# SPECIFICATION MANUAL

# DCSB Project No. P-83800/ITB-008-24LM
# Roof Replacement at Englewood High School #90

## FOR
## Office of Facilities Maintenance
## DUVAL COUNTY PUBLIC SCHOOLS

**25 JANUARY 2024**

**Design Team of**
**kasper architects + associates**
**Jacksonville, Florida**
**kasper architects Project No. 23046**

# NON-TECHNICAL SPECIFICATIONS


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Note: Pursuant to *Florida Statutes*, Duval County Public Schools (Owner) is exempt from Florida Sales Tax on the purchase of construction material and equipment and has elected to exercise this right. All bids are to be submitted with all applicable taxes included.

**TABLE OF CONTENTS**

KASPER ARCHITECTS COVER SHEET
DUVAL COUNTY PUBLIC SCHOOLS COVER SHEET
TABLE OF CONTENTS

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

SECTION 000107 – SEALS PAGE
SECTION 000115 - INDEX OF DRAWINGS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 010000 - GENERAL REQUIREMENTS
SECTION 010300 - SPECIAL REQUIREMENTS AND PROVISIONS
SECTION 010400 – COORDINATION
SECTION 010600 - REGULATORY REQUIREMENTS
SECTION 011000 - SUMMARY OF WORK
SECTION 012000 - PROJECT ADMINISTRATION
SECTION 013000 – SUBMITTALS
SECTION 014000 - TESTING
SECTION 015000 - TEMPORARY CONTROL AND SAFETY
SECTION 016000 – MATERIAL AND EQUIPMENT
SECTION 017700 – CONTRACT CLOSEOUT
SECTION 017839 - PROJECT RECORD DOCUMENTS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

SECTION 061000 - ROUGH CARPENTRY

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION 075216 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING
SECTION 075423 – THERMOPLASTIC SINGLE-PLY ROOFING
SECTION 076200 - SHEET METAL FLASHING AND TRIM
SECTION 079200 - JOINT SEALANTS

**SEALS PAGE - 000107**

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**END OF SECTION**

**INDEX OF DRAWINGS - 000115**

1. Purpose

The purpose of this section is to provide a listing of those Drawings, which are a part of this Contract:

Architectural

| | |
|---|---|
| A0.0 | COVER |
| A0.1 | NOTES, SYMBOLS, & LEGEND |
| A0.2 | DEMOLITION ROOF PLAN |
| A5.1 | OVERALL ROOF PLAN |
| A5.2 | ROOF PLAN - AREA A |
| A5.3 | ROOF PLAN - AREA B |
| A5.4 | ROOF PLAN - AREA C |
| A5.5 | ROOF PLAN - AREA D |
| A5.6 | ROOF PLAN - AREA E |
| A5.7 | ROOF PLAN - AREA H |
| A5.8 | ROOF PLAN - AREA G |
| A5.9 | ROOF PLAN - AREA H |
| A5.10 | ROOF PLAN - AREA J |
| A5.11 | ROOF PLAN - AREA K |
| A5.12 | ROOF PLAN - AREA L |
| A5.13 | ROOF PLAN - AREA M |
| A5.14 | ROOF DETAILS |
| A5.15 | ROOF DETAILS |

Structural

| | |
|---|---|
| S1.1 | ROOF DIAGRAM - AREA A, B, C, D, F |
| S1.2 | ROOF DIAGRAM - AREA E, G, H |
| S1.3 | ROOF DIAGRAM - AREA I, J, K, L |
| S1.4 | ROOF DIAGRAM - CANOPY |

**END OF SECTION**

**GENERAL REQUIREMENTS - 010000**

1.1 Content

This specification sets forth requirements for the day-to-day coordination of the work effort in order to minimize the disruption of:

A. School schedule

B. Teaching environment

C. School utilities

D. School security

1.2 Daily, Ongoing Coordination

The Contractor shall maintain an ongoing daily coordination of his work effort with the school staff. The Contractor shall adjust his construction effort and work hours to minimize disruptions to the normal operation of the school.

1.3 Contractor s Working Hours

A. SUMMER HOURS: N/A

B. The Contractor shall coordinate his planned working hours with the school Principal in advance. Circumstances which alter these plans, will require further coordination and approval by the principal.

C. No work shall be performed at any time unless a school custodian or other person assigned by the school principal is on duty.

1. Normal custodian hours are 7:30 a.m. to 11:00 p.m. Monday through Friday.

2. The above hours are maintained during the regular school term. However, custodian holidays are not always the same as those of the faculty and students.

3. Variations occur in normal working hours from one school to another.

D. Regular Term School Day:

1. Regular Schools (See DCPS website for exceptions)

| | |
|---|---|
| Kindergarten | 8:30 a.m. - 1:30 p.m. |
| Elementary | 8:30 a.m. - 3:00 p.m. |
| Middle | 9:30 a.m. - 4:15 p.m. |
| High | 7:15 a.m. - 2:00 p.m. |

2. Magnet Schools

   School hours may vary significantly at magnet schools. Confirm school hours with OFDC Project Manager.

E. School Terms

1. Regular: fall, winter, spring sessions.

2. Summer.

3. Modified Calendar: confirm track with OFDC Project Manager.

F. Special Functions During the School Day.

1. Special school functions such as school-wide testing, etc., may be scheduled during the construction effort.

2. The Contractor shall not schedule or perform work that will interfere with the operation of school during special school functions or testing.

3. Coordinate with the school Principal.

1.4 Construction Noise/Interference

A. Construction noise or the normal results of construction operations will not be allowed to interfere with the normal operations of the school or any of its support areas such as the cafeteria, media center, etc.

B. The Contractor shall plan his operations accordingly if noise, dust or smoke may cause his operations to be delayed or performed before or after normal school hours.

C. The Contractor shall notify the school Principal prior to any electrical work being performed to preclude interruption of power to the school s computer center or any other school areas.

1.5 Functions After the School Day

A. School facilities may be utilized after the school day for:

1. Community education

2. Scheduled school activities

3. Sporting events

4. Community-related events

B. The Contractor shall coordinate with the Principal to avoid interfering with after-hour school functions.

C. The Contractor will receive cooperation and understanding from the Principal with regard to maintaining a Construction Schedule.

1.6 Work Within Occupied Space

Should planned work be virtually noise, odor and/or pollutant-free, the Principal may allow work in certain occupied areas while school is in session. Coordinate with the Principal.

1.7 Weekend and Holiday Work

A. The Contractor shall obtain the permission of the Owner prior to scheduling work on weekends or holidays. The Contractor shall not perform construction work without the aforementioned permission. Permission shall be obtained for each individual occasion prior to work being performed.

B. To ensure the continuity of quality construction, an inspector from the Office of Building Code Enforcement, Duval County Public Schools, 1701 Prudential Drive, 5th floor, Jacksonville, Florida, 32207, Telephone (904) 390-2150, must be scheduled for all weekend/holiday work. Also, to gain access to the work and provide security, an assigned school person on duty (Duty Custodian) shall be arranged for with the principal at least forty-eight (48) hours in advance. Locking the school shall be the responsibility of the assigned person on duty.

C. The Contractor shall reimburse the Owner for those costs incurred by the Owner in providing:

1. A weekend/holiday Inspector.
2. An assigned school person on duty (Duty Custodian).

D. The Contractor shall arrange for an Inspector two working days prior to the weekend or holiday for which the Inspector is needed. The Owner schedules weekend/holiday inspectors.

E. The Contractor shall arrange for a person on duty (Duty Custodian) two working days prior to the weekend or holiday required. The school Principal schedules weekend or holiday persons on duty.

F. The Contractor shall not expect the assigned person on duty (Duty Custodian) to perform any construction work whatsoever or clean or remove debris from the construction operations.

G. When work is complete at the end of the day, the Contractor shall leave the school in such a manner that it can be secured by the assigned school person.

H. The Contractor shall clean any debris, trash and dust caused by his operation during such periods of work so as to leave the occupied portions of the building in a clean, safe, healthful environment for the nextschool day.

1.8 Securing Occupied Spaces at the End of Each Day s Operations

A. The Contractor shall secure all openings in the exterior shell. He shall ensure that existing occupied spaces are secure against both the weather and forced entry.

B. If after-hours building security cannot be attained by standard construction methods, the Contractor shall post a bonded and licensed security guard.

C. The utilization of a guard shall be approved by the Owner prior to use.

1.9 Contractor s Superintendent

A. The Contractor s Superintendent shall be present at the job site while all construction operations are taking place.

B. The Superintendent shall remain on a particular job site until the work is completed or consent is granted by the Owner or Architect/Engineer for his early removal.

