



TULSA COUNTY
DAVID L. MOSS CRIMINAL JUSTICE CENTER
300 N DENVER AVENUE
TULSA, OK 74103



Roof Replacement Project
Issue for Bid
August 7, 2020

7633 E. 63rd Place
Suite 300
Tulsa, Oklahoma 74133





**CONLEY
GROUP**

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ROOF REPLACEMENT PROJECT

FOR

TULSA COUNTY
DAVID L. MOSS CRIMINAL JUSTICE CENTER
300 N DENVER AVENUE
TULSA, OK 74103

100% ISUUE FOR BID
CONLEY GROUP PROJECT # 20-6211.01
August 7, 2020

**TULSA COUNTY
2020 ROOF REPLACEMENT DAVID L. MOSS CRIMINAL JUSTICE CENTER
TULSA, OKLAHOMA**

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AUGUST 7, 2020**

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SECTION 01010 - SUMMARY OF THE WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and conditions of the construction contract and the Special Conditions listed below apply to work of this section.
- B. All sections of the specifications are related to each other and are to be utilized in conjunction with each other for the successful execution of this work.

1.2 PROJECT/WORK IDENTIFICATION

- A. Project Name and Location:
Tulsa County
2020 David L. Moss Criminal Justice Center Roof Replacement Project
300 North Denver Avenue
Tulsa, Oklahoma
- B. Document Clarifications:
 - 1. Contractor and subcontractors shall thoroughly review the existing project conditions, drawings and specifications and submit in writing to Tulsa County's Representative a list of questions, clarifications.
 - 2. The Tulsa County Representative shall respond in writing via Addendum prior to Bid Time. This is not the case for unforeseen existing conditions that reveal themselves during the construction process.
 - 3. Additions or modifications to the Issue for Bid documents shall be made by Change Order Request submission for evaluation and negotiation covering said additions and modifications with the Bid amount adjusted by the final, agreed upon Change Order amount.
 - 4. If the bidder fails to comply with the requirement of item 1 above, Tulsa County and the Consultant shall consider these Bid Documents to be complete and that they provide all information necessary for the successful watertight installation and warranty of all components related to this project. Bidder and Manufacturer shall bear all cost for material and labor for all subsequent work necessary to provide a successful watertight installation and warranted associated components installation. No exceptions.
- C. Summary of Work:
Contractor is responsible for furnishing all labor, equipment, materials, management and supervision required to remove and replace existing ballasted EPDM roofing systems on Criminal Justice Center Building including all required and related unit, curb, Equipment modification, utility modifications, obsolete equipment removal and deck repair as designated in the Documents. The Roofing

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Contractor shall be the prime contractor (“contractor”) for this project and shall be responsible for providing scheduling, coordination, and warranty for the work of all trades necessary for the successful execution and completion of this project. Obtaining all permits required by the authority having jurisdiction over this project shall be the responsibility of the prime contractor and the cost of obtaining all permits shall be contained in the cost amount.

Work shall include the following as a minimum:

1. Minimal Interior protection will be needed. Drape and Cover Interior Protection: The interior of the facility will be used by Tulsa County personnel during operations. Contractor shall coordinate and provide drape and cover interior protection at interior areas as directed by Tulsa County. Interior monitoring will be required at interior protected areas when roof, curb and wall construction activities are taking place. At those locations, the interior space and finishes shall remain accessible and functional, except as approved at times the Tulsa County Representative. Interior protection crew shall be one that specializes in interior protection application and has documented recent experience performing work in a power plant environment. Contractor shall provide dumpsters with covers for disposal of removed roofing materials, waste, debris, etc. Contractor shall furnish crane, safety ramps, lifts, or scaffold for removal of all construction debris. All debris shall be removed via covered chutes or covered containers.
2. Contractor shall provide an acceptable Fall Hazard Protection and Safe Work Access Plans in compliance with Tulsa County and OSHA requirements prior to the Pre-Construction Conference. The Contractor shall furnish approved tie off points certified by Professional Engineer licensed in the State of Oklahoma for work around deck openings caused by unit, deck or curb demolition work. All aspects of the accepted Fall Hazard Protection Plan must be adhered to at all times. Complete Plans shall be submitted in the package.
3. Contractor employees and crew shall access the David L. Moss Criminal Justice Center area by secured outside scaffolding, approved by Tulsa County. Access will be reviewed at the Pre-Construction meeting between Contractor and Tulsa County.
4. Furnish Contractor’s Five (5) Year Warranty as outlined in Specifications.
5. Temporary water will be provided by Tulsa County. Contractor shall provide generators for electricity. Fuel type for generators to be determined at Pre-Con conference.
6. Contractor shall provide as-built record drawings and specifications which reflect all the completed, approved modifications from the bid documents as a part of project closeout documentation. A contract time limit has been set for the contract closeout process. See specification 01700.
7. Contractor shall provide Tulsa County-accepted experienced field and office project management and support personnel, skilled mechanics/technicians and laborers, tools as well as well-maintained and

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fully operational equipment in the number/quantity necessary to support and complete the project within in the scheduled time limits. Submit list and experience to Tulsa County and Consultant prior to pre-construction conference.

8. Contractor shall submit in his bid package copies of current certifications, resumes or other documentation required for employees assigned to this project for plant access. Refer to other sections of this specification.
9. Contractor shall be responsible for obtaining and payment of all federal, state and local permits, fees, etc. in connection with the work.
10. Roofing Contractor shall coordinate with Tulsa County approved sub-contractors who shall perform all mechanical and electrical modifications work related to the project. Contractor shall schedule and coordinate all work with Tulsa County Representative. Contractor shall subcontract with Tulsa County approved subcontractor to perform mechanical modification work. Contractor shall be responsible for management and coordination of all roof project work.
11. Contractor shall provide visible means of identification for all employees on site, i.e., hard hats, ID badge, shirts, acceptable to Tulsa County.
12. Contractor personnel shall wear designated PPE at all times while on site.
13. The facility must remain fully operational during all contractor operations. The Contractor shall cooperate fully with the Tulsa County Representative, facility personnel and Consultant to ensure this occurs.
14. Other work may be performed on site by other Tulsa County subcontractors. Special coordination and scheduling may be required as not to delay their work or the work to be performed under this contract.
15. Refer to specification section 01700 for project closeout requirements.
16. Refer to attachments for additional Tulsa County requirements, etc.
17. There will be work access issues created due to the type of facility where work is to be performed. Tulsa County Sheriff's Office DLM Maintenance Department representative will review these during the Pre-Con conference.

D. List of Proposed Subcontractors:

1. The Prime Contractor shall submit on the Bid Form with his Bid Proposal a listing of ALL subcontractors and suppliers and the work each will be responsible for executing under this contract.
2. Tulsa County reserve the right to reject any or all proposed Subcontractors without any financial liability to Tulsa County.
3. Failure to submit this list may be cause for disqualification at the discretion of Tulsa County.

E. Tulsa County Contract for Project Performance indicates the work of contract, and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the contract documents may include, but are not necessarily limited to the following:

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1. Existing site conditions and restrictions.
2. Approved site use and storage plan.
3. Job Site Safety and Fall Hazard Plan
4. Safe work access

1.3 CONTRACTOR USE OF PREMISES

A. General: The Contractor shall limit his use of the premises as indicated by Tulsa County and execute work to allow for full use of the facilities and site by other contractors present.

1. Use of the Site: Confine operations at the site to the areas permitted by Tulsa County. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to all Tulsa County rules and regulations affecting the work while engaged in project construction.
2. Per Steve Miller, the contractor will need to notify him prior to any situation in which there may be falling debris, chemical contamination, or any situation which may impact inmate health and safety or jail operations as the building will always be occupied.
3. Working hours shall be restricted as follows to accommodate the project schedule and shall be limited to 10 hours per day, WHICH SHALL INCLUDE MANDATORY 1-HOUR FIRE WATCH where hot work is necessary, unless written approval in advance is provided by the Tulsa County's Representative:

New Construction Work and Demolition.	7am – 4pm Monday through Friday. No weekends, no Holidays.
Material Delivery and Bulk Storage /Staging Activities, Dumpster change out. Crane moving related activities.	7am – 4pm Monday through Friday. No weekends, no Holidays.
Note: Work can occur outside of these hours only if approved by the Jail Administrator. Contractor must submit access plan to the Jail Administrator for approval and must ensure access would be secure during off hours to prevent unauthorized access.	

4. Contractor shall repair to Tulsa County's satisfaction at Contractor's sole cost all damage to any and all equipment, building contents, roofing, grounds, landscaping, building, paving, finishes, furnishings, public or private property caused by Contractor's operations on this project. Refer to the minimum Insurance requirements document for Special Insurance coverage requirements.
5. Contractor's approved personnel and subcontractors shall only enter the adjacent building interior in clean shoes at specific locations where required to perform interior work. Workers shall be escorted by Tulsa County designated representatives at all times if required by Tulsa County.
6. Contractor shall comply with all Tulsa County security requirements. Contractor's workers shall/may be issued badges and must show identification daily to enter site.

7. Contractor shall be limited to use only designated on-site bulk storage areas, parking, access gates, and set-up/staging/short term storage areas as indicated by Tulsa County.
8. Contractor shall ensure ample materials are on site, so the progress of the project is not delayed. Notify Tulsa County and the Consultant in writing with the bid package of long lead time items to be installed as part of the work; identify item and associated lead time and impact on project schedule. Materials on the roof shall be located so that the existing roof structure is not overloaded, and that roof drainage is unobstructed. Contractor shall protect stored materials from damage. Damage caused by overloading of roof areas by the Contractor shall be repaired/replaced to the satisfaction of Tulsa County and the Consultant at the sole expense of the Contractor. Contractor shall furnish breathable tarps for coverage of materials stored on roof areas. **Manufacturers shipping wrappers are not acceptable for proper weather protection.** All materials must be secured to prevent damage or displacement due to wind conditions. All materials and debris resulting from removal of the existing deconstruction, roof system or curb/deck demolition work shall be removed from roof area on a daily basis. No material or equipment shall be staged or stored on the adjacent roof areas at any time (NO EXCEPTIONS).
9. **Contractor shall deliver or move materials to or from the Bulk Storage or Staging Areas during times designated by Tulsa County. Coordinate/confirm times with Tulsa County Representative.**
10. Contractor shall furnish adequate generators and lighting systems, to properly illuminate all work areas, set-up areas and material handling areas and all bulk storage to allow proper and safe execution of the project during pre-dawn, twilight or nighttime operations should they occur, with the permission of Tulsa County.
11. Contractor shall coordinate and execute work to maintain the building in a watertight condition at all times.
12. Permit for hot work (cutting torches, hot air and open flame welding guns and machines, soldering pots, welding, cutting, grinding or any other spark producing activities) must be obtained on daily basis and require review of work to be performed by designated Tulsa County representative. **The number of contractors provided fire watch personnel shall be reviewed with the Tulsa County Sheriff's Office Life Safety Officer, Tyler Perry, during the Pre-Con Conference project walk. Contractor shall submit with his Package the product and technical data for all items/equipment listed above that is applicable to the installation or performance of the work.**

1.4 FACILITY OCCUPANCY

- A. This facility is in full operation, 7 days a week 24 hours a day. The Tulsa County will occupy and use the site and the existing building during the entire period of

construction operations. Cooperate fully with the Tulsa County Representative and the Facility Management to ensure that daily operations can occur with no disruption.

- B. **Maintain established traffic lanes for all site operations and emergency vehicle access to the facility at all times.**
- C. Keep the site and roof area in a clean and orderly state to the satisfaction of the Tulsa County Representative

1.5 MISCELLANEOUS AND GENERAL PROVISIONS

- A. Existing Structures: Shall remain in place, except where specifically indicated for removal or modification. Refer to drawings and specification section 02070.
- B. Alterations to Existing Work:
Existing work shall be cut, drilled, altered, removed, or temporarily removed and replaced as necessary for performance of work under the contract. Work that is replaced shall match similar existing work. Structural members shall not be cut or altered, except where noted on drawings, without authorization of the Tulsa County representative. Work remaining in place, which is damaged or defaced during this contract, shall be restored to the condition existing at time of award of contract.
- C. Coordinate the need for, and schedule interior protection installation at areas indicated on the drawings and as directed by the Tulsa County Representative.
- D. All dumpsters on-site and being transported that contain debris shall be covered. Dumpsters just returned to site from being emptied may not require covering if approved by Tulsa County representative. Waste shall be properly disposed in a land-fill area approved by Tulsa County. All costs related to this project for waste collection / disposal shall be included in the contractor's base bid amount. Copies of landfill receipts shall be provided to the Tulsa County representative for each dumpster emptied and returned to the project site. No Exceptions. Tulsa County will not be responsible for any fines or costs incurred by the contractor for improper or illegal disposal of waste from this project. Coordinate all work with where regulated materials are to be removed.

1.6 WEATHER PROTECTION AND DAMAGE TO EXISTING ROOFING NOT INCLUDED IN PROJECT SCOPE:

- A. Upon beginning work on the existing roof, contractor shall take full responsibility for any water penetration into the roof area or building interior regardless of cause. Contractor shall patch and protect existing roofing as required to prevent leaks or water infiltration under roof system and into the building. Contractor

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shall repair areas, at no additional cost to Tulsa County. Provide protection as indicated on the drawings.

- B. Contractor shall have at the work site, a sufficient amount of moisture proof coverings to provide quick temporary protection to exposed decking, unfinished roof, or open roof or building wall penetrations in the event of a rapid change in the weather.

1.7 SCHEDULED START AND COMPLETION/WORK PHASING:

- A. Contractor Mobilization: As per the Tulsa County Contract for Project Performance, work is to start within ten (10) days after receipt of Notice to proceed/Work Order.
- B. Work shall be performed on weekends during the same week that weather event(s) cause “no work” conditions to occur. Documented advance approval by Tulsa County via email is required. No verbal approvals are valid without email follow-up to Tulsa County, the Consultant and their representatives.

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION – Not Applicable

END OF SECTION 01010

SECTION 01090 - DEFINITIONS AND STANDARDS

PART 1 – GENERAL

1.1 DEFINITIONS

- A. General Explanation: A substantial amount of specification language consists of definitions of terms found in other contract documents, including drawings. (Drawings are recognized as being diagrammatic in nature and not completely descriptive of requirements indicated thereon). Certain terms used in contract documents are defined in this article. Definitions and explanations contained in this section are not necessarily either complete or exclusive but are general for the work to the extent that they are not stated more explicitly in another element of contract documents.
- B. Special Conditions: Wherever the term "Special Conditions" or "Section, Special Conditions" is used in the specifications, it refers collectively to all of the sections in Volume 1, General Requirements, and General Conditions and Special Conditions.
- C. Indicated: The term "Indicated" is a cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- D. Directed, Requested, etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Tulsa County Representative", "requested by the Tulsa County Representative", and similar phrases. However, no such implied meaning will be interpreted to extend the Tulsa County Representative responsibility into Contractor's area of construction supervision.
- E. Approve: Only the Tulsa County Representative, or an individual designated by him in writing, can approve or disapprove contract actions. Even if the specifications indicate that an individual other than the Tulsa County Representative (such as the "Consultant") will approve or disapprove an action, it is understood that only the Tulsa County Representative has this authority unless the individual is so designated by him in writing. Even when an individual is so designated, the Contractor may appeal the action to Tulsa County and Tulsa County decision shall be final. In no case will "approval" by the Tulsa County Representative be interpreted as a release of the Contractor from responsibility to fulfill requirements of contract documents.

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- F. Project Site: The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on drawings.
- G. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- H. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
- I. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- J. Installer: The term "Installer" is defined as the entity (person or firm) engaged by the Contractor or its subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. Installers shall be skilled in the work they are to perform.
- K. Specialist: The term "Specialist" means an individual or firm of established reputation (or, if newly organized, whose personnel have previously established a reputation in the same field), which is regularly engaged in, and which maintains a regular force of workmen skilled in either (as applicable) manufacturing or fabricating items required by the contract, installing items required by the contract, or otherwise performing work required by the contract. Where the contract specification requires installation by a specialist, that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, or an individual or firm who will perform the work under the manufacturer's direct supervision.
- L. Testing Laboratory: The terms "testing laboratory" or "independent laboratory" are interchangeable, and are defined as an independent entity engaged by the Contractor to perform specific inspections or tests of the work, either at project site or elsewhere; and to report results of those inspections or tests.
- M. Nationally Recognized Testing Laboratories: The term "nationally recognized testing laboratory (NRTL)" shall mean a firm or organization which is recognized by OSHA in accordance with 29 CFR Part 1910.7 to test and approve (i.e., certify, label or list) equipment or materials as being safe for the intended use. Labeling and/or listing of products by NRTL's is acceptable wherever a reference to the UL or FMRC label is made in the specifications.

- N. Label: The label must be provided by a nationally recognized testing laboratory. The contractor shall provide a statement from the testing laboratory attesting that the laboratory has been approved by OSHA to certify the category of product(s) being submitted for approval.

1.2 OVERLAPPING AND CONFLICTING ASSIGNMENTS

- A. Specifications and Drawings: Where there appear to be overlapping or conflicting requirements in the drawings and specifications, the order of precedence established by the clauses "Specifications and Drawings for Construction" and "Specifications and Drawings" of the General Conditions shall govern.
- B. Standard Details and Specification Drawings: The terms "standard details" and "specification drawings," which may be used interchangeably, refer to detailed drawings which are bound into the project manual and are referenced on the drawings or elsewhere in the project manual. In some instances, there may be notes on the drawings which modify the standard details or specification drawings. Where there appear to be overlapping or conflicting requirements between the standard details or specification drawings and other portions of the contract documents, the order of precedence established in the Contract.
- C. Industry Standards: Where compliance with 2 or more industry standards or sets of requirements are specified and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, most stringent requirement as determined by Tulsa County shall govern.
- D. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether or not it is specifically indicated as such.

1.3 MINIMUM QUALITY/QUANTITY

- A. In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with that minimum (within specified tolerances) or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to the Tulsa County Representative for decision before proceeding.

1.4 ASSIGNMENT OF SPECIALISTS

- A. In certain instances, specification text requires that specific work is to be assigned to specialists who must be engaged for performance of that work. Such assignments are special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with applicable regulations, union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of requirements remains with the Contractor.

1.5 DRAWING SYMBOLS

- A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Consultantural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.
- B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical/electrical drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, those symbols are supplemented by more specific symbols where appropriate as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Contracting Officer for clarification before proceeding.

1.6 INDUSTRY STANDARDS

- A. General Applicability of Standards: Except where more explicit or more stringent requirements are written directly into the contract documents, applicable standards of construction industry have same force and effect (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith, subject to the order of precedence previously stated.
- B. Publication Dates: Refer to clause "Standard References" of General Conditions. Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of Invitation for Bids.
1. Updated Standards: Submit a change order proposal where an applicable industry standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Contracting Officer will decide whether to issue a change order to proceed with the updated standard.

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- C. Copies of Standards: Maintain copy of referenced standards, including those referenced in the referenced standards and where required manufacturer's instructions, where work is being performed, and make available to the Construction Engineer or inspector on request.
- D. Abbreviations and Names: The following acronyms or abbreviations as referenced in contract documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up to date as of date of contract documents:

AA	Aluminum Association 818 Connecticut Ave. NW Washington DC 20006
AISC	American Institute of Steel Construction 400 N. Michigan Ave., 8th Floor Chicago, IL 60611
ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20874
ANSI	American National Standards Institute 655 Fifteenth Street, NW, Suite 300 Washington, DC 20015
APA	American Plywood Association P.O. Box 11700 Tacoma, WA 98411
ARMA	Asphalt Roofing Manufacturers Association 6288 Montrose Road Rockville, MD 20852
ASC	Adhesive and Sealant Council 1600 Wilson Blvd., Suite 910 Arlington, VA 22209
ASTM	ASTM 1916 Race Street Philadelphia, PA 19103
AWPA	American Wood Preservers' Association P.O. Box 849 Stevensville, MD 21666
FMG	FM Global 500 River Ridge Rd. P.O. Box 9102 Norwood, MA 02062
FS	Federal Specification (General Services Administration) Specifications Units (WFCIA)

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	7th and D Streets, SW Washington, DC 20406
NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269
NRCA	National Roofing Contractors Association 8600 Bryn Mawr Avenue Chicago, IL 60631
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) Government Printing Office Washington, DC 20402
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association P.O. Box 70 Merrifield, VA 22116
UL	Underwriters Laboratories 333 Pfingsten Road Northbrook, IL 60062

PART 2 – PRODUCTS – Not Applicable

PART 3 – EXECUTION – Not Applicable

END OF SECTION 01090

SECTION 01300 - SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

- A. The types of submittal requirements specified in this section include shop drawings, product data, samples, certificates of conformance or compliance, certified test or inspection reports, and miscellaneous work-related submittals. Individual submittal requirements are specified in applicable sections for each unit of work.
- B. Tulsa County / Consultant’s approval of all submittals shall be obtained by the Contractor prior to the Pre-Construction Conference date.
- C. **Submittal package shall be complete and include all items required in each individual specification section in the Project Manual.**
- D. Complete Bound Sets of final approved submittals will be required as a part of Project Close-out. Refer to specification 01700.

