#### SECTION 07 31 24

**GRANULAR COATED STEEL SHINGLE**

#### BASED ON DFD MASTER SPECIFICATION DATED (R02/06/17)

**Note to Specifier:**

**Read the first paragraph after this statement, before proceeding.**

**Obtain and read the most current version of the DOA-DFD “Minimum Design Guidelines for Roofing and Waterproofing Systems”. Note the revision date at the title.**

This section has been written to cover most (but not all) situations that you will encounter. Depending on the requirements of your specific project, you may have to add materials, delete items, or modify what is currently written. The Division of Facilities Development expects changes and comments from you.

Recent changes in the specification are associated with the date by the title, identified by the ‘color green’. DO NOT DELETE THE DATE. Obtain the most current specification section for each project. Pay special attention to all ’Notes to Specifier’ identified in ‘color blue in italic’ typeface. Roof system options are also identified within [brackets] by the ‘color blue’. This language may be used or deleted as required by the scope of project. This section should be reviewed carefully as it has language for both new construction and re-roofing.

DFD Standard Roofing Details for various roof systems including HVAC and Electrical runs, curbs and support, louver, door and windows and State of Wisconsin Guarantee Forms are located on the DFD Website with the Master Roofing Specification.

part 1 - GENERAL

Scope

The work under this section includes all labor, material, equipment and related services necessary to install granular coated steel [self ventilating shingles or self ventilating shakes] vapor retarder and synthetic membrane, associated roofing system components including metal flashing and roof related construction as required to receive the manufacturer warranty as specified herein.

Record documents shall include digital photos.

PART 1 - GENERAL

Scope

Related Work

Reference Standards

Guarantee and Warranties

Quality Assurance

Product Delivery, Storage and Handling

Submittals - Technical and Other Documents

Submittals – Final Documents required upon completion of theWork

PART 2 - PRODUCTS

Manufacturers Suppliers andMaterials

PART 3 - EXECUTION

Examination

Site Conditions

Substrate Preparation

Installation of New Roof System

Cleaning

RELATED WORK

Applicable provisions of Division 1 shall govern work under this Section. Contractor shall consult these provisions in detail prior to proceeding with work.

[06 10 53 - Miscellaneous Rough Carpentry - Roofing]

[07 63 00 -Sheet Metal Roofing Specialties]

[26 41 00 – Facility Lightning Protection]

[00 00 00 - Specific Roofing Section]

**Notes to Specifier:**

Lightning Protection Systems” that must be removed, altered, interrupted or disabled to perform the new work must be upgraded at the roof level. The Contractors qualified lightning protection system Installer shall submit a written statement that the roof level portion of the installation would\* qualify for a UL “Master Label”.

In the event that the Contractor wishes to make improvements in materials and/or techniques, or is required to make improvements by the material manufacturer in order to obtain the manufacturer warranty, the Contractor shall make written request stating in full the nature of the proposed change(s) and furthermore state that the changes, if approved, will be accomplished at no additional cost to contract.

**REFERENCES STANDARDS**

[APA – American Plywood Association.]

[ASTM C1289 – Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.]

ASTM D522 – 93a – Coating Flexibility Test.

ASTM D2247 – 100% Relative Humidity Test.

ASTM D2794 – 93 – Reverse Impact Test.

ASTM E108 & UL 790 – Class A, B & C Fire Rated.

ASTM G 26 – Accelerated Weathering Test.

CCMC Traffic Load Test.

CCMC Uniform (Snow Load Test) Load.

NBS 23 – Hail Resistance Test

NRCA ‑ Roofing and Waterproofing Manual.

UL 580 & UL 1897 – Roof Deck Construction and Roofing Systems, Uplift Resistance.

UL 2218 – Class 4 Rating – Impact Resistance.

**GUARANTEE and warranties**

State of Wisconsin Roof System Guarantee: Provide written **five (5) year** guarantee warranting all roofing and flashing required under contract, to be watertight and free from defects in materials or workmanship for period of time, as stipulated in guarantee form.

Contractor shall perform a minimum of two (2) roof system inspections during the term of this guarantee. The first inspection shall be approximately two (2) years after installation date on five (5) year guarantee with final inspection performed within last 6-months of five (5) year guarantee. Contact the Agency Contact to arrange for a site visit date. Agency Contact will accompany the Contractor. Submit written inspection reports, e-mailed to Owner (DFD Project Manager) and Agency Contact immediately after inspection is performed and prior to guarantee expiration.

It is recommended that the Contractor take digital photos of the finished work for their files and future reference.

A copy of the required State of Wisconsin Roof System 5-yr Guarantee form shall be a part of this Section and located at the end of this Section and may be acquired at the following State website; doa.wi.gov/DFD

**Contractor and all sub-contractors shall review the guarantee and requirements of this Section prior to providing a quote for the Work required by this Section.**

**Notes to Specifier:**

The following shall apply for existing roof systems covered by State guarantee or manufacturer warranties.

**Notes to Specifier:**

DFD Project Manager and the shingle manufacturer must be notified of intent to penetrate the existing guaranteed and/or warranted roof system prior to approval of final bid documents. DFD shall provide information concerning the original approved roof system Contractor(s), existing guarantees & warranties. If required, the manufacture shall provide alternate approved Contractor information when original Contractor is not available. This information shall be included within the bid documents allowing the State to maintain the existing State Guarantee and/or various manufacturer warranties through their expiration dates.

