



Birmingham-Jefferson Civic Center Authority

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ADDENDUM #2

TO ALL POTENTIAL BIDDERS OF BJCC REROOF – THEATER ROOF

BJCC is making the following change to the bid specifications:

Please see the attached Addendum No. 2.

Please email Shelia.Montgomery-Mills@bjcc.org if you have any questions.

Sincerely,

Sharon A. Proctor
Purchasing Coordinator
Birmingham-Jefferson Civic Center Authority

ADDENDUM NO. 2 (TWO)

Addendum No. 2 (TWO) to the Contract Documents for:

BJCC

Theater Reroof

Birmingham, Alabama

HHA Project #: 15051.00

Addendum Date: March 2, 2018

A1-1 GENERAL:

A1-1.1 The following changes and/or additions to the Contract Documents are hereby made part of same and are incorporated in full force as part of the Contract. This Addendum forms a part of the Contract Documents and modifies the **original Construction Documents dated February 02, 2018.**

A1-1.2 Bidder shall acknowledge receipt of this Addendum when submitting bid.

A1-1.3 This Addendum shall supersede all contrary and/or conflicting information contained in the Contract Documents, which are hereby amended as follows:

A1-2 SPECIFICATIONS:

A1-2.1 SECTION 07 62 00 SHEETMETAL FLASHING AND TRIM - 2.2, B, 1. Color: **A-26 Sierra Tan by W.P. Hickman.**

A1-2.2 SECTION 07 72 00 ROOF ACCESSORIES - **DELETE**

A1-2.3 SECTION 07 72 33 ROOF HATCH RAILING SYSTEM - **DELETE**

A1-2.4 SECTION 07 84 00 FIRE STOPPING, - Listed in Table of Contents but not included. ATTACHED.

A1-2.5 SECTION 09 90 00 PAINTING, - ADD, attached.

A1-2.6 SECTION 11 24 29.19 HORIZONTAL FALL PROTECTION, - ADD, attached.

A1-3 CONSTRUCTION DOCUMENTS:

A1-3.1 Sheet A4.2.4 - Installation Note #13 - Change to read, **New skylight glazing replacement. Existing framing to remain in place, clean, prime and field paint all steel framing components.**

A1-4 CLARIFICATIONS:

A1-4.1 Note - Tie-off system is for fall protection and NOT window washing use.

END OF ADDENDUM NO. 2 (TWO)

07 84 00 - FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Firestopping: Labor, materials, products, equipment, and services to supply and install fire stopping and smoke seal work for the entire project. Products include sealants, mortars, intumescent caulk, pillows, collars, and firestop devices for the following:
 - a. Openings in fire rated walls, floors, and roofs, both empty and those containing penetrations such as cables, conduits, cable trays, pipes, ducts, and similar penetrating items.
 - b. Gaps between fire-rated floor slabs and exterior curtain walls.
 - c. Gaps located within expansion joints.
 - d. Openings at each floor level in fire-rated shafts or stairwells.
 - e. Gaps between the tops of fire rated walls and underside of fire rated floor or roof assemblies.
2. Smokestopping: Smokestopping of penetrations through non-fire-rated smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.

B. Related Sections:

1. Section 03 30 00 - Cast-In-Place Concrete: Installation of sleeves and construction of blockouts in concrete assemblies.
2. Section 07 92 00 - Joint Sealers: Sealants for non-fire-rated openings.
3. Section 09 29 00 - Gypsum Board: Acoustical sealant.
4. Division 22 - PLUMBING
5. Division 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC).
6. Division 26 - ELECTRICAL.

1.2 REFERENCES

A. Reference Standards:

1. ANSI/UL 1479 - Fire Tests of Through-Penetration Firestops; 1994.
2. ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems; 1998.
3. ASTM E 814 - Test Method of Fire Tests of Through Penetration Firestops; 2000.
4. ASTM E 1966 - Standard Test Method for Fire-Resistive Joint Systems; 2001.
5. ULC-S115 - Fire Tests of Firestop Systems; 1995 (R2001).

1.3 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Tested systems or design for each different firestopping condition.
2. Product data for specified products indicating product characteristics, performance, and limitation criteria.
3. Preparation instructions and recommendations.
4. Storage and handling requirements and recommendations.
5. Installation instructions and methods.
6. Manufacturer's certification, if requested.