1.10 Site Commencement/Scheduling Coordination

A. The Contractor shall keep the Owner informed of his plans to begin work at any particular school.

B. The Contractor shall keep the Owner informed of any delays and/or changes in the work schedule.

1.11 Operating Utilities

A. During normal working hours and/or after-hour school activities, the school shall not be without operating utility services as a result of Contractor s operations.

B. Work effort shall be planned and coordinated with the Principal to preclude an untimely interruption of utility services.

C. The Contractor shall be aware that schools utilize computer information centers. Coordinate with school Principals to preclude interruption of electrical power to these centers.

1.12 Contractor s Clean-Up

The Contractor shall clean debris, trash and dust caused by daily operations to leave occupied building spaces in a clean, safe and healthful condition, ready for the next school day. Failure to do so shall result in immediate clean up at the Contractor s expense.

**END OF SECTION**

**SPECIAL REQUIREMENTS AND PROVISIONS - 010300**

1.1 Purpose

This specification section provides information regarding the following special subjects:

A. Procedures for Contract Execution receipt of Notice to Proceed.

B. Early Occupancy.

C. Special Provisions

1. Toxic Substance
2. Smoking
3. I.D. Badges
4. Appropriate Attire
5. Fraternization with staff and students

1.2 Construction Start-Up Administration Procedures

The following sequence of events is generally adhered to in the completion of early contract administration details.

A. After the Bid opening, the Board requires a period of time for the administrative process of issuing a Notice of Award, i.e., Board consideration and possible approval, Contract preparation, etc.

B. Upon issuance of a Notice of Award, the Contractor will have 10 days to:

1. Execute the Contract (Construction Contract).
2. Provide Performance and Material Payment Bond.
3. Provide Complete Subcontractor Listing for all subcontracts.
4. Submit Certificate of Insurance and Indemnification Receipt.

C. After Executing Contract and Prior to Starting Actual Work

1. Begin shop drawing submittal and sample procurement.

2. Submit Construction Schedule within ten (10) days after Notice to Proceed.

3. Submit Schedule of Values within ten (10) days after Notice to Proceed.

D. Upon receipt of the Executed Contract and other documents in paragraph 1.02 B above, the Owner will issue a Notice to Proceed.

1. Contract Time starts the day the Notice to Proceed is issued - not the day it is received by the Contractor.

2. Coordinate closely with the Owner (Facilities Division) to determine date of commencement in the Notice to Proceed.

3. Extensions of Contract Time will not be granted as a result of the normal administrative delay in actual receipt of the Notice to Proceed unless the Notice to Proceed is significantly delayed.

1.3 Owner's Occupancy

A. The Contractor shall coordinate his efforts and concentrate his work forces where Contract Documents indicate that certain portions of the Work be completed ahead of others.

B. Where certain portions of the Work are completed in advance of their scheduled date, the Owner shall reserve the right to take possession.

C. In either of the two above cases where the Owner desires to take partial possession of a construction project, the following considerationsapply:

1. The taking possession of and use of part of the Work shall not be deemed as acceptance of any work not completed in accordance with the Contract Documents.

2. The Owner, ARCHITECT/ENGINEER and Contractor shall inspect the particular portion completed to determine its degree of completion prior to use or possession.

3. A Certificate of Substantial Completion shall be issued by the ARCHITECT/ENGINEER which defines the extent of the portion of work inspected and of which possession is to be taken or use established and shall establish the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance.

4. The Owner reserves the right to occupy any portion of the space at its discretion under anyof the following conditions:

(a) Project is past Contract Time without reaching Substantial Completion; or,

(b) Space was scheduled for occupancy after the date of Substantial Completion.

(c) A Certificate of Occupancy has been issued for the occupied space.

If, in the opinion of the ARCHITECT/ENGINEER, the space to be occupied is safe for occupancy but has not reached a level of completion to be judged Substantially Complete, the Owner, at its discretion, may not issue a Certificate of Substantial Completion for the occupied space until such time as the work has reached a level to be considered so.
Should the Owner occupy a portion of the project and the remainder has not reached Substantial Completion in accordance with the Contract requirements, the delay damages to the Owner shall be pro- rated representing a sum for the total remaining work.

1.4 Special Provisions

A. Toxic Substances:

In accordance with Chapter 87-202, Laws of Florida (CS/HB 8020), all toxic substances on the Florida substance list that are used in the repair, construction or maintenance of educational facilities are subject to certain provisions:

1. The Contractor shall notify the Duval County School Board Facilities Division (Owner) in writing five (5) working days prior to the intended use of the substance.

2. The notification shall contain:
   a. Name of substance.
   b. Where substance is to be used.
   c. When substance is to be used.

B. Smoking:

Smoking is prohibited on school property, including all buildings and grounds.

C. I.D.:

I.D. Badges and/or company logos on shirts or hats are required of all Contractors personnel.

D. Attire:

Proper attire shall be worn at all times.

1. Shirts shall be worn while on school property at all times. (No tank tops or undershirts will be permitted).
2. Clothing displaying nudity, obscene language, obscene symbols or pro-drug slogans is prohibited.
3. Shorts will not be permitted.
4. Proper shoes to ensure the individual's safety shall be worn at all times.

E. Fraternization:

Contractor staff shall not fraternize with school staff or students. Contractors shall not make payments or contributions to School Board staff, Design Professionals or consultants nor impart anything of value in excess of twenty-five ($25) dollars.

**END OF SECTION**

**COORDINATION - 010400**

1.1 Architect/Engineer Control

A. The ARCHITECT/ENGINEER will render all interpretations of the Construction Documents upon request by the Owner or Contractor.

B. The ARCHITECT/ENGINEER will provide assistance for and approve solutions to construction problems.

C. Decisions relating to quality shall be approved by the ARCHITECT/ENGINEER.

D. Prior approval of the ARCHITECT/ENGINEER shall be obtained unless the approval of others is specifically required. Contractor is not to assume that approval has been given.

E. Product or System Approvals:

1. Where products or systems are specified by manufacturer's name and noted as approved, subsequent approval is not required if utilized exactly as specified.

2. The ARCHITECT/ENGINEER's approval implies only that a system is acceptable as it directly relates to the requirements of the Contract Documents. ARCHITECT/ENGINEER approval neither implies endorsement nor absence of fault.

F. Requests for changes shall be in writing. ARCHITECT/ENGINEER approval shall be in writing and obtained prior to work being performed.

G. Contract sum and/or time changes (Change Orders) shall require Owner's written approval prior to proceeding.

1.2 Contractor's Control

A. The Contractor shall be responsible for coordinating the entire project.

B. The Contractor shall insure that work is performed according to the Contract Documents.

C. The Contractor shall:

1. Assign work to subcontractors as required by:
   a. Labor and trade jurisdictions.
   b. Government regulations.
   c. Contract Documents.

D. The Project Manual (PM) is organized according to types of work effort. However, additional work of similar type may be called for in more than one section. The Contractor is responsible for the total, overall coordination of work effort and shall insure the distribution and accomplishment of the total work effort regardless of PM organization.

E. The Contractor shall contract with those Subcontractors included on the Sub-Bidder Listing.

F. The Contractor shall insure the distribution of all documents, correspondence, instructions, etc., to affected parties, subcontractors, material suppliers, etc.

G. The Contractor shall ensure that all Subcontractors are informed of the requirements of the Contract Documents.

H. The Contractor shall cooperate with individuals authorized to visit the Work and ensure that they conform to all safety and security requirements.

I. The Contractor shall notify the ARCHITECT/ENGINEER immediately of any condition, which will cause a delay, hindrance, or disruption in the construction process.

J. The Contractor shall coordinate the scheduling of work to be performed under other separate Owner contracts. The Contractor shall inform the Owner of work observed to be improperly executed and shall also reflect it on its daily reports.

1.3 Contractor/Subcontractor Joint Control Responsibilities.

A. The Contractor shall coordinate with Subcontractors, suppliers, etc. for the timely:

1. Submittal of Product Data
2. Samples
3. Product orders
4. Material deliveries
5. Installations

B. The Contractor shall <u>not</u> expect nor receive time extensions or product substitutions as a result of improper administration. However, delays beyond the control of the Contractor and his agent may be legitimate reasons for time extensions.

C. The Contractor shall determine that material deliveries do not overload the structure and cause permanent deformation.

D. The Contractor shall be responsible for the protection of all work completed and in progress.

E. The Contractor shall educate his Superintendent of the importance of protecting completed work. The Superintendent will ensure that Subcontractors protect work by other trades and thereby minimize damage to other work as well as their own. The Superintendent will ensure that the completed work is protected from the weather.

F. The Contractor shall coordinate the efforts of different trades for the building-in or connection of devices, equipment or services necessary for the installation of work.

G. The Contractor shall be responsible for receiving, storing and accounting for all deliveries of materials and equipment for the Work.

