

Roofing Replacement, Maintenance and Repair Specifications

Section 1: Scope of Work

The Tennessee Department of Transportation (TDOT) is seeking to establish a contract for Roofing Replacement, Maintenance and Repair for all Tennessee Department of Transportation facilities statewide.

Section 2: Contract Exceptions

- **State Building Commission (SBC)** – Jobs that are estimated to be over \$100,000 are excluded from being conducted under this contract without the prior approval of the State Building Commission (“SBC”) per By-Laws, Policy, and Procedure of the State Building Commission of Tennessee Item 2. The Tennessee Department of Transportation should maintain SBC approval documentation for a minimum of one year following the end of the contract period for audit purposes of all contract release orders that are valued at \$100,000 or more. TDOT Departments should contact the Contract Administrator to determine what proper approval maintenance procedures are.
- **Other Exceptions**
Asphalt Shingles

Section 3: Preventative Maintenance

- The Tennessee Department of Transportation reserve the right to call out the Contractor to perform a preventative maintenance inspection. It is the discretion of the Tennessee Department of Transportation as to how often these inspections should occur. The Contractor should work at a custom preventative maintenance schedule, if so desired.
- Contractor shall inspect all copings, concrete, terra-cotta, etc. for loose fasteners, unsealed lap joints, and deteriorated sealants
- Contractor shall inspect roof membranes – fully adhered EPDM (Ethylene Propylene Diene Monomer), ballast EPDM, BUR (Built-Up Roof), etc. – for splits, tears, holes, loose seams, over stretched EPDM along parapet walls, base of all roof protrusions, vent pipes, roof curbs, pitch pockets, roof hatches, skylights, etc.
- Contractor shall inspect all gutters, and downspouts.
- Contractor shall inspect for roof hazards, exposed wires, broken conduits, damaged antennas, cables, gas lines, and roof debris.

- Contractor shall inspect roof insulation to determine the integrity of existing insulation or the lack of adequate insulation.
- Contractor shall provide a written report to the Tennessee Department of Transportation of its findings and recommendations within five (5) business days from completion of inspection.
- The Tennessee Department of Transportation reserve the right to request the Contractor to execute any work recommended by the Contractor during the maintenance inspection; however, Contractors are not obligated to execute any recommended work.

Section 4: Galvalume Metal Roofing Repair Specifications (Non-Salt Bin Facilities)

- All paints used in galvalume roofing repairs must be equal to either Sherwin Williams' exterior products or PPG Porter Paints' exterior products.

Section 4.1: Substrate Preparation

- Contractor shall remove non-operable gas vents, electrical conduit, etc.
- Contractor shall remove old metal roofing down to wood decking.
- Contractor shall replace damaged decking with same or equal decking material.
- Contractor shall re-secure decking.
- Contractor shall install 30 lb. felt paper prior to roof panel installation. (Felt paper to be used only on solid roof decks).
- Contractor shall install ice and water shield onto all valleys a minimum of 3' wide.
- All lumber used for galvalume roofing repairs must be new #2 grade pine.

Section 4.2 Galvalume Metal R-Panels

- All R-panels (PBR panels) shall be a premium #1 white painted galvalume 26-gauge unless otherwise specified.
- Contractor shall install sealants along entire full length of side lap seams and all flashing details using np-1 sealant or equal.
- Metal roof panel ends, along each side of ridge, shall be cut along metal rib profile parallel to roof panel 2". Contractor shall fold up and cut flanges flush with top side of each metal rib. Contractor shall leave flanges between metal ribs and apply sealant in corners.
- Contractor shall install fasteners every two feet in the flat service of the R-Panel and securing

each to a purlin.

- Contractor shall install universal polyethylene rolled foam closure along each side of ridge cap.
- Metal ridge cap shall be premium #1, 26-gauge with .5" hem along cut edges.
- Metal roof panels along gable rakes shall have a manufacture raised rib or be cut in flat and folded 2" up before gable rake trim is installed.
- Contractor shall replace all electrical flashing boots.
- Contractor shall replace all gas vent boots up to 12" in diameter using high-temp (437 degrees Fahrenheit) boot.
- Contractor must have a minimum of 5-years commercial experience with galvalume metal roof repairs. Contractor shall be required to furnish three job references, names and telephone numbers.