1.2 DEFINITIONS

- A. Work-related submittals of this section are categorized for convenience as follows:
 - 1. Shop drawings include specially-prepared technical data for this project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to a range of similar projects.
 - 2. Product data include standard printed information on materials, products and systems; not specially prepared for this project, other than the designation of selections from among available choices printed therein.
 - 3. Samples include both fabricated and unfabricated physical examples of materials, products and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of samples, which are too large or otherwise inconvenient for handling in specified manner for transmittal of sample submittals.
 - 4. Certificates of conformance or compliance are documents attesting that a product complies with a specified standard.
 - 5. Certified test (or inspection) reports are documents attesting that a product meets a specified level of performance or quality when a prototype specimen is tested or inspected in accordance with a specified procedure,

and consist of a certified statement by the product supplier or Contractor accompanied by a complete report of the inspection or test.

6. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance requirements, physical work records, record drawings, product data samples, certificates of conformance or compliance, or certified test reports.
7. Contractor's Certification of project completion and compliance. Contractors certification that all work is complete and in full compliance with the contract.

1.3 GENERAL SUBMITTAL REQUIREMENTS

A. General:

1. Submission of Contract Drawings as Shop Drawings will not be permitted unless the drawings are accepted in writing by the manufacturer and contractor at the time of Contract Award.
2. All submittals shall be made to the Tulsa County Representative /Consultant.
3. Only the Tulsa County's Representative or an individual designated by the Tulsa County in writing can approve or disapprove submittals. Deviations and variations from the contract requirements contained in the submittal can be approved only by the Tulsa County's Representative or a designated individual delegated such authority in writing by the Tulsa County's Representative.
4. Failure on the part of the Contractor to indicate approval on submittals prior to submission to Tulsa County's Representative may result in them being returned to the Contractor without being acted upon.
5. No delays in the construction schedule, occasioned by the Contractor's failure to submit material for approval in accordance with the approved schedule, will be acceptable.
6. **Each item proposed to be incorporated into the work will be clearly identified on the product data sheet. Failure to comply will be cause for rejection of the submitted item.**

B. Scheduling: All submittals required to be submitted for approval by the Tulsa County's Representative shall be submitted, reviewed and found to be acceptable prior to start of field work unless otherwise approved by the Tulsa County's Representative in writing.

C. Coordination and Sequencing: Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by the approval of submittals. Coordinate and sequence different categories of submittals for same work, and for interfacing units of work, so that one will not be delayed for coordination of the Tulsa County's Representative review with another.

- D. Preparation of Submittals: Provide permanent marking on each submittal to identify project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals.
- E. Subcontractor Submittals: Show Contractor's executed review and approval marking and **provide at dedicated page on the front of the submittal package for the Tulsa County's Representative/Consultant review stamp and action marking.** Package each submittal appropriately for transmittal and handling. Submittals which are received from sources other than through the Prime Roofing Contractor will be returned without action.

1.4 SPECIFIC-CATEGORY SUBMITTAL REQUIREMENTS

- A. General: Except as otherwise indicated in individual work sections, comply with requirements specified herein for each indicated category of submittal. Provide and process final submittal, in a manner similar to initial submittals.
- B. Shop Drawings: Refer to the General Conditions of the Contract between Tulsa County and Contractor. Shop drawings shall be prepared by a trained professional draftsman or CADD Technician. The Consultant Shall be the sole judge as to the acceptable quality of shop drawings submitted unacceptable quality shop drawings will be automatically rejected and returned not reviewed. Delays in the project due to unacceptable quality shop drawings will not be considered legitimate change order request items. Provide newly prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated), with name of preparer indicated (firm name). Show dimensions and note, which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards, and special coordination requirements. Do not allow shop-drawing copies without comment letter or stamp indicating approval by the Tulsa County's Representative designated representative to be used in connection with the work. Contractor proceeds at Contractor's sole risk and responsibility to correct any work performed without shop drawing approval. Maintain one set of shop drawings (for each submittal) at project site, available for reference.
 - 1. Initial Submittal: 6 copies of each brochure / product data and drawings.
 - 2. Final Submittal, if initial submittal is rejected: In the same quantity as original.
 - 3. Coordination Drawings: Prior to performance of work in spaces in which two or more trades are involved and in which the probability of interference exists as determined by either the Contractor or the Tulsa County's Representative, submit composite coordination drawings for the work. Show the work of all involved trades in a scale not less than 1/2" = 1'-0", or larger if required by the Tulsa County's Representative designated representative. Any work installed prior to approval of

coordination drawings shall be at the Contractor's sole risk, and subsequent relocations required to avoid interference shall be made at no cost to Tulsa County. In case interference develops, Tulsa County's Representative or designated representative will decide which work shall be relocated, regardless of which was installed first.

4. **Copies of Manufacturer's Standard Details are not acceptable shop drawings. Product Manufacturer shall review and provide an approval stamp, signed and dated by Tech. Department Manager, on all shop drawings. Submittals made without this stamp will be automatically rejected.**

C. Product and MSDS Data: Collect required data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements, which have been checked, and special coordination requirements. Maintain one set of product data (for each submittal) at project site, available for reference.

1. Submittals: Contractor shall not submit product data, or allow product use on the project, until he has confirmed compliance with requirements of the contract documents and Tulsa County. Submittal is for information and record, unless otherwise indicated. Initial submittal is final submittal unless returned by the Tulsa County's Representative, marked with an action, which indicates an observed noncompliance.
 - a. Provide a preliminary single-copy submittal where required (or desired by Contractor) for selection of options by the Tulsa County's Representative.
 - b. Installer's Copy: Do not proceed with installation of materials, products or systems until final copy of applicable product data is in possession of Installer.
2. **No products shall be permitted on site without Tulsa County and Consultant review and acceptance of all product MSDS.**
3. Heat/Flame Producing Equipment:
 - a. Product data for each type of equipment and description shall be submitted to Tulsa County for review and approval.
 - b. No such equipment shall be permitted on site without prior Tulsa County approval.

D. Samples: Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Tulsa County's Representative selection is required. Include information with each sample to show generic description, source or product name and manufacturer,

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TULSA, OKLAHOMA**

limitations, and compliance with standards. Maintain one sample (for each submittal) at project site, available for reference.

1. Submittal: At Contractor's option, provide preliminary submittal of 3 sets of samples for review and action. Otherwise, initial submittal is final submittal unless returned with action, which requires re-submittal. Submit 3 sets of samples.
 2. Mock-ups: Mock-ups and similar samples specified in individual work sections are recognized as a special type of sample. Comply with requirements for "samples" to greatest extent possible, and process transmittal forms to provide a record of activity.
- E. Certificates of Conformance or Compliance: Follow same procedure as for product data. Where required by other sections of specification indicate compliance with the specified standard by means of a label on the container, or on an inconspicuous place on the product.
- F. Certified Test and Inspection Reports: Process each as either "shop drawing" or "product data", depending upon whether report is uniquely prepared for project or a standard publication of workmanship control testing at point of production; process accordingly. Maintain one set of test or report (for each submittal) at project site, available for reference.
1. Report shall include a description of the prototype specimen the product. The label shall refer to the test or inspection report and include the date of the report.
- G. Warranties: In addition to copies desired for Contractor's use, furnish the originals and 3 copies. The contractor's five (5) year warranty. See specification 07999.
- H. Standards/Manufacturer's Recommendations: Where copy submittal is indicated, and except where specified integrally with "Product Data" submittal, submit 4 copies to the Consultant's Representative. Where workmanship at project site and elsewhere is governed by standard, furnish additional copies to fabricators, installers and others involved in performance of the work. Installation of the item will not be allowed to proceed until the information is received. Failure to furnish the information can be cause for rejection of the material. Maintain one set (for each submittal) at project site, available for reference.
- I. Closeout Submittals: Refer to individual work sections and to "closeout" section for specific requirements on submittal of closeout information, materials, and similar items.

- J. General Distribution: Provide additional distribution of submittals (not included in foregoing copy submittal requirements) to subcontractors, suppliers, fabricators, installers, and others as necessary for proper performance of the work.
- K. As Built drawings: Refer to Section 01700 and 07525.

1.5 ACTION ON SUBMITTALS

- A. Consultant Action: Where action and return are required or requested, the Consultant will review each submittal, mark with Action, and where possible return within 1 week of receipt. Where submittal must be held for coordination, Contractor will be so advised.
 - 1. Final Unrestricted Release: Work may proceed, provided it complies with contract documents, when submittal is returned marked "Acceptable" or, "Approved for Construction," or "No Exceptions Taken."
 - 2. Final-But-Restricted Release: Work may proceed, provided it complies with notations and corrections on submittal, with contract documents, and with Tulsa County requirements when submittal is returned marked "Note Markings."
 - 3. Returned for Resubmittal: Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals marked "Rejected." (or unmarked submittals where a marking is required) to be used in connection with performance of the work.
 - 4. Other Action: Where submittal is returned, with the Consultant explanation included, it will be marked "Comments Attached" and may be used alone or in conjunction with any of the above actions.

PART 2 - PRODUCTS - Not Applicable

PART 3 - EXECUTION - Not Applicable

END OF SECTION 01300

SECTION 01400 - QUALITY CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. General Quality Control
- B. Manufacturers' Field Services

1.2 QUALITY CONTROL, GENERAL

- A. Maintain quality control over suppliers, subcontractors, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality.

1.3 MANUFACTURER'S FIELD SERVICES

- A. When specified in respective Specification section, manufacturer to provide qualified technical representative authorized to bind the corporation to observe field conditions, conditions of surfaces and installation, quality of workmanship, and to make appropriate recommendations.
- B. Manufacturer's technical representative shall conduct an inspection at the start of installation and shall attend the final inspection.
- C. Notify Tulsa County, Consultant and manufacturer's technical representative a minimum of one-week prior to date of final inspection.
- D. Representative shall submit written report to Consultant listing observations and recommendations within three (3) calendar days of site visit. A complete set of reports shall also be submitted as a part of the project closeout documents.

1.4 TULSA COUNTY QUALITY CONTROL

- A. The Conley Group Site Observer is Tulsa County's field representative and therefore has the same authority as a Tulsa County employee. Contractor shall heed direction given by the Conley Group's Site Observer as if the direction was given by the Tulsa County Project Manager. Any Contractor employee who acts contrary to the direction Site Observer shall be immediately removed from the project and will not be permitted to return. No exception.

PART 2 – PRODUCTS - Not Applicable

PART 3 – EXECUTION - Not Applicable

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

- A. General: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents. Provisions of this section are applicable to, but are not limited to, utility services, construction facilities, security/protection provisions, and support facilities.

1.2 JOB CONDITIONS

- A. General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. Conditions of Use: Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.
- C. Existing Equipment on Site: Cover equipment that is to remain in place within the area of contract operations and protect it against damage or loss. Store equipment that is removed in performance of work where directed or reuse in work as required by drawings and specifications. Equipment temporarily removed shall be protected, cleaned and restored/repaired equal to its condition prior to starting work. Security for equipment or material that is to be reused and is removed for temporary storage shall be the sole responsibility of the Contractor.
- D. Weather Protection:
1. Submit weather protection plan to the Owner's Representative for approval. Weather protection plan shall be submitted at the Pre-construction meeting or within fourteen days after the notice to proceed is issued.
 2. Maintain adequate inventory of materials to install temporary waterproofing and perform cleanup in the event of a weather emergency, or unforeseen site conditions.
 3. As a part of the project base bid requirements, the Contractor shall visit the project immediately during the onset of any rain event to check for and

repair any water intrusion occurrences into the building regardless of time of day. Contractor shall notify the Owner's Representative immediately of all rain event activities he intends to perform and when they are to take place. Water entry into the building is to be minimized and cost for repair/replacement of damages caused as well as clean-up and removal shall be solely that of the Contractor.

- E. Controlled Access Set-Up and Material Storage Areas:
1. Set-up areas are available at the project site. Locations to be reviewed during Pre-Construction meeting.
 2. Contractor shall erect temporary security fencing as required by Tulsa County. Areas shall be returned to its condition prior to starting work when the project is completed at no additional cost.
 3. Contractor shall erect and maintain overhead protection and fall protection equipment to meet OSHA and Tulsa County requirements at no additional cost, if required.

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY SERVICES

- A. The types of services required include, but are not limited to, water, storm drainage, and electrical power. When connecting to existing franchised utilities for required services, comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
- B. Water: Premises are supplied with which may be used in this work, subject to requirements and conditions of the Owners Representative. Contractor shall make his own arrangements for such services. Where non-potable water is used, mark each outlet with health hazard warning signs.
- C. Storm Drainage: Maintain drainage system in a clean, unclogged condition during construction period. Contractor phasing plan shall include provisions to maintain storm water drainage and watertight building at all times.
- D. Electrical Power: To be reviewed at Pre-Con meeting.
- E. Portable Toilet Facilities: Contractor shall provide ample facilities on site to support the number of employees assigned to the project.
1. Locate remotely from public access/use and as directed by the Owner's Representative.

2. Clean and sanitize weekly or when directed by Owner's Representative.

3.2 TEMPORARY CONSTRUCTION FACILITIES—Refer to the Contract

- A. The types of temporary construction facilities required include, but are not limited to, electrical power distribution, lighting and hoisting facilities, scaffolds or powered material lifts and ladders. Provide facilities reasonably required to perform construction operations properly and adequately at no additional cost.
- B. Enclosures: When temporary enclosures are required to ensure adequate workmanship, weather protection and ambient conditions required for the work, provide fire-retardant treated lumber and plywood; provide tarpaulins with UL label and flame spread of 15 or less at no additional cost.
- C. Electrical Facilities: Provide all temporary electrical facilities, including electrical generators, lamps required for construction and safety operations. Remove all such equipment when construction has been completed. Where it is determined, during construction, that the temporary facilities, as installed, interfere with Building's occupant operations or other construction operations and, when notified by the Owner's Representative or relocate said facilities in an approved manner at no cost to the Owner. No wire, bus or electrical equipment which is part of any of the permanent electrical systems may be used for temporary electrical service for construction operations, unless specifically approved by the Owner's Representative. Temporary connections shall be in accordance with NEC and OSHA requirements. The Contractor shall be responsible for any damage or injury to equipment, materials, or personnel caused by improperly protect temporary installations. All costs for materials and installation for temporary electrical facilities and energy for their operation shall be at the expense of the Contractor. The hours of operation, level of illumination and coverage for safety of personnel shall meet the minimum requirements of the Owner's representative. Provide electrical welders used in the erection and fabrication of equipment with an independent grounding cable connected directly to the structure on which the weld is being made rather than to adjacent conduit or piping.
- D. Elevator or Stair Use: Contractor shall not use the building's elevators or stairs without the express written permission of the Owner.
- E. Access Provisions: Provide safe and structurally sound scaffolds, stairs, ramps, material lifts and similar temporary access elements as reasonably required to perform all aspects and locations of the scope of work and facilitate its inspection during installation, all at no additional cost.

3.3 SECURITY PROVISIONS

- A. Tulsa County will not provide security measures; they are the responsibility of the contractor.

3.4 TEMPORARY SUPPORT FACILITIES

- A. General: The types of temporary support facilities required include, but are not limited to, first aid facilities, cleanup facilities, waste disposal service, and similar miscellaneous general services, all as may be reasonably required for proficient performance of the work and accommodation of personnel at the site. Discontinue and remove temporary support facilities, and make incidental similar use of permanent work of the project, only when and in manner authorized by the Owner Representative and, if not otherwise indicated, immediately before time of substantial completion. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities. These facilities shall be completely removed from the project site before final payment will be made to the Contractor.
- B. Contractor shall furnish gas or propane fired generators as approved by Tulsa County, and temporary lighting system to provide adequate site and task lighting to safely perform all construction activities. Contractor shall incorporate all accessories, devices, etc to reduce noise, fumes and vibration.
- C. Waste Management: Refer to Specification 01010.
1. All waste and debris shall be bagged and hoisted from the roof. Nothing shall be thrown from the roof.
 2. Bagged and loose waste and debris shall be secured/contained at all times and in all locations. Nothing shall be permitted to be blown off the roof or from the site.
 3. No bagged or loose waste of debris shall be placed on existing or completed work without Owner Representative approved protection.
 4. Waste containers, receptacles, dumpsters, etc. shall be provided with lids or covers acceptable to the Owner's Representative.
 5. Bagged wet waste material and debris shall be placed in watertight 45mil EPDM lined containers, receptacles, dumpsters, etc.
 6. Waste containers, receptacles, dumpsters, etc. shall be kept covered/closed while on site and during transport to disposal site. Contractor shall be responsible for payment of all fines received for violations of local, state or federal applicable laws.
 7. Waste shall be disposed of in a legal landfill. Contractor shall provide original receipts from the landfill location for every disposal made. Contractor shall keep a log of waste transport and disposal at the project job site for review by the Owner's Representative at his discretion. Log and receipts will be required as a part of 01700 Project Close Out.

3.5 TEMPORARY SCAFFOLDS, LADDERS AND POWERED LIFTING EQUIPMENT

- A. Provide roof protection at all set up areas and landing areas for scaffolds, ladders and powered lift equipment consisting of ¾” plywood and 1.5” polystyrene insulation.
 - 1. All stage and scaffold equipment shall be tied back and anchored in accordance with all applicable laws and equipment manufacturer’s recommendations.
- B. Provide special staging, lifting or scaffolding equipment enclosure system with netting or other approved means to contain all new and removed materials, tools, equipment, and all other items on the stage or scaffolding from falling to areas below.
- C. Contractor to provide a letter from a licensed engineer or independent testing firm certifying design, condition and loading of Contractor’s staging or scaffolding equipment, installation of equipment, and safety equipment is suitable for intended purpose and complies with all applicable laws. Certification shall be required for each and every change of condition and shall be performed and submitted to the Owner prior to use of stage or scaffolding equipment. All scaffolding shall be inspected by Contractor’s Safety Representative before the start of each days’ work. Faulty conditions discovered shall be remedied immediately.
- D. Contractor shall submit a project specific Safety and Fall Hazard Protection Plan complying with all applicable OSHA laws. Contractor should submit safety plan to Tulsa county for review and approval at the Pre-Construction Meeting. One copy of the Plan shall be maintained at the job site.
 - 1. Contractor shall require all employees on site to read Plan and provide written certification indicating that they have read, understand and will comply with the Plan.
 - 2. Contractor shall submit a copy of the certification signed by all workers on this project, to Owner Representative prior to starting work on this project.
- E. Failure of any Contractor’s employee to lanyard tools or enforce safety requirements will be cause for removal of that employee from jobsite.
- F. Contractor is solely responsible for monitoring and enforcing all safety requirements for this project.

END OF SECTION 01500

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

- A. General: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents. Provisions of this section are applicable to, but are not limited to, utility services, construction facilities, security/protection provisions, and support facilities.