1.4 Installation of Products

A. Contractor shall install products in complete compliance with Contract Documents. This shall include the preparation or provision to receive the installation of a product, the preparation of a product for installation or application, the application or installation of a product or the adjustment and protection of a product.

B. Normally, Contract Documents require compliance with the manufacturer's instructions. In some cases, requirements greater than the manufacturers are imposed. However, under no circumstances should Contract Documents reduce those imposed by the manufacturers. The Contractor shall review both; where doubt exists, seek ARCHITECT/ENGINEER clarification prior to proceeding.

1.5 Adjustment and Cleaning

A. As work progresses, clean and protect completed work from the subsequent work of other trades.

B. Protect work until commencing preparations for final inspection.

C. The Contractor shall review the work to determine that:

1. The installation is a sound, structurally adequate assembly.
2. The assembly is correctly installed and operates, or functions as intended.
3. Assembly is adjusted for smooth operation and performance.
4. No debris shall be buried on the site. All debris shall be hauled from the site and disposed of in compliance with governmental regulations.

D. Protection of Completed Work: The Contractor shall make certain all portions or trades of work are protected as completed from subsequent work, traffic, etc. Such protection shall include but not be limited to:

1. Finish Flooring: Install 30# rosin-sized paper in traffic and storage paths. Tape all joints. Allow no traffic, storage or work on or above unprotected surfaces.

2. Roofing: Materials shall not be stored on the completed roofing membrane, nor shall it be subjected to traffic.

**END OF SECTION**

**REGULATORY REQUIREMENTS - 010600**

1.1 Purpose

This section amplifies and underscores Contractor requirements for work on public property and compliance with government regulations.

1.2 Work on Public Property

Prior to performing work on public property, the Contractor shall secure:

A. Written permission and/or permits from the controlling government agency, and where required:

B. Furnish bonds or guarantees for the accomplishment of such work.

1.3 Government Regulations and Requirements

A. Contractor Responsibility:

The Contractor shall comply with all government regulations and requirements, which affect the accomplishment of the Work.

B. Violations:

1. The Contractor shall inform the ARCHITECT/ENGINEER of suspected or observed errors or conflicts in accordance with regulatory guidance.

2. The Contractor shall not proceed with work affected by suspected violations until the conflict has been resolved.

1..4 Governing Building Code

The Contractor shall be governed by:

A. The State Requirements for Educational Facilities (SREF) in accordance with Florida Building Code under *Florida Statutes*.

B. Any and all codes or standards made a part of SREF by reference, i.e., Paragraph 6A- 2.0111 in accordance with Florida Building Code under *Florida Statutes*.

**END OF SECTION**

**SUMMARY OF WORK - 011000**

1.0 Work Covered by contract documents.

The project consists of recapping existing modified roofs with single ply TPO for Englewood High School #90.

1.1 Contractor Responsibilities

A. General

1. Designate submittals and delivery date for each product.
2. Review shop drawings, product data, samples and other submittals. Submit to ARCHITECT/ENGINEER with notification due to nonconformance with Contract Documents.
3. Receive and unload products at site.
4. Inspect deliveries, record shortages and damaged or defective items and inform the ARCHITECT/ENGINEER accordingly.

B. Coordination of Work

1. The General Contractor and Subcontractors shall review other sections of work applicable to their work and ascertain requirements in other sections applicable to their work. Each shall be held responsible for coordination and inclusion of the work indicated as if it were in the particular subcontractor's section. The ARCHITECT/ENGINEER shall be advised of any discrepancies or conflicts within 24 hours of discovery.

2. All subcontractors, suppliers, etc., shall be responsible for knowing what information is given on all sheets of the drawings and specifications concerning his particular work. The failure of the Contractor to provide this notice shall result in a waiver of any claim for any such conflict or discrepancy not timely communicated.

1.2 Work Effort Sequence of Priorities

Work shall be sequenced to provide minimum interruption to school operation.

1.3 Changes

No special implication, interpretation, construction, connotation, denotation, import or meaning shall be assigned to any provision of the Contract Documents because of changes created by the issuance of any (1) addendum, (2) amendment, (3) bulletin, (4) notice of deletion, (5) notice of omission, or (6) change order other than the precise meaning that the Contract Documents would have had if the provision thus created had read originally as it reads subsequently to the (1) addendum, (2) amendment, (3) bulletin, (4) notice of deletion, (5) notice of omission or (6) change order by which it was created.

1.4 Contract Forms and Bidding Requirements

A. Forms, requirements and documents included in this Project Manual, together with the Table of Contents, are a part of the Contract Documents.

B. Drawing sheets as identified on Index to Drawings are a part of the Contract Documents.

C. Documents, affidavits and printed forms included in the Contract Documents are required by the Duval County School Board.

D. The requirement of Division O and 1 apply to all Divisions and Sections of the Project Manual as if reproduced therein.

1.5 Visitor's Log

A. The Contractor shall maintain a log in the field office to record visits by the ARCHITECT/ENGINEER, his consultants, Owner's representatives and inspectors and all visitors. This log shall become the official record of all job visits and shall show date, time of arrival and departure, name and who represented.

B. The Contractor shall submit a copy of this log with each application for Partial Payment indicating project name and period covered by the log.

**END OF SECTION**

**PROJECT ADMINISTRATION - 012000**

1.1 Related Requirements

A. Schedule of Values

B. Shop Drawings and Submittals

C. Testing Laboratory Services

D. Temporary Facilities, Utilities and Operations

E. Clean-Up

F. Project Close-Out

1.2 Project Meetings - General

A. Schedule and administration of progressmeetings:

1. Meeting agenda: The Contractor shall advise the Architect/Engineer at least 24 hours in advance of project meetings regarding all items to be included in the agenda.

2. Minutes: The Architect/Engineer will compile the official minutes of each project meeting and will furnish three copies to the Contractor. The Contractor may make and distribute such other copies as he wishes.

3. Any corrections to the minutes must be submitted in writing within three (3) days of receipt of the recorded minutes.

B. Architect/Engineer: The Architect/Engineer will attend meetings to ascertain that work is expedited consistent with construction schedule and with Contract Documents.

C. Work Included: To enable orderly review during the progress of the Work to provide for systematic discussion of problems, the Architect/Engineer will conduct project meetings throughout the construction period.

D. Related Work Described Elsewhere: The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility solely.

E. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 Pre-Construction Meeting

A. A pre-construction meeting will be scheduled by the Owner within fifteen (15) days after the date of the written Notice to Proceed. The owner will set the date, time and place of the meeting prior to start of any construction. Authorized representatives of the Contractor, the job superintendent and major subcontractors shall attend. The purpose of the meeting will be to verify general construction procedures, expedite the handling of shop drawings and scheduling, and establish a working understanding among the parties involved in the project.

B. Minimum Agenda: Distribute data on, and discuss:

1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, material suppliers and Architect/Engineer.
2. Channels and procedures for communications.
3. Construction schedule, including sequence of critical work.
4. Contract Documents, including distribution of required copies of original documents and revisions.
5. Processing of shop drawings and other data submitted to the Architect/Engineer for review.
6. Processing of field decisions and Change Orders.
7. Rules and regulations governing performance of the work.
8. Procedures for safety and first aid, security, quality control, housekeeping and other related matters.

1.4 Progress Meetings

A. The Contractor shall schedule regular monthly meetings prior to submitting each Request for Payment at a time agreed upon by the Architect/Engineer. Subcontractors, materials suppliers and others may be invited to attend those project meetings in which their aspects of the work are involved.

B. Additional meetings shall be held as required.

C. Progress meetings shall be held in the construction office at the job site or other location acceptable to Architect/Engineer. The location shall be indicated in a notice issued by the Contractor.

D. Minimum Agenda:

1. Review, revise as necessary, and approve minutes of previous meeting.
2. Review status of RFIs, Change Orders, Project Schedule, or claims for delay.
3. Review progress of the work since last meeting, including status of submittals for approval.
4. Identify problems which impede planned progress.
5. Develop corrective measures and procedures to regain planned schedule.
6. Complete other current business.

1.5 Construction Schedules - General

A. Provide projected construction schedules acceptable to the Architect/Engineer for entire work; revise at least monthly.

B. As a minimum, the Contractor shall prepare a schedule utilizing computer generated Critical Path method. Schedule shall be prepared on Primavera or other nationally recognized software acceptable to the Architect/Engineer. Indicate starting and completion dates for the Work as a whole as well as for the major categories of work by CSI sections or as may be agreed upon by the Architect/Engineer.

C. Minimum sheet size: As required to fit all information rendered in a legible manner on one
(1) sheet.

D. Provide complete sequence of construction byactivity.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Update schedule monthly. Show all changes occurring since previous submission of updated schedule.