Section 5: Polyurea Roofing Repair and Polyurethane Foam Specifications (Non-Salt Bin Facilities)

- Product shall be VFI #4000 aluminum coating two-part component with 96% solids and capable of achieving a minimum of 50 dry mils thick in one coat or equivalent.
- Manufacturer must be the sole manufacturer of polyurethane foam and coating and must be able to provide manufacturer complete foam and coating systems warranty. Contractor should be certified by the manufacturer to apply their product. A copy of the certification is required as a part of respondent's bid submission.
- Manufacturer must have a minimum of 10-years experience in manufacturing plural component coatings with a solids content of 96% or more and a perm rating of .45 or less. "Proof "of experience must be provided as a part of bid submission. A letter furnished by the Manufacturer certifying their 10 year experience, contact information and a minimum of three job references, names and telephone numbers must be provided as a part of respondent's bid submission.
- Contractor must have a minimum of 5-years commercial experience with polyurea, have applied a minimum of 100,000 square feet in the polyurethane foam and polyurea coating application process and must be certified by an approved manufacturer. Contractor shall be required to furnish three job references, names and telephone numbers as a part of respondent's bid submission as proof of experience.
- All polyurethane roof closed cell foam shall be a minimum of 1 ½ " thick with a minimum density of 2.7 and manufactured by a coating manufacturer as part of a complete roof system.
- Contractor will be required to designate a proportioning unit solely for the application of 2.70

roof foam only. Machine must be capable of maintaining pressures of 2500 psi and maintaining moderate temperature of 160 degrees Fahrenheit.

- Contractor will be required to designate a second proportioning unit solely for the application of plural component polyurea coating only with 96% solids and a 1-1 ratio. Machine shall be capable of maintaining pressures of 2500 psi and maintaining temperatures of 160 degrees Fahrenheit.
- The Contractor is responsible for applying coating when the weather forecast is favorable 24 hours prior to and after application. Application of foam insulation must be performed when the substrate surface temperature is at least 50 degrees Fahrenheit, the ambient temperature is at least 50 degrees Fahrenheit and the wind speed is no more than 15 miles per hour. The foam insulation should not be applied when the humidity is greater than 85% or when the dew point and the ambient temperature are within 5 degrees Fahrenheit of one another.
- The Contractor must protect areas surrounding the spray area from excess spray with drop cloths, tarps, etc. If the Contractor fails to do so, the Contractor will be held liable for repairs.
- No pinholes will be accepted. Contractor will be responsible for 100% of materials and labor for all repairs and the recoating of all pinhole areas.

Section 6: Salt Bins

- Repairs to be made to Salt Bins owned by the Tennessee Department of Transportation (TDOT) will be determined solely by TDOT's Engineering Operations Division. The salt bin's structure has a curvature but the length of the building will be determined by the length of the concrete wall. All linear and square feet calculations will be determined by straight line measurements (note: the metal curvature measurement will not be used for the length down the side or back walls. A straight tape measurement is to be used to measure the length and width of the bin. The tape or wheel will be placed on top of the concrete wall and pulled over the roof to the other side, which is the top of the concrete wall on the opposite side. This measurement will be for linear and square feet measurements. Any measurements to factor the curvature of each rib of metal will not be accepted. All TDOT salt bins have a curvature metal design.
- The Contractor will provide all labor, material, and equipment to apply polyurea and primer to salt bins on an as needed basis.
- The Contractor must have a minimum of 10-year's experience with structural repairs and applying polyurea coating and epoxy primer inside and outside buildings. Contractor shall have experience using the mechanical applicator proportioning unit. Contractor shall be required to furnish three job references, names and telephone numbers as a part of respondent's bid submission as proof of experience.