- B. Shop Drawings: Submit shop drawings showing typical installation details including reinforcement, anchorage, fastenings and method of installation for each type of firestopping condition.
- C. Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories, indicating installation locations.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Company specializing in manufacturing products of this Section with minimum 3 years documented experience.
 - 2. Company quality management system registered in accordance with the requirements of ISO 9001:1994.
- B. Installer Qualifications:
 - 1. Company with minimum 3 years experience in the installation of specified materials on comparable projects.
 - 2. Written approval of firestopping material manufacturer(s).

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's sealed and labeled containers. Handle and store materials in accordance with manufacturer's instructions.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.6 PROJECT CONDITIONS

- A. Comply with manufacturer's recommended requirements for temperature, relative humidity, and substrate moisture content during application and curing of materials.
- B. Ventilate solvent based materials in accordance with manufacturer's instructions by natural means or, if necessary, by forced air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Firestopping products are based on products as manufactured by A/D Fire Protection Systems.
 - 1. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to the following:
 - a. Hilti, Inc.
 - b. 3M Company.
 - c. STI Specified Technologies, Inc.
 - d. Tremco.
 - e. USG.

2.2 SYSTEM REQUIREMENTS

- A. Firestopping - General: Provide complete systems of asbestos-free firestopping capable of maintaining an effective barrier against flame, smoke and gases, listed by UL, WH, ULC, or FM, or other independent testing agency, and acceptable to authorities having jurisdiction.
1. Fire Resistance Ratings: As required to maintain fire resistance of fire rated assemblies; ratings of assemblies are indicated on drawings.
 2. Materials: Provide materials of type, thickness, width and density to provide and maintain fire resistance rating.
 3. Through Penetrations: Provide systems meeting ANSI/UL 1479, ULC-S115 or ASTM E 814, completely filling annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.
 4. Building Joints: Provide systems meeting ANSI/UL 2079 or ASTM E 1966.
 5. Compatibility: Provide materials which are compatible with all materials used in the system including materials used in or on penetrants as well as all construction materials used in conjunction or contiguous with the system.

2.3 MATERIALS

- A. Non-Sagging Firestopping Sealant: Silicone-based single component sealant, curing to durable, flexible, watertight, silicone rubber; A/D FIREBARRIER Silicone.
1. VOC Content: Less than 0.69 pounds/gallon (0.08 kg/L), when tested in accordance with ASTM D 3960.
 2. Hardness: 12, when tested in accordance with ASTM D 2240, Type A durometer.
 3. Tear Strength: 20 pounds/inch (3.5 kN/m), when tested in accordance with ASTM D 624, Die B.
 4. Elongation at Break: 600 percent, when tested in accordance with ASTM D 412.
 5. ASTM C 920 Classification: Type S, Grade NS, Class 25, Uses NT, G, A, and M.
 6. Application Temperature Range: 0 to 120 degrees F (minus 18 to 50 degrees C).
 7. Performance Temperature Range: Minus 50 to 300 degrees F (minus 45 to 149 degrees C).
 8. Color: Red.
- B. Pourable, Self-Leveling Firestopping Sealant: Silicone-based single component sealant, self leveling, curing to durable, flexible, watertight, silicone rubber; A/D FIREBARRIER Silicone SL.
1. VOC Content: Less than 0.50 pounds/gallon (0.06 kg/L), when tested in accordance with ASTM D 3960.
 2. Hardness: 5, when tested in accordance with ASTM D 2240, Type A durometer.
 3. Elongation at Break: 600 percent, when tested in accordance with ASTM D 412.
 4. Tensile Strength: 140 psi (965 kPa), when tested in accordance with ASTM D 412.
 5. Movement Capability: Plus 100 / minus 50 percent, when tested in accordance with ASTM C 719.
 6. Adhesion in Peel: 15.7 pounds (7.1 kg), when tested in accordance with ASTM C 794, 180, 2 inches/minute, mortar, cohesive failure.
 7. Application Temperature Range: 0 to 120 degrees F (minus 18 to 50 degrees C).
 8. Performance Temperature Range: Minus 50 to 300 degrees F (minus 45 to 149 degrees C).
 9. Color: Red.
- C. Firestopping Mortar: Fiber reinforced, foamed cement mortar; A/D FIREBARRIER Mortar.
1. Compressive Strength: 430 psi (2965 kPa), minimum.
 2. Shrinkage: None.
 3. Color: Charcoal gray.