G. Indicate progress of each activity; show start and completion dates. Revise with each update.

H. The Owner owns all float in the project schedule.

I. If the updated Construction Schedule is not submitted with Application for Partial Payment, request will be returned to the Contractor.

1.6 Submittals and Distribution of Schedules

A. Submit initial schedules within ten (10) days after date of Notice to Proceed.

B. Architect/Engineer will review schedules and return reviewed copy within ten (10) days after receipt.

C. If required, resubmit within seven (7) days after return of reviewed copy.

D. Submit monthly, with Contractor's pay request, updated schedules accurately depicting progress to first day of each month. Show activities ahead or behind schedule.

If schedule indicates activity or activities being behind schedule, then the Contractor shall provide a plan of action, approved by the Architect/Engineer, to bring the activity or activities back on schedule to the satisfaction of the Owner.

E. Submit the number of copies required by Contractor, plus three (3) copies to be retained by Architect/Engineer.

F. Instruct Subcontractors to report any inability to comply, and provide detailed explanation, with suggested remedies.

1.7 Project Inspections

A. Where inspections of in-place work are specified and Architect/Engineer's approval is required before further work can take place, or where records of procedures are specified, the Contractor shall schedule inspections:

1. With the Office of Building Code Enforcement, Duval County Public Schools.
2. Give no less than twenty-four (24) hours' notice.
3. On Mondays through Fridays between the hours of 7:30 a.m. and 5:00 p.m.

B. Where daylight or installed project lighting at areas to be inspected is less than 30 candlepower, provide this same level by artificial illumination with portable lighting.

C. Office of Building Code Enforcement Inspections - All Projects

All projects will require detailed code compliance inspections by the Office of Building Code Enforcement, Duval County Public Schools, 1701 Prudential Drive, 5th floor, Jacksonville, Florida, 32207, Telephone (904) 390-2150. The disciplines normally include, but are not necessarily limited to, structural, mechanical, electrical, plumbing and general building. The contractor shall make all drawings, specifications, previous inspection reports, and change documents available to Office of Building Code Enforcement Inspectors.

The contractor shall provide 24-hour notification for all inspection requests. These inspections will not be made on weekends or state holidays, unless special arrangements are made in advance and all costs are paid by the contractor. In the event a Building Code Enforcement Inspector cannot inspect the site immediately after being notified, the work must not be concealed. Work not inspected and not approved before concealed by the Contractor shall be uncovered for inspection when directed by the Inspector. All time and costs for uncovering and reconstructing such work shall be borne by the contractor.

All building inspections will be made for conformance with approved construction documents in accordance with the Florida Building Code under *Florida Statutes*.

The cost for all re-inspections of work found defective and subsequently repaired shall be borne by the contractor.

The following information is included as a guide to the Contractor to assist him in determining the type and frequency of inspections. The list is not complete but is provided only as a guide:

# EXAMPLES OF INSPECTION SCHEDULES

## General Building Inspections

These inspections will include areas such as roofs, curtain walls, windows and other glass, door types and installations, handicapped requirements, and structural for non-threshold buildings, including the following:

Foundation Inspection: After excavation is completed, forms erected, and reinforcing steel placed.

Reinforcing Inspection: To be made after any reinforcing steel is in place and before placing any concrete.

Frame Inspection: To be made at each floor level and after all framing, furring and bracing are in place and the plumbing and electrical work are roughed in.

Roof Inspection: Verification of existing conditions prior to reroofing, during all tests, and upon completion of work.

Electrical Inspections:

1. Rough-in inspection which is made after the roof, framing, and bracing is in place but prior to the installation of wall or ceiling. Inspection must take place before the wiring is concealed.

2. A final inspection is made after the building is completed and all equipment is connected and in operating condition.

3. Other inspections: additional inspections may be required as the construction progresses, especially on larger complex projects.

   Inspections in general will consist of the following:

   (a) Check material to see if it has been tested or approved by a testing laboratory.

   (b) Check boxes, conduit, wire, receptacles, switches, panel boards, and any other electrical material or equipment for compliance with codes, plans and specifications.

   (c) Check directly buried cable or conduit for minimum cover requirements.

   (d) Check conduit and cable supports.

   (e) Check installation of fire alarm systems, telephone systems, intercom systems and any other system specified or shown on plans.

(f) Check wire sizes to ensure that voltage drop is not excessive.

(g) Check incoming service, voltage and phase, service conductors, and main disconnect.

(h) Check panel board for compliance with the plans and specifications.

Mechanical Inspections

1. Underground Utilities Inspection including fuel gas lines, refrigeration lines, chilled water lines, condensing water lines, and condensate removal lines, other miscellaneous definite purpose preparation requirements, and related pressure/leakage testrequirements.

2. Rough-in Inspection of equipment supports, piping, ductwork, dampers, venting curbs, and other mechanical work scope installation as required prior to the closing of walls and ceilings for purposes of finishing.

3. Final Inspection of the completed mechanical systems for performance, appearance and compliance with general specifications standards and codes compliance.

4. Special Inspections may be required in addition to the above for reasons of:

   (a) New or original concepts in equipment and materials or in applications thereof.

   (b) Scheduling, i.e., "fast tracking" or other accelerated forms of construction.

Plumbing Inspections

1. Site Work and Underground Utilities including fuel gas lines, water supply, sanitary waste lines, and storm drainage lines.

2. Rough Inspection of supply lines, waste and storm drainage lines for leakage under specified pressure tests, and adequate slopes to ensure proper drainage. Inspection also include conformance to pipe bedding, support, thrust blocking, etc.

3. Stack-out Inspection of supply lines, waste and storm drainage lines for leakage under specified pressure test conditions, positions, materials and workmanship.

4. Final Inspection of the completed plumbing system for conditions of line sterilization, performance, appearance and compliance with general specification standards and codes.

5. Special inspections may be required in addition to the above for reasons of:

   (a) Scheduling, i.e., "fast tracking" or other accelerated forms of construction.

(b) Special conditions or forms of construction which would not permit the normal ordered sequence of inspection.

Other Inspections

The Department of Business Regulation has the responsibility for elevator inspections.

All other agencies having jurisdiction may require inspection of those portions of the work.

**END OF SECTION**

**SUBMITTALS - 013000**

1.1 Submittals

A. The following submittals are required by the Contract Documents and are briefly explained herein:

1. Construction Schedule
2. Schedule of Values
3. Product Data

B. Information regarding submittal administration is also included herein.

1.2 Construction Schedule

A. The Contractor shall submit to the Owner and the Architect/Engineer two (2) copies of his Construction Schedule.

B. Upon acceptance by the Owner and ARCHITECT/ENGINEER, the Contractor shall post a copy of the Schedule within the Field Office where it can be readily referenced.

1.3 Schedule of Values

A. The Contractor shall submit to the Owner and the Architect/Engineer, two (2) copies of his Schedule of Values within ten (10) days of the Notice to Proceed.

B. The Schedule shall be in an outline format divided into major categories of construction as established by the Table of Contents. A value (amount) for each category shall be assigned thereto.

C. Submit on AIA Form G703, Continuation Sheet for the Application and Certificate for Payment, AIA Form G702.

1..4 Product Data

A. Product Data includes:

1. Shop drawings
2. Descriptive data
3. Samples
.4. Schedules
5. Certificates
6. Guarantees
7. Warranties
8. Maintenance manuals

B. Submittal requirements for Product Data are listed in the technical sections of the Project Manual. The ARCHITECT/ENGINEER may, at his option, request additional Product Data.

1.5 Submittal Routing

A. Submittals shall be routed in the following manner:

1. Subcontractors, suppliers and others shall route to the Contractor.
2. The Contractor shall route to the ARCHITECT/ENGINEER.
3. The ARCHITECT/ENGINEER shall route to the Owner (certain approved Product Data only).

B. Return shall be in thereverse order.

C. The Contractor shall furnish copies of approved Submittals to governmental agencies as may be required or requested.

1.6 Review Procedures

A. Contractor's Review: The Contractor shall thoroughly review data submitted for compliance with the Contract Documents.

1. Data found not to be in accordance with the CD's shall be returned for compliance.
2. Data found to be acceptable shall be:
   a. Noted as required.
   b. Stamped indicating action taken.
   c. Forwarded to ARCHITECT/ENGINEER.

B. ARCHITECT/ENGINEER Review: The ARCHITECT/ENGINEER will review submittals and advise of his findings.

1. ARCHITECT/ENGINEER will not accept material for review that has not been reviewed and approved by the Contractor, and he will return data immediately.
2. The ARCHITECT/ENGINEER will review data which has been properly approved by the Contractor and will either mark it "Approved", "Disapproved" or "Approved as Noted".
3. Items marked "Disapproved" shall be resubmitted by the Contractor after making any required corrections or additions.
4. Items marked "Approved as Noted" may be resubmitted for further clarification.
5. ARCHITECT/ENGINEER approval does not relieve the Contractor of his responsibility for deviations from the Construction Documents unless he has notified the ARCHITECT/ENGINEER in writing of these deviations at the time of submittal.