1.2 JOB CONDITIONS

- A. General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. Conditions of Use: Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.
- C. Existing Equipment on Site: Cover equipment that is to remain in place within the area of contract operations and protect it against damage or loss. Store equipment that is removed in performance of work where directed or reuse in work as required by drawings and specifications. Equipment temporarily removed shall be protected, cleaned and restored/repaired equal to its condition prior to starting work. Security for equipment or material that is to be reused and is removed for temporary storage shall be the sole responsibility of the Contractor.
- D. Weather Protection:
1. Submit weather protection plan to the Owner's Representative for approval. Weather protection plan shall be submitted at the Pre-construction meeting or within fourteen days after the notice to proceed is issued.
 2. Maintain adequate inventory of materials to install temporary waterproofing and perform cleanup in the event of a weather emergency, or unforeseen site conditions.
 3. As a part of the project base bid requirements, the Contractor shall visit the project immediately during the onset of any rain event to check for and

repair any water intrusion occurrences into the building regardless of time of day. Contractor shall notify the Owner's Representative immediately of all rain event activities he intends to perform and when they are to take place. Water entry into the building is to be minimized and cost for repair/replacement of damages caused as well as clean-up and removal shall be solely that of the Contractor.

- E. Controlled Access Set-Up and Material Storage Areas:
1. Set-up areas are available at the project site. Locations to be reviewed during Pre-Construction meeting.
 2. Contractor shall erect temporary security fencing as required by Tulsa County. Areas shall be returned to its condition prior to starting work when the project is completed at no additional cost.
 3. Contractor shall erect and maintain overhead protection and fall protection equipment to meet OSHA and Tulsa County requirements at no additional cost, if required.

PART 2 - PRODUCTS – Not Applicable

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY SERVICES

- A. The types of services required include, but are not limited to, water, storm drainage, and electrical power. When connecting to existing franchised utilities for required services, comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
- B. Water: Premises are supplied with which may be used in this work, subject to requirements and conditions of the Owners Representative. Contractor shall make his own arrangements for such services. Where non-potable water is used, mark each outlet with health hazard warning signs.
- C. Storm Drainage: Maintain drainage system in a clean, unclogged condition during construction period. Contractor phasing plan shall include provisions to maintain storm water drainage and watertight building at all times.
- D. Electrical Power: To be reviewed at Pre-Con meeting.
- E. Portable Toilet Facilities: Contractor shall provide ample facilities on site to support the number of employees assigned to the project.
1. Locate remotely from public access/use and as directed by the Owner's Representative.

2. Clean and sanitize weekly or when directed by Owner's Representative.

3.2 TEMPORARY CONSTRUCTION FACILITIES—Refer to the Contract

- A. The types of temporary construction facilities required include, but are not limited to, electrical power distribution, lighting and hoisting facilities, scaffolds or powered material lifts and ladders. Provide facilities reasonably required to perform construction operations properly and adequately at no additional cost.
- B. Enclosures: When temporary enclosures are required to ensure adequate workmanship, weather protection and ambient conditions required for the work, provide fire-retardant treated lumber and plywood; provide tarpaulins with UL label and flame spread of 15 or less at no additional cost.
- C. Electrical Facilities: Provide all temporary electrical facilities, including electrical generators, lamps required for construction and safety operations. Remove all such equipment when construction has been completed. Where it is determined, during construction, that the temporary facilities, as installed, interfere with Building's occupant operations or other construction operations and, when notified by the Owner's Representative or relocate said facilities in an approved manner at no cost to the Owner. No wire, bus or electrical equipment which is part of any of the permanent electrical systems may be used for temporary electrical service for construction operations, unless specifically approved by the Owner's Representative. Temporary connections shall be in accordance with NEC and OSHA requirements. The Contractor shall be responsible for any damage or injury to equipment, materials, or personnel caused by improperly protect temporary installations. All costs for materials and installation for temporary electrical facilities and energy for their operation shall be at the expense of the Contractor. The hours of operation, level of illumination and coverage for safety of personnel shall meet the minimum requirements of the Owner's representative. Provide electrical welders used in the erection and fabrication of equipment with an independent grounding cable connected directly to the structure on which the weld is being made rather than to adjacent conduit or piping.
- D. Elevator or Stair Use: Contractor shall not use the building's elevators or stairs without the express written permission of the Owner.
- E. Access Provisions: Provide safe and structurally sound scaffolds, stairs, ramps, material lifts and similar temporary access elements as reasonably required to perform all aspects and locations of the scope of work and facilitate its inspection during installation, all at no additional cost.

3.3 SECURITY PROVISIONS

- A. Tulsa County will not provide security measures; they are the responsibility of the contractor.

3.4 TEMPORARY SUPPORT FACILITIES

- A. General: The types of temporary support facilities required include, but are not limited to, first aid facilities, cleanup facilities, waste disposal service, and similar miscellaneous general services, all as may be reasonably required for proficient performance of the work and accommodation of personnel at the site. Discontinue and remove temporary support facilities, and make incidental similar use of permanent work of the project, only when and in manner authorized by the Owner Representative and, if not otherwise indicated, immediately before time of substantial completion. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities. These facilities shall be completely removed from the project site before final payment will be made to the Contractor.
- B. Contractor shall furnish gas or propane fired generators as approved by Tulsa County, and temporary lighting system to provide adequate site and task lighting to safely perform all construction activities. Contractor shall incorporate all accessories, devices, etc to reduce noise, fumes and vibration.
- C. Waste Management: Refer to Specification 01010.
1. All waste and debris shall be bagged and hoisted from the roof. Nothing shall be thrown from the roof.
 2. Bagged and loose waste and debris shall be secured/contained at all times and in all locations. Nothing shall be permitted to be blown off the roof or from the site.
 3. No bagged or loose waste of debris shall be placed on existing or completed work without Owner Representative approved protection.
 4. Waste containers, receptacles, dumpsters, etc. shall be provided with lids or covers acceptable to the Owner's Representative.
 5. Bagged wet waste material and debris shall be placed in watertight 45mil EPDM lined containers, receptacles, dumpsters, etc.
 6. Waste containers, receptacles, dumpsters, etc. shall be kept covered/closed while on site and during transport to disposal site. Contractor shall be responsible for payment of all fines received for violations of local, state or federal applicable laws.
 7. Waste shall be disposed of in a legal landfill. Contractor shall provide original receipts from the landfill location for every disposal made. Contractor shall keep a log of waste transport and disposal at the project job site for review by the Owner's Representative at his discretion. Log and receipts will be required as a part of 01700 Project Close Out.

3.5 TEMPORARY SCAFFOLDS, LADDERS AND POWERED LIFTING EQUIPMENT

- A. Provide roof protection at all set up areas and landing areas for scaffolds, ladders and powered lift equipment consisting of ¾” plywood and 1.5” polystyrene insulation.
 - 1. All stage and scaffold equipment shall be tied back and anchored in accordance with all applicable laws and equipment manufacturer’s recommendations.
- B. Provide special staging, lifting or scaffolding equipment enclosure system with netting or other approved means to contain all new and removed materials, tools, equipment, and all other items on the stage or scaffolding from falling to areas below.
- C. Contractor to provide a letter from a licensed engineer or independent testing firm certifying design, condition and loading of Contractor’s staging or scaffolding equipment, installation of equipment, and safety equipment is suitable for intended purpose and complies with all applicable laws. Certification shall be required for each and every change of condition and shall be performed and submitted to the Owner prior to use of stage or scaffolding equipment. All scaffolding shall be inspected by Contractor’s Safety Representative before the start of each days’ work. Faulty conditions discovered shall be remedied immediately.
- D. Contractor shall submit a project specific Safety and Fall Hazard Protection Plan complying with all applicable OSHA laws. Contractor should submit safety plan to Tulsa county for review and approval at the Pre-Construction Meeting. One copy of the Plan shall be maintained at the job site.
 - 1. Contractor shall require all employees on site to read Plan and provide written certification indicating that they have read, understand and will comply with the Plan.
 - 2. Contractor shall submit a copy of the certification signed by all workers on this project, to Owner Representative prior to starting work on this project.
- E. Failure of any Contractor’s employee to lanyard tools or enforce safety requirements will be cause for removal of that employee from jobsite.
- F. Contractor is solely responsible for monitoring and enforcing all safety requirements for this project.

END OF SECTION 01500

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Unless otherwise specifically provided in this contract, reference to any equipment, material, article, or patented process, by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. Subject to compliance with specified requirements, the Contractor may, at his option, use any equipment, material, article, or process which, in the judgment of the Owner's Representative, is equal to that named. No asbestos containing materials shall be utilized.
- B. Definitions: "Products" is defined to include purchased items for incorporation into the work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, installed or applied to form units of work. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in contract documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.
- C. Standards: Refer to Division 1 section "Definitions and Standards" for applicability of industry standards to products of project, and for acronyms used in text of specification sections.

1.2 SUBMITTALS

- A. Requests for Substitutions: Requests for Substitutions must be submitted via email by the Questions deadline shown on the Solicitation Notice. Tulsa County will then forward the Request to the Architect for review and respond to Tulsa County and those responses will be communicated to all vendors via a formally issued addendum.
- B. Labels and Listings: Where equipment or materials are specified to conform to requirements of the standards of organizations such as American Society of Mechanical Engineers (ASME), Underwriters Laboratories Inc. (UL), Sheet Metal and Air-Conditioning Contractors National Association, Inc. (SMACNA), and Air Moving and Conditioning Association (AMCA) or other organizations that use a label or listing as a method of indicating compliance, submit proof of such conformance to the Owner's Representative for approval. The label or listing of

the specified organization will be acceptable evidence. In lieu of the label or listing, the Contractor may submit a notarized certificate from a nationally recognized testing organization, adequately equipped and competent to perform such services and approved by the Owner Representative, stating that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard or code. For materials whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, furnish a notarized certificate from the manufacturer stating that the material complies with the applicable referenced standard or specification.

- C. Work Related Submittals: Contractor's submittal of shop drawings, product data or samples which relate to work not complying with requirements of contract documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

1.3 QUALITY ASSURANCE

- A. Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product or material, select an option which is compatible with other products and materials already selected (which may have been from among options for those other products and materials). Total compatibility among options is not assured by limitations within contract documents, but must be provided by Contractor. Compatibility is a basic general requirement of product/material selections.

1.4 PRODUCT DELIVERY-STORAGE-HANDLING

- A. General:
 - 1. Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss including theft and protect against damage from climatic conditions.
 - 2. Control delivery schedules to minimize storage of products at site or on the roof and conflicts with Tulsa County workforce shift changes.
 - 3. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.
 - 4. Damaged or defective items, in the opinion of the Owner's Representative shall be replaced at no cost to the Owner.
 - 5. Protect all moisture sensitive products.

1.5 WARRANTIES (GUARANTEES)

- A. General: The warranty and guarantee provisions of the General Conditions apply to all work of the contract, including but not limited to, the following specific categories related to individual units of work specified in sections of Divisions 2 through 16 and Section 07999 of these specifications:
1. Special Project Warranty (Guarantee): A warranty specifically written for the Contractor and roof system, all materials and equipment furnished under the contractor for all materials and equipment furnished under the contract documents against defects in materials and workmanship for five (5) years and twenty (20) years respectively from the date of final acceptance; Refer to the Contract and Section 07999.
 2. Specified Product Warranty: A warranty which is required by contract documents, to be provided for a manufactured product incorporated into the work, regardless of whether manufacturer has published a similar warranty without regard for specific incorporation of product into the work, or has written and executed a special project warranty as a direct result of contract document requirements.
 3. Coincidental Product Warranty: A warranty which is not specifically required by contract documents (other than as specified in this Section); but which is available on a product incorporated into the work, by virtue of the fact that manufacturer of product has published warranty in connection with purchases and users of product without regard for specific applications except as otherwise limited by terms of warranty.
- B. Refer to individual sections of Divisions 2 through 16 for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees), in excess of what the General Conditions or Contract require.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT COMPLIANCE

- A. General: The compliance requirements for individual products, as indicated in contract documents, are multiple in nature and may include generic, descriptive, performance, prescriptive, compliance with standards, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with.
- B. Procedures for Selecting Products: Contractor's options for selecting products are limited by contract document requirements, and governing regulations, and are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying:
1. Standards, Codes and Regulations: Where only compliance with an imposed standard, code or regulation is required, selection from among

- products which comply with requirements including those standards, codes and regulations, is Contractor's option.
2. Performance Requirements: Provide products which comply with specific performances indicated, and which are recommended by manufacturer (in published product literature or by individual certification for application indicated. Overall performance of a product is implied where product is specified with only certain specific performance requirements.
 3. Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
 4. Visual Matching: Where matching with an established sample is required, final judgment of whether a product proposed by Contractor matches sample satisfactorily is the Owner Representative's.
 5. Visual Selection: Except as otherwise indicated, where specified product requirements include "...as selected from manufacturer's standard colors, patterns, textures..." or words of similar effect, the selection of manufacturer and basic product (complying with requirements) is Contractor's option and subsequent selection of color, pattern and texture is the Owner's Representative's selection.

2.2 GENERAL PRODUCT REQUIREMENTS

- A. General: Provide products which comply with the clause "QUALITY OF MATERIALS, EQUIPMENT AND WORKMANSHIP" of the General Conditions, and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety guards and other devices and details needed for complete installation and for intended use and effect.
 1. Standard Products: Products shall be essentially the standard catalogued products of manufacturers regularly engaged in production of such products and shall be the manufacturer's latest standard design that complies with the specification requirements. Equipment shall essentially duplicate items that have been in satisfactory commercial and industrial use at least two years, or more if otherwise specified, prior to bid opening; or in lieu thereof shall have been used and operated in a test installation which, in the opinion of the Owner's Representative, duplicate its field performance for the same period of time. The Owner's Representative reserves the right to require the Contractor to submit evidence to this effect for his approval. When two units of the same class of equipment are required, these units shall be the product of a single manufacturer; however, the component parts of the system need not be the products of the same manufacturer.
 2. Continued Availability: Products which, by nature of their application, are likely to be needed at a later date for maintenance and repair or replacement work, shall be current models for which replacement parts are available.

PART 3 - EXECUTION – Not Applicable

END OF SECTION 01600

SECTION 01700 - PROJECT CLOSEOUT

PART 1 – GENERAL

1.1 SUMMARY

- A. General: This section includes general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in other sections of these specifications. Time of closeout is directly related to "Substantial Completion", and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been noted as substantially complete at different dates.
- B. All Closeout documents shall be submitted within 60 calendar days of final inspection.

1.2 PREREQUISITES TO SUBSTANTIAL COMPLETION

- A. General: Prior to requesting inspection for certification of substantial completion (for either entire work or portions thereof), complete the following and list known exceptions in request:
 - 1. In progress payment request, coincident with or first following date claimed, show either 100% completion for portion of work claimed as "substantially complete", or list incomplete items, value of incompleteness, and reasons for being incomplete. Include supporting documentation for completion as indicated in these contract documents.
- B. Pre-Final Inspection Procedures: Upon receipt of Contractor's request for an inspection for certification of substantial completion, the Tulsa County's Representative will either proceed with a pre-final inspection or advise the Contractor of pre-requisites not fulfilled. Following the pre-final inspection, the Tulsa County's Representative will note substantial completion, or advise the Contractor of work which must be performed and repeat inspection when requested and assured that work has been substantially completed. Results of the completed pre-final inspection will be documented on the "Defects and Omissions List". Items listed on the "Defects and Omissions List" shall be completed prior to final acceptance.

1.3 PREREQUISITES TO FINAL ACCEPTANCE

- A. General: Prior to requesting final inspection for certification of final acceptance and final payment complete and submit the following:

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1. Submit copy of pre-final Defects and Omissions List stating that each item has been completed or otherwise resolved for acceptance.
 2. Complete all final cleaning up and restoration activities requirements, including touch-up painting of marred surfaces, site related items, etc. to the satisfaction of the Tulsa County's Representative.
 3. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, Manufacturer's Certifications, landfill and disposal receipts and similar documents indicated in ALL sections of the project specifications.
 4. **Submit as-built drawings and specifications and similar final record information acceptable to the Tulsa County Representative. As-built documents shall be complete and legible and include all modifications made to the construction document information during construction. As-built documents will be submitted to Tulsa County representative BEFORE final inspection is performed. All added project costs incurred due to contractor's non-compliance with this requirement will be paid for by the Contractor/deducted from the final payment.**
- B. Final Inspection Procedure: Provide, in writing, a notice that all the work related to the contract, including punch-list items resulting from earlier inspections and previous incomplete items have been completed. Upon receipt of Contractor's notice, the Tulsa County's Representative will perform a final inspection of the work. The Tulsa County's Representative, manufacturer's representatives, and Contractor's Representative shall attend the Final Inspection. Upon completion of final inspection, the Tulsa County's Representative will either notify the Contractor that the work is accepted as complete and prepare documents to have the Tulsa County Representative issue a certificate of final acceptance or advise the Contractor of work not completed and/or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.
1. In the event the "final inspection" is repeated due to the Contractor's failure to complete and/or verify as being complete all punch list items and other previously accepted incomplete items, the Contractor shall be responsible for payment for additional costs incurred to the Tulsa County.
 2. The Tulsa County Representative will determine the amount, if any, to be paid by the Contractor. Amount will be deducted from the Contractor's final payment.
- C. After the final inspection has been performed and the Contractor is notified by the Tulsa County Representative that the work is accepted, provide copies of the following to the Tulsa County's Representative for review and acceptance.
1. Submit Table of Contents of Contractor's Project Closeout Manual to Tulsa County Representative for review / comment within 7 days after Final Inspection.

2. Submit a copy of the final payment request with final releases, consent of surety to final payment, waiver of liens, and supporting documentation not previously submitted and accepted.
 3. Submit a copy of final Defects and Omissions List stating that each item has been completed or otherwise resolved for acceptance.
 4. Submit a copy of the specific warranties, final certifications, maintenance requirements, etc.
 5. Submit As-built drawings and specifications or notarized letter under signature that the project was constructed per the Contract Documents.
- D. After being notified by the Tulsa County's Representative that the documents are accepted, provide the following to the Tulsa County:
1. Submit the original final payment request with final releases, consent of surety of final payment, waiver of liens, and supporting documentation not previously submitted and accepted.
 2. Submit the final Defect and Omissions List stating that each item has been completed or otherwise resolved for acceptance.
 3. Submit the original of the specific warranties, final certifications and Manufacturer's maintenance requirements, Manufacturer certifications and technical reports, and other documents indicated in ALL sections of the project specifications, with three copies of each document.
 4. Submit As-Built drawings and specifications, if necessary.
 5. Submit 3 complete bound sets of product data, shop drawings, submittals etc., to the satisfaction of the Tulsa County representative.
- E. In the event the Contractor fails to receive notice from the Tulsa County's Representative relating to the approval of the final payment request and associated documents within 14 calendar days, notify the Tulsa County Project Manager.

PART 2 – PRODUCTS - Not Applicable

PART 3 – EXECUTION

3.1 FINAL CLEANING

- A. Comply with manufacturer's instructions for cleaning operation. The following is required in addition to special cleaning specified in technical sections.
1. Remove all construction activity related debris from the roof and bulk storage, staging areas, and the area around the building to the satisfaction of Tulsa County's Representative.
 2. Wipe surfaces of roof equipment and wall projections clean.
 3. Clean project site, building(s), including landscape and site areas of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits. Repair /

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replace any site or building related items damaged during execution of the work to the satisfaction of the Tulsa County's Representative.

- B. Removal of Protection: Except as otherwise indicated or requested by the Tulsa County's Representative, remove temporary protection, access devices and facilities which were installed or used during course of the work.

END OF SECTION 01700

SECTION 02070 - SELECTIVE DEMOLITION AND RENOVATION WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions apply to this Section.
- B. All sections of the specifications are related to each other and are to be utilized in conjunction with each other for the successful execution of this work.