- D. Intumescent Firestopping Caulk: Water based, single component elastomeric sealant; A/D FIREBARRIER Intumescent Caulk.
 - 1. VOC Content: 1.2 pounds/gallon (138 g/L), when tested in accordance with ASTM D 3960.
 - 2. Hardness: 45, when tested in accordance with ASTM D 2240, Type A durometer.
 - 3. Elongation at Break: 110 percent, when tested in accordance with ASTM D 412.
 - 4. Tensile Strength: 160 psi (1103 kPa), when tested in accordance with ASTM D 412.
 - 5. Effects of Accelerated Weathering, UV or Cold: No cracking, when tested in accordance with ASTM C 920.
 - 6. Color: Orange.
- E. Firestopping Collars: Steel collar with intumescent silicone strip for penetration protection; A/D FIREBARRIER Collars.
- F. Firestopping Pillows: Intumescent layer between non-combustible insulation, sealed together in polyethylene shell; A/D FIREBARRIER Pillows.

2.4 ACCESSORIES

- A. Accessories: Provide components needed to install each firestopping system. Use only components specified by the firestopping manufacturer and listed in the design for the fire resistance rated system.
- B. Damming and Backup Materials, Supports and Anchoring Devices: Non-combustible, to manufacturer's recommendations and in accordance with the tested system being installed as acceptable to jurisdictional authorities.
- C. Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.
- D. Water: Potable.
- E. Tape: Pressure sensitive masking tape as recommended by the firestopping manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, openings, voids, adjoining construction and project conditions. Confirm compatibility of surfaces scheduled to receive firestopping.
- B. Verify that work within opening has been completed before installing firestopping. Coordinate with work of other trades so that firestopping applications can be inspected prior to being covered by subsequent construction.
- C. Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.
- D. Do not proceed until substrate and project conditions are satisfactory.

3.2 PREPARATION

- A. Clean surfaces to receive firestopping thoroughly. Verify that surfaces are free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of firestopping material.
- B. Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.
- C. Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- D. Provide anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests.
- E. Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of work. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.
- F. Verify that submittals have been completed before starting installation.

3.3 INSTALLATION

- A. Install in strict accordance with manufacturer's instructions for the specified or selected designs for the type of assembly being firestopped, the type of penetrant, and the condition of the opening in each case.
 - 1. Obtain the manufacturer's instructions for conditions not fully covered by printed instructions.
 - 2. Record in writing all oral instructions received.
- B. Install firestopping with sufficient pressure to properly fill and seal openings for effective smoke seal.
- C. Remove excess firestopping material promptly.
- D. Damming Boards: Install forming or damming materials and other accessories required to support fill materials during their application; position to produce the shapes and depths required to achieve fire ratings of through-penetration firestop systems.
 - 1. Combustible Type: For temporary dams only, remove after firestopping material has cured, unless permitted as permanent by design and by code.
 - 2. Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying firestopping materials.
- E. Fill, Void, and Cavity Materials: Use materials recommended by the firestopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes, and where void filler material becomes part of the fire rated assembly.
- F. Sealant: Use non-sagging type where void cannot be dammed sufficiently to contain sealant until cured.
 - 1. Install damming material or mineral wool as required.

2. Apply sealant to minimize air voids and to ensure sealant is in full contact with penetrating items and surrounding surfaces.
3. Tool sealant to ensure substrate contact if required.
4. Remove excess sealant in accordance with manufacturer's recommendations. Do not exceed minimum system or design thickness by more than 25 percent.

G. Mortar: Install damming material as required. Mix mortar in strict accordance with manufacturer's instructions. Fill openings to minimum thickness as recommended by manufacturer and by tested system or selected design to achieve required fire rating.

H. Firestopping Mineral Wool: Install by compressing material to the minimum compression required tested system or selected design. Apply firestopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating.

I. Firestopping Devices, Collars, and Pillows: Install in accordance with manufacturer's instructions, to achieve specified fire resistance.

3.4 FIELD QUALITY CONTROL

A. Inspect completed installations prior to concealing or enclosing an area containing firestopping materials.

B. Notify Owner and authorities having jurisdiction prior to concealing or enclosing an area containing firestopping materials.

