetration Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 24ga thick.
- G. Roof-Drain Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.016 inch (0.40 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm).
- B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.
- C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 - 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 - 5. Torch cutting of sheet metal flashing and trim is not permitted.
 - 6. Do not use graphite pencils to mark metal surfaces.

- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 - 1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of [10 feet (3 m)]with no joints within 24 inches (600 mm) of corner or intersection.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
 - 1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
 - 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not solder for aluminum sheet.
 - 2. Do not use torches for soldering.
 - 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 - 4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

- B. Hanging Gutters: Join sections with joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Fasten gutter spacers to front and back of gutter.
 - 2. Anchor and loosely lock back edge of gutter to continuous cleat.
 - 3. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches (600 mm) apart.
 - 4. Anchor gutter with straps spaced not more than 24 inches (600 mm) apart to roof deck, unless otherwise indicated, and loosely lock to front gutter bead.
 - 5. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet (15.24 m) apart. Install expansion-joint caps.
- C. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints.
 - 1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
 - 2. Provide elbows at base of downspout to direct water away from building.
 - 3. Connect downspouts to underground drainage system.
- D. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
 - 1. Anchor scupper closure trim flange to exterior wall and solder to scupper.
 - 2. Loosely lock front edge of scupper with conductor head.
 - 3. Seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.
- E. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch (25 mm) below scupper discharge.
- F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches (100 mm) in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch (75-mm) centers.
- C. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.
- D. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
 - 1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at [24-inch (600-mm)] [16-inch (400-mm)]centers.
 - 2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at [24-inch (600-mm)]centers.

- E. Copings: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.
- F. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.
- G. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm). Secure in waterproof manner by means of anchor and washer at 36-inch (910-mm) centers unless otherwise indicated.

3.6 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Reglets: Installation of reglets is specified in Section 042000 "Unit Masonry."

3.7 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200