**Example:** Where a state five (5) year guarantee is relevant the Roofing Contractor who signed the state guarantee shall be included in the roofing Section. When the state five (5) year guarantee has expired the shingle manufacturer shall be included in the roofing Section, to avoid losing either the guarantee or the warranty.

**Notes to Specifier:**

The following shall apply for existing roof systems no longer covered by State guarantee or manufacturer warranties.

At minimum, request and insert a one (1) year or two (2) year State guarantee for all new construction projects and remodel projects including mechanical and electrical new work roof penetrations or placement to include all penetrations or abandonment of existing roof penetrations that require minor roof system repair, minor replacement and/or new roofing material installed into a portion of the existing roof system to seam into the existing roof system membrane to achieve a watertight condition.

Contractors Performance-Payment Bond is only required to apply to this trade section during the construction period and the first year of the guarantee period. Said Bond shall not apply to any extended guarantee period beyond the first year. Such extended guarantees are limited to the applicable Contractor and manufacturer as herein specified.

**Roofing Contractor shall sent application request for warranty(s) required herein to the manufacturer prior to start of Work.**

**Manufacturer’s Standard Pro-Rated Warranty:** Provide manufacturer's granular coated steel shingle/shake standard **fifty (50) year** warranty against material defects and 120 mph wind, hail stone penetration warranty and surface coating degradation.

**Manufacturer’s Non-Prorated Period Protection Warranty:** Coverage shall include a minimum of **twenty (20) years** non-prorated protection including cost of labor to remove and replace part or all of the shingle system affecting performance, include replacement of any or all manufacturer products and components included in the system warranty through the non-prorated and annually declining prorated duration of the warranty.

Non-prorated protection guarantee is available from the following manufacturers;

Decra Roofing System

Metro Roof Products

The following information shall be included on all guarantee and warranty documents:

State of Wisconsin (Owner), Agency, city or township, street address where work was performed, building name, Owner Project number, Owner (DOA) building number, all roof areas involved and total sq. ft. area of all roof areas.

Manufacturer material and installation requirements may vary concerning issuance of the non-prorated protection warranty.

Include and provide all product(s), labor and installation methods necessary and as specified herein, including manufacturer requirements not found specified herein, as required by the approved manufacturer to obtain the specified warranty requested herein.

All products used for adhesive and/or adherence purposes and sealants approved and/or supplied by the manufacturer shall be covered by the manufacturer non-prorated protection warranty specified herein and the State Guarantee.

Existing re-installed and new metal flashing and new wood blocking mechanical securement shall be covered in the State guarantee but not the manufacturer system warranty specified herein.

Shop fabricated metal flashing materials as specified in Section 07 63 00 and herein or as required for a complete watertight system may be provided in lieu of manufacturer fabricated metal flashing and shall be covered by the five (5) year State guarantee.

**QUALITY ASSURANCE**

Refer to “Submittals - Technical and Other Document” for number of submittal required.

A pre-construction meeting will be held at the site prior to the start of the work. See submittals required. All required submittals shall be delivered to the DFD Project Manager at the meeting for review, in the amount specified.

**Prior to the start of construction, it is required that the Contractor’s foreman shall be in attendance at preconstruction/pre-installation meeting(s).**

Roofing Contractor shall be recognized by the manufacturer of the roof system as an “approved” or “authorized” Contractor applicator of their system and all associated products.

Contractor shall have been in business for a minimum of three (3) years and within the past three (3) years the Contractor shall be able to document the successful completion of a minimum of three (3) projects of similar size and/or scope of the Work as specified in this Section. Backup documentation/verification may be requested by the Owner.

Roofing Contractor shall notify the manufacturer in writing of their intent to obtain all system material and send application for the warranty for work required herein. Warranty application document sent to the manufacturer shall include a current date, indicate the Owner Project Number, bid document technical Section(s), composition of roof system to be installed per bid documents and be signed by the Roofing Contractor.

Manufacturer shall provide Roofing Contractor with a current date written documentation reply stating the receipt of Contractor request including warranty application and statement that the Roofing Contractor is an ”approved and authorized Contractor applicator” in good standing, for the work specified herein. A copy of this letterhead documentation shall be submitted to Owner at the preconstruction meeting. Such document shall include a current date, acknowledgement the Owner Project Number, bid document technical Section(s), include the roofing Contractor business name, certification status, year of issue and duration of such status.

Changes or variations to the roof system composition as required herein shall be approved by the Owner, in writing. Changes provided by the Contractor without Owner written approved shall be cause for rejection of the Work in its entirety.

Roofing Contractor on-site Foreman shall be approved by the manufacturer and shall remain on-site throughout the duration of the project.

Contractor workers employed on this project shall be recognized by the manufacturer of shingle roof system as “approved” or “authorized” applicator(s) and/or within the past two (2) years, the worker shall be able to document the successful completion of a minimum of three (3) projects of similar size and/or scope of the Work as specified in this Section.

All roofers by trade, and employed on this project shall have a certificate of successful completion of training, if available from a manufacturer, for the system to be installed. Construction trade employees other than roofers shall not be allowed to perform the work required herein pertaining to the physical placement/installation of any and all of the roof system components specified herein.

Manufacturer certificate of successful completion of training for each roofer employed on this project shall be submitted to Owner, if available. Document shall be up to date, indicate worker name, certification status, year of issue and duration of such status.

Contractor shall provide a list of all workers to be employed on this project. The list shall indicate each of the workers by name and their construction trade and shall include the Project foreman and Contractor main office contact person.

List shall include after-hour/weekend emergency phone contact personal and their office and cell phone numbers, for use in case of emergency situations.