- Polyurea hybrid coatings and two-part epoxy metal primers used for Salt Bin repair are to be delivered in unopened manufacturer's containers with manufacturer labels affixed.
- The polyurea shall be applied by use of a mechanical applicator proportioning unit. Contractor will be required to designate a proportioning unit solely for the application of plural component polyurea coating only with 96% solids and a 1-1 ratio. Machine shall be capable of maintaining pressures of 2500 psi and maintaining temperatures of 160 degrees Fahrenheit.
- The Contractor is responsible for applying coating when the weather forecast is favorable 24 hours prior to and after application. Application of foam insulation must be performed when the substrate surface temperature is at least 50 degrees Fahrenheit, the ambient temperature is at least 50 degrees Fahrenheit and the wind speed is no more than 15 miles per hour. The foam insulation should not be applied when the humidity is greater than 85% or when the dew point and the ambient temperature are within 5 degrees Fahrenheit of one another.
- No pinholes will be accepted. Contractor will be responsible for 100% of materials and labor for all repairs and the recoating of all pinhole areas.
- A current listing of State Salt Bins can be found as Attachment 1. The Tennessee Department of Transportation reserves the right to update, add to or delete from this listing during the life of the contract.
- Salt will be moved from the area being repaired salt bins to include twelve inches below top base of concrete foundation while repairs are underway. It will be the Contractor's responsibility to protect the content of the Salt Bins during all times while work is ongoing. The Contractor will be responsible for any damage caused to either facility or product(s) within said facility by the Contractor's employees or sub-contractor(s).

Section 6.1: Primer Application of Metal Roofs and Walls

- VFI #11 epoxy primers or Sherwin Williams' copoxy shop primer or equal must be applied over all metal roofs and walls at a rate of 250 - 300 square feet per gallon.
- Epoxy shall be applied with a maximum 45 minute pot life.
- Epoxy shall not be exposed for over 7 days.
- The epoxy catalyst must be thoroughly mixed for 5 minutes.

Section 6.2: Metal Repairs (Within 4 feet of Base Plate and Concrete Wall)

- All work shall include that all metal repairs of metal roofing are secured to the existing metal base plate.
- All repairs shall be completed using galvalume or stainless steel 16-gauge metal.

- All metal is to be cleaned and primed with VFI #11 or Sherwin Williams' copoxy shop primer or equal on all sides.
- New metal will be secured to the existing base plate and existing metal of the building roof using stainless steel fasteners along the perimeter of repaired areas.
- Any replacement of existing fasteners will be done using fasteners of the next larger size of existing fasteners.
- Reinforced all-purpose 1602 butyl fabric or equal or sonolastic np-1 urethane caulk or equal with a minimum of 50% solids will be installed around the perimeter of repaired areas.

Section 6.3: Metal Repairs (4 feet or more above Concrete Wall)

- All repairs shall be completed using galvalume or stainless steel 16-gauge metal.
- Metal is to be cleaned and primed with VFI #11 or Sherwin Williams' copoxy shop primer or equal on all sides.
- New metal will be secured to the existing roof using stainless steel fasteners along the perimeter of repaired areas.
- Reinforced all-purpose 1602 butyl fabric or equal or sonolastic np-1 urethane caulk or equal with a minimum of 50% solids will be installed around the perimeter of repaired areas.

Section 6.4: Vertical Wall Replacement

- Contractor shall remove all damaged metal from any vertical wall.
- Contractor shall install galvalume or stainless steel 16 gauge metal using stainless steel fasteners to secure each panel.
- Salt bins are approximately 40' to 100' wide with a dome shape. All replacement wall panels shall be approximately 2' wide.

Section 6.5: Galvalume Plates

- All galvalume used shall be 18 gauge.
- All plates shall be installed at an angle that fits the contour of the salt bin wall and roof.
- All plates shall fit over the bottom seal as it attaches to the concrete wall. Plate to be mechanically attached using 1/4" x 1 1/4" stainless steel fasteners.
- All seams shall be sealed with sonolastic np-1urethane caulk or equal.
- Contractor shall apply VFI #11 or Sherwin Williams' copoxy shop primer or equal to all

exposed surfaces of the plate.

- Contractor shall apply VFI #4000 or Sherwin Williams' envirolastic ar170 or equal polyurea aluminum coating at a minimum of 50 mils thick over all exposed sides of the plate.