1.2 SUMMARY

- A. This section includes, but is not limited to the following:
 - 1. Roof Replacement Work and Related Modifications:
 - a. Remove and dispose of existing ballasted aggregate, roof membrane, flashings, and insulation down to deck and wall substrates.
 - b. Remove and dispose of obsolete equipment, curbs, duct, insulation, and supports as indicated on plans.
 - 2. Asbestos containing material related work: Refer to Specification 01010.
 - 3. The contractor has sole responsibility for control and execution of all work related to this project to insure that it will not affect the operations, systems or equipment within the area of work.
- B. Coordination
 - 1. The contractor shall be responsible for securing the services of and for the coordination of work performed by Tulsa County personnel, independent Tulsa County service or other contractors contracted to perform the following services in conjunction with this project:
 - a. Electrical Modifications to be performed by Contractor:
 - 1) Contractor shall coordinate with Tulsa County approved subcontractor who will perform all electrical work required under contract.
 - b. Mechanical installation and Modifications to be performed by Contractor.
 - 1) Contractor shall coordinate all required work with Tulsa County approved Subcontractor who will perform mechanical work required under contract.
 - c. Interior Protection:
 - 1) (Limited) Review requirements for, and schedule with Tulsa County Representative, all work of the Interior Protection Subcontractor to ensure interior protection is in place prior to the commencing of roof work or any work

- that could potentially cause damage to any equipment, systems etc located inside the building.
- 2) Interior protection shall be suspended cover or drape and cover as determined. Scaffolding or support structures which will interfere with the operation of the facility will be permitted only with Tulsa County approval.
 - 3) Installation of interior protection shall be done during scheduled times indicated in Specification Section 01010.
- d. Asbestos containing Material Removal/Modification:
- 1) Contractor shall coordinate all work with abatement.
 - 2) Contractor shall coordinate and schedule the work and be responsible for its completion.
2. All other miscellaneous incidental work required to install complete and weather tight roof system installation as specified and as required to obtain specified manufacturer's warranties.

1.3 SUBMITTALS

- A. Schedule indicating proposed sequence of operations for selective demolition work to Tulsa County Representative for review and acceptance prior to start of work.
1. Provide detailed sequence of demolition and renovation work to ensure uninterrupted progress of the Building's operations and interior protection installation.
 2. Coordinate all demolition and renovation work to maintain the building in a watertight condition.
- B. Provide submittal information as outlined in specification section 01300.

1.4 JOB CONDITIONS

- A. Occupancy: The facility is operational continuously and Tulsa County will occupy the building during demolition and construction phases. Conduct selective demolition and renovation work in a manner that will minimize need for disruption of the building's operations. Provide minimum of 72 hours advance notice to Tulsa County Representative of demolition activities that will affect facility activities or operations or require equipment shutdown. Refer to Specification Section 01010.
- B. Condition of Structures: Tulsa County assumes no responsibility for actual condition of items to be demolished.
1. Contractor shall assume all responsibility for equipment and components to be removed and re-installed.

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- C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value shall be protected and stored. Tulsa County has the option of retaining or having the contractor remove from the site.
 - 1. Sale of removed items on site will not be permitted.
 - 2. Tulsa County shall be credited for value of all salvaged items not retained.

- D. Protections: Provide temporary barricades, overhead protection and other forms of protection to protect Contractor personnel and general public from injury due to selective demolition work.
 - 1. Provide protective measures as required to provide free and safe passage of Tulsa County's personnel and general public to any portion of building where roof work is being performed.
 - 2. Provide protection from damage to existing finish work that is to remain in place and becomes exposed during demolition operations.
 - 3. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 - 4. Install temporary barricade/fencing around set-up staging areas.
 - 5. Remove protections at completion of work. Coordinate and schedule with Tulsa County Representative.

- E. Damage: Promptly repair damage caused to adjacent facilities or building components by demolition and renovation work. Refer to Specification 01010.

- F. Traffic: Conduct selective demolition and renovation operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction and Tulsa County. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

- G. Approved Flame Cutting or Welding: Do not use cutting torches for removal or welders for installation until hot work permit is obtained and work area is cleared of flammable materials. At concealed spaces, verify condition of hidden space before starting flame-cutting or welding operations. Maintain adequate number of portable fire suppression devices during flame-cutting and welding operations. Provide dedicated firewatch personnel inside and outside of building as required by Tulsa County. Refer to specification 01010 for Hot Work Procedures and Permit.

- H. Utility Services: Maintain existing utilities in service and protect them against damage during demolition operations.

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1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction and Tulsa County. Provide temporary services during interruptions to existing utilities, as acceptable to authorities having jurisdiction and Tulsa County.
 2. Provide and maintain fire protection services and equipment during demolition and construction operations.
- I. Environmental Controls:
1. Use methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection. Interior protection systems are to be provided by the Contractor.
 - a. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
 2. Do not create openings in roof or exterior walls which may allow leakage during rain when possibility of rain is 30% or more as reported by the local National Weather Service reporting station or another agreed to weather reporting source.
 3. Schedule and conduct operations to accommodate wind conditions. Do not perform work with winds exceeding 30 mph, or when safe work practices cannot be maintained.
 4. Provide material and run-off containment areas as directed by authority having jurisdiction and Tulsa County.
 5. Refer to Specification Section 01010.
- J. Emergency Equipment: Maintain on-site materials and equipment necessary to apply emergency temporary seal in event of sudden storms or inclement weather. Provide rooftop fire extinguishers and first aid items as mandated by the authority having jurisdiction, OSHA and Tulsa County.
- K. Seal all air intakes, vents, louvers and other such items to prevent fumes, odors, dust and debris from entering building. Coordinate with Tulsa County's Representative.
- L. Only enter building, with an approved representative and at approved locations. Areas requiring cleaning due to contractor non-compliance shall be done by the contractor at no additional cost to Tulsa County.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials for Reinstallation: Carefully raise or remove, store, and protect for reinstallation the following:
1. Designated electrical related, mechanical related, process related ventilation equipment, duct work or miscellaneous fabrications.

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2. Other items are indicated on the drawings.
- B. Fasteners:
1. Nails: Non-ferrous, cement-coated, or hot-dip galvanized ring shank nails.
 2. Concrete and Masonry Screws:
 - a. Stainless steel or galvanized with lead expansion anchors.
 - b. Acceptable Manufacturers:
 - 1) ITW Buildex.
 - 2) The Rawlplug Company, Inc.
 - 3) Or Approved Equal.
 4. Steel deck screws:
 - a. Stainless steel.
 - b. Kwik-Flex self-drilling corrosion resistant by Hilti.
 - c. Or Approved Equal.
- C. Grout - Concrete Deck Patching and Pitch Pan Base:
1. Quick setting formula.
 2. Acceptable Products:
 - a. SonnogROUT 10K, Sonneborn Building Products.
 - b. W.R. Meadows CG.86 grout.
 - d. Or Approved Equal.
- D. Roof Deck Plate (repair areas less than 144 sq inches in size): 16ga galvanize
- E. Roof Deck: Match existing metal deck in configuration, gage and finish. Anchor to match existing spacing. Refer to structural drawings.
- F. Moisture insensitive epoxy: acceptable products:
1. Sika
 2. 3M
 3. Or Approved Equal
- G. Metal and Metal Deck Primer:
1. DevGuard 4308 primer
 2. Or Approved Equal.
- H. Lightweight concrete fill materials:
1. Material acceptable to roof system manufacturer
 2. Submit product and MSDS data to Consultant

PART 3 – EXECUTION

3.1 GENERAL

- A. Provide support if required to prevent collapse of items or areas to be demolished and adjacent areas to remain.

1. Cease operations and notify Tulsa County Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
- B. Contractor shall erect and maintain dust-proof partitions, closures, seals, and overhead protection as required to prevent spread of dust, debris, or fumes into or within the building. The Contractor shall be responsible for properly protecting items in the building to insure facility operation is unaffected at any time.
- C. Coordinate and schedule activities with Tulsa County Representative with regard any aspect of the work.

3.2 PREPARATION

- A. Take measures to maintain watertight conditions during term of Contract. Contractor is responsible for damage to building and its contents during term of contract due to leaks and for repairing leaks immediately as they occur or for failure to provide temporary enclosures to protect the interior of the building and its contents during the work. Refer to Specification Section 01010.
- B. Interior protection shall be provided by the Contractor prior to start of any activities on the roof. Coordinate/determine areas of interior protection to be installed with Tulsa County Representative and Facility Manager.
- C. Notify Tulsa County's Representative one (1) week in advance of anticipated mechanical, electrical and plumbing work. Do not commence with this work until operation schedule of other Tulsa County subcontractors is confirmed and that their operations will not be disrupted and notice to proceed is given by the Tulsa County Representative.

3.3 DEMOLITION AND DECONSTRUCTION

- A. General: Perform selective demolition and deconstruction work in a systematic manner. Do not remove more materials than can be infilled and made watertight in the same day.
- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Tulsa County's Representative in written, accurate detail. Pending receipt of directive from Tulsa county's Representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.
- C. Roof Removal and Deck Renovation:

1. Inform Tulsa County Representative of demolition and deconstruction activities for scheduling at a time that would not disrupt facility operations.
 2. Insure all interior protection is in place and checked for tight seal at each location demolition is scheduled to occur.
 3. Remove existing roofing, down to existing concrete deck as indicated on the drawings.
 4. Repair existing deck as indicated on the drawings, if needed.
 5. Coordinate work with interior protection, mechanical and electrical work with Tulsa County Representative.
 6. Do not stockpile debris on any roof surface. Promptly dispose of obsolete equipment not desired to be kept by Tulsa County and debris at authorized disposal site each day.
 7. No hauling of debris, or moving equipment over existing roof membrane shall be permitted without roof protection material accepted by Tulsa County representative.
 8. Do not allow debris to fall, be thrown, or be blown from roof areas.
 9. Vacuum clean substrates. Do not create airborne debris. Use air blowers with permission of Tulsa County's Representative only.
 10. Wet insulation shall be placed in watertight, lined dumpsters, containers or bags only.
- D. Coordinate demolition and deconstructed work, roofing operations and interior protection to maintain the building in watertight, dirt and dust free interior condition.

3.4 DISPOSAL OF DEMOLISHED AND DECONSTRUCTED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.
1. If hazardous materials are encountered during demolition operations, contact Tulsa County for direction as to proper disposal.
 2. Burning of removed materials is not permitted on project site.
 3. Hazardous materials abatement is contracted through Contractor and is to be done by the abatement subcontractor.
 4. Lead jacks shall be collected and placed in containers for proper disposal.
- B. Provide legible copy of receipt obtained from the disposal site to the Tulsa County Representative for each load of waste material disposed.
- C. Asbestos contractor – refer to Specification 01010.
- D. Components retained by Tulsa County:

1. Items indicated on the drawings to be loaded, transported, unloaded and neatly stockpiled by contractor personnel at an on-site location designated by the Tulsa County Representative.

3.5 FALL PREVENTION

- A. Contractor shall submit a Fall protection/Prevention Plan to Tulsa County for review and approval at the Pre-Construction meeting and comply with the provisions of approved plan at all times.

3.6 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work and renovation, remove tools, equipment, and demolished materials from site. Remove protections and leave areas vacuum clean.
 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition and renovation work. All repairs and replacements shall be done to the satisfaction and at no additional and at no additional cost to of Tulsa County.

END OF SECTION 02070

SECTION 06100 - ROUGH CARPENTRY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS AND SECTIONS

- A. The drawings and General Provisions of Contract, including General and Supplementary Conditions, and all sections of the specification are related to each other and are to be utilized in conjunction with each other for the successful execution of this work.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Installation of new nailers at new curbed penetrations as required for minimum 8" flashing height.
 - 2. Installation of framing and blocking to match new insulation thickness on the perimeters and per details (details may not show all wood blocking to be installed).
 - 3. Refer to Schedule of Values.

1.3 DEFINITIONS

- A. Rough carpentry includes carpentry work not specified as part of other Sections and generally not exposed, unless otherwise specified.

1.4 DELIVERY, STORAGE AND HANDLING, PROTECTION OF STORED AND INSTALLED MATERIAL

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
- B. Identify and separate damaged materials to prevent use.
- C. Use means necessary to protect installed work from damage or displacement.

15. SUBMITTALS

- A. As outlined in Specification Section 01300.

PART 2 – PRODUCTS

2.1 LUMBER, GENERAL

- A. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Wood Members, Deck Nailers, and Blocking: Pressure preservative treated in accordance with AWPA using Copper Azole (CA-B or CBA-A) and retaining 0.10 pounds salt per cubic foot wood. Preservatives shall be compatible with roof membrane.
 - 1. Preservative Treated and Noncombustible: Standard Grade fir or No. 2 Southern Yellow Pine bearing UL label.
 - 2. Complying with American Lumber Standards of manufacturer's association under whose rules lumber is produced.
 - 3. Kiln-dried, marked with mill identification.
 - 4. Moisture Content: 15 percent maximum at time of installation.
- C. Plywood Substrate: Minimum 3/4", CDX exterior grade plywood sheathing with square edges, or thickness to match existing thickness and size of substrate units being replaced. Pressure preservative treated in accordance with AWPA using Copper Azole (CA-B or CBA-A) and retaining 0.10 pounds salt per cubic foot wood. Preservatives shall be compatible with roof membrane. Kiln dried, maximum 15 percent moisture content at time of installation.
- D. Treated Lumber shall be treated to comply with the American Wood Preservers Association (AWPA) C2 standard and inspected by an agency certified by American Standards Committee's (ALSC) Board of Review.
- E. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
 - 1. SPIB - Southern Pine Inspection Bureau.
 - 2. WCLIB - West Coast Lumber Inspection Bureau.
 - 3. WWPA - Western Wood Products Association.
 - 4. AWPA - American Wood Preserves Association.
- F. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, and moisture content at time of surfacing, and mill.
- G. Nominal sizes are indicated, except as shown by detail dimensions.

- H. Fire-resistant Load Treatment: Comply with current International Building Code requirements and standards.

2.2 NAILERS, BLOCKING, FRAMING SUPPORTS, AND MISCELLANEOUS LUMBER (ALL MATERIALS LISTED MAY NOT BE A PART OF THIS PROJECT SCOPE)

- A. General: Provide lumber and boards for support or attachment of other construction including rooftop equipment curbs and support bases, wood cants, nailers, blocking, furring, grounds, stripping, and similar members as indicated on detail drawings.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes to match existing or as indicated on the drawing.
- C. Minimum width dimension of roofing insulation stop / nailers shall be 6" nominal (No 2"x4" lumber).
- D. Non-combustible and pressure preservative treated in accordance with AWPB LP-2 using Wolman Salts (Tanalith) and retaining 0.25 pounds salt per cubic foot wood. Preservatives shall be compatible with roof membrane.
 - 1. Preservative Treated and Noncombustible: Standard Grade fir or No. 2 Southern yellow Pine bearing UL label.
 - 2. Complying with American Lumber Standards of manufacturer's association under whose rules lumber is produced.
 - 3. Marked with mill identification.
 - 4. Moisture Content: 15 percent maximum at time of installation.

2.3 CONSTRUCTION PANELS, GENERAL

- A. Provide material acceptable to roof system manufacturer as substrate for cold process application of flashing, vapor barrier membrane and roofing membrane (refer to Specification Section 07525).
- B. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.
- C. Trademark: Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.
- D. Wood sheathing Overlay Panels: Provide APA rated panels complying with requirements indicated for grade designation, exposure durability classification, and thickness.
 - 1. Grade designation - APA CDX PLUGGED, EXTAPA.

2. Exposure durability classification - EXPOSURE 1.
 3. Thickness - 3/4 inch or as indicated on the drawings.
 4. Fire-resistive treated at locations of torch-applied roofing materials if acceptable to roof system manufacturer and authority having jurisdiction.
- E. Gypsum overlay, thermal underlayment barrier, substrate/cover board and fire barrier panels:
1. Densdeck “Prime” or “Duraguard” roof boards by Georgia – Pacific or equal approved by the roofing manufacturer.
 2. Panel size as recommended by Georgia – Pacific and the Roofing Manufacturer; fire – resistive as required by final roofing system installation selected.
 3. Adhere to substrate as recommended by the Panel Manufacturer.
- F. Fasteners/Adhesive:
1. Corrosion resistant screw anchors.
 2. Size and length as recommended by manufacturer.
 3. Adhesive as recommended by the panel manufacturer. Submit Product and MSDS to Architect.

2.4 FASTENERS

- A. Fasteners and Plates: Corrosion resistant anchors approved by manufacture; type and length recommended by manufacturer for existing substrate.
- B. Fasteners shall project into substrate in accordance with Factory Mutual and manufacturer’s requirements.
- C. Concrete and Masonry Fasteners:
1. Round head stainless steel screw and neoprene washer with lead expansion anchor, FS FF-S-325, Group IV, Type II.
 2. Acceptable Products:
 - a. Rawlplug, The Rawl Plug Company, Inc.
 - b. Trufast CF Fastener.
 - c. Or approved equal.
- D. Wood Screws:
1. Steel fastener with fluorocarbon coating.
 2. Thread Diameter: 0.220-inch minimum.
 3. Shank Diameter: 0.172-inch minimum.
 4. Acceptable Products:
 - a. Olympic #12 standard roofing fastener with CR-10 fluorocarbon coating.
 - b. Trufast TP Fastener with Trukote PC-3 coating.
 - c. Or approved equal.

- E. Nails:
 - 1. Hot dipped galvanized 8d ring shank nails for decking.
 - 2. Hot dipped galvanized 16d ring shank nails for framing.
- F. Sheet Metal Screws: Self tapping sheet metal screws. Size as required for intended use.
- G. Washers: Galvanized steel, lead or neoprene type as required.
- H. All exposed fasteners to be stainless steel, or non-corrosive as required to match fastened materials and substrate.
- I. Construction Adhesive: Premium Grade, waterproof adhesive, similar to “Liquid Nails”, for materials which adhesive is to bond. Provide MSDS to David L. Moss Criminal Justice Center for review.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Securely attach carpentry work to substrate by adhering, anchoring, and fastening as required by industry standards.
- D. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Replace all split material. New material that splits during installation shall be removed and replaced at no additional cost to Tulsa County.

3.2 SUBSTRATE, NAILERS, BLOCKING, SLEEPERS, CURBS, PLATFORMS AND EXPANSION JOINTS

- A. Install substrate, nailers, blocking, and sleepers, curbs, platforms and expansion joints where detailed and required for screeding or attachment of other work. Use construction adhesive as indicated on the details.
- B. Fabricate curbs, platforms and expansion joints as detailed.
- C. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- D. Attach as required to support and resist applied gravity, and 300 pounds per linear foot uplift or pullout loading. Add additional anchors to existing materials as directed by Tulsa County Representative.

3.3 CODE MARKINGS

- A. During installation of lumber products, install lumber products so that code markings are readily viewable during inspections.
- B. Contractor may be required, without additional cost to Tulsa County, to remove and reinstall lumber products not showing code markings for inspection.

3.4 CLEANING

- A. Daily clean-up and proper disposal of waste, debris, saw-dust, anchors and other similar materials shall be done by the Contractor to the satisfaction of the Facility Manager and the Tulsa County Representative at no additional cost to Tulsa County. No exceptions.

END OF SECTION 06100

SECTION 07228 – ROOF AND DECK INSULATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes installation of multiple layers of rigid polyisocyanurate insulation board, tapered insulation, crickets and saddles of insulation board, and gypsum cover board over roof deck substrate on the David L. Moss Criminal Justice Center as indicated on the Drawings.
- B. First layer of rigid insulation board adhered with FM Global 1-120 Approved, low-rise foam adhesive on all roof areas, will be adhered to the temporary roof, installed to the exiting concrete tees.
- C. The second insulation board, tapered insulation, crickets and saddles and cover board are to be adhered to the base layer of rigid with FM Global 1-120 Approved, low-rise foam adhesive on all roof areas.
- D. Non-combustible spray foam insulation is to be installed at voids in roof/wall and any other type of thermal barrier discontinuities prior to installation of vapor barrier/secondary roof membrane underlayment board.
- E. Ensure there is adequate slope and positive drainage away from fan curbs on all roof areas. Provide crickets and saddles between drains and around drainage obstructions present on the roof. Tapered insulation on all roof areas. Standing water on the roof beyond the limits permitted by warranty provisions of the roofing manufacturer are unacceptable and will be corrected by the Contractor as part of the Base Bid amount.