Labors, sheet metal workers or other non-roofer employees shall not be allowed to perform the actual installation of any part of manufacturer warranted roof system required by this Section without manufacturer documentation of proper training, as required herein.

**Note to Specifier:**

For Projects with AE, Agency or Owner over-site: Roofing Contractor MUST submit specified amount of manufacturer’s current paper-print installation and the detail manual.

Contractor shall obtain and provide Owner with the manufacturer’s most current dated three-ring or spiral-bound installation and detail manual.

Contractor shall perform work required using details provided within the specifications, on the drawings or as required by the manufacturer for a proper watertight installation and to allow issuance of warranties required herein.

All system components not specifically identified herein but required by the manufacturer for the roof system installed by the Work required in this Section shall be provided and included in the manufacturer watertight warranty as required herein. System components required by the Work in this Section but otherwise not considered as warranted by the manufacturer shall be upgraded to manufacturer specific products at the time of bid such that they are included in the Work and therefore covered by the warranty required herein.

Provide all equipment recommended by the manufacturer for proper installation of the materials specified.

Roofing installations shall comply with fire resistive rating as defined in the Wisconsin Administrative Code. Required rating on these roofs: U.L. Class A.

It is the responsibility of the General Prime Contractor to obtain the services of a competent licensed sub-contractor to perform the Work required by these bid documents.

Electrical: For removal and reinstallation of roof curb-mounted exhaust fans and associated covers, ventilators, electrical equipment associated wiring connections at the unit(s).

Agency: Responsible for disconnect where wiring must be pulled or cut and conduits relocated to allow installation of the new roof system.

Plumbing: To re-lead drain pipe, repair and/or reset the roof drain bowls to interior piping.

Mechanical/HVAC: For removal of belt, chain driven and/or electrical exhaust fans and associated flex connection and duct runs/piping and its associated roof curb penetration.

The Contractor shall raise all existing mechanical and electrical trades’ roof system penetrations to a minimum height above the roof system of 8”.

Contractor shall notify the Agency Contact 24 hours in advance of all Electrical, Plumbing and Mechanical disconnections.

**Note to Specifier, Used for Existing Conditions:**

Lightning Protection Contractor: For removal, re-installation, replacement of broken components and written verification as stated in specification section 26 41 00 of existing cabling, lightning rods, associated products and proper anchoring, fastening and/or adherence of all of cabling and rods and/or rod base plates. Verify that this installation does not interfere with the proper installation of the roofing metal flashing and its clip/cleat fastening point. The lightning protection system rods shall not be installed nor fastened to any horizontal portion of the roof system metal flashing or coping.

It is the responsibility of the Agency to perform inspection of the roof areas to be replaced by this project and to provide the following services:

Agency is responsible for the following: Existing Electrical, Plumbing and Mechanical installations and associated equipment pipe and duct runs shall be identified/verified by the State Agency as in use or be spray painted in ORANGE by the Agency if they are abandoned or shall be abandoned and shall be removed by this roofing Contractor, and verify that the electrical run is terminated, prior to start of work by Contractor. Electrical conduct runs lying directly on the existing roof membrane, or fastened to perimeter wall or metal flashing or coping shall be relocated by the Agency prior to start of work.

**PRODUCT DELIVERY, STORAGE AND HANDLING**

Make no deliveries to the project site until ready to install or approved storage area is provided. The State will not accept delivery nor will the State be responsible for any materials or equipment stored on the premises.

Deliver materials in original unopened containers of packaging clearly labeled with manufacturer’s name, brand name, instructions for use, all identifying numbers and U.L. labels.

Deliver materials in sufficient quantity to allow work to proceed without delays.

Materials used on the job must be stored in such a manner as not to create a nuisance or hazard.

Store materials on clean, raised platforms, with breathable, weather protective covering when stored outdoors. Provide continuous protection from materials against weathering and moisture absorption.

Factory applied "shrink-wrapping" is not considered to be an acceptable weather protective covering. Store rolled goods on end; do not double stack rolls. Improper storage practices will be grounds for rejection of questionable materials.

Store primers, coatings, sealants and similar materials between 60 degrees and 80 degrees Fahrenheit.

Contaminated and Damaged Materials: Remove damaged or contaminated materials from site.

DO NOT store materials in a manner which will overload any portion of the building.

Handle all materials in a manner which will not damage the material. All damaged materials shall be removed from project site.

Select and operate material handling equipment and store materials as not to damage existing construction or applied roofing, and without overloading the building structural system.

**SUBMITTALS - TECHNICAL AND OTHER DOCUMENTS**

**At the preconstruction meeting and prior to start of work,** **submit the following for approval by Owner.**

Prior to the start of any work, bring all of the following submittals as required herein to the pre-construction meeting in the amount specified below, for review and approval by DFD Project Manager.

The following information shall be included on all submitted documents:

Agency/Location/Address where work is performed obtained from the Agency Contact listed to include Building Name, Bldg. State Number, Roof Areas, DFD Project Number and total sq. ft. of all roof areas.

MANUFACTURER WARRANTY ACKNOWLEDGEMENT

Upon receiving the Contract Offer from the Owner, Contractor shall immediately notify the manufacturer of intent to purchase the product and to obtain the warranty as specified by this Section.

**Submit:** Three (3) copies of the Contractors dated notification letter sent to the membrane supplier.

**Submit:** Three (3) copies, on manufacturer letterhead, stating acknowledgement of such notice and agreement to provide the warranty required by this Section. The letterhead acknowledgement shall include the date such letter was issued, Owner Project title, Project number, Section number(s), manufacturer representative signature and be addressed to the Roofing Contractor.