C. ARCHITECT/ENGINEER Review Time Limit: Submittals shall be processed by the ARCHITECT/ENGINEER and returned to the Contractor within fourteen (14) days of receipt. The ARCHITECT/ENGINEER will make every effort to expedite review. The Owner shall not be liable to the Contractor for any delay in processing the submittals.

D. No work for which submittals are required (with the exception of test certificates for completed work, final guarantees and maintenance manuals) shall be performed until submittals are approved by the ARCHITECT/ENGINEER except at the Contractor's risk.

1.7 Definitions

A. Shop Drawings:

1. Fabrication drawings for custom products.
2. Modified catalog data annotated for a specific condition of service.
3. Installation drawings for product assemblies orsystems.

B. Description Data: Manufacturer's catalog data, literature, etc., on product or system.

C. Samples: Physical examples of products proposed for use.

D. Schedules: Itemized listing of products and proposed locations.

E. Certificates: Notarized statements made and signed by authorized company representatives attesting to their product having met CD requirements

F. Guarantee or Warranty: Specific guarantees required in Project Manual in addition to the completed work guarantee required of Contractor. See Section 01700, Contract Closeout.

G. Maintenance Manuals:

1. Three-ring (minimum) 8-1/2" x 11" hardback, vinyl-covered binder is for Owner's permanent record.
2. Contents to include reproductions of shop drawings, descriptive data, schedules, etc., corrected through final approval, plus operation, maintenance, parts listing, service availability, cleaning instructions, etc.
3. Permanently mark edge of binder to indicate contents and projecttitle.

1.8 Required Information to be Included with all Submittals

A. Date of Submittal

B. Name of Project

C. Name of Contractor

D. Reference to a specific section, drawing or detail

E. Manufacturer's or fabricator's name

F. Owner's name

G. Installer's name

1.9 Required Information to be Included with Shop Drawings and Descriptive Data

A. Factory or shop applied finish or protective coating.

B. Installation requirements and recommendations.

C. Product protection requirements.

D. Cleaning precautions and/or requirements.

E. Applicable activation requirements or procedures.

1.10 Quantities (Minimum)

A. Shop Drawings

1. Custom Fabrications or Assemblies: Either six copies of each sheet, etc., or one reproducible transparency of each drawing.
2. Modified Catalog Data: Six copies.

B. Descriptive Data and Schedules: Six copies

C. Physical Samples/Examples: Two copies

D. Mockups: One site constructed example

E. Certificates: Four copies

F. Guarantees or Warranties

1. Examples for initial review and approval: Two copies.
2. After approval, actual construction completion documents: Two copies

G. Maintenance Manual: Two copies

1.11 Off-Site Shop Fabrication Facilities

The Contractor shall provide the Architect/Engineer and the Owner a list of all off-site shop fabricated items so that the Architect/Engineer and/or the Owner may visit the Shop Fabrication facilities to inspect the work if so desired. The list shall include the item or product being fabricated, the name, street address, telephone number and person to contact to arrange a visit.

**END OF SECTION**

**TESTING - 014000**

1.1 Purpose

The purpose of this section is to provide the Contractor with guidance in regard to various potential testing requirements.

1.2 Types

A. Job testing examples:

1. Concrete strength tests.
2. Asphaltic concrete testing.
3. Other materials testing that may be required by the Specifications.

B. Point of Manufacturer Testing:

Manufacturer's laboratory tests and procedures specified for systems or assemblies to determine product quality or performance.

1.3 Responsibility

A. The Contractor shall be responsible for the cost of any and all tests required.

1..4 Testing

A. Job Testing: Required testing of the Contractor's work shall be performed by an independent laboratory or testing agency. These agencies shall be accredited by the U.S. Department of Commerce under the National Voluntary Laboratory Accreditation Program or regularly inspected by the NBS.

B. Point of Manufacturer Testing: Laboratory tests and procedures specified for systems or assemblies to determine product quality or performance will be acceptable to applicable government agencies, code enforcement agencies, the ARCHITECT/ENGINEER and his consultants.

**END OF SECTION**

**TEMPORARY CONTROL AND SAFETY - 015000**

1.1 PURPOSE

A. This section provides direction for the establishment and maintenance of:

1. Temporary Utilities

2. Barriers

3. Temporary Controls

4. Project Safety

5. Fire Alarm and Security System

6. Project Sign

1.2 DURATION

A. All facilities required herein shall be provided by the Contractor and maintained for the duration of the project or as may be specifically required.

1.3 TEMPORARY UTILITIES

A. Drinking Water: Provide cool water with dispensing facilities. School facilities may not be used.

B. Construction Water: For remodeling and/or renovation work, the Owner shall provide water for construction at the nearest 3/4" hose bib. The Owner shall approve connection. The Contractor is responsible for:

1. Extending the source to his operations.

2. Providing water treatment if necessary.

3. Providing for additional water beyond that available from the Owner.

C. Toilet Facilities: The Contractor shall be responsible for providing his own temporary facilities and shall not use the Owner's facilities.

D. Electric Power

1. The owner's available power shall be provided. Power shall be available at the nearest point of connection. The Contractor shall be responsible for making the connection and for extending the conductors safely to his site of operations.

2. Should damage occur to the Owner's system, the Contractor shall bear the cost of repair.

3. Power requirements in excess of the Owner's capacity to provide them shall be provided by the Contractor.

E. Telephone

1. The Contractor shall provide a telephone located in the Construction office for all local calls made by anyone connected with the work.

1.4 BARRIERS

A. The Contractor shall provide barriers as either needed or required and shall comply with applicable governmental requirements for barricade lighting, marking, flagmen etc., to protect work, property and persons. Adequate and appropriate safety barriers, such as fencing, shall be utilized to keep students and other unauthorized persons from entering the construction area(s).

B. Dust-proof partitions shall be provided during demolition activity or as required to prevent the spread of dust and debris.

1.5 TEMPORARY CONTROLS

A. Environmental Requirements: Comply with all regulations for the reduction of pollution, water conservation and the preservation of soil, etc. that may be in effect and required by law.

B. Noise Control: Construction noise shall be minimized.

C. Debris Control: Keep premises clean and free from the accumulation of debris and rubbish. Provide trash and debris receptacles. Remove debris from the site daily. Do not bury debris or rubbish on site.

1.6 PROJECT SAFETY

A. The Contractor shall comply with all applicable governmental and insurance company requirements relative to construction and project safety.

B. The Superintendent shall be on the site during all working hours.

C. The Superintendent shall be trained in project safety and designated the Contractor's Safety Director.

1.7 FIRE ALARM AND SECURITY SYSTEM

A. The Contractor shall not interrupt the existing fire alarm or security system without taking all necessary precautions and measures to ensure the safety and security of the building contents and inhabitants.

1.8 PROJECT SIGN

A. Not required for this project.

**END OF SECTION**

**MATERIAL AND EQUIPMENT - 016000**

1.1 Purpose

This section provides direction and amplification for the:

A. Substitution of Proprietary Products.

B. Substitution of Nonproprietary Products.

C. Product Delivery and Storage.

D. Payment for Stored Material.

1.2 Referenced Documents

A. Reference to industry, association or national standards or specifications, i.e., Federal, ASTM, ANSI, etc., shall imply the latest edition published on or before the date of this project or as specifically indicated.

B. Reference to these documents thereby makes them a part of this Project Manual as though bound herein.

C. ARCHITECT/ENGINEER approval shall be required if the Contractor desires to use an edition other than that referenced.

1.3 Proprietary Products and Substitutions

A. General: The Contractor shall furnish products of one or more manufacturers listed. Approved products shall be considered equivalent regardless of listing.

B. Substitutions: Prior to bidding, the Contractor shall make a written request to the ARCHITECT/ENGINEER for the substitution of an approved product giving reasons for requesting a substitution.

1. The Contractor shall fully describe the new item, material or product and provide the manufacturer's information. Provide samples if appropriate.
2. The Contractor shall include any and all adjustments to the Work in addition to any changes in the Contract amount.
3. The ARCHITECT/ENGINEER will review all data of proposed substitution provided by the Contractor and advise the Contractor of his decision in writing.
4. Changes or substitutions shall not be made without the ARCHITECT/ENGINEER's approval.
5. Changes or substitutions affecting the Contract amount and/or compliance schedule shall be made only with written recommendation of the ARCHITECT/ENGINEER and written approval of the Owner.

1.4 Nonproprietary Products and Substitutions

A. Performance specifications establish minimum standards for all products.

B. Construction Documents may reference a product which meets or exceeds minimum standards. This reference is for information only and nonproprietary in intent.