1.3 RELATED SECTIONS

- A. 01010 – Summary of the Work
- B. 01400 – Quality Control
- C. 06100 – Rough Carpentry
- D. 07525 – Cold Process Modified Bitumen Roofing

- E. 07600 – Flashing and Sheet Metal
- F. 07900 – Sealants and Caulking

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C 518: Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
 - 2. D 4479: Cold Process Asphalt Based Adhesives
 - 3. E-84: Surface Burning Characteristics of Building Materials
 - 4. C 209: Water Absorption
 - 5. C 177: Test for Thermal Conductivity of Materials
 - 6. C1289: Standard Specification for Rigid Cellular Polyisocyanurate Thermal Insulation Board
- B. National Roofing Contractors Association (NRCA):
 - 1. NRCA Roofing and Waterproofing Manual, Current Edition

1.5 SUBMITTALS

- A. Product Data and MSDS Sheets: Data sheets for each component required, including base sheet, vapor barrier, insulation, insulation adhesive, base sheet fasteners, fasteners, and plates shall meet FM Global 1-105 requirements. Clearly indicate on submittal the length of fastener and type of plate to be installed.
- B. Shop Drawings
 - 1. Provide scaled layout diagram for each size and type of roof insulation board utilized.
 - 2. Provide plan showing layout of roof areas indicating insulation pattern, direction of slope, taper insulation plan, amount of slope, spot elevations indicating thickness at high and low points, and cricket / saddle locations.
 - 3. Note impact of new insulation systems on equipment and penetration flashing heights, and modification plan to achieve minimum 8” height.
 - 4. Manufacturer’s acceptance stamp with signature and date shall be applied to all shop drawings.
- C. Certificates: Roofing system manufacturer's written acceptance of proposed insulation, facer material, adhesives / anchors, and procedures for installation.
- D. Refer to following sections for additional required submittals.

1.6 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Provide Underwriters Laboratories, Inc., Class A rated system and component materials.
 - 2. Comply with NRCA Roofing and Waterproofing Manual's recommendations for non-nailable deck.
 - 3. Install in accordance with FM Global's Class 1 fire rating and 1-105 wind uplift criteria.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store materials in accordance with manufacturer's recommendations.
- B. Outdoor Storage:
 - 1. Tarp and shield vapor barrier, base sheet, insulation and cover board from moisture and ultraviolet rays.
 - 2. Elevate insulation above substrate 4 inches minimum.
 - 3. Secure insulation to resist high winds.
 - 4. Test and remove from site all insulation base sheet and vapor barrier membrane determined wet, as defined by reading of 15 or higher on handheld Delmhorst moisture meter. Tulsa County representative shall be present during all testing.
 - 5. Remove from site all base sheet, vapor barrier membrane, insulation and cover board that has been wet, but which has dried.
 - 6. Distribute insulation stored on roof deck to prevent concentrated loads that would impose stress or strain on deck or structural members, or block drainage of storm water.

1.8 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Apply base sheet, underlayment board, SA vapor barrier, insulation boards, tapered insulation boards and cover boards in dry weather.
 - 2. Do not proceed with roof construction during inclement weather or when chance of precipitation is predicted to be 30% or greater per the agreed to weather reporting service.
 - 3. Do not apply SA vapor barrier system, adhesive or insulation boards over wet or moist deck or in foggy conditions.
 - 4. Do not proceed with roof construction when wind speeds are 30 mph or when safe work procedures cannot be maintained.
 - 5. Do not apply SA vapor barrier, cover or insulation board in any condition, which would not meet the manufacturer's recommendations/requirements.
 - 6. Install adhesive when adhesive, ambient, and surface temperatures are within manufacturers recommended range.

- B. Protection
 - 1. Provide special protection from traffic on completed work. Minimal traffic over completed work is preferred.
 - 2. Remove all damaged base sheet, vapor barrier insulation and install acceptable new units before installation of roof system.
 - 3. Do not install more basesheet, vapor barrier, insulation or cover board than can be covered with roof membrane and flashings in the same day.
 - 4. Maintain on site equipment and material necessary to apply emergency temporary seals in the event of sudden storms or inclement weather.
 - 5. Costs for emergency roofing shall be paid by roofing contractor.

1.9 SEQUENCING AND SCHEDULING

- A. Plan roof layout and progress of work with respect to roof deck slope to avoid rainwater drainage into completed roofing.
- B. Coordinate base sheet, vapor barrier, insulation, tapered insulation, cover board and roofing work with other work to prevent traffic and material handling over new work.
- C. Deck Acceptance: Prior to start of roof system installation, the roofing contractor shall inspect all roof decks and associated substrates and provide written acceptance of conditions to Tulsa County Representative. No work shall commence without written acceptance of deck or substrate. Installation of materials without written acceptance constitutes acceptance of the deck installation by the roofing contractor.

1.10 WARRANTY

- A. Contractor's Warranty: Furnish written warranty in accordance with Tulsa County roofing manufacturer's requirements agreeing to replace failing insulation or insulation adhesive due to defective material or workmanship. Warranty shall include, but may not be limited to, all other work performed by Contractor which may be described in other sections including, but not limited to roofing, flashings, sealants, caulking, sheet metal, and roofing accessories. Warranty period is five (5) years from date of final acceptance by Tulsa County. Refer to Section 07999 for Roofing Contractors Five (5) Year Warranty.
- B. Roof System Manufacturer's Warranty: Roof Membrane Manufacturer Warranty shall specifically include coverage of the insulation systems, adhesives and fasteners under the Twenty (20) Year No Dollar Limit Total Roof System Warranty to be furnished under this contract. Refer to Section 07999.

PART 2 – PRODUCTS

2.1 PRIMARY, COVER, TAPERED INSULATION, CRICKETS AND SADDLES

- A. All thermal, primary, cover and tapered insulation products shall be approved in writing by the product manufacturer and roof system manufacturer for use with low-rise foam adhesives. Roof system manufacturer shall submit test certificates or field approvals documenting FM Global Class 1-120 and U.L. Class A approvals of the proposed system.
- B. Board Insulation Layers: Insulation composed of rigid closed cell polyisocyanurate foam insulation:
1. Base layers of flat board: 2.3” thickness as indicated on the drawing.
 2. Minimum thickness: 2.3" at drains indicated on the drawings. Confirm required thickness with existing conditions.
 3. Minimum density: 2.0#/cf.
 4. Minimum R-value: R=5.6 per inch thickness.
 5. Board size: 4'-0"x4'-0".
 6. Provide board in thicknesses (not to exceed 2.3”) as permitted by UL, FM Global, and roofing manufacturer’s warranty provision.
 7. Acceptable Products:
 - a. Paratherm by Siplast
 - b. Or equal approved in writing by roofing system manufacturer
- C. Tapered Insulation, Crickets, Diamonds, and Saddles: Rigid, closed cell, polyisocyanurate foam insulation with fiberglass facers. Tapered system at cricket, saddle, and drain sump shall be pre-engineered and factory cut in 4’ x 4’ boards to reduce the number of layers and to provide minimum resultant 1/8” slope to the drains and when installed over existing substrate. Refer to drawings for configuration of crickets and saddles between scuppers. Provide tapered units to provide minimum ½” per foot slope between drains. Provide 1/4” per foot slope tapered insulation in drain sumps.
1. Minimum thickness: ½ inches.
 2. Full tapered ¼” per foot slope insulation on all roof areas.
 3. Slope for saddles and crickets: slope shall be 200% of the slope of the tapered insulation system on each roof area or as noted and dimensioned on the drawings.
 4. Acceptable Products:
 - a. Paratherm by Siplast
 - b. Or equal approved in writing by roofing system manufacturer.
- D. Cover Board (Top Layer) and Underlayment Board (Thermal Barrier):
1. Gypsum roofing board: ASTM C 1177 and FM 4450; Type X/Fire Resistant

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2. Flat stock: 5/8” minimum thickness depending upon manufacturer’s tested FM Global 1-120 assembly. Fire resistive as indicated on the drawing.
 3. Fire Barrier: 5/8” F.R. Densdeck (where required by Certa and/or roofing manufacturer).
 4. Acceptable Products:
 - a. Georgia-Pacific – DensDeck “DuraGuard” or “Prime”
 - b. Roof system manufacturer’s recommended product meeting listed requirements and Twenty (20) Year No Dollar Limit Warranty and FM Global/UL approvals.
- E. Low Rise Foam Adhesives for Insulation and Cover Board:
1. Roof System Manufacturer’s FM Global 1-120 and UL Class A tested and approved low rise foam adhesive, as approved by roof system and product manufacturer, to install layers of insulation by cold process application. Provide recommended application pattern (s) for FM Global 1-120 compliance.
 2. Roof Membrane Manufacturer shall provide written approval and specified total system warranty coverage of all insulation system products and with low rise foam adhesive for use with their roof system.
 3. Acceptable Products:
 - a. Olybond 500 Adhesive Fastener by Olympic Manufacturing Group
 - b. Weather-Tite Pourable Foam Insulation Adhesive by Millennium Adhesive Products
 - c. Parastik by Siplast
 - d. Owner approved FM Global and UL approved adhesive as permitted by the Insulation Board Manufacturer and Roof System Manufacturer.
 - e. Or an approved equal.
- F. Fiberglass Base Sheet: Premium grade, fiberglass base sheet meeting ASTM D 4897, Type II approved by FM Global for use in 1-120 approved roof assemblies.
- a. Parabase by Siplast
 - b. Owner approved equal.
- G. Vapor Barrier Roof Sheet: A high-quality, modified bitumen SBS SA base sheet to provide tensile, tear, and puncture strength while maintaining the flexibility of the sheet meeting ASTM D6163, Type I. Vapor barrier membranes should have the following characteristics:
- a. Tensile Strength: 70 lb/in
 - b. Cold Flex: -0 degrees F.
 - c. Thickness: Minimum 80 mils, in accordance with ASTM D5147.
 - d. Length: 50 feet, in accordance with ASTM D5147.
 - e. Width: 39.4 inches in accordance with ASTM D5147.
 - f. Net Coverage: 150 square feet.

- g. Paradiene 20 SA
- H. Deck Fasteners and Plates: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Global 4470 and approval for FM Global 1-120 designed for adhering roofing membrane components to substrate, tested by manufacturer for required adhesion strength, and acceptable to roofing system manufacturer for warranty coverage up to 120 MPH wind speed.
 - a. Adhesive by Siplast
 - b. Or Approved Equal
- I. Non-combustible spray foam insulation:
 - 1. Provide compatible product approved in writing by insulation board and roofing system manufacturers.
 - 2. Acceptable Product: “Tiger Foam Insulation” as manufactured by Commercial Thermal Solutions, Inc., Spring Lake, NJ Contact: 800-262-8200, web address: www.tigerfoam.com
 - 3. Or Approved Equal

PART 3 – EXECUTION

3.1 GENERAL

- A. Follow local, state, and federal regulations, safety standards, and codes. When conflict exists with this contract document, the more restrictive provisions shall be applicable to this contract.
- B. Consider roof system manufacturer's technical specifications part of this specification and use as reference for specific application procedures.

3.2 EXAMINATION

- A. Examine roof deck, base sheet, vapor barrier membrane, underlayment board surfaces and all other related substrates. Verify that there are no conditions present that would prevent roof system manufacturer's approval of application of roof system prior to installation of insulation or gypsum cover board. Examine conditions including but not limited to following:
 - 1. Inadequate or unacceptable attachment of substrates to structure.
 - 2. Inadequate slope to achieve positive slope to drain with proposed insulation system.
 - 3. Accumulations or presence of moisture.
 - 4. Tears, holes, punctures or open seams in vapor barrier membrane.
 - 5. Ridges, uneven surface conditions, or gaps.
 - 6. Rust or other forms of deterioration.
 - 7. Presence of foreign materials unacceptable to manufacturer.
 - 8. Inadequate flashing height or termination provisions.

- B. Roof System Manufacturer's approved roofing contractor shall inspect and provide written approval of decks, membranes, and substrates prior to start of installation of base sheet, vapor barrier, and insulation systems.
- C. Notify Tulsa County representative immediately in writing describing extents and locations of unacceptable substrates.

3.3 PREPARATION

- A. Confirm that all required deck repair installation, priming, and / or nailer installation and roof drain adjustment/installation operations have been completed. Thoroughly vacuum clean all areas and surfaces to receive new underlayment board and insulation. Do not cause airborne debris during the cleaning process. Use of blowers shall be permitted only with the written permission of the Tulsa County Representative.
- B. Do not proceed with permanent installation until deck, nailers, and substrate defects or deficiencies are correct. Proceeding with installation of permanent underlayment board or insulation constitutes acceptance of deck and substrate conditions by the roof contractor and insulation board manufacturer.
- C. Inspect insulation and gypsum board products prior to installation. Remove broken, damaged or similar condition materials indicated by the Tulsa County Representative immediately from the site.

3.4 INSTALLATION

- A. Layout and install insulation in accordance with roof system and insulation manufacturer's recommendations and FM Global 1-120 requirements. Increase adhesive application rates and mechanical fastener number in gypsum panel thermal barrier at perimeters and corners as required to meet FM Global 1-120 approval requirements.
- B. Field cut and fit base sheet, underlayment board, vapor barrier, insulation, and coverboard. Stagger joints between layers of membrane and insulation/cover boards to meet the Manufacturer's minimum recommended dimension.
- C. Do not install broken, damaged, wet, warped or bent underlayment, insulation or cover boards. Replacement of installed boards as described shall be done by the Contractor at no additional cost to the Tulsa County.
- D. Do not install more insulation or cover board than can be covered by first interply membrane roofing and flashing on the same day.

Fire Barrier Board:

1. Provide 5/8" thick F.R. DensDeck or material as required recommended by Certa and/or the roofing manufacturer.
2. Adhere to substrate as recommended by Fire Barrier Board Manufacturer and as required to meet CERTA procedures.

E. Installation of First Layer of Insulation System:

1. Thoroughly clean the base sheet per the manufacturer.
2. Layout insulation boards with staggered joints and mechanically fasten in pattern to meet FM Global 1-120 requirements and roof system manufacturer's requirement for 120 MPH wind speed warranty coverage. The fastener rate can vary with roof system configuration. An increased amount of ribbons may be required at roof penetration locations and at the perimeter and corners of the roof, depending on building and parapet wall heights. At roof penetrations and roof perimeter edge and corners additional ribbons are to be installed per manufacturer's recommendations.
3. Stagger end joints of the insulation boards a minimum of 1/3 of the overall length or the Manufacturer's recommended minimum dimension. Long joints shall be continuous.
4. Butt joints tight, allowing no more than 1/4-inch wide gaps between units. Fill voids completely with spray foam insulation compatible with the insulation board. Gaps and voids at roof perimeter and penetrations shall be foamed full.
5. Do not use broken, damaged, wet, warped or bent insulation or cover board units. Remove such material immediately from the site.
6. Field cut and fit units at penetrations.
No areas of standing water by warranty definition will be permitted on finished roof system. Corrections to provide warrantable roof drainage shall be accomplished at the sole expense of the Contractor.

F. Installation of Remaining Insulation System:

1. Thoroughly clean the bottom layer of insulation, prime exposed wood, and other substrates and apply adhesive at a minimum rate of 1 gallon per 100 square feet of area if recommended by insulation manufacturer.
2. Dispense 1'-0" (304.8 mm) of 3/4" – 1" (19.1 – 25.4 mm) diameter bead of adhesive in pattern to meet FM Global 1-120 requirements and roof system manufacturer's requirement for 120 MPH wind speed warranty coverage. The application rate can vary with roof system configuration. An increased amount of ribbons may be required at roof penetration locations and at the perimeter band of the roof, depending on building and parapet wall heights. At roof penetrations and roof perimeter edge and corners additional ribbons are to be installed per adhesive manufacturer's recommendations.

3. Firmly set each layer of insulation boards in a full layer of low-rise foam adhesive. Walk each board in. Weigh down boards as permitted and recommended by the adhesive manufacturer. Raise and inspect a minimum of five (5) boards during each day of installation to determine that sufficient adhesive is being installed to bond insulation board to insulation board. Apply additional adhesive as needed to obtain full embedment or on any area that appears to be thin or bare of adhesive or where total board adhesion is accomplished with initial adhesive application. Weights shall not deform the surface of the insulation board.
 4. Exert sufficient pressure on insulation boards during installation to prevent air pockets. Fully adhere insulation units across entire bottom surface.
 5. Stagger end joints of the insulation boards a minimum of 1/3 of the overall length or the Manufacturer's recommended minimum dimension. Long joints shall be continuous.
 6. Butt joints tight, allowing no more than 1/4-inch wide gaps between units. Fill voids completely with spray foam insulation compatible with the insulation board. Gaps and voids at roof perimeter and penetrations shall be foamed full.
 7. Do not use broken, damaged, wet, warped or bent insulation or cover board units. Remove such material immediately from the site.
 8. Field cut and fit units at penetrations.
 9. No areas of standing water by warranty definition will be permitted on finished roof system. Corrections to provide warrantable roof drainage shall be accomplished at the sole expense of the Contractor.
- G. Installation of Cover Layer, Taper Insulation, Tapered Saddles and Crickets.
1. Coat the top layer of insulation with minimum 1" wide ribbons of foam adhesive as required to meet FM Global 1-120 and roof system manufacturer's warranty requirements for 120 MPH wind speed across width of board or as directed by system manufacturer for 120 MPH wind uplift resistance rating and warranty coverage.
 2. Firmly set tapered crickets and saddles where indicated on plans, and cover with cover board set in insulation adhesive. Walk each board in. Exert sufficient pressure on insulation boards during installation to prevent air pockets. Raise and inspect a minimum of five (5) boards during each day of installation to determine that sufficient adhesive is being installed to bond insulation board to insulation board. Apply additional adhesive as needed to obtain full embedment or on any area that appears to be thin or bare of adhesive.
 3. Do not apply adhesive where insulation or cover boards cannot be installed before the adhesive films over or sets.
 4. Stagger end joints of the insulation and cover boards a minimum of 1/4 of the overall length. Long joints shall be continuous.

5. Butt joints tight, allowing no more than ¼ inch wide gaps between units. Fill voids between boards full and continuous with compatible spray foam insulation.
 6. Do not use wet, broken, damaged, warped or bent insulation or cover board units.
 7. Neatly field cut and fit units at penetrations. Fill perimeter voids at penetration with spray foam insulation.
- H. Fire Barrier Board:
1. Provide 5/8” thick F.R. Densdeck or material as required recommended by Certa and/or the roofing manufacturer for cold process application.
 2. Adhere to substrate as recommended by Fire Barrier Board Manufacturer and as required to meet CERTA procedures.

3.5 ADJUSTING

- A. Examine installation and remove damaged insulation and install acceptable new units before installation of roof system.
- B. Correct irregularities, misaligned joints, low spots or areas of potential poor drainage before installation of cover board.

3.6 CLEANING

- A. Remove debris and material wrappers from roof to dumpster daily. Throwing of debris and materials from roof to dumpsters will not be permitted.
- B. Leave insulation clean, dry, and ready to receive cover board and new roofing.
- C. Remove adhesives from all surfaces designated by Tulsa County Representative, the insulation board manufacturer and / or the roofing manufacturer.

3.7 PROTECTION AND STORAGE

- A. Provide special protection from traffic on completed work.
- B. Prohibit or minimize traffic over and storage of heavy materials on completed work.
- C. Notify Tulsa County Representative immediately, by written report and photographic documentation, of activities of other contractor’s workers that are engaged in rooftop activities which will damage or compromise the roofing installation or hinder the roofing contractor’s progress in a timely manner.

END SECTION 07228

SECTION 07525 –MODIFIED BITUMEN ROOFING

PART 1 – GENERAL

- A. This section includes furnishing and installing a cold process applied 3-ply modified bitumen roofing membrane to replace the existing roof systems on the David L. Moss Criminal Justice Center Building. (Alternate Bid 2-ply modified bitumen roofing system).
- B. Field Quality Control measures are required.
- C. Mark-ups of drawings and specifications reflecting As-built conditions are mandatory. Complete As-builts shall be submitted prior to the final inspection of the roofing.