C. Repair defective and damaged work as required to ensure compliance with the Contract Documents.

3.5 CLEANING AND PROTECTION

A. Upon completion of this work, remove all unused materials, equipment and debris from the site.

B. Protect installed work from damage or contamination until Substantial Completion.

END OF SECTION 07 84 00

SECTION 09 90 00 – PAINTING

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 the work specified in this section.

1.2 SUMMARY

- A. This Section includes surface preparation and priming of exterior items and surfaces affected by the reroofing and repairs to this building. Extent of painting work is as herein specified:
 - 1. Exterior Substrates:
 - a. Steel.
 - b. Galvanized metal.
 - c. Aluminum (not anodized or otherwise coated).
- B. Related Sections include the following:
 - 1. Section 070150.19 "Preparation For Re-roofing" for removal and/or repair of existing roof system and accessories.
 - 2. Section 075400 "Thermoplastic Membrane Roofing (TPO)" for thermoplastic roof system and roof accessories installation.
- C. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
 - 1. Prefinished items not to be painted include the following factory-finished components:
 - a. Exposed pre-finished sheet metal trim.
 - b. Finished mechanical and electrical equipment.
 - c. Ventilation materials.
 - d. Aluminum storefront materials.
 - e. Finished hardware.
- D. Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the manufacturing the products specified, with a minimum 10 years experience.

- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience.
- C. Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used.
 - 1. Notify the Architect/Consultant of problems anticipated using the materials specified.
- D. Material Quality: Provide the manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary names used to designate colors or materials are not intended to imply that products named are required or to exclude equal products of other manufacturers.
 - 2. Federal Specifications establish a minimum quality level for paint materials, except where other product identification is used. Provide written certification from the manufacturer that materials provided meet or exceed these criteria.
 - 3. Products that comply with qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use when acceptable to the Architect/Consultant. Furnish material data and manufacturer's certificate of performance to Architect for proposed substitutions.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for handling, storing, and applying each coating material.
- B. Samples: Submit two paper chip samples, 8-1/2 x 11-inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Coatings: 10 percent, but not less than 2 gal of each material and color applied.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name, label and following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).

3. Federal Specification number, if applicable.
 4. Manufacturer's stock number and date of manufacture.
 5. Contents by volume, for pigment and vehicle constituents.
 6. Thinning instructions.
 7. Application instructions.
 8. Color name and number.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
1. Protect from freezing.
 2. Remove oily rags and waste daily.
 3. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 JOB CONDITIONS

- A. Do not apply materials when surface and ambient temperature are outside the temperature ranges required by the paint product manufacturer.
1. Minimum Application temperature for solvent-thinned paints: when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F (7 and 35 deg C).
 2. Minimum Application temperature for latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
 3. Do not apply exterior paint in snow, rain, fog or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide The Sherwin-Williams Company; products indicated or comparable product from one of the following:
1. Benjamin Moore & Co.
 2. PPG Architectural Finishes, Inc.
- B. Provide all paints and coating products used in any individual system from the same manufacturer; no exceptions.
- 1.

2.2 PRIMER

- A. Pro Industrial Pro-Cryl Universal Primer, Sherwin Williams.

- B. Exterior Ferrous-Metal Primer: Factory-formulated, rust-inhibitive metal primer for exterior application.
- C. Exterior Galvanized Metal Primer: Factory-formulated, galvanized metal primer for exterior application.
- D. Where manufacturer offer options on primers for a particular substrate, use primer categorized as "Best" by the manufacturer.

2.3 PAINTS AND COATINGS – GENERAL

- A. Paints and Coatings: Ready mixed.
 - 1. Provide paints and coatings of a soft consistency, capable of being readily and uniformly dispersed o a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each coating material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedures are specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offer options on primers for a particular substrate, use primer categorized as "Best" by the manufacturer.
 - 1. Primers maybe tinted to 50 percent of finish color.
- C. Intermediate and Topcoat:
 - 1. Pro Industrial Urethane Alkyd Enamel, by Sherwin Williams.
- D. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D-National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
 - 3. All materials and products to comply with LEED VOC requirements.