C. Should substitutions of these nonproprietary products be desired, the Contractor shall follow the procedure outlined above in paragraph1.3.B.

1.5 Product Delivery and Storage

A. Delivery:

1. Products subject to delivery or storage damage shall be delivered in their original manufacturer's packaging.
2. Products shall be delivered in containers appropriate to the product. Products shall bear the manufacturer's original wrapping with sufficient information thereon to determine that they meet the requirements of the Contract Documents.
3. Testing agencies or association labels attesting to a particular quality standard shall be affixed at the point of manufacture.

B. Storage:

The Contractor shall:

1. Comply with safety requirements or manufacturer's recommendations in the storage of products.
2. Ensure that stored materials do not exceed the structural limitations of building areas on which they are stored.
3. Keep materials stacked, well ventilated, covered and protected against water and wind damage.
4. Stack on supports of adequate strength and spacing to prevent material damage or deformation.
5. Provide sufficient clearance from the supporting substrate to assure adequate drainage and prevent direct contact with water or moist surfaces.
6. Provide protective coverings for floor areas or supporting substrates where spillage is likely to damage finishes, materials, etc.

1.6 Payment for Stored Material

A. Stored material for which the Contractor desires payment prior to incorporation shall be stored in a manner which protects the Owner's interests.

B. Storage shall either be at the site and fully insured or in an approved warehouse with evidence of insurance and the consent of Surety.

C. Method of storage, location and proof of insurance are required at the time of submitting the Application for Payment.

**END OF SECTION**

**CONTRACT CLOSEOUT - 017700**

1.1 Purpose

This section generally outlines Contractor responsibilities for the Project or Contract closeout, including:

A. Adjustment and Cleaning.

B. Record Drawings and Maintenance Manuals.

C. Substantial Completion.

D. Release of Lien.

E. Consent of Surety to Final Payment.

F. Inspection Certificates.

G. Bonds and Guarantees.

H. Application for Final Payment.

1.2 Adjustment and Cleaning

A. Prior to the final inspection, the Contractor shall perform and complete the following:

1. Repair or replace defective products or areas damaged by the Contractor.
2. Clean all exposed or semi-exposed surfaces which have been soiled as a result of the work effort (even though previously cleaned).
3. Remove all stains, spots, marks and dirt from finished surfaces. Clean in accordance with the manufacturer's written instructions.
4. Replace mechanical equipment filters, adjust all finished hardware and schedule service instruction conferences with the Owner just prior to final inspection.

B. Cleaning shall include, but not be limited to, the following:

1. Removal of product protective coverings and labels. Do not remove UL, FM or other permanent labels or placards necessary for life-safety operations or to establish Construction Documents compliance.

2. Removal of all debris from the site. Debris shall not be buried on the site. Debris shall be disposed of according to government requirements.

3. Other cleaning as required:
   a. Dry or wet vacuum cleaning.
   b. Dusting of all new and existing surfaces.
   c. Carpet shampooing.
   d. Cleaning of inside glazed surfaces and outside glazed surfaces if new or soiled by the work of this contract.
   e. Cleaning required by various specification sections with particular attention to instructions and specific requirements.

C. Adjustment shall include, but not be limited to, the following:

1. Adjustment of products, assemblies, equipment, hardware, components, etc., to achieve an installation, which operates smoothly, correctly, and as intended.

2. Adjustment as required by various sections of the Specifications.

1.3 Record Documents and Maintenance Manuals

A. Maintenance Manuals shall be submitted to the ARCHITECT/ENGINEER for approval.

1. Manuals shall contain maintenance and record documents as provided for by the Specifications.
2. Upon ARCHITECT/ENGINEER approval, manuals shall be forwarded to the Owner.
3. Final Payment shall be withheld until approved manuals are received by the Owner.

B. The Contractor shall submit his Field Notes on "as-built" conditions to the ARCHITECT/ENGINEER and shall have ARCHITECT/ENGINEER approval before Final Payment will be released by the Owner. See Section 01720, Project Record Documents.

C. The ARCHITECT/ENGINEER shall provide Record Documents which identify "as-built" conditions of the work. These documents shall be based on the Contractor's Field Notes maintained throughout the life of the project. See Section 01720, Project Record Documents.

D. Deviations from the above requirements will not be accepted without prior written approval. Failure to comply shall result in Final Payment being withheld. The Contractor waives any claim associated with withholding of retainage by the School Board if it fails to provide the above referenced materials and comply with all closeout requirements.

1.4 Substantial Completion

A. Inspection: The Contractor shall provide the ARCHITECT/ENGINEER with a written notification of project completion, a punch list of items to be completed, and request an inspection tour of the project.

B. The Contractor, ARCHITECT/ENGINEER and Owner shall be present for the inspection.

C. The ARCHITECT/ENGINEER will prepare a Certificate of Substantial Completion, AIA Form 9704, based on the results of the inspection. Attached thereto will be a list of items, "punch list," requiring additional Contractor attention and/or resolution. The Certificate shall be executed by all parties. The Owner signs after Board approval.

D. At the end of the allotted time for punch list work to be completed, a final inspection shall be held. Failure to identify all items shall not be deemed a waiver of those discrepancies, and Contractor shall have seven (7) days to remedy items identified after notice of the deficiency. Any items remaining incomplete will be completed by the Owner and the cost of the work charged against the Contractor's retainage.

1.5 Release of Lien or Claim

A. Along with his Application for Final Payment, the Contractor shall submit a sworn statement that all work has been completed and that all bills for labor, materials and Subcontractor's work have been paid in full.

B. Additionally, the Contractor shall submit statements from each of his Subcontractors, material or labor suppliers that they too have completed all work and that all bills for labor, materials and their Subcontractor's work have been paid in full.

C. Sworn statements shall be made on the Owner's standard Release of Lien form.

D. Owner shall have no obligation or responsibility to make any payments to any subcontractor or supplier.

E. Upon request by the Contractor and a subcontractor or supplier together with the written consent of surety, the Owner may at its sole discretion issue joint checks. Failure of the Owner to elect this option should not give rise to any cause of action by any party.

1.6 Consent of Surety to Final Payment

A. Along with his Application for Final Payment, the Contractor shall provide a Consent of Surety to Final Payment.

B. Consent of Surety may be made on AIA Standard Form G707 or on a letter from the bonding company.

1.7 Inspection Certificates

A. Upon completion of the Project and before applying for Final Payment, the Contractor shall have the electrical, plumbing and mechanical work (and any other work) as applicable, inspected and approved by the Office of Building Code Enforcement, Duval County Public Schools, as required by the Specifications and all applicable codes, laws and ordinances, per *Florida Statutes*.

B. The Contractor shall submit all inspection certificates to the Owner with his Application for Final Payment.

1.8 Bonds and Guarantees

A. The Contractor shall submit copies of all Bonds and Guarantees as required.

B. The Contractor's "one year" Guarantee shall commence on the date of Substantial Completion.

C. The Contractor shall submit all Bonds and Guarantees with his Application for Final Payment.

D. This unconditional guarantee shall not replace or supersede any cause of action that may exist pursuant to the Contractor or law which has a limitation period in excess of one (1) year.

1.9 Application for Final Payment

A. The Final Certificate and Application for Payment shall be submitted with the required Release of Lien statements, Contractor's Guarantee and Consent of Surety to Final Payment.

B. The Application shall be marked "FINAL" and shall account for all Change Orders, including any liquidated and actual damages that may have been assessed for late completion.

**END OF SECTION**

**PROJECT RECORD DOCUMENTS - 017839**

1.1 Purpose

This section provides Contractor guidance for the creation, preparation and maintenance of:

A. "Job Set" Record Documents (RD's)

B. Final Record Documents

C. Visitor's Log

1.2 Quality Assurance

A. The Contractor shall delegate the responsibility for the maintenance of Record Documents and the Visitor's Log to one person on his staff as approved by the ARCHITECT/ENGINEER.

B. The contractor shall insure the accuracy of RD's and shall:

1. Thoroughly coordinate all changes.
2. Make adequate and properentries.

C. Timeliness of Entries: The Contractor shall make all entries within a reasonable amount of time (24 hours) after receipt of information or the need for an entry arises.

1.3 Submittals

A. The ARCHITECT/ENGINEER's approval of current Job Set RD's will be a prerequisite to his approval of the Contractor's monthly Applications for Payment.

B. The ARCHITECT/ENGINEER's approval of the Final RD's will be a prerequisite to his approval of the Contractor's Application for Final Payment.

C. The Contractor shall submit his Visitor's Log for the inspection of the ARCHITECT/ENGINEER or Owner as may be requested.