CONTRACTOR AND WORKER QUALIFICATION

**Submit:** Three (3) copies of manufacturer current written documentation stating the Contractor is an ”approved Contractor applicator” in good standing, for the work specified herein. Document shall be up to date, indicate Contractor name, certification status, year of issue and duration of such status.

**Submit:** Three (3) copies of the manufacturer certificate of successful completion of training, if available, for each roofer employed on this project. Document shall be up to date, indicate worker name, certification status, year of issue and duration of such status.

**Submit:** Three (3) copies of a list of all workers to be employed on this project. The list shall indicate each workers name and trade. Project supervisor and main contact person shall be identified.

MANUFACTURER INSTALLATION INSTRUCTIONS

**Contractor shall submit specified amount of manufacturer’s current paper-print installation and detail manual to be used for on-site inspection/verification of work performed.**

**Submit:** One (1) copy of the manufacturer most current version, complete edition paper-copy installation and detail 3-ring or spiral bound manual. Partial submittals taken from within the bound manual are not acceptable.

GRANULAR COATED STEEL SHINGLE/SHAKE MANUFACTURE LOCATION**:**

**Submit:** Three (3) copies of manufacturer labeling data indicating location of the production plant to verify plant location acceptance, see PART 2 – PRODUCT, MATERIAL herein.

GRANULAR COATED STEEL SHINGLE/SHAKE & ASSOCIATED METAL COLOR CHART**:**

**Submit**: One (1) copy of an original color chart of each product to the used on the project. Agency Representative shall notify the DFD Project Manager and Contractor via e-mail as to the color selected.

GRANULAR COATED STEEL SHINGLE/SHAKE ASTM D3462 “CERTIFICATION”:

**Submit:** Three (3) copies of manufacturer “certified” documentation concerning ASTM D3462.

GRANULAR COATED STEEL SHINGLE/SHAKE WEIGHT VERIFICATION:

**Submit:** Three (3) copies of manufacturer documentation concerning minimum weight per square.

Agency Representative shall select shingle color and send color choice verification via e-mail to DFD Project Manager and Contractor.

MATERIAL LIST

**Submit:** Three (3) copies of a list of all materials intended for use on the project, starting at the roof deck and identified by manufacturer's name, size, thickness, type or grade. List shall be submitted on Contractor's letterhead stationery. Submit product data sheets for all materials not included in manufacturer manual.

Contractor shall state the following at the bottom of the material list submittal:

**“New products installed on this project do not contain asbestos”.**

[ASBESTOS TESTING

**This testing is required when removing all or a part of any existing asphalt roofing and associated material.**

**Submit:** Three (3) copies of test results including a drawing indicating location where tests samples are taken. Contractor replacing the roof system is required to take a minimum of two (2) samples of existing roof system(s) components encountered starting at the roof deck including all membranes encountered, to be sent to a testing lab. **Take two (2) samples to include shingle, asphalt membrane, I & W membrane and any mastic encountered.** Additional samples are required where roof areas are not of the same roof system or installation period.

Test Laboratory results paperwork shall properly identify the Owner Project No., project location, bldg. name, bldg. number & roof area/location where the test sample was taken.

Test lab and associated removal and disposal charges shall be the responsibility of the Contractor at no additional cost to the project.

A Contractor owner or employee shall have taken the exterior asbestos supervisor course and possess current documentation that they are an ‘Exterior Asbestos Supervisor’ able to take existing roof system samples as required to be tested for possible asbestos contamination.

All workers removing asbestos must be certified to perform the work.

ASBESTOS – POSITIVE RESULTS

**Submit:** Three (3) copies of the necessary regulatory notifications for asbestos removal or three (3) copies of sample test results indicating the roofing materials slated for removal do not contain asbestos. (Refer to General Requirements Article “HAZARDOUS SUBSTANCES – ASBESTOS, LEAD AND POLYCHLORINATED BIPHENYLS (PCB’S)” for additional information.)

**Test lab results must be submitted prior to start of work]**

RECYCLED MATERIALS:

**Submit:** Three (3) copies of a Recycled Waste Management Plan to Owner for review. Include recycle business name, address, contact, and phone number where all recycled roofing material removed by this project will be delivered.

**Note to Specifier:**

This is required on ALL asphalt shingle re-roof Projects): When removing an existing roof where existing materials might contain asbestos, insert the following paragraph(s.

Contact a metal recycling company for metal debris containers, pickup or delivery of metal debris intended for disposal.

Contractor shall contact a recycler listed below or another recycle service if closer to the work as to delivery of asphalt shingle roofing. Some of the recyclers may take cedar/shake shingle and sheet-rock debris.

Check with the recyclers listed as to accepting mixed or sorted loads and what materials they will accept mixed in with asphalt shingles. All debris not accepted shall remain the responsibility of the Contractor for proper disposal.

BUR-modified Roofing materials may not be an acceptable recycling product.

SAFETY REPORT

**Submit:** One (1) copy of a written report to be given to the Agency Representative at the preconstruction meeting, describing in detail the Contractors implementation of specific OSHA regulations, Contractor’s worker safety program methods/means, roof perimeter safety and identification of the “watch person” required at all roof levels. Identify fire extinguisher and their locations, all equipment/operators on roof/ground in setup/storage area and travel routes used while performing the work.