2.4 PAINT SYSTEMS – EXTERIOR

- A. Ferrous Metals, Unprimed, 1 coat Primer, Acrylic 2 coat:
 - 1. One coat of primer.
 - 2. Semi-gloss: Two coats of Acrylic enamel.
- B. Ferrous Metals Touch-Up, Primed, Acrylic 2 Coat:
 - 1. Touch-up with rust-inhibitive primer recommended by the topcoat manufacturer.
 - 2. Semi-Gloss: Two coats of Acrylic enamel.

- C. Zinc-Coated Metal, Primer, Acrylic, 2 coat:
 - 1. One coat exterior galvanized metal primer.
 - 2. Semi-gloss: Two coats acrylic enamel.

- D. Aluminum, Primer, Acrylic, 2 coat:
 - 1. One coat aluminum primer.
 - 2. Semi-gloss: Two coats acrylic enamel.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrates and conditions under which painting will be performed in compliance with paint application requirements.
 - 1. Comply with Manufacturer's requirements for inspection.
 - 2. Apply paint only after unsatisfactory conditions have been corrected.

- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

- B. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
 - 1. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with same type shop primer.

- C. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum-based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.

- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.4 PRIMER APPLICATION

- A. General: Apply primer in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
- B. Do not apply primer over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
- C. Prime Coat: Apply a prime coat of material on prepared surface as recommended by the manufacturer. Re-coat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears.

3.5 CLEAN-UP AND PROTECTION

- A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting. At the completion of work of other trades, touch-up and restore all damaged or defaced surfaces.

END of SECTION 09 90 00

SECTION 11 24 29.19 - HORIZONTAL FALL PROTECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Provide rooftop horizontal cable fall protection system for rooftop maintenance including end anchors, intermediate cable supports, variable cable supports, traveler and corner cable supports as required.

1.2 REFERENCE STANDARDS

- A. ANSI A10.32, "Personal Fall Protection Used in Construction and Demolition Operations."
- B. ANSI Z359.1, "Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components."
- C. ASTM A123 / A123M, "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
- D. ASTM A747/A747M, "Standard Specification for Steel Castings, Stainless, Precipitation Hardening."
- E. ASTM A36, "Standard Specification for Carbon Structural Steel."
- F. ASTM A666, "Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar."
- G. ASTM A500, "Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes."
- H. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 1. Welding rods and bare electrodes: Select according to AWS specifications for metal alloy welded.
- I. CSA Z259.16, "Design of Active Fall Protection Systems."
- J. OSHA 1926.502, "Fall Prevention Systems and Criteria and Practices."

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of horizontal cable fall protection system with structural supports and finish materials.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's data and product information indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing in sufficient detail that the product complies with the contract requirements.
- B. Shop Drawings: For fabrication showing the complete fall protection system. Layout drawings of each system in relation to the supporting structure indicating the locations of properly labeled components.
- C. Furnish proof of installer's certification approval by manufacturer in the form of the installer's current certificate issued by the manufacture.
- D. Designer's Qualifications Statement.
- E. Systems Manual:
 - 1. Maintenance Procedures: Including parts list and maintenance requirements for all equipment.
 - 2. Operation Procedures: Indicating proper use of equipment for safe operation of the systems.
 - 3. Manufacturer's catalog data indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing sufficient detail that the product complies with the contract requirements.
- F. Record Documents: Include a copy of Record Drawings in the systems manual.
- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- H. Delegated-Design Submittal: For fall protection system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

- A. Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State of Alabama.
- B. Install fall protection system by manufacturer's authorized, trained, and certified personnel.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging.
- B. Store materials in original protective packaging.
- C. Prevent soiling, physical damage, or moisture.

1.7 PROJECT CONDITIONS

- A. Coordinate layout and installation of framing and reinforcements for fall protection system anchors.

1.8 WARRANTY

- A. Correct defective Work within a one year period after Date of Substantial Completion.
- B. Provide 25 year manufacturer warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Product: Subject to compliance with requirements, provide 3M Fall Protection; DBI-SALA® RoofSafe™ Cable System.
- B. Substitutions: Not Permitted
- C. Source Limitation: Obtain fall protection system and components from a single manufacturer.

2.2 SYSTEM DESCRIPTION

- A. Allow users to walk uninterrupted the entire length of the system and provide secure anchorage to arrest a fall. System to allow attachment at any point along the cable and enables freedom of movement along the cable as it passes by intermediate anchors.
- B. Maximum span of 39 feet (12 m) between anchors and provides continuous hands free access for the user of the roof fall protection system.
- C. System must not be used as a tieback anchor for façade maintenance.