D. The Contractor shall submit a copy of his prior month's Visitor's Log with each Application for Payment. He shall indicate the name of the project and the period covered by the log.

1..4 Protection of RD's

A. Take precautions to protect RD's from deterioration, loss or damage. Conserve, as necessary, the "Job Set" until the completion of work and the transfer of information from the "Job Set" to the "Final Record Documents."

1.5 "Job Set" Record Documents

A. Identification

Upon receipt of the set of documents to be used as the job set, identify each of the documents with the title, "Record Documents - Job Set."

B. Preservation

1. Devise a suitable method for protecting the "Job Set" from anticipated user wear.
2. Use the "Job Set" only for the entry of new data and the ARCHITECT/ENGINEER's review.
3. Maintain the "Job Set" at the project work site designated by the ARCHITECT/ENGINEER.

C. Making Entries

1. Use an erasable colored pencil.
2. Clearly describe the change by note or by graphic line.
3. Date all entries.
.4. Highlight the change by the use of a "cloud" around the area(s) affected.
5. Use different colors for overlapping changes.

D. Other Entries

1. Indicate any ARCHITECT/ENGINEER directed changes by note; i.e., "ARCHITECT/ENGINEER directed change."
2. Contractor originated changes and inadvertent errors which are approved by the ARCHITECT/ENGINEER shall be clearly indicated by note.

E. Schematic Layout Conversion

1. General Background: Most mechanical, electrical, and plumbing drawings are schematic in nature and not intended to portray precise physical layout or location.

   a. The final physical layout is determined by the Contractor and may be different from that shown in the Drawings.

   b. Future modifications or maintenance will require accurate, final, physical arrangement information.

2. "Job Set" RD's: The Contractor shall annotate the "Job Set" RD's to show:

   a. Plan Location: Dimension layout of mechanical/electrical runs to within 1" of the centerlines of each run.

b. Identification: Identify the item by accurate note showing size, material and function; i.e., "4" cast iron drain," "1/2" copper water," etc.

c. Show the vertical (height) location by symbol or note; i.e., "in ceiling plenum," "exposed ceiling mounted," "under slab," etc.

d. Make identifications sufficiently descriptive so that they may be easily related to the Specifications.

1.6 Final Record Documents

A. General: The Contractor shall furnish Final Record Documents that provide factual reference information of a permanent nature, enabling future modifications and maintenance to proceed without expensive site investigation.

B. Final Record Documents shall be in CD format. Contractor, at his own expense, shall obtain a set of Record Documents in PDF format from the ARCHITECT/ENGINEER to be used for Final Record Documents.

C. Prior to the transfer of information from the "Job Set" to the Final RD's, the Contractor shall obtain a review by the ARCHITECT/ENGINEER of all recorded data. Make all required revisions.

D. Transfer of Data to Drawings

1. Carefully transfer all change data from the "Job Set" to PDF.
2. Coordinate all changes as required. Clearly indicate changes to all drawings affected; i.e., plans, sections, details, etc. Give the full description of changes to provide a comprehensive record. Show actual locations, dimensions, notes, etc.
3. Call attention to each entry by drawing a "cloud" around it. All "clouds" shall be drawn on the reverse side.
.4. Make changes neatly and consistently. Drawings shall be modified with either ink or black pencil. Line quality shall be crisp, consistent, and equal to the original.

E. Transfer of Data to other Documents (Project Manual)

1. Seek ARCHITECT/ENGINEER approval of changes made on the "Job Set" Project Manual. If changes are neat, legible, and clean, the ARCHITECT/ENGINEER is authorized to approve the "Job Set" as the Final.
2. If ARCHITECT/ENGINEER approval is not forthcoming, obtain a new copy of the Project Manual and make all data changes necessary.

F. Review and Approval: Submit the complete set of Record Documents to the ARCHITECT/ENGINEER for his approval. Revise, as necessary.

1.7 Changes Subsequent to Acceptance

The Contractor's responsibility for recording change ends upon acceptance of the Work by the Owner (Approved Certificate of Final Inspection by State DOE). However, changes resulting from replacements, repairs, and alterations required as a result of the Contractor guarantee work shall be recorded.

1.8 Visitor's Log

1. The Contractor shall maintain a log in the Field Office to record visits by the ARCHITECT/ENGINEER, his consultants, and all visitors, including Owner's representatives and inspectors.

2. This log shall become the official record of all job visits and shall show:

   a. Date
   b. Time of Arrival
   c. Time of Departure
   d. Person's Name
   e. Entity Represented

3. The Contractor shall furnish a copy of the log to the Architect/Engineer or Owner.

1.9 Contractors' Project Related Documents

All documents shall be made available to the Owner upon request.

**END OF SECTION**

**ROUGH CARPENTRY - 061000**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Roof curbs, cants, and perimeter nailers.
2. Wood blocking in roof openings.
3. Wood furring and grounds.

B. Related Sections include the following:

1. Membrane roofing.
2. Thermoplastic Single Ply Roofing

1.3 DEFINITIONS

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. RIS - Redwood Inspection Service.
4. SPIB - Southern Pine Inspection Bureau.
5. WCLIB - West Coast Lumber Inspection Bureau.
6. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

2. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
4. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.

B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated, as documented according to ASTM.

B. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks, under coverings, and keep spaced above earth.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.

1. The factory mark each piece of lumber with a grade stamp from a grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. Wood Structural Panels:

1. Plywood: DOC PS 1.

2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
3. Comply with "Code Plus" provisions in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial."
4. Factory mark panels according to indicated standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA C2 (lumber), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and
15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 18 inches above grade.
4. Wood floor plates that are installed over concrete slabs directly in contact with earth.

2.3 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Rooftop equipment bases and support curbs.
2. Blocking (NOT FIRE RETARDANT TREATED).
3. Cants.
4. Nailers.
5. Furring.
6. Grounds.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 19 percent maximum moisture content and the following species:

1. Mixed southern pine; SPIB.
2. Hem-fir or Hem-fir (north); NLGA, WCLIB, or WWPA.
3. Eastern softwoods; NELMA.

4. Northern species; NLGA.
5. Western woods; WCLIB or WWPA.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Hem-fir or Hem-fir (north), Construction or 2 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or Spruce-pine-fir, Construction or 2 Common grade; NELMA, NLGA, WCLIB, or WWPA.

D. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where rough carpentry is exposed to weather or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Lag Bolts: ASME B18.2.1.

1. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with member's plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber.

D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. CABO NER-272 for power-driven fasteners.
2. Published requirements of metal framing anchor manufacturer.
3. 2017 or most recent edition of Florida Building Code including amendments.

E. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations contained in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.

1. Comply with "Code Plus" provisions in the above-referenced guide.

B. Fastening Methods: Fasten panels as indicated below:

1. Sheathing:
   a. Nail to wood framing.
   b. Screw to cold-formed metal framing.
   c. Space panels 1/8 inch apart at edges and ends.
2. Plywood Backing Panels: Nail or screw to supports.

**END OF SECTION**

**SBS MODIFIED BITUMINOUS SHEET ROOFING - 075216**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. References: NRCA (National Roofing Contractors Association) - Roofing Manual and SMACNA - Architectural Sheet Metal Manual, latest editions.

1.2 SUMMARY

A. This Section includes the following: EXISTING ROOF TO REMAIN, NOTED AREA'S TO BE REMOVED AND REPLACED, PREP EXISTING ROOF PER MANUFACTURERS RECOMMENDATIONS.
   1. Base Sheet Application to Prepared Substrate.
   2. Roof Membrane Application.
   3. Roof Flashing Application.
   4. Incorporation of Sheet Metal Flashing Components and Roofing Accessories into the Roof System.
   5. A brief description of the work that will be required (see the Construction Documents as well as other specification sections for a full description):

      The project consists partly of the removal and proper disposal of part of the existing membrane roofing system, blocking, nailers, fascias, flashing and curbs as noted in the drawings.

      General: **Seams and T-laps at the cap sheet typically shall be Hot Air welded only. Torching the seams and laps is not acceptable or allowed**.

      The Roofing Contractor shall maintain the water tightness of all of the roof areas under construction at all times.

B. Products installed but not furnished under this section:
   1. Wood blocking and nailers.
   2. Sheet Metal Flashing and Trim.
   3. Sheet Metal Roofing Specialties.

C. Related Sections: The following sections contain requirements that relate to this Section:
   1. Division 6 Section 06100 "Rough Carpentry" for treated wood nailers, curbs, and wood cants.
   2. Division 7 Section 07620 "Sheet Metal Flashing and Trim" for metal flashings, trim and counter flashings.
   3. Division 7 Section 07901 "Joint Sealants".
   4. The specifications in this section and the drawings are based on products and systems as manufactured by Siplast, Johns Manville, Soprema, Inc., and GAF for the purpose of establishing the quality and type of roofing required.