Section 6.6: Application of Aluminum Polyurea Coating

- VFI #4000 aluminum polyurea coating or Sherwin Williams' envirolastic ar170 or equal with 96% solids over dry substrate.
- Product shall be installed with mechanical applicator proportioning unit.
- Contract shall use the gusmer h-20/35 mechanical applicator or equal meeting the following specifications:
 1. Applicator must maintain pressure of approximately 2500 psi.
 2. Applicator must maintain product temperature of approximately 130 to 140 degrees Fahrenheit.
 3. The heater product hose must be capable of handling maximum pressure output of 3500 psi by the mechanical applicator proportioning unit.
- Aluminum polyurea shall be applied onto metal substrate at a minimum of 50 mils thick in one coat upon completion.

Section 6.7: Base Plate Installation

- Contractor shall apply VFI #11 epoxy primers or Sherwin Williams' copoxy shop primer or equal to all sides of 1/4" metal base plate.
- Contractor shall apply VFI #4000 polyurea aluminum coating or Sherwin Williams' envirolastic ar170 or equal on all sides of metal base plate at a minimum of 50 mils thick.
- Contractor must remove all debris from top side of concrete wall prior to installation of metal base plate.
- All coated metal base plates will be approximately 4" in width along the vertical concrete wall, approximately 4" in width on top of the concrete wall and approximately 4" in width along the metal roof wall. The base plate will resemble the shape of a "lazy".
- All base plates shall be secured to the concrete wall with 1/2" diameter, 3 3/4" long concrete fasteners every two feet.
- Stainless steel metal fasteners must be attached to every curve on metal wall that touches 1/4" of metal plate.
- All metal fasteners must also be coated with polyurea.

Section 6.8: Total Salt Bin Roof Replacement

A. Work covered by this Contract is to construct covered salt bin roofs at various locations within the State of Tennessee. Designated by the State of Tennessee Department of Transportation Engineering Operations Division.

- Salt bin, roof only, shall be constructed upon the reinforced concrete. Upon request, Standard Drawings will be available from the office of the Director of Engineering Operations, Suite 400 – James K. Polk Building, Nashville, TN. 37243-0333 Alan Durham (615-741-5116).
- The Contractor shall provide any site surveys and other documentation required by the State Fire Marshall's Office or any other jurisdictional authority. Cost for providing this information is to be included in the price bid for other items.
- The Contractor shall field verify dimensions of existing salt bin prior to ordering materials.
 - Contractor shall furnish all materials, labor, equipment, caulking and assorted hardware to erect the self-supporting arch type roof.
- Workmen erecting the steel arch roof sections are to be paid under the classification "Iron Workers (Structural)" as listed in the Minimum Wage Scales for state funded projects.
- Contractor must clean and remove all debris from top side of concrete wall prior to installation of metal base plate.

B. MATERIAL SPECIFICATIONS:

- The Contractor will ensure the salt bin roof is designed to meet the minimum requirements set forth in the 2018 International Building Code (IBC 2018).
- The first four feet of arch roof and end wall shall be painted with one (1) 50 mil coating of polyurea sealer. An epoxy primer is required prior to application of the polyurea coating. Epoxy primer and polyurea applications shall be as recommended by manufacturer. All metal fasteners within the area to be covered shall be encapsulated with the polyurea.
- Self-supporting arch roof sections and front and end wall sections shall be a minimum of 18 gauge G-90 galvanized steel meeting ASTM A653-99, a minimum of 0.05 inch thick galvalume steel meeting ATSM 792-03 or a minimum of 0.10 inch thick 5052- H141 aluminum alloy and shall meet or exceed minimum live loads, dead loads and wind loads as noted on Standard Drawing. All hardware and connecting bolts shall be ASTM A307-97 steel galvanized according to ASTM A153-98.
- Self-supporting arch roof sections shall be erected as per manufacturers' recommendations. Completed arch roof shall have a clear height of at least 35 feet above top of footings at center

span.

Section 7: BASIS FOR PAYMENT:

- All costs involved for roof construction including: Labor, Materials, Equipment, Removal, Disposal, and any Incidentals shall be included in the bid price.

Section 8: Warranty

- A manufacturer's warranty of 10 years materials and labor shall be required for all polyurea work completed as part of this contract.
- All repair work will be excluded from 10-year warranty. All repairs will have one-year warranty on all materials and labor.
- Contractors shall include a three-year labor warranty, and a minimum one-year parts warranty or a manufacturer's standard warranty, whichever is greater, for all galvalume metal roofs.
- A manufacture twenty-five-year material warranty to be included for all galvalume metal roofs.