MSDS DATA:

**Submit:** One (1) copy of all MSDS paperwork for each product used on this project to be given to the Agency Representative at the preconstruction meeting.

EMERGENCY AND OFFICE CONTACT PHONE LIST:

**Submit:** One (1) copy of the Contractor’s office superintendent and job foreman daytime, after hours and weekend phone contact numbers to be given to the Agency Representative at the preconstruction meeting.

Contractor shall maintain the following at the Project site throughout construction. One (1) copy of the specifications, drawings, addenda, value enhancement, change order and all approved submittals at the project site throughout construction.

One (1) copy of the latest version of the manufacturer handbook including details and technical information concerning application techniques for all primary roofing system materials required by the work.

One (1) copy of the Material Safety Data Sheets (MSDS) manual for all materials used on this project.

**SUBMITTALS – FINAL DOCUMENTS REQUIRED UPON COMPLETION OF THE WORK:**

**Prior to final payment, submit the following to Owner as one (1) package including a cover page listing all documents sent:**

The following information shall be included on all guarantees, warranty and other submittal documents:

Agency, city or township, street address where work was performed, building name, Owner Project number, Owner (DOA) building #, all roof areas involved and total sq. ft. of all roof areas.

DIGITAL PHOTOS:

Provide digital camera photos throughout the project as required by these specifications and/or requested by Owner.Contractor shall take multiple digital camera photos of the following to be submitted electronically, via e-mail to Owner. **Cell phone photos are not acceptable.**

Contractor shall take and submit digital camera photos’ of the various difficult watertight locations and mechanical fastening that will be hidden from view or otherwise concealed beneath the completed work. Multiple photos shall be taken of the entire installation starting at the roof deck and continuing throughout the roof system installation as it progresses in layers, as required per specification.

Contractor shall take and submit digital camera photos of all changes to the scope of work to include existing conditions as the work takes place in its various stages [of demolition and] of the new Work as it takes place throughout its various stages

Provide digital camera photos’ of the completed work. Photos shall include the various metal flashing details, transitions and penetration height changes and in general an over-all view of the field of all roof areas. Photos shall be identified by the roof area where photos are taken.

RECYCLED MATERIALS

**Submit:** One (1) copy of material final destination Recycled Waste Management Plan to include all delivery receipts. Include recycle business name, address, contact, and phone number where all recycled roofing material removed by this project have been delivered.

Upon completion, Contractor shall submit a final summary of the progress reports, including the percentage of recycled waste (weight or volume) to the quantity of waste that would have been otherwise land filled.

**Submit:** Recycler receipt for all deliveries showing all received product their weight and % calculation as described in GENERAL REQUIREMENTS, Article 38.

**Submit:** One final summary of the total sq. ft. bulk sum of all recycled waste material.

[WASTE MANIFEST:

**Submit:** Two (2) copies of the Waste Manifest Records to DFD Project Manager if required in accordance with General Requirements Article “HAZARDOUS SUBSTANCES – ASBESTOS, LEAD AND POLYCHLORINATED BIPHENYLS (PCB’S)”.]

STATE OF WISCONSIN ROOF GUARANTEE:

**Submit:** One (1) original guarantee as required herein. (Refer to GUARANTEE article in Part 1 of this Section).

MANUFACTURER ROOF WARRANTY

**Submit:** One (1) of the original membrane suppliers warranty of all membrane warranties required herein. (Refer to GUARANTEE article in Part 1 of this Section).

MISCELLANEOUS METAL WARRANTY:

**Submit:** One (1) original of manufacturer warranty as required by Specification Section 07 63 00.

[LIGHTNING PROTECTION CERTIFICATION**:**

**Submit:** One (1) original document of all testing required by Specification Section 26 41 00.1)]

SETTLEMENT CERTIFICATE [AND WAGE RATE AFFIDAVIT]:

**Submit:** One (1) copy of each document.

# PART 2 - PRODUCTS

**manufacturer Suppliers and Materials**

All products used in this installation shall be compatible with one another.

Use new materials only; salvaged or used materials are unacceptable.

Owner has pre-approved specific manufacturers.

Approved Shingle Manufactures:

Decra Roof Systems, Corona, California

Metro Roof Products, Oceanside, California

Manufacturer shall have had granulated coated steel [shingle] [shakes] in production and use on roof systems for a minimum of fifteen (15) years.

Unapproved manufacturer and products installed on the Project shall be cause for rejection of the roof system in its entirety and shall be completely replaced by the Contractor at no cost to the Project.

All associated products not specifically mentioned herein but required by the manufacturer for a proper, complete and warranty specified installation shall be included in the bid and provided by the Contractor.

Use new materials only; salvaged or used materials are unacceptable and shall be removed from the site and be recycled.

All products used in this installation shall be compatible with one another and the shingle intended for use.

Granular Coated Steel Roofing Shingle and Shake: Fire, wind and hail resistant roofing shakes as follows:

26 gauge metals coated with “Zincualume” (Aluminum-Zinc Alloy) corrosion inhibitors and epoxy or acrylic primers, base coating, ceramic coated (ceramically-fired) stones, overgrazed.

Sealants: One-part polyurethane type, as recommended by the shake roofing panel manufacturer

Trim, shake cap, fascia, Z-bar metal al to match stone coated panels and color, other miscellaneous flashing products and accessories of not less than 28 gauge steel, not specifically described, but required for a complete an proper installation of the work in this section.

Self-ventilating shingle and shakes shall be required.