1.1 SUMMARY - THIS SECTION INCLUDES

- A. **Base Bid**
 - 1. One (1) Self adhered base ply adhered to the existing concrete deck roof.
 - 2. 3-ply modified bitumen roofing membrane (two (2) base ply and one (1) cap ply), with granule surface cap ply and related flashings, sealants, mastics, and attachments. 4.6” of base insulation, 1/4” tapered insulation on all roof areas and 5/8” DensDeck coverboard, all adhered, cold process, FM Global 1-120.
- B. All other miscellaneous incidental work required to make repairs and modifications to existing roof and to obtain and Contractor’s Five (5) Year Warranty.
- C. Alternate Bid #1:
 - 1. Delete one (1) additional base ply to make it one (1) base ply and one (1) cap ply, cold process.

1.2 RELATED SECTIONS

- A. 01010 – Summary of the Work
- B. 02070 – Selective Demolition and Renovation Work
- C. 06100 – Rough Carpentry
- D. 07228 – Roof and Deck Insulation
- E. 07600 – Flashing and Sheet Metal
- F. 07900 – Sealants and Caulking

- G. 07999 – Warranty

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM) Latest Editions:
1. D 41: Asphalt Primer Used in Roofing and Waterproofing.
 2. D 2178: Asphalt Coated Composite Ply Sheet Used in Roofing and Waterproofing.
- B. Federal Specifications (FS): FF-S-325 Shield, Expansion; Nail, Expansion; and Nail, Drive Screw (Devices, Anchoring, Masonry).
- C. National Roofing Contractors' Association (NRCA): Roofing and Waterproofing Manual, Latest Edition.
- D. FM Global loss prevention data sheets and wind uplift test certifications.

1.4 SUBMITTALS

- A. Contractor, subcontractors, and roof system manufacturer technical department shall thoroughly review the drawings and specifications and submit in writing to the Tulsa County's Representative any conflicts, requests for clarifications, coordination issues, etc. for written response prior to submission of product data and shop drawings.
- B. Product Data: Submit manufacturer's data sheets for each product, tools, and installation equipment to be used on project. **Clearly indicate by highlighting and written notation which item is proposed for this project where multiple items are depicted on the data sheet. Noncompliance will be cause for automatic rejection of data.**
- C. Material Safety Data Sheet: Submit manufacturer's Material Safety Data Sheet for ALL products to be utilized on the project site. No material shall be permitted on site until review and acceptance of MSDS by Tulsa County.
- D. Shop Drawings:
1. Prepare scaled roof plan locating and identifying new exhaust fan locations.
 2. Shop drawings shall include:
 - a. Outline of roof with dimensions, for all roof areas.
 - b. Location and type of penetrations, temporary ramps, and related details on roof plan.
 - c. Penetration details.
 - d. Deck type.

- e. Roof slope and designated direction of slope.
 - f. Location of proposed staging areas and material storage on roof plan.
 - g. Manufacture installation guidelines for curb, damper and exhaust fan installation.
- 3. No work shall commence until thoroughly coordinated and complete shop drawings, MSDS, and Product Data information has been submitted and accepted by the Tulsa County and the Consultant.
 - 4. Complete sets of final accepted submittals are required as a part of project closeouts; see specification 01700.
- E. Project Manager, project superintendent resume.
 - F. Warranties: Roof manufacturer's standard warranty for roof repair and Contractor's 5-year warranty.
 - G. FM Global Roof Nav Assembly Number: Submit written certification and assembly number assigned by FM Global to specified roof assembly indicating acceptance / compliance with 1-120 wind uplift resistance rating as a minimum. Also, for Alternate Bid #1.
 - H. Submit at Project Closeout roof system manufacturer's written approval or acceptance of membrane plies, flashings, cap ply membrane adhesives, installation details, insulation, coverboard, underlayment board, vapor retarder membrane, and related materials based upon existing site conditions for full systems coverage under the specified special 20-year "No Dollar Limit" Total Systems Warranty.

1.5 QUALITY ASSURANCE

- A. Applicator: Provide written certification of the following at the Pre-Construction Conference:
 - 1. Approved by manufacturer of accepted roof system.
 - 2. As a single applicator with minimum of 5 years previous successful experience in installations of similar systems and project size and scope.
 - 3. Contractor shall fully man and perform work **continuously** from start to completion of project and that crew and site management personnel changes will occur only with prior approval of Tulsa County.
- B. Regulatory Requirements:
 - 1. Follow local, state, and federal requirements, safety standards, and codes.
 - 2. Refer to applicable building codes for roofing system installation requirements and limitations. When conflict exists, the more restrictive document will govern.

- C. Pre-installation Conference:
1. Prior to roofing demolition, installation, conduct conference at project site. Contractor to provide all certifications required by this and other specification sections.
 2. Attendance: Tulsa County's Representatives, Contractor superintendent, roof applicator, roof system manufacturer's technical representative, and subcontractor's representatives.
 3. Notification of all required attendees will be made a minimum of five (5) calendar days in advance of meeting. Greater notification time will be provided if possible.
 4. Agenda – shall include but may not be limited to:
 - a. Designation of key individuals and their respective responsibilities.
 - b. Anticipated crew size and explanation of scheduling of roofing operations and installation sequencing by the Contractor.
 - c. Daily production anticipated.
 - d. Processing procedures of payment applications, field and change orders.
 - e. Review equipment to be used in membrane application.
 - f. Review of site use, staging and material storage locations, material delivery and moving scheduling, and site housekeeping.
 - g. Accommodations for temporary services (water, power) and determination of areas requiring interior protection.
 - h. Coordination of work by other trades and interior protection requirement.
 - i. Construction phasing, and protection of completed roofing, flashing and sheet metal work.
 - j. Emergency rain event inspection and protection procedures – daily seal inspection procedure.
 - k. Roof system manufacturer's vapor barrier inspection and written acceptance. Contractor's acceptance of existing deck.
 - l. Discussion of process for roof repairs.
 - m. Workmanship expectations of Tulsa County / Tulsa County's Representatives.
 - n. Submittals and shop drawings review.
 - o. As-built document requirements.
 - p. Fall hazard prevention.
 - q. Tulsa County safety requirements and weekly contractor safety meeting.
 - r. Daily check of scaffolding by contractors Safety Manager with report to Tulsa County's Representative and inspection tag requirement.
 - s. Miscellaneous topics desired to be discussed / resolved.
 - t. Roofing Contractor shall prepare a written record of the meeting and distribute to all attendees within 5 business days of meeting occurrence.

- D. Installation:
1. Installation shall be in accordance with manufacturer's current published application procedures, general recommendations of the National Roofing Contractors' Association and these specifications. Follow FM Global and Underwriters Laboratories' requirements acceptable for use with specified products or systems.
 2. Roofing shall be as described in this section and shall be provided and approved by roof system manufacturer. Materials not manufactured or provided by roof system manufacturer shall have written approval from roof system manufacturer stating that materials are acceptable and are compatible with other materials and systems required, and are covered under the specified warranty in 07999.
- E. There shall be no deviations made from this specification, or approved shop drawings without prior written approval of Tulsa County and roof system manufacturer.
- F. **Perform work of this section in accordance with highest standards of practice relating to trades involved. Less than the highest standard work is unacceptable and will be rejected by the Tulsa County Representative and be replaced by the Contractor at no additional cost to the Tulsa County.**
- G. Roof System Manufacturer's and Contractor's Initial Inspections paid for by the Contractor:
1. Roofing contractor shall inspect and provide written acceptance of metal deck and other substrates. Vapor barrier membrane and insulation substrate installation shall be approved in writing by the Roof System Manufacturer.
 2. Written acceptance shall be submitted to Tulsa County's Representative prior to start of work and shall be included in Closeout Documents.
- H. Laboratory Testing and Samples:
1. At Tulsa County's request, obtain up to 4 field samples of completed roof membrane, and repair assembly. Take samples at locations designated by Tulsa county's Representative and test for compliance with requirements on Contract Documents and with manufacturer's published performance criteria. Test shall be performed by nationally recognized testing laboratory in accordance with accepted ASTM methods. Contractor shall assume costs for extraction and patching of samples. Tulsa County will assume costs for testing of field sample.
 2. Correct deficiencies at no additional cost to Tulsa County.
 3. If for any reason areas that are tested by Tulsa County fail to meet contract or roof manufacturer's requirements, then subsequent expense for repair and retesting of those areas will be borne by Contractor.

- I. A roof drainage / water test shall be performed by the roofing contractor and Infrared Thermographic Survey may be performed by Tulsa County's subcontractor prior to final inspection. Coordinate with Tulsa County Representative.

1.6 AS-BUILT DOCUMENTS

- A. Contractor shall prepare and continuously maintain on site, a set of drawings and specifications which are to be "red-lined" reflecting field modifications and as-built conditions of the project.
- B. Status of As-built documents will be visually confirmed weekly by the Tulsa County Representative.
- C. Non-current As-built documents will be cause for delay in progress payments at the discretion of Tulsa County's Representative and/or the Consultant.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
- B. Store materials in accordance with manufacturer's recommendations.
- C. Store rolled goods on clean, raised platforms. Store other materials in dry area, protected from water and direct sunlight. No roll materials shall be stored in a leaning position or be double stacked.
- D. Provide continuous weatherproof protection of materials inside storage vans to ensure against deterioration for duration of project.
- E. Damaged and deformed materials shall be replaced at no additional cost to Tulsa County. Damaged and deformed material shall be immediately removed from the project site.
- F. Materials Stored on Roof Areas for Immediate Use:
 1. Distribute to prevent concentrated loads that would impose excessive strain on deck or structural members.
 2. Positively secure to prevent displacement by wind.
 3. Cover with waterproof breathable tarps for protection from exposure.
 4. Material storage shall be in strict accordance with the Tulsa County Representative's direction.
- G. Materials should be handled in such a manner as to ensure it remains dry prior to and during installation.

- H. Material shall be delivered and moved as scheduled with the Facility Manager. Confirm times with Tulsa County's Representative.
- I. The project site equipment, staging, and storage areas shall be maintained in a neat and orderly manner to the satisfaction of the Tulsa County's Representative and the Facility Manager.

1.8 PROJECT CONDITIONS

- A. Environmental Requirements / No – Work Weather Day Definition:
 - 1. Apply roofing in dry weather and dew and frost – free conditions.
 - 2. Do not install roofing in inclement weather or when rain is predicted at 30% or more possibility as reported by the nearest reporting Office of the National Weather Service, or when ambient temperature is below 40°F or as recommended by the roofing manufacturer with approval of the Tulsa County Representative. These conditions constitute a “no work” weather day.
 - 3. Do not expose stored roofing materials and accessories to constant temperature in excess of 180°F.
 - 4. Do not install roofing when wind speeds or gusts are 30 mph or greater, or when safe roofing operations cannot be maintained. Wind speeds or gusts of 30 mph or in excess of 30 mph constitutes an automatic “no work” weather day.
- B. Restore to original condition or replace work and materials damaged during handling or as directed by the Tulsa County Representative.
- C. Emergency Materials and Equipment: Maintain on site, sufficient emergency materials, pumps, and equipment to apply emergency temporary seals in event of sudden storms or inclement weather. Provide emergency personnel when required by weather conditions to maintain the building in a watertight condition.
- D. **When a 30% or greater chance of rain is forecast the day of the work, the evening of the work or the next day, the Contractor and Tulsa County Representatives shall thoroughly inspect the day's work, prior to leaving the jobsite, to insure no leaks will enter the building. Damaged caused shall be repaired or replaced to the satisfaction of the Tulsa County Representative, at no additional cost to Tulsa County, by the Contractor.**

1.9 SEQUENCING AND SCHEDULING

- A. Coordinate roofing schedule with work of other trades and work required to be installed prior to work in this Section, and all other specification sections and plans.
- B. Coordinate roofing installation to prevent traffic and material handling over new work.

1.10 PROTECTIONS AND RAIN EVENT PROCEDURE

- A. Protect surfaces adjacent to hoist or scaffolding on roof surfaces with special protections prior to starting work.
- B. Provide leak proof boxes, buckets or other device to hold containers of paint, thinner, tar remover and other materials which are open or setting on roof. No open containers shall be left of roof overnight. Provide 1½” polysio board protection beneath all containers being used in installation operations to protect new in-place insulation and membranes.
- C. Provide leak proof liner in dumpsters which receive roofing material which is wet or as directed by the Tulsa County’s Representative.
- D. Existing lead flashings / material removed from the project shall be collected and placed in containers acceptable to Tulsa County. Removal of lead containing containers shall be done by Tulsa County.
- E. Review with Tulsa County Representative one week in advance of scheduled roofing operations to determine locations where interior protection may be required to be installed to protect the interior of the facility and equipment. Ensure protection is installed prior to commencing roofing operations. Frequently monitor the areas where protection is installed to ensure it is intact.
- F. Contractor shall carefully plan and inspect all work areas and all-night seals to ensure the work areas remain watertight throughout the project schedule.
- G. Rain event leak inspections.
 - 1. Contractor shall continuously monitor weather conditions.
 - 2. Should off-hour rain event occur, Contractor’s superintendent shall immediately inspect the project for leaks into the building and implement leak repair or control procedures.
 - 3. Contractor’s Superintendent shall contact Tulsa County representative prior to and after each rain-event leak inspection.
 - 4. Interior cleanup and damage repair from rain-event leaks shall be done at the sole cost of the Contractor.

- H. Confirm that suspended cover interior protection is in place prior to commencing with roofing related work. Monitor the inside of building during loading, transportation and temporary staging of new exhaust fans on the roof to ensure no dust, dirt, flaked paint debris, loose items are apparent. Stop work immediately, perform clean-up and determine interior protection means acceptable to Tulsa County.

1.11 WARRANTY

- A. Contractor's Warranty: In addition, Contractor shall furnish written warranty agreeing to replace failing roofing and/or flashing due to defective material or workmanship. Warranty shall include other work performed by Contractor, but which may be described in other sections including, but not limited to, roofing, flashing, surfacing, sealants and caulking, sheet metal, adhesives, insulation, and roof accessories. Warranty period is five (5) years after date of written final acceptance by Tulsa County. Refer to Section 07999.
- B. Special Roof System Manufacturer's Warranty: Manufacturer's 20-year "Full System" warranty shall provide "No Dollar Limit" coverage against leakage and defects in product quality, performance and workmanship, including all roofing system components for weather conditions including wind speeds up to and including 90 mph. Manufacturer's written acceptance and approval of all roof system materials, details, installation procedures, substrate condition, field inspection reports, and final inspection and acceptance shall be made an amendment to the warranty. Warranty period is 20 years from date of written final acceptance by Owner. Warranty form is provided in Section 07999. No other warranty forms will be accepted.

PART 2 – PRODUCTS

2.1 BUILT-UP ROOF SYSTEMS (BASIS OF DESIGN – SIPLAST)

- A. Primary roof cover: 3-ply (2 interply, 1 cap) built-up modified bitumen roof membrane with granule surfacing.
- B. Alternate Bid#1: 2-ply (1 interply, 1 cap) built-up modified bitumen roof membrane with granule surfacing.
- C. Approved Manufacturers as follows:
1. Siplast Icopal (Basis of Design)
 2. Performance Roof Systems (Derbigum)
 3. Or Approved Equal
- D. FM Global Hail Damage Resistance Rating required: Class 1 – SH for severe hail

2.2 PRIMARY MATERIALS

- A. Modified Bitumen Cap Ply:
 - 1. Polyester and glass fiber mat bonded together with resinous binder and coated with weathering grade modified asphalt with white or Tulsa County approved manufacturer's standard color granulated surfacing.
 - 2. Acceptable Product:
 - a. Siplast – Paradiene 30 HT
 - b. Or approved equal.
- B. Interply Sheet: Fiberglass reinforced base ply that complies with requirements of ASTM D 6163.
 - 1. Acceptable Product:
 - a. Siplast – Paradiene 20 HT
 - b. Or approved equal.
- C. Temporary Roof Sheet: Fiberglass Reinforced base ply that complies with requirements of ASTM 6163.
 - 1. Acceptable Products:
 - a. Siplast-Paradiene 20SA
 - b. Or an approved equal
- D. Flashing Membrane:
 - 1. Manufacturer's specified Paradiene 40 cap flashing sheet over two (2) Paradiene 20 interplies flashing sheet(s).
 - 2. Number of flashing plies: two (2) base and one (1) cap flashing ply.
 - 3. Alternate Bid #1: One (1) base and one (1) cap flashing ply
- E. Granules:
 - 1. To match size and color of granules on cap sheet.
- F. Flashing Adhesive:
 - 1. Siplast – PA828
 - 2. Or approved equal.

2.3 FASTENERS

- A. Fasteners: Corrosion resistant anchors approved by roof system manufacturer of type and length recommended by manufacturer for existing substrates.
- B. Fasteners shall penetrate into substrate in accordance with Factory Mutual 1-120 requirements and manufacturer's requirements.
- C. Base sheet fasteners shall be non-corrosive and type required by the roofing manufacturer as determined by pull test results.

- D. Concrete and Masonry Fasteners:
 - 1. Round head stainless steel screw and neoprene washer with lead expansion anchor, FS FF-S-325, Group IV, Type II.
 - 2. Acceptable Products:
 - a. Rawlplug, The Rawl Plug Company, Inc.
 - b. Trufast CF Fastener
 - c. Or approved equal.

- E. Wood Screws and Metal Deck Fasteners:
 - 1. Steel fastener with fluorocarbon coating or stainless steel.
 - 2. Thread Diameter: 0.220" minimum.
 - 3. Shank Diameter: 0.172" minimum.
 - 4. Acceptable Products:
 - a. Parafast #12 standard roofing fastener with CR-10 fluorocarbon coating.
 - b. Olympic #12 standard roofing fastener with CR-10 fluorocarbon coating.
 - c. Trufast TP Fastener with Trukote PC-3 coating.
 - d. Or approved equal.

- F. Washers: Lead or neoprene type.

- G. All exposed fasteners to be stainless steel, or corrosion – resistant coated and be compatible with fastened materials and substrate.

2.4 RELATED MATERIALS (Not all listed may be included in the work.)

- A. Asphalt Primer: ASTM D 41; approved by roof system manufacturer.

- B. Aluminum Compression Bar:
 - 1. Minimum 1/8" thick extruded aluminum with integral sealant tray.
 - 2. 1" minimum overall width; factory punched to accept fasteners 6" on center
 - 3. Acceptable Products:
 - a. Olympic Termination Bar "Lip Bar"
 - b. Trufast TB-75
 - c. Or approved equal.

- C. Asphaltic Plastic Cement: Approved by roof system manufacturer.
 - 1. Inclines Up to 1/2"/ft.: ASTM D 4586, Type I, non-asbestos containing.
 - 2. Inclines Exceeding 1/2"/ft.: ASTM D 4586, Type II, non-asbestos containing.

- D. Cant Strip:
 - 1. Structural and Non-structural: Treated solid wood.

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2. Cant Height Above Substrate: 3-5/8" minimum or 2" as noted or detailed on the drawings.
 3. Wood treatment to be acceptable to roofing manufacturer.
- E. Walkway Protection Pads:
1. Preformed pads of rubber or asphalt, fibers, and fillers compatible with substrate.
 2. Size:
 - a. Thickness: 1/2-inch to 5/8-inch
 - b. Width: 3 feet
 - c. Length: 3 feet
 3. Acceptable Products:
 - a. Roof-Gard Pads, Humane Equipment Co.
 - b. DynaTread Plus Walkpads, Johns Manville Building Products
 - c. Or approved equal.
 4. Adhesive: Roof Manufacturer's recommended product compatible with acceptable walk pad.
- F. Sealant Pan Filler:
1. **Two-part**, Elastomeric, Pourable sealer approved by roof system manufacturer.
 2. Acceptable Products:
 - a. Sonneborn Pourable Sealer
 - b. Tremco
 - c. Or approved equal.
 3. Non-shrink Grout: refer to Section 02070.
- G. Perimeter Warning Stripe:
1. Minimum 4" wide, 125 mil thickness, yellow warning stripe as manufactured by Advanced Marking Division of Patch Rubber Company, 3M.
 2. Adhesive: Firestone Bonding Adhesive if approved in writing by stripe and Roofing Manufacturer. Alternative approved adhesive may be considered upon written approval of roof system manufacturer and warranty provisions are maintained.
- H. Self-Healing Tape:
1. Foam tape is unacceptable.
 2. Refer to specification 07600 2.4 G.
- I. PMMA Liquid Resinous Flashing System:
1. Multi-coat, polyester reinforced PMMA resin system as recommended by the roofing manufacturer for the 20-year warranty roof system.