Section 9: Off-Site Work

- All work must be completed onsite, unless preapproved by authorized TDOT personnel. A Contractor should make every effort to let the TDOT know off-site work will be needed for a job during the initial estimate phase. The Tennessee Department of Transportation will not pay for work conducted off-site if the Contractor does not receive written approval prior to beginning work off-site.

Section 10: General Specifications

- **Licenses** – Contractor must have a valid State of Tennessee Contractor's License.
- **Beginning Work** – All work should be coordinated with the site's Facilities Manager. A time to begin work will be mutually agreed upon by the Contactor and the TDOT Facilities Manager. No work will begin until approval is granted by the site's Facilities Manager. If work begins without prior approval, TDOT will not be liable for payment of this work and the Contractor will be liable for any damage done to the site. The Contractor should sign-in and sign-out with agency personnel when arriving and leaving a facility or the surrounding grounds.
- **Response Time for Scheduled Work** – the Contractor shall respond to the Tennessee Department of Transportation request for roof repairs within thirty days. The Contractor and the agency contact person will coordinate a job start date.

- **Response Time for Emergency Work** – Contractor must respond and resolve any roof related leaks within five working days of notification from client, permitted proper weather conditions are present.
- **On-Site Responsibilities** – Contractor is responsible for keeping building dry during roofing process.
- **Final Inspection** – Prior to acceptance of any project the Contractor or his designated authority will be required to attend a final inspection. This inspection is to ensure that all painted surfaces are acceptable. An authorized TDOT representative will have final approval.
- **Charge Schedule** – All work must be performed during the State’s regular business hours, unless pre-approved by the site’s Facilities Manager. Regular business hours are Monday through Friday, 8:00 AM to 4:00 PM. Legal State holidays are excluded. A listing of approved holidays in the State of Tennessee can be found at: <http://www.tn.gov/state-holidays.shtml>.
- **Trip Charge** – Contractor will be allowed a one-time/one-way trip charge on a per job/single truck basis, unless otherwise approved by the requesting agency. The Trip Charge will be calculated on a per mile basis, using Google Maps directions for the shortest route between points A and B. Point A will be the Contractor’s home office, and Point B will be the location of the job site. The Contractor will be required to submit a Google Maps printout demonstrating the shortest route with their final invoice. Vendor will be responsible for all lodging, meals, and other associated travel expenses.
- **Equipment** – The Contractor should have all tools, equipment, materials, and supplies required to complete the scope of service of this contract readily available for their private use.
- **Job Estimating** – An estimate of cost will be required for all work. The Contractor shall receive agency written approval prior to starting any work. The agency will request a written estimate be submitted. Job estimates will be monitored by agency personnel for accuracy.
- **Repair Costs beyond Initial Estimate** – Repair cost cannot exceed the amount estimated without justification from the Contractor and prior approval from the site’s Facility Manager.
- **Invoice Requirements** –
 - Payment invoices must be submitted to the agency within thirty days of job completion. The invoice, service ticket, and all product receipts and rental agreements shall be legible.
 - The invoice for payment must reference the following:
 - The facility name
 - Brief description of work performed
 - An itemized list by commodity line of work performed per line item(s)
 - The date(s) the work was performed
 - The current date (date invoice was created)

Section 11: TDOT Contacts

- **TDOT Invoice and Payment Contact Information**

- General Inquiries – Gregg Bennett, Gregg.Benntt@tn.gov, 615-741-9125
- Invoice and Payments

TDOT Region 1

PO Box 22368
Knoxville, TN 37914
Mark Lewis
Facilities Manager
Phone: 731-984-6600

TDOT Region 2

PO Box 22368
Chattanooga, TN 37422
Andy Westfall
Facilities Manager
Phone: 423-326-6698

TDOT Region 3

6601 Centennial Blvd.
Nashville, TN 37243
Jimmy Kistner
Facilities Manager
Phone: 615-350-4377

TDOT Region 4

300 Benchmark Place Bldg. E
Jackson, TN 38301
Frank Hornsby
Facilities Manager
Phone: 731-935-0262

ATTACHMENT 1

Listing of Salt Bin locations is an external attachment to the Invitation To Bid (ITB) Event#40100 – XXXX.