**Notes to Specifier:**

Non-ventilating shingle are not preferred

**Synthetic Underlayment:** ASTM D226, ASTM E-108 Class A Fire, “Sharkskin-Ultra” weight per roll 45#/10sq. roll; “Titanium-UDL”, weight per roll 45#/10sq. roll. The aforementioned products have been approved by the Owner for use unless the manufacturer requires the use of their synthetic underlayment to obtain warranty required herein.

**Manufacturer’s products in use less than 10-years are not acceptable.**

**Cap-nails are required and this requirement shall over-ride manufacturer acceptance of synthetic underlayment fastening with staples, roofing nails, cap-staples, or other type fasteners.**

**Installing synthetic membrane just ahead of granulated coated steel shingle installation shall not reduce total amount of cap-nail fasteners required to be installed in the systhetic membrane.**

**Notes to Specifier:**

**15# and 30# Asphalt Underlayment:** Are NOT acceptable products unless required by special Project conditions.

Self-Adhering Ice & Water Backup Protection Membrane: Polyethylene surfaced, self adhering modified bitumen such as W.R. Grace Ice and Water Shield or as approved by the manufacturer as compatable with their shingle or required to obtain the manufacturer non-protated warranty.

[Optional: Provide zinc strips at shingle ridge where the roof wear surface is exposed to a very moist, damp, heavily wooded area or shaded area that does not allow for proper evaporation and drying.

Fungi and Mildew Inhibitor Strips: Zinc 20 oz. sheet stock.]

**Notes to Specifier:**

Copper products are not compatible and shall not be installed in this roof system.

Provide matching color ridge vent shingles as manufactured recommended and provided by the manufacture and proper minimum exposure per manufacturer’s printed instructions.

Fasteners: Manufacturer shall provided and approve of all screw fasteners and their length as required for a proper warranted system.

Sealant: ASTM C920, Type S, Grade NS, Class 25, Use NT, M, G, A or O; FS TT-S-00230C, Type II, Class A; one-part polyurethane base, elastomeric joint sealing compound such as Sika Chemicals "Sikaflex 1a", Sonneborn-Contech "Sonolastic NP1" or Tremco "Vulkem 116" or “Dymonic".

Other products, not specifically described, but required for a complete and proper installation of the work in this section shall be selected by the Contractor subject to approval by Owner.

**Notes to Specifier:**

Vented batten systems are NOT preferred over self ventilated granulated metal shingle or shakes.

[Vented Roof Systems:]

[Wood Battens: 2” x 2” nominal, standard grade or better installed per manufacturer instructions to obtain system warranty.]

[Steel Battens: Galvanized steel channels, not less than 22 gauge and 1-1/2” high.

Fasteners: Galvanized nails or screws as recommended by the manufacturer for all installation requirements.]

# PART 3 - EXECUTION

**EXAMINATION**

Examine the areas and conditions under which work in this section will be installed. Notify the Owner of any conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

**Proceeding with the work shall signify the Contractor’s acceptance of the substrate being covered by this Work.**

**SITE CONDITIONS**

Apply roofing in dry weather. This roofing system may be installed over synthetic membrane during rain events only if the synthetic membrane was previously installed in dry weather.

This roof system may be applied in colder weather, but not during freezing rain or snow events. Contractor shall obtain and submit manufacturer cold weather limitations.

Existing materials designated to remain, which are damaged or defaced as a result of the work shall be replaced at Contractor's expense to like new condition.

Install all rooftop mounted equipment in a watertight manner and repair any damage to sheet metal or other components related to connection and protection of the roof system.

Prevent materials from entering and clogging roof drains and conductors including those drains on adjacent low slope roof areas. Remove roof drain plugs when no work is taking place or when rain is forecast.

Protection of surfaces: Take every precaution to prevent water leakage, or debris falling into the building interior, or other such occurrences. Contractor is responsible for any and all damage to the building interior or its contents that occur as a direct cause of the Work and due to the Contractors methods and mean practice to accomplish the Work required herein.

Wall surfaces shall be protected with tarpaulins or other suitable cover to prevent damage, staining or discoloration that might result from operations such as removal, disposal, replacement or removing of equipment or materials to the roof surface. Windows, doorways, docks, walkways, etc. may require special protection measures.

Contractor shall layout a cloth or canvas tarp ground cover that will not easily tear from dropped debris, to catch all falling debris during demolition and installation. Protection provided shall extend beyond eave or edge slide-off and/or drop-off areas a minimum of 10’-0”. After removal of ground cover, Contractor shall walk the area beyond and under the debris drop-off area to clean up all debris by use of a wheel-magnet and eye-sight.

The same ground cover protection shall be provided under and/or around dump truck or dump box locations at or along side the building.

[Provide 3-sided enclosures at all building entry areas to allow access to the building during demolition and construction activity. Minimum enclosure construction requirements are as follows;

Building entry enclosure shall start at a minimum of 10’-0” beyond the building eave or edge slide-off and/or drop-off area.

Over-head: ¾” CDX plywood mechanically fastened or secured to minimum of 4 wood scaffolding planks securely fastened over properly braced walk-through 6’-0” steel scaffolding.

Side: ¾” CDX plywood mechanically fastened or secured to each side of the walk-through steel scaffolding to provide complete enclosure.]

Disposal of materials: All materials to be disposed of shall be loaded directly into trucks or drop-off dump-box by means that will prevent damage to existing or new surfaces and to control pollution. Free-fall of debris from heights over 15’ will not be allowed.

Contractor is responsible for any charges, such as landfill fees, incurred for disposal of materials.