- J. Pipe Supports:
 - 1. Preformed stackable polycarbonate supports as manufactured by Miro.
 - 2. To support electrical conduits and any other miscellaneous rooftop piping.
 - 3. Max spacing = 8'-0" on center.

- K. Non-Combustible Spray Foam Insulation:
 - 1. "Tiger foam" – Refer to Specification 07228 2.1 G.
 - 2. Alternative manufacturer and product as accepted by FM Global, UL and Tulsa County Representative.

2.5 ASBESTOS CONTAINING MATERIAL

- A. No asbestos containing materials shall be delivered to jobsite or incorporated into the project.

PART 3 – EXECUTION

3.1 GENERAL

- A. Perform work of this section in accordance with best standards of practice relating to trades involved.
- B. Follow local, state and federal regulations, safety standards and codes. When conflict exists, the more restrictive document shall govern.
- C. Follow insurance underwriter's requirements acceptable for use with specified products, equipment or systems.
- D. Consider roof system manufacturer's technical specifications part of this specification and use as reference for specific application procedures and recommendations.
- E. Complete roofing, flashing, and related items daily. No phased application is allowed unless specified in writing from roof membrane manufacturer.
- F. Provide pull tests on metal deck at locations indicated on the drawings and other locations as directed by the roofing manufacturer.

3.2 EXAMINATION OF SURFACES

- A. Curb and wall substrates: Examine cover board and related surfaces and verify there are no conditions such as inadequate anchorage, foreign materials, moisture, ridges or other conditions which would prevent satisfactory installation, drainage and performance of the roofing system.

- B. Start of work under this “Part Three – Execution” constitutes acceptance of deck, substrate and site conditions by roofing contractor. Cost of correction of deficiencies manifest after the start of work will be borne solely by the Contractor.

3.3 PREPARATION

- A. Make repairs to curb and wall substrates, insulation and cover board surfaces.
- B. Sleeves and Curbs: Clean and secure curbs, ducts, sleeves and other work which pass through roof as required to receive new roofing and flashings.
- C. Seal openings, projections, and penetrations in substrate to prevent adhesive migration into building. Damage to building or interior caused by adhesive migration shall be corrected by Contractor at his sole expense. Confirm interior protection is in place.
- D. Prior to application of membrane, remove foreign matter and substrate. Debris between substrate and roof membrane or plies of roof membrane is not acceptable. Membrane plies shall be replaced at no additional cost to Tulsa County.
- E. Carefully broom/vacuum clean substrate immediately prior to roofing application. Use of air blowers to clean substrate is unacceptable unless permitted in writing by Tulsa County.
- F. Verify that nailers and new insulation and coverboard system are properly repaired and/or installed prior to start of roof installation.
- G. Prime all wood, metal and other substrates in accordance with roof system manufacturer’s procedures prior to membrane installation.

3.4 THREE PLY MEMBRANE INSTALLATION:

- A. Prepare and install roof membrane materials in accordance with roof system manufacturer's current published application instructions. No open-flame devices shall be used for seaming operations unless prior written approval is provided by Tulsa County safety department.
- B. Roof Ply Installation:
 - 1. Start at the low point of the roof, install first ply at least 6 inches up opposite slope. Install plies shingle fashion up the slope of roof. Lay each ply so that flow of water is over or parallel to (but never against) lap. On multiple slope substrate, coordinate and install ply lay-out to avoid back water laps.

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2. Treat the surface of the top layer of insulation or cover board with the manufacturer's recommended primer at a minimum rate of one (1) to one and a half (1 1/2) gallons of primer per two hundred (200) square feet of insulation surface.
3. Cold Process apply one (1) ply of roofing in shingle fashion (starter sheets required), lapping 24 inches.
4. Apply roofing membrane ply by rolling membrane ply into adhesive and broomed in using a squeegee. Shingle membrane ply in, free of buckles, air pockets, and fishmouths. Lay each ply so that flow of water is over or parallel to (but never against) lap. End laps shall be 4 inches minimum and at least 12 inches apart or as recommended by the roofing manufacturer.
5. Heat weld all end laps and side laps with a hot air welder to ensure complete bond of ply to ply, daily. No laps will be left open overnight, they are to be welded on the day of installation.
6. Install sheet in adhesive immediately. Adhere the top of the ply down to the lap line. Do not install adhesive in the laps.
7. Install subsequent plies in shingle fashion over the previously installed sheet with side and end laps as specified. Stagger ply sheets to ensure that end lap seams do not coincide with end laps in adjacent membrane sheets.
8. "Brooming in" is required for hand rolling methods. Brooming is essential and must be done promptly and effectively to eliminate voids and to insure adequate adhesion. Brooming shall be at a 45-degree angle and not directly behind the roll. Do not walk on plies during installation.
9. Provide manufacturer's recommended time lapse period between installations of each of the interplies and cap ply.
10. Install modified bitumen granulated surfaced cap sheet in shingle fashion lapping 18 inches into uniform application of bleedout. Apply granules at membrane lap "bleed out" in uniform fashion and tamp in per manufacturer's recommendations.
11. Foot and equipment traffic over membranes should be held to absolute minimum during application and until membrane and asphalt has sufficiently set to prevent displacement or membrane deformation. Protect finished membrane with 3/4 inches plywood over 1.5-inch polystyrene insulation in areas where foot traffic cannot be avoided.
12. Limit foot traffic on cap sheet when ambient temperature is 90°F or greater.
13. Tie-ins:
 - a. At tie-in cut, install base ply as needed to even out tie-in with new roof.
14. Defect Detection and Correction:
 - a. Inspect installed membranes, temporary seals, flashings, and other roof system components and repair defects prior to the end of each 12-hour work shift.

- b. Where possible, cut sheet to allow to lay correctly, install manufacturer's cold process adhesive and adhere sheet to substrate. Where not possible, cut out defects and fill in removed area with layer adhesive applied base ply.
 - c. Overlay all defects with layer of ply sheet adhesive applied procedure. Ply sheet to be full width of sheet and minimum 12 inches in each direction beyond the defect. Butt top of repair ply to bottom edge of adjacent succeeding ply above. Fishmouths, mole runs, and blisters shall be cut and patched. One new ply added for each ply that is cut.
 - d. Carefully inspect all laps and seams and seal loose, open or discontinuous laps and seams using hot air welding device (if approved) or with adhesive and a steel trowel or brush.
15. Base Flashing Ply Installation.
- a. Apply flashings only after modified bitumen roofing membrane is in place. Compose flashings of two (2) plies of interply sheet and one (1) ply of granule surfaces membrane. (Alternate Bid #1, one (1) ply of interply sheet and one (1) ply of granule surface membrane).
 - b. Over properly installed roof membrane, install flashing system in accordance with the roof system manufacturer's requirements and the detail drawings. Prime substrates above the base ply and cant. Coat the roof membrane ply sheet and substrates with manufacturer's cold process flashing adhesive at a minimum rate of two (2) gallons of adhesive per hundred (100) square feet of surface. Spread the asphalt pool across the surface to create an even coat with the torch or trowel. Wait five (5) minutes and recoat any areas that show signs of insufficient or thin mastic. Do not apply mastic where the flashing ply sheets cannot be installed daily.
 - c. Cut flashing membrane to extend 6 inches minimum above top of field ply covering cant. Overall minimum height of top of flashing membrane above top of roof surface is 8 inches; maximum height is 24 inches. Flashing base plies must extend horizontally 4 inches onto field of roof surface beyond bottom edge of cant strip or previous ply of membrane must extend 2" beyond base plies, and minimum of 6" beyond bottom edge of cant strip. Cut base plies in maximum three (3) foot length. Side laps shall be 3 inches minimum.
 - d. Prime flashing substrates with asphalt primer and permit to dry prior to application of cap flashing. Apply asphalt primer at one gallon/200 square feet minimum as recommended by manufacturer.
 - e. Apply flashing ply by rolling membrane onto the properly prepared substrate. Flashing plies shall be free of buckles,

wrinkles, creases or fishmouths. Fully embed each ply in manufacturer approved mastic. Apply additional flashing adhesive as needed to obtain full embedment, and on any area that appears to be thin or bare of asphalt/adhesive. Cut flashing ply sheet into sections as needed to allow for correct installation of the sheet. Apply sufficient hand or roller pressure on sheet during application to prevent air pockets and achieve full bonding. Stagger flashing base sheet to ensure that end lap seams do not coincide with laps in adjacent field base ply.

- f. Install 6” fabric and approved mastic reinforcement at all flashing laps, inside and outside corners in accordance with the manufacturer’s requirements.
- g. Seal the top edge and side laps of flashing base ply to prevent water infiltration until flashing can be installed.
- h. Mechanically attach top edge of flashing system with suitable fasteners, waterproof washers, and aluminum compression bar. Fastener spacing shall be 6 inches on center. Nailing top edge of flashing system is not accepted.
- i. Unprimed metal surfaces are not acceptable for application of flashing membranes.
- j. At inside and outside corners and all laps, install 6” fabric and approved mastic reinforcement in accordance with roof system manufacturer's requirements. All laps and corners require 6” fiberglass mesh and approved mastic reinforcement.
- k. Bond flashing materials to substrate 100 percent.
- l. Defect Correction:
 - 1. Inspect installed materials and repair defects daily.
 - 2. Cut sheet to allow to lay correctly, install new cold process adhesive and adhere sheet to substrate.
 - 3. Overlay all defects with layer of composite ply in adhesive. Ply sheet to be full width and length of flashing sheet.
- m. **Wait the manufacturer’s minimum adhesive flash-off time to occur before installing subsequent roof system components, (7 days).**

Alternate Bid #1: Delete 2nd base ply as stated above, one (1) base ply and one (1) cap ply. One (1) base ply flashing and one (1) cap ply flashing.

3.5 FLANGED FLASHINGS:

- A. Sheet metal flanges shall be minimum 4 inches wide and flat, without creases or bends.

- B. Set flanges in bed of plastic cement applied at minimum rate of one gallon/100 lineal foot of flange.
- C. Nail flanges 3 inches on center in two staggered rows.
- D. Prime metal surfaces with asphalt primer both sides and permit to dry prior to application of two-ply stripping.

3.6 SEALANT PANS:

- A. Sealant pans are not permitted except at locations approved in writing by the Tulsa County's Representative or as shown in the detail drawings. Sealant pan detail is only acceptable with an approved rain hood. All joints in sealant pans must be soldered watertight at seams, corners, and flanges.

3.7 DAILY SEAL:

- A. Install temporary water cut-offs at completion of each day's work and completely remove upon resumption of work. Inspect water cuts at the end of each day.
- B. Ensure that water does not flow beneath completed sections of membrane system, including completion of flashings, terminations, and daily seals.
- C. Temporarily seal loose membrane edge with cold process adhesive or plastic cement. Exercise caution to ensure that membrane is flashed to the roof drains in a manner to prevent water migration below membrane, and so as to avoid blockage of storm water drainage.
- D. When work is resumed, remove and dispose of membrane where asphalt or other sealants were previously applied before resuming installation.

3.8 CLEANING:

- A. Remove trash, debris, equipment, and parts from job site minimum daily or more often as required to keep site clean to the satisfaction of the Tulsa County's Representative.
- B. Remove stains from walls, louvers, roof top equipment, hatches, ductwork, piping, walkways, and driveways, etc. to the satisfaction of the Tulsa County's Representative.
- C. Leave building and site free of roofing materials, debris, stains, bitumen, and drippage to the satisfaction of the Tulsa County's Representative.

- D. Remove all debris from within gutters and downspouts. Test to assure free water flow to the satisfaction of the Tulsa County's Representative.

3.9 PROTECTION:

- A. Provide special protection or avoid equipment and foot traffic on completed roof areas during duration of roofing initial installation time period.
- B. Damages caused by Roofer's personnel or subcontractors shall be corrected by the Roofing Contractor to the satisfaction of Tulsa County's Representative at no additional cost to the Tulsa County.
- C. Provide manufacturer's recommended protective means or footwear necessary to protect the cap sheet to all individuals required to walk the finished installation at no additional cost to Tulsa County.

3.10 FALL PROTECTION RESTRAINT SYSTEM:

- A. There is no Fall Protection Restraint System present on any of the roof areas contained in this project.
- B. Contractor shall submit proposed Fall Hazard Prevention Plan to Tulsa County for their acceptance for all roof areas contained in this project.
- C. No work shall commence on any roof area within this project without a Fall Hazard Prevention Plan acceptable to Tulsa County Safety Department for that roof area.
- D. Acceptance of Fall Hazard Prevention Plan by Tulsa County does not imply assumption of responsibility or liability for the roofing contractor for the design or execution of the plan or from results which may occur from implementation of or noncompliance with the accepted plan.
- E. No additional cost to Tulsa County.

3.11 DAILY SEAL

- A. Install temporary water cut-offs at completion of each day's work and completely remove upon resumption of work. Inspect water cut-offs at the end of each day with the Tulsa County's Representative. Cut-offs shall be watertight.
- B. Ensure that water does not flow beneath completed sections of membrane system, install double seal on secondary roof as well as exposed roof, including completion of flashings, terminations, and daily seals.

- C. Temporarily seal loose membrane edge with cold process adhesive or plastic cement. Exercise caution to ensure that membrane is flashed to the roof drains in a manner to prevent water migration below membrane, and so as to avoid blockage of storm water drainage.
- D. When work is resumed, remove and dispose of membrane where asphalt or other sealants were previously applied before resuming installation.

3.12 FIELD QUALITY CONTROL MEASURES

- A. Provide up to two (2) system samples for each roof area when requested by Tulsa County or roof system manufacturer in areas indicated by Tulsa County's Representative or the Consultant.
- B. Follow procedures required by roof system manufacturer for obtaining samples.
- C. Repair sampled areas.
- D. Correct deficiencies in roof system determined by roof sample analysis and as prescribed by roof system manufacturer. Costs for additional samples required will be borne by Contractor.
- E. Contractor shall be responsible for all costs to remove, replace or modify all areas of roof repaired under this contract and found defective.

3.13 ADJUSTING

- A. Repair damages to new or existing construction caused by roofing operations.
- B. Cost of repairs shall be paid for by the Roofing Contractor.
- C. Damaged areas or building components shall be repaired to pre-roofing operation condition to the satisfaction of the Tulsa County's Representative, Consultant and the Facility Manager.

END OF SECTION 07525

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including Uniform General and Supplementary General Conditions of the Contract apply to work of this Section.

1.2 SUMMARY

- A. Shop or field-formed sheet metal work for moisture protection.
- B. Types of work specified in this Section includes, but is not limited to the following:
 - 1. Roof penetration sleeves.
 - 2. Metal counterflashing flanges, sealant pans, sleeves and rain hoods, surface mount counterflashings, metal flashings.
 - 3. Miscellaneous sheet metal accessories, fabrications, closures and curb covers.
 - 4. Formed metal edge - fascia.
 - 5. Exposed metal trim, thru wall scuppers, thru edge scuppers gutter, and downspouts.
 - 6. Coping and fascia panels with cleats.
 - 7. Expansion joints in metal fabrications.
 - 8. Roof related fabrications and accessories.

1.3 RELATED SECTIONS

- A. 02070 - Selective Demolition and Renovation Work
- B. 07228 - Roof and Deck Insulation
- C. 06100 - Rough Carpentry
- D. 07525 –Modified Bitumen Built-Up Roofing
- E. 07900 – Sealants and Caulking

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A 525 Steel Sheet, Zinc-Coated (Galvanized), by the Hot-Dip Process.
 - 2. A 526/A526M Steel Sheet, Zinc-Coated (Galvanized), by the Hot-Dip Process, Commercial Quality.

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3. A 527/A527M Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality.
 4. B 32 Solder Metal.
 5. D 4586 Asphalt Roof Cement, Asbestos Free.
 6. B 209 Aluminum and Aluminum-Alloy Sheet and Plate.
 7. ASTM - A167 Stainless and Heat Resisting Chromium – Nickel Steel Plate, Sheet and Strip.
- B. Federal Specifications (FS):
1. FF-S-325 Shield, Expansion; Nail, Expansion; and Nail, Drive Screw (Devices, Anchoring, Masonry).
 2. QQ-L-201F(2) Lead Sheet.
 3. TT-C-494A Coating Compound, Bituminous, Solvent Type, Acid Resistant.
 4. TT-S-00227E Sealing Compound, Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
 5. TT-S-00230C Sealing Compound, Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 6. TT-S-001543A Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 7. Fed. Spec. QQ-S-766C Steel Plates, Sheet and Strip, Corrosion Resisting.
- C. National Roofing Contractor's Association (NRCA): NRCA Roofing and Waterproofing Manual, Latest Edition.
1. Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA): Architectural Sheet Metal Manual, Latest Edition.

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data, Flashing, Sheet Metal, and Accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- C. Samples of the following flashing, sheet metal, and accessory items:
1. 8-inch-square samples of specified sheet materials to be exposed as finished surfaces.
 2. 12-inch-long samples of factory-fabricated products exposed as finished work. Provide complete with specified factory finish.
- D. Shop drawings showing layout, profiles, methods of joining, and anchorages details, including, but not limited to, major counterflashings, trim/fascia units, and

metal to metal join expansion joint systems. Provide layouts at 1/4-inch scale and details at 3-inch scale or larger.

- E. ANSI/SPRI ES-1 Compliance Certification: contractor to submit certification letter, signed and notarized, acknowledging that new, formed, metal copings shall be fabricated and installed to comply with the requirements of ANSI/SPRI ES-1. Include all supporting certificates, information and calculations

1.6 PROJECT CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

1.7 WARRANTY

- A. Contractor's Warranty: Provide Owner a written warranty which shall warrant sheet metal work to be free of leaks and defects in materials and workmanship for a period of five (5) years after date of final acceptance by Owner. Installation shall resist 120 mph wind speed.

PART 2 - PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM MATERIALS

- A. Lead: ASTM B 749, Type L51121, copper-bearing sheet lead, 2- 1/2 or 4 lb/sq ft as specified for the specific application.
- B. Stainless Steel: ASTM A 167 Type 302/304 soft temper.
- C. Zinc-coated (Galvanized) Steel Sheet: Commercial quality with 0.20 percent copper, in accordance with ASTM A 526 except ASTM A 527 for lock forming; coating designation G90 hot-dip galvanized, and mill phosphatized for painting in accordance with ASTM A 525 (paint-grip type), 24 gauge minimum, except as otherwise indicated on the drawings.
- D. Prefinished Metal:
 - 1. "Kynar 500" fluoropolymer prefinished, G90 galvanized steel, minimum 22 gauge or as indicated on the drawing.
 - 2. Fluoropolymer coating shall consist of polytetrafluoroethylene, minimum 70% by weight, applied by manufacturer in four coats, dry film thickness one mil, minimum.
 - 3. Technical Data: Coating
 - a. Hardness – F Minimum: NCCA 11-12.
 - b. Adhesion, Cross Hatch – 1/16" (no removal): NCCA 11-5.

- c. Formability – 2T Bend (no cracking or removal): ASTM D 522-85.
4. Color: To be selected by the Owner’s Representative from manufacturer’s standard pallet.

2.2 FLEXIBLE SHEET MEMBRANE FLASHING AND COPING/FLASHING UNDERLAYMENT

- A. Elastic Sheet Flashing/Underlayment: Nonreinforced flexible, black elastic sheet flashing of 60 mils thickness and complying with the following:
 1. Shore A Hardness (ASTM D 2240): 50 to 70.
 2. Tensile Strength (ASTM D 412): 1200 psi.
 3. Tear Resistance (ASTM D 624, Die C): 20 lbs. per linear inch.
 4. Ultimate elongation (ASTM D 412): 250 percent.
 5. Low temperature brittleness (ASTM D 746): minus 30 deg F (minus 35 deg C).
 6. Resistance to ozone aging (ASTM D 1149): no cracks for 10 percent elongated sample for 100 hours in 50 pphm (50.5 mPa) ozone at 104 deg F (70 deg C).
 7. Resistance to Heat Aging (ASTM D 573): maximum hardness increase of 15 points, elongation reduction of 40 percent, and tensile strength reduction of 30 percent, for 70 hours at 212 deg F (100 deg C).
- B. Acceptable Manufacturer’s:
 1. Carlisle Roofing Products.
 2. Firestone Building Products Division.
 3. Or approved equal.