2.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design fall protection system.
- B. Structural Performance: Fall protection systems shall withstand the effects of loads and stresses within limits and under conditions required by ANSI A10.32, ANSI Z359.1, and OSHA 1926.502.
 - 1. Allow for multiple users, based on required system calculations.
 - 2. System designed for 2 simultaneous users maximum.
 - 3. System capable of spanning 39 feet (12 m) between intermediate supports.
 - 4. Maximum allowable force on anchors: 1348 lbs. (6 kN).

2.4 COMPONENTS

- A. Cable: 7x7, 5/16 inch (8 mm) 316 Stainless Steel Wire, Breaking Strength 8542 lbs. (38 kN).
- B. End Anchorage Connector: 316 Stainless Steel, electropolished and Serial Numbered.
- C. Tensioner: 180 lbs. (0.8 kN) 316 Stainless Steel.
- D. Intermediate Guide: 316 Stainless Steel, electropolished.
- E. 90 and 45 Degree Corners: 316 Stainless Steel, electropolished. Other angles are achieved using Variable Guide.
- F. Variable Guide: 316 Stainless Steel, electropolished.
- G. Swage Toggles: 316 Stainless Steel.
- H. UniGrab Attachment Device with Carabiner: ASTM A747/A747M Precipitation Hardening Stainless Steel Casting, electropolished and numbered.
- I. Modular Anchors, with RoofSafe™ Eye and Pin:
 - 1. SpiraTech™ Anchor.
 - 2. Tip Over Anchor.
- J. Anchorage Plates: Anodized aluminum plates designed and tested to work with the SpiraTech™ and Tip Over Anchor.

2.5 MATERIALS

- A. Primary cable assembly components: Stainless steel: ASTM A666, Type 316.
- B. Aluminum: 6082 aluminum alloy.
- C. Connectors: Comply with OSHA regulation 1926.502.

2.6 FABRICATION

- A. Fabricate anchoring devices as recommended by the manufacturer to provide adequate support for intended use. Shop fabricate required anchorage posts using structural steel with material test certificates for full material traceability.
- B. Welding: AWS structural specification D1.1 by certified welders.
- C. Fabricate joints in a manner to discourage water accumulation.
- D. Swaging: Swage cable in-line with the anchor point.
- E. Finishes:

1. Stainless Steel: Electropolished for corrosion resistance.
2. Structural Steel: Zinc Galvanized for corrosion resistance.
3. Aluminum: Anodized.

2.7 ACCESSORIES

- A. Fasteners: Designed to support a load on the system of 2 times the maximum design load without failure.
- B. Signage: Provide signs and system identification tags.
- C. Flashing: Comply with requirements of Section 076200 "Sheet Metal Flashing and Trim."
- D. Sealant: Comply with requirements of Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fall protection equipment.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate location of fall protection equipment indicated to be attached to structural substrate or surface of roofing system, and furnish anchoring devices with templates and diagrams.

3.3 INSTALLATION

- A. Install according to approved shop drawings and manufacturer's instructions.
- B. Install anchorage and fasteners in accordance with manufacturer's recommendations to obtain the allowable working loads published in the product literature and in accordance with this specification.
- C. Exposed work shall be true to line and level with accurate angles, surfaces and with straight square edges. Coordinate anchorage system with supporting structure.
- D. Do not load or stress system until materials and fasteners are properly installed and ready for service.
- E. Do not use until trained in the use of the system.

3.4 FIELD QUALITY CONTROL

- A. Provide manufacturer's certified installer to inspect installed fall protection system.
- B. Test fall protection system for compliance with the following requirements:
 - 1. Ensure that system components operate as specified.

3.5 ADJUSTING

- A. Adjust fall protection components to function smoothly and safely.

3.6 CLEANING

- A. Clean components of any deleterious coatings or compounds.
- B. Remove loose materials, crating, and packing materials from site.

3.7 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate operation of system to Owner's personnel.
 - 1. Briefly describe function, operation, and maintenance of each component.
- B. Training: Train Owner's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Provide training at the lifeline installation site.
 - 4. Training to take place at the completion of the installation.

END OF SECTION