**SUBSTRATE PREPARATION**

Plan work and take whatever action is necessary to prevent dirt and debris from entering the building during the Work required by this Section.

**Note to Specifier:**

If required, insert language relative to removal and disposal of existing roofing system. Include archival information on existing materials, if available.

**Notes to Specifier:**

Existing asphalt shingle may stay in place if they are not curling or brittle such that they would interfer with proper installation of the new system.

Cedar shingle and shakes shall be completely removed to expose the deck.

Clean and prepare existing asphalt [deck] shingle roof system to receive new self vented granulated coated steel [shingle] [shake] over synthetic membrane over entire deck including over all self-adhering ice & watershield where applied to deck.

[Remove and dispose of the existing [asphalt shingle] [cedar shingle/shake] roof system to expose the existing deck. This includes but is not limited to, all of the existing [shingles, felts, metal edge, apron, stepflashing, counterflashing, valley, gutter, downspouts, gravity vents, power vents, pipe vent roof jack flashing, ridge vents] and other associated roof system materials and replace with new products.]

Existing system nail and/or staple fasteners shall be removed during demolition, not hammered into the decking. Dispose of all materials that are not intended for reuse. Clean and prepare existing deck to receive the new roof system. Provide additional fasteners for existing wood decking found to be loose or to have insufficient or improper or insufficient fastening.

Continual cleanup shall be of utmost importance, as this is an area [of high pedestrian traffic] [used for vehicle travel and/or parking] [used for animal enclosure].

Metal trimmings and used or broken knife blades shall be accounted for at all times. Trim and blades shall not be discarded, but kept in a safe location for proper daily disposal.

**Note to Specifier:**

Identify Associated Products and Installations- Example:

50-yr warranty porcelain enamel steel shake over manufacture recommended water repellant synthetic membrane over existing or new roof deck. Supply and install new manufacturer associated component edge metal, apron, stepflashing, counterflashing, valley and all required miscellaneous metal flashing for a complete system installation. Replace and extend all gravity vents to be minimum 8” above highest side of the shingle surface . Replace existing gutter and downspouts with a seamless gutter system. Align new gutters to be level and drain properly to previously [new] established downspout areas. Mechanically fasten and properly seal all joints with specified sealant. Shingle and edge metal shall have proper overhang and positive drainage into the new gutter to avoid water and ice buildup behind the gutter.

Inspect decking: Replace any warped, rotted or otherwise structurally unsound material. Notify Owner if existing deck is unacceptable for the new Work.

Sweep the entire roof to remove loose granules and other debris.

Verify that wood blocking, curbs and nailers are securely anchored and that roof openings and penetrations are in place and set and braced.

Verify that the substrate is clean, dry and free from sharp projections and depressions and that all surfaces and site conditions are ready to receive new materials.

**INSTALLATION OF NEW ROOF SYSTEM**

**Note to Contractor:**

**Instruct all applicators employed on the project to actually read and become familiar with the manufacturer’s written installation instructions as printed on the product wrapper and/or obtained from the manufacturer, and the specific DFD installation requirements within this specification. A copy of the manufacturer’s installation instructions and these specifications shall be kept on site for the duration of the project.**

**Material and installation requirements herein shall take precedence over manufacturer recommended materials and installation instructions unless such Work prevents manufacturer authorization of warranty specified herein.**

[Install all nailers and wood or metal blocking and/or battens as requirement by specification and/or manufacturer instructions recommendations and/or in accordance with Section [06 10 53.]

Pressure Treated Plywood and Lumber: These products shall not be specified or provided for use in roofing projects as a substrate material intended to receive mechanical fasteners used to secure metal roof panels, panel clips, metal coping, roof penetration curbs cap and Counterflashing, all other metal flashing, roofing insulation and membrane installations that are a part of the roof system.

The manufacture shall approve of all system mechanical fasteners used to secure all roof system components.

Contractor shall take multiple digital photos to be submitted electronically to the Owner as required in “submittal” section of this specification.

Prior to installation, sweep the entire roof deck to remove loose nails, staples, granules, wood dust/particles and other debris and verify that all nails or other fasteners in decking are flush to deck substrate.

[Self-Adhering Ice & Water Backup Protection Membrane: Install per specifications and in accordance with the manufacturer's additional detailed instructions, directly to the deck substrate as follows:

Eave Edge: Over deck, starting at 1-1/2” beyond the eave and rake edge, up slope a minimum of 5'-0” (two (2) courses) from the roof eave, or more, to achieve a minimum of no-less than a 5’-0” width deck coverage up the slope beyond the exterior finished (heated area) wall of the building.

Rake Edge: Over deck, starting at 0’-6” minimum lap onto the eave edge self-adhering ice & water backup protection membrane application and 1-1/2” beyond the rake edge and adhered to fascia, up slope and over the ridge onto the opposite side slope, 0’-6” minimum.

Continue through valley areas to be a minimum of 2’-0” beyond centerline of valley onto the opposite slope, both directions.

Valley 1st Layer: Over deck, two (2) courses wide up the valley, 1st course side lapped 0’-6” minimum beyond centerline of valley onto the opposite slope decking, 2nd course side lapped 0‘-4” minimum onto 1st course membrane application and both course shall continue up slope over the ridge onto the opposite slope, intersecting roof slope or up intersecting wall 1’-0” minimum to achieve watertight installation.

Fill in voids in decking at valley deck material butt joints prior to membrane installation to achieve a true, tight void less surface.