## 1.3 REFERENCE STANDARDS

A. References in these specifications to standards, test methods and codes are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.
   1. ASTM: American Society for Testing and Materials.
      a. D41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing and Waterproofing.
      b. D312 - Standard Specification for Asphalt Used in Roofing.
      c. D1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
      d. D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
      e. D4586 - Standard Specification for Asphalt Roof Cement, Asbestos Free.
      f. D4601 - Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
      g. D6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
      h. D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
      i. D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
      j. E108 - Standard Test Methods for Fire Tests of Roof Coverings.
   2. FM: Factory Mutual Engineering and Research.
   3. NRCA: National Roofing Contractors Association- Roofing and Waterproofing Manual.
   4. OSHA: Occupational Safety and Health Administration.
   5. SMACNA: Sheet Metal and Air Conditioning Contractors National Association.
   6. UL: Underwriters Laboratories.

## 1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Install insulation and modified bituminous sheet roofing that remain watertight and does not permit the passage of water, resist specified uplift pressures, withstand wind loads, structural movements, thermally induced movement, and exposure to weather, without failure at the project site per the requirements of the 2017 Florida Building Code including Amendments/ Supplements.

B. UL Listing: Provide modified bituminous sheet roofing system and component materials that have been tested for application and slopes indicated and are listed by Underwriters Laboratories, Inc. (UL) for Class A external fire exposure. Per the 2017 Florida Building Code: all roofing materials shall be labeled Class A per ASTM E108 and shall be certified by a nationally recognized independent testing laboratory. All roofing systems shall be installed within the limitations of the test procedure for surfacing, deck cross slopes and combustibility.

C. Provide roof-covering materials bearing UL Classification Marking on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.

D. Per the 2017 Florida Building Code: All new installed materials shall be sealed from moisture penetration at the end of each day. The contractor shall provide the architect of record with a "final statement of compliance" for the board. The roof shall be inspected by the manufacturer's representative within one year of acceptance by the board.

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Prior to contract award:
1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.

2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.

C. Submittals Include:
1. Certificate of Analysis from the testing laboratory of the primary roofing materials manufacturer, confirming the physical and mechanical properties of the roofing membrane components. Testing shall be in accordance with the parameters published in ASTM D 5147 and ASTM D 6298 and indicate Quality Assurance/Quality Control data as required to meet the specified properties. A separate Certificate of Analysis for each production run of material shall indicate the following information:
   a. Material type
   b. Lot number
   c. Production date
   d. Dimensions and Mass (indicate the lowest values recorded during the production run);
      - Roll length
      - Roll width
      - Selvage width
      - Total thickness
      - Thickness at selvage (coating thickness)
      - Weight
   e. Physical and Mechanical Properties;
      - Low temperature flexibility
      - Peak load
      - Ultimate Elongation @ 5% Maximum Load
      - Dimensional stability
      - Compound Stability
      - Granule embedment
      - Resistance to thermal shock (foil faced products)

2. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

D. Product data for each type of product specified.

E. Shop Drawings: Submit shop drawings indicating on all roofs to receive roofing; dimensions, slopes, configuration, details, special conditions and metal work.

F. Samples for Verification: For the following products:
1. Manufacturer's standard sample size of smooth-surfaced roofing membrane sheet & flashing backer sheet.
2. Manufacturer's standard sample size of mineral-granule-surfaced roofing membrane cap sheet and flashing sheet.
3. Manufacturer's standard sample size ofbase-sheet.
4. Six fasteners of each type, length and finish used for complete roofing installation.

G. Letter of Intent to Warrant: Roofing membrane manufacturer shall provide a non-pro-rated, no dollar limit, leak free warranty for **20 years** from the date of substantial completion. Roofing membrane manufacturer shall provide a letter of intent to warrant in accordance with these specifications and drawings to the Contractor for review and acceptance by the Owner prior to the contract. The roof warranty shall state that if the substrate is damaged beyond use, meaning normal performance ie. fastening and insulating abilities, due to a roof failure covered by the roof warranty, the roofing manufacturer will replace or repair the substrate at no cost to the Owner.

H. Record Drawings- During construction operations the Contractor shall faithfully record all changes from the Contract Drawings, including accurate dimensions where applicable. All such changes shall be recorded neatly with red ink by the Contractor on an unused set of the Contract Drawing prints. The red line changes shall be reviewed by the DP who shall modify all Contract Drawings to reflect and incorporate all field changes.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Obtain primary products, including each type of roofing sheet, membrane flashings, and vapor retarder (if any), from a single manufacturer. Provide secondary products as recommended by manufacturer of primary products for use with roofing system specified. The manufacturer shall have a minimum of ten (10) years of experience in the production of SBS Modified Bituminous Sheet Roofing. The primary roofing products shall have maintained a consistent composition for a minimum of five years. The manufacturer shall have supplied the same or equal products on at least five (5) projects of similar size and scope prior to bidding. The manufacturer shall furnish to the Design Professional prior to the Pre-Bid meeting, written documentation to the above requirements and any other pre-qualification documentation required by the Owner or Design Professional.

B. Installer Qualifications:
1. Five (5) years minimum experience installing roofs for commercial/industrial/educational or similar buildings of similar size and scope using products specified.

2. Certified Florida roofing contractor with the primary office of business within 100 miles of the project site.
3. Must be certified by membrane manufacturer to install their products prior to bidding as an applicator qualified to install 20 year warranted roof systems. Any sub-installer must also have this certification.

4. Must have installed products of specified manufacturers on at least five previous jobs of similar size and scope.

5. Must have full-time roofing foreman or superintendent with minimum five years documented experience installing products specified. Said Foreman shall be present on the job during the application of any warranted roofing products.
6. Contractors must list all subs on the bid form.
7. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractors Association, amended to include the acceptance of a phased roof system installation.
8. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

C. Inspections:
1. Required annual inspection jointly by roofing contractor and membrane manufacturer for five years after completion of roof installation.
2. Inspection and acceptance of the temporary roofing membrane by the Architect and/or the DCPS Roofing Coordinator or their designated representative prior to additional work being done over the temporary membrane.
3. Weekly inspections during installation by membrane manufacturer followed by written report to the Design Professional. Submit copies of the reports to the Owner with the Contractor's Pay Application.
4. Final Inspection: Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Architect, Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

E. Mandatory Pre-Bid Meeting: See front-end specifications. Only manufacturers listed in the specifications or in Addenda as acceptable will be accepted. No manufacturers will be approved within ten days of the bid opening.

F. Pre-application Roofing Conference: Approximately two weeks before scheduled commencement of modified bitumen sheet roofing installation and associated work, meet at project site with installer; installer of each component of associated work; installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work, if any); Architect; Owner; roofing system manufacturer's representative; and other representatives directly concerned with performance of the work, including (where applicable) Owner's insurers, test agencies, and governing authorities.
1. Review foreseeable methods and procedures related to roofing work, including but not necessarily limited to the following:

a. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drainage, curbs, penetrations, and other preparatory work performed by other trades.

b. Review roofing system requirements (drawings, specifications, and other contract documents).
c. Review required submittals, both completed and yet to be completed.
d. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
e. Review required inspection, testing, certifying, and material usage accounting procedures.
f. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including temporary roofing.

2. Record (Contractor) discussions of conference, including decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. If substantial disagreements exist at the conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Materials shall be delivered in the Manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Materials shall be stored out of direct exposure to the elements. Roll goods shall be stored on a clean, flat and dry surface. Rolls of roofing must be stored on ends. Materials shall be handled and stored on the roof in a manner so as to preclude overloading of deck and building structure. Liquid materials such as solvents, adhesives and asphalt cutback products shall be stored away from open flames, sparks or excessive heat. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life. Cover all materials using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable. Do not leave unused felt and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather or other moisture sources.

C. Handling: All materials shall be handled in such a manner as to preclude damage and contamination with moisture or foreign matter, rolled goods shall be handled to prevent damage to edges or ends.

D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above shall be automatically rejected and shall be removed and replaced at the Contractor's expense.

1.8 PROJECT CONDITIONS

A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit a unit of work to be installed in accordance with Manufacturers' recommendations and warranty requirements.

1. Environmental Requirements:
   a. Precipitation: Roofing materials shall not be applied during precipitation and shall not be applied in the event there is a probability of precipitation during application. The Contractor shall take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

2. Protection Requirements:
   a. Membrane Protection: Protection against staining and mechanical damage shall be provided for newly applied roofing and adjacent surfaces throughout this project.
   Limited Access: The Contractor shall prevent access by the public to materials, tools and equipment during the course of the project.
   b. SAFETY: In order that the site be maintained safely, the following safety provisions are a part of this contract: Penalties for Safety Violations: 1