2.3 FASTENERS

- A. Fasteners shall be same metal as flashing and sheet metal or, noncorrosive metal as recommended by fastener manufacturer. Select materials to prevent galvanic corrosion.
- B. Exposed fasteners shall be stainless steel, as required for compatibility with fastened fabrications and substrate; self-sealing or gasketed for watertight installation.
- C. Mechanical Fasteners:
 1. Nails: Compatible with material fastened, flathead, wire, barbed, slating type.
 2. Washers: Lead or neoprene.
 3. Screws: Self-tapping sheet metal type compatible with material fastened.

4. Rivets: Stainless steel or copper material, as required for compatibility with fastened fabrications and substrate, type and size as recommended by sheet metal manufacturer.
5. Concrete and Masonry Fasteners:
 - a. Round-head stainless steel screw and neoprene washer with lead expansion anchor, FS FF-S-325, Group IV, Type II.
6. Acceptable Products:
 - a. Rawlplug, The Rawl Plug Company, Inc.
 - b. Trufast CF Fastener, Construction Fasteners.
 - c. Or approved equal.

2.4 MISCELLANEOUS MATERIALS AND ACCESSORIES:

- A. Solder: For use with steel or copper, provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux. Neutralize flux after soldering.
 1. Use phosphoric acid flux with stainless steel.
- B. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.
- C. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 07900 Section " Sealants and Caulking."
- D. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.
- E. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.
- F. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
- G. Self-Healing Tape:
 1. Thickness = $\frac{1}{8}$ ", with pressure-sensitive adhesive on one face.
 2. Acceptable Manufactures:
 - a. Ductmate Industries, Inc.
 - b. Williams Products, Inc.
 - c. Sika-Sarnafil
 - d. Or Approved Equal
 3. Install where indicated on the detailed drawings. Refer to Section 07525.

2.5 FABRICATED UNITS

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

2.6 FABRICATED ITEMS

- A. Flashing sleeves, counterflashings and umbrellas for piping penetration and guard rail supports: 22-gauge stainless steel.
- B. Plumbing Vent Stack Flashing: 2-1/2 lb. lead. Fabricate and install in accordance with approved shop drawings.
- C. Downspout and Conductor Heads: Minimum 24-gauge Kynar finished metal or fabricated per SMACNA requirements and detail drawings. Maximum 10'—foot lengths.
- D. Counterflashings, flanges: Minimum 24-gauge stainless steel fabricated per SMACNA requirements and detail drawings. Maximum 10-foot lengths.

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- E. Coping Caps: Minimum 22-gauge Kynar finished metal or fabricated per SMACNA requirements and detail drawings. Maximum 10'—foot lengths
- F. Curb covers, wind clips and closures: Minimum 22-gauge galvanized steel fabricated in accordance with SMACNA requirements and the detail drawings.
- G. Continuous Cleats: 1-1/4-inch continuous strips, same material and thickness as adjacent sheet metal item, except where heavier gauge is noted on detail drawings.
- H. All miscellaneous sheet metal, including wind clips to be minimum 24-gauge stainless steel fabrications except as otherwise outlined in this Section or the detail drawing.
- I. Roof Penetrations and Bonnet/Umbrella Counterflashings: Minimum 22-gauge stainless steel, two-piece construction.
- J. Expansion Joint Cover Assemblies: 22-gauge stainless steel formed in 10-foot maximum lengths.
- K. Gauges and finishes indicated on the drawings supersede gauges and finishes on metals indicated above.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install sheet metal with lines, arises, and angles sharp and true, and plane surfaces free from objectionable wave, warp or buckle. Exposed edges of sheet metal shall be folded back to form 1/4-inch hem on concealed side from view. Finished work shall be free from water retention and leakage under all weather conditions. Prefabricated corners or transitions are required at changes in direction, elevation or plane and at intersections. Locate field joints not less than 12 inches, nor more than 3'-0" from actual corner. Laps shall be 1 inch, riveted and soldered at following locations: Prefabricated corners; transitions; changes in direction, elevation, and plane; at intersections.

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- C. Anchor units of work securely in place to prevent damage or distortion from wind or buckling. Provide for thermal expansion of metal units; conceal fasteners where possible. Set units true to line level as possible.
- D. Install fabricated sheet metal items in accordance with manufacturer's installation instructions and recommendations and with SMACNA Architectural Sheet Metal Manual.
- E. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces with zinc chromate, bituminous coating, or other permanent separation at locations of contact as recommended by manufacturer or fabricator. Do not use materials incompatible with roofing system.
- F. Flanges: Bed flanges to be strip flashed in thick coat of bituminous roofing cement.
- G. Curb Cover and Flashings:
 - 1. Install over underlayment and slip sheet.
 - 2. Fully solder all seams and joints.
 - 3. Secure with fasteners and neoprene washers 12 inches on center.
 - 4. Slope top to drain.
- H. Risewall Counterflashings:
 - 1. Overlap 2 inches on base flashing; lap ends 4 inches with adjacent flashing or as shown on detail drawings.
 - 2. Furnish prefabricated corners at all changes in plane or direction in accordance with SMACNA requirements.
- I. Roof Penetration Hoods and Umbrella Counterflashing:
 - 1. Install watertight hood or umbrella counterflashing at sleeves and penetration locations, such as pipes and conduit penetrating roof, and at equipment supports and over sealant pans. Install self-healing tape where indicated on the drawings.
 - 2. Set umbrella counter flashing in sealant. Slope top of sealant to drain.
 - 3. Fully solder connections and seams and install in accordance with approved shop drawings.
 - 4. Tighten draw bands.
 - 5. Seal top of umbrella counterflashing with sealant. Slope top of sealant to drain.
- J. Copings and Caps:
 - 1. Install new 24 gauge or Kynar finished coping caps. Color to be selected by Owner's Representative (Refer to Drawings).
 - 2. Provide 4" wide matching snap covers at all coping joints.

3. Install two continuous beads of sealant at each side of snap cover plates before installation.
 4. Inside and outside corners shall be folded seam construction with 2'-0" maximum leg length. Surface sealed joint is unacceptable and will be rejected by Consultant and replaced by contractor at no additional cost to the Owner.
- K. Thru Wall and Thru Edge Scuppers
1. Install new fully soldered thru edge and thru wall scuppers at designated locations.
 2. Provide minimum 8" wide flange to received flashing membrane.
 3. Provide minimum 8" wide surface plate and closures to confirm and seal to wall panel profiles.

3.2 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces.
- B. Refer to Section 01040 for additional requirements.

END OF SECTION 07600

SECTION 07900 - SEALANTS AND CAULKING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Sealant application to counterflashing reglets, hoods, umbrellas, roofing related sheet metal and additional sealant application as required to provide complete and watertight roofing system.
- B. Hi-temperature brand sealants at hot stacks, and reliefs and hot vent pipe.
- C. Sealing fasteners and holes in roof related metal fabrications.

1.2 RELATED SECTIONS

- A. 02070 - Selective Demolition and Renovation Work.
- B. 07600 – Flashing and Sheet Metal.
- C. 07525 – Modified Bitumen Roofing.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C 669 Glazing Compounds for Back Bedding and Face Glazing of Metal Sash.
 - 2. C 920 Elastomeric Joint Sealants.
 - 3. D 1644 Solids content.
 - 4. D 412 Elongation.
 - 5. D 146 Pliability.
- B. Federal Specifications (FS):
 - 1. TT-S-00227E Sealing Compound, Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
 - 2. TT-S-00230C Sealing Compound, Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures).
 - 3. TT-S-001543A Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures).

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, joint preparation and installation instructions, and color charts for each product required.

- B. Submit manufacturer's certification that products meet specified requirements and are appropriate for project applications. Submit certification as a part of the shop drawing submittal.
- C. Samples for Initial Selection Purposes: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available for each product exposed to view.
- D. Submit Manufacturer's Material Warranty as a part of shop drawing submittal.

1.5 QUALITY ASSURANCE

- A. Product Labels: Include manufacturer's name, type of sealant and color on labels of containers.
- B. Single Source Responsibility for Joint Sealer Materials:
 - 1. Obtain joint sealer materials from single manufacturer for each different product required.
 - 2. Provide primers, joint sealers, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience as supplied and warranted by one manufacturer.
 - 3. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.
- C. Installer Qualifications: Installer having not less than five years successful experience in comparable projects and employing personnel skilled in operations required for project.
- D. Field Sample: Upon directions of Tulsa County, prepare 12-inch samples in presence of Tulsa County demonstrating removal and cleaning process and application of sealant.
- E. Use test methods standard with manufacturer to determine if priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealers to joint substrates under environmental conditions that will exist during actual installation.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original containers with seals unbroken and labels intact.
- B. Store materials in a single lockable area of project site.

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- C. Protect materials from extreme temperatures and exposure. Store in accordance with manufacturer's recommendations.

1.7 PROJECT CONDITIONS

- A. Environment: Comply with sealant manufacturer's recommended minimum and maximum installation temperatures and other weather protection.

1.8 SEQUENCING AND SCHEDULING

- A. Prepare and seal all joints in sequence and at proper time to maintain weather tight condition of the area being sealed.

1.9 WARRANTY

- A. Manufacturer's Warranty:
 - 1. Provide five year material warranty for all sealants.
 - 2. Provide ten year warranty for Sealant D.
- B. Submit Manufacturer's Material Warranty as a part of shop drawing submittal.
- C. Contractor's Warranty: Provide written warranty against leakage and defects in workmanship for a period of Five (5) years from date of final acceptance by Tulsa County. Refer to Section 07999.

PART 2 – PRODUCTS

2.1 SEALANT (All Sealants Listed May Not Be Used On This Project)

- A. Polyurethane Sealant (Sealant A):
 - 1. Single component, non-sag, nonstaining, non-bleeding, self-priming, FS TT-S-00230, Type II, Class A.
 - 2. Color: As selected by Tulsa County Representative.
 - 3. Acceptable Products:
 - a. Dynatrol I, Pecora Corp.
 - b. Sonolastic NP1, Sonneborn Building Products Corp.
 - c. Dymonic, Tremco Products Corp.
 - d. Vulkem 116, Mameco International, Inc.
 - e. Sikaflex-1A, Sika Corporation.
 - f. Or Approved Equal
- B. Polyurethane Sealant (Sealant B):
 - 1. Multi-component, non-sag, self-priming, FS TT-S-00227, Type II, Class A.
 - 2. Color: As selected by Tulsa County Representative.

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3. Acceptable Products:
 - a. Dynatrol II, Pecora Corp.
 - b. Sonolastic NP2, Sonneborn Building Products Corp.
 - c. DYmeric, Tremco Products Corp.
 - d. Sikaflex, 2cNS Sika Corp.
 - e. Or Approved Equal

- C. Silicone Sealant (Sealant C):
 1. Single component elastomeric silicone sealant; FS TT-S-001543, Class A, nonsag; ASTM C 920, Type S, Grade NS, Class 25.
 2. Color: As selected by Tulsa County Representative.
 3. Acceptable Product:
 - a. Dow Corning 795
 - b. G.E. Silpruf
 - c. Or Approved Equal

- D. Silicone Sealant (Sealant D):
 1. One-part, self-priming, structural, FS TT-S-001543, Class A; FS TT-S-00230, Type II, Class A
 2. Color: As selected by Tulsa County Representative
 3. Acceptable Product:
 - a. Dow Corning 975
 - b. Or Approved Equal

- E. High Temperature Sealant (Sealant E):
 1. One-part, self-priming, neutral cure, non-structural silicone FS TT-S-001543A (COM-NBS) Class A. FS TT-0230C (COM-NBS) Class A
 2. Acceptable Product:
 - a. Dow-Corning 799 Silicone Glass and Metal Building Sealant
 - b. Or Approved Equal

- F. Fire Stop (Sealant F):
 1. Sealant: Dow Corning Fire Stop Sealant 2000
 2. Foam: Dow Corning Fire Stop Foam 2001
 3. Wrap: Dow Corning Fire Stop Intumescent Wrap Strip 2002
 4. Primer: Dow Corning 1200 RTV Prime Coat
 5. Or Approved Equal

2.2 RELATED MATERIALS

- A. Joint Cleaner: Noncorrosive, nonstaining type, compatible with joint forming materials as recommended by sealant manufacturer.

- B. Joint Backing:

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1. Closed cell polyethylene foam rod, over-sized 30 to 50 percent for joint size, compatible with sealant, sized and shaped to provide proper compression upon insertion in accordance with manufacturer's recommendations.
2. Acceptable Products:
 - a. Sonneborn Sonofoam closed cell (CC) Backer-Rod.
 - b. Or equal products approved by the sealant manufacturer.
- C. Bond Preventive Materials: Pressure sensitive adhesive polyethylene strip recommended by sealant manufacturer to suit application.
- D. Primer: Nonstaining type as recommended by sealant manufacturer to suit application.
- E. Masking Tape: Nonstaining, nonabsorbent type compatible with sealant and surfaces adjacent to joints.

2.3 MIXING

- A. Mix multi-component products as directed by manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine joints for defects that would adversely affect quality of installation.

3.2 PREPARATION

- A. Cleaning:
 1. Clean joints receiving sealant and adjacent surfaces in manner not to damage existing materials.
 2. Remove dust and debris.
 3. Wipe nonporous surfaces clean with toluene or xylene and clean cloths.
- B. Priming:
 1. Prime joint substrates where indicated or where recommended by sealant manufacturer based upon preconstruction sealant substrate tests or prior experience.
 2. Apply primer to comply with joint sealer manufacturer's recommendations.
 3. Confine primers to area of joint sealer bond. Do not allow spillage or migration onto adjoining surfaces.

- C. Masking: Mask areas adjacent to joints to prevent sealant contact with surfaces which would be permanently stained or damaged by sealant or by cleaning methods required to remove excess sealant.

3.3 APPLICATION

- A. Joint Size: Examine joint dimensions and size materials to achieve required width-to-to-depth ratio as recommended by sealant manufacturer.
- B. Joint Backing:
 - 1. To achieve required joint depths, restrict depth of joints by use of joint backer rod or neoprene tape as detailed on the drawings.
 - 2. Size backer rod to allow for 30 percent minimum compression of the backer rod when installed.
 - 3. Where joint backing material is not feasible due to insufficient clearance or where mortar is partially removed, install bond preventive material in joint.
 - 4. Three-sided adhesion of sealant is not permitted.
 - 5. Confirm neoprene tape is installed at locations indicated on the details. Do not install sealant until tape is installed.
- C. Sealant
 - 1. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates.
 - 2. Apply sealant in uniform continuous bead without gaps or air pockets, following manufacturer's instructions for each specific type of sealant.
 - 3. Provide uniform cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
 - 4. Self-Leveling Sealant: Apply in accordance with manufacturer's recommendations.
 - 5. Slope the top of all horizontal joint sealant to provide positive drainage. No standing water will be permitted on top of these locations.
- D. Tooling:
 - 1. Tool joints to required configuration in accordance with manufacturer's recommendations.
 - 2. Tooling Non-sag Sealants:
 - a. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration required.
 - b. Eliminate air pockets and ensure contact and adhesion of sealant with sides of joint.
 - c. Remove excess sealant from surfaces adjacent to joint.
 - d. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by manufacturer.

- e. Remove masking immediately after tooling without disturbing joint sealant.

3.4 ADJUSTING

- A. If damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

3.5 CLEANING

- A. Remove excess sealant from adjacent surfaces immediately after contact.
- B. Remove debris and containers from jobsite.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion.

3.7 SCHEDULE

- A. Sealant A: Sealant work in conjunction with non-moving joints and minor repairs.
- B. Sealant B:
 - 1. Replacing existing exterior building sealants.
 - 2. Wall penetrations.
 - 3. Crack repairs in concrete, precast concrete, stone, stucco and other .
- C. Sealant C: Metal to metal joints in copings.
- D. Sealant D: All hot stacks, exhausts, flues and heater exhausts.
- E. Sealant E: All open joints or penetrations through roof deck at pipes, conduit, ducts, lightning protection, etc.

END OF SECTION 07900

SECTION 07999 – CONTRACTOR PROJECT WARRANTIES

PART 1 – GENERAL

1.1 UPON COMPLETION OF WORK

- A. Contractor shall execute an original copy of the attached “Contractor Five (5) Year warranty” for all repair work on this project. Any other warranty form will be rejected.

1.2 FINAL ACCEPTANCE

- A. Proper execution and submittal of these warranty documents are required prior to final payment for the project by the Tulsa County will be issued.

1.3 RELATED DOCUMENTS AND SECTIONS

- A. The drawings, General Provisions of Contract, including General and Special Conditions, and all sections of the specifications are related to each other and are to be utilized in conjunction with each other for the successful execution of this work.

PART 2 – PRODUCTS

- A. Provide Manufacture’s Warranties for new roof, HVAC modifications, drain bowls, plumbing pipe and structural ladder, minimum 5 years duration.

PART 3 – EXECUTION

- A. Contractor to execute warranty for all workmanship and materials.
- B. Free from defects for a period of 5 years.

ATTACHMENTS:

Contractor Five (5) - Year Warranty

END OF SECTION 07999

**TULSA COUNTY
2020 ROOF REPLACEMENT DAVID L. MOSS CRIMINAL JUSTICE CENTER
TULSA, OKLAHOMA**

CONTRACTOR FIVE (5) YEAR WARRANTY

For

Tulsa County

2020 David L. Moss Criminal Justice Center Roof Replacement Project

300 North Denver Avenue

Tulsa, Oklahoma

To: Tulsa County Contractor Warranty Period: Five (5) Years
300 North Denver Avenue on 2020 David L. Moss Criminal Justice Center Roof Replacement Project
Tulsa, Oklahoma From Date of Final Acceptance

Contractor's Warranty No. _____ Begins: _____

Ends: _____

The Undersigned, _____ having heretofore entered into a contract with Tulsa County, dated _____, 2020, for the above titled work at the David L. Moss Criminal Justice Center at 300 North Denver, Tulsa, Oklahoma and in accordance with said Contract, do hereby guarantee that all labor and material furnished and all work performed or subcontracted by us is free from defects, watertight and in conformance with said Specifications and Drawings for this Contract, and shall remain free of defects and watertight for a period of Five (5) years on roof replacement systems and all designed and related work indicated in the Contract Documents from the date of Tulsa County's final acceptance.

We, the Undersigned, do certify that all Materials used for Work described herein meet the Specification in its entirety.

We further agree to repair, in a timely manner and at our own expense, any portion of said work which may prove to be defective, including but not limited to leaks, or other defects, for a period of Five (5) years from the beginning of the warranty period. We further agree that, if a leak (or leaks) should develop within the warranty period, we shall endeavor to repair such leak (or leaks) within a period of 48 hours after being informed by the Tulsa County or his representatives. If at the end of this time we have been unable to begin the repairs, the Tulsa County will have the option of taking any reasonable steps necessary to make the repairs, and we will reimburse the Tulsa County, in full, for any reasonable expenses incurred in having the repairs made. Any such action shall not be a breach of the provisions of this Warranty.

**TULSA COUNTY
2020 ROOF REPLACEMENT DAVID L. MOSS CRIMINAL JUSTICE CENTER
TULSA, OKLAHOMA**

We certify that all work performed under the terms of this Warranty shall be in strict accordance with the requirements of the product manufacturer in order to maintain the validity of the existing manufacturer's warranty (should one be in effect).

SUBSCRIBED AND SWORN to before me this _____ day of _____, 2020.

Company Name

By: _____.

Company Officer

Notary Public in and for the State of _____.

Notary Signature: _____.

(SEAL)

Notary Printed Name: _____.

My Commission Expires: _____.