Valleys over 20’ in length shall receive two (2) additional course width installations, side lapped 0‘-4” minimum onto previous course membrane, continuing up slope and terminating at a point half the length of the valley run.

Membrane shall be cut, lapped and properly adhered at bottom of valley deck and over the eave to provide a void less and complete watertight closure.

Valley Metal Flashing, Per Section 07 63 00:

Valley metal shall be installed over self-adhering ice & water backup protection membrane and starter piece shall continue across edge metal flashing. Field hem eave-end of valley metal flashing 3/4” min. Install and slide starter valley metal flashing into place with hemmed edge fit over eave edge-metal flashing.

Self-Adhering Ice & Water Backup Protection Membrane over Valley Metal: Install per specifications and in accordance with the manufacturer's additional detailed instructions, directly to the metal valley flashing, previous membrane installation and deck substrate as follows;

Valley 2nd Layer: Provide one course width at each side of the valley metal, starting at equal to the eave edge metal flashing, up the line established for valley shingle application continuing over the ridge onto the opposite slope or onto an intersecting roof slope a minimum of 0’-6” to achieve complete watertight closure.

Digital Photos: Contractor shall take multiple digital photos of all end-of-valley locations showing all phases of the watertight work required, identify all digital photos per each location and send digital photos to the DFD Project Manager at end of the project construction phase and prior to final payment.

Deck Penetrations: Over deck, one (1) course wide around all penetration in the field of the roof including curbs, plumbing, mechanical or electrical piping, dormers, other vertical field or roof installations. One (1) course width at all roof to wall locations or other vertical installations. Membrane shall turn up onto all vertical penetrations 4” minimum.

Eave valley membrane and metal terminations shall be installed watertight.]

Edge metal shall be fabricated and sized to conceal the self-adhering ice & water backup protection membrane lapped onto fascia. (See Section 07 63 00.)

Edge metal intended to be lapped by another edge metal installation shall be field-cut and notched as required prior to installation to achieve a proper tight-fitting lap. Edge metal shall have proper lap, minimum 1” maximum 2”.

Edge metal intended to lap other edge metal installations shall be hand compressed prior to installation to achieve a tight fit at the lap. Nails through the edge metal laps are not acceptable.

**Install synthetic underlayment over the entire roof deck area including over self-adhering ice & water backup protection membrane to prevent the shingle from adhering to the self-adhering ice & water backup protection membrane.**

**Omission of the synthetic underlayment over the self-adhering ice & water backup protection membrane shall result in rejection of the work.**

Use of synthetic membrane approved herein allows the Contractor to remove all existing shingles, cover the roof deck with one (1) layer of underlayment lapped and mechanically fastened with cap-nails and per manufacturer instructions prior to starting installation of the shingles specified herein.

Synthetic membrane warranty shall be available for the length of the shingle roof warranty.

**Cap-nail fastening of synthetic membrane is mandatory, without acception.**

Prior to synthetic membrane and shingle installation, sweep the entire roof surface to remove loose nails, staples, granules, wood dust/particles and other debris and verify that all fasteners in membrane installation are installed true and flush.

At Eave: Install synthetic underlayment over edge metal.

At Rake: Install synthetic underlayment under edge metal.

Shingles Installation over the synthetic underlayment:

If applicable, install manufacturer supplied starter course.

New shingles shall overhang eave and rake metal edge 3/8" minimum and/or per manufacturer instructions.

Apply shingles with manufacturer’s required shingle exposure to the weather.

[Optional: Provide ‘Fungi and Mildew Inhibitor Strips’, Zinc 20 oz. sheet stock. Install Zinc strip at ridge and where roof meets wall areas to provide a minimum 3” exposure with a ¾” hem at leading edge.]

[NOTE: Copper shall not be used in the roof system as it is not a compatable product. ]

Counterflashing may be zinc where roof meets wall areas. Receiver portion of 2-pc counterflashing shall be color matched prefinished metal.

Check coursing periodically throughout installation and re-align as required by use of a chalk snap line to provide a proper, straight and true vertical and horizontal installation, per manufacturer instructions.

Re-check coursing prior to reaching the ridge and adjust to allow equal shingle exposure after shingle over ridge vent and/or shingle ridge caps are installed.

**Periodically during each day of installation, at the end of each day and again at completion, the Contractor foreman shall review the installation from the ground, to assure that all shingles are lying flat and proper. Improper substrate condition shall be removed or corrected each day to allow for proper shingle lay down.**

Cut opening in decking at ridge to meet the minimum requirement for a vented space.

**Ridge Vent:** Ridge vent shall be installed the full length of the ridge. The cut-to-fit section, as required to fit the ridge length shall NOT be the first or the last section installed.

**Extra Bundles of Shingles:** Do NOT leave extra bundles of shingle on site for Agency.

**CLEANING**

Touch up areas where granulated coating received damage, using paint kit supplied by the manufacturer to properly match roof system color.

Clean roof surface and replace damaged shakes.

Sweep the entire roof surface to remove loose granules and other debris.

Clean all existing and new gutters and downspouts to be free of roofing debris including shingle and metal cuttings, nails and shingle granules to allow for unobstructed, proper water flow.

Inspect adjacent roof systems, their drain strainers and the grounds below the work area and remove debris associated with this project.

Repair or replace defaced or disfigured finishes caused by work of this Section. In areas where finished surfaces are soiled by the work of this Section, consult manufacturer of surfaces and manufacture of product causing the stain for cleaning advice, product recommendation and conform to their instructions.

\*\*\* END OF SECTION \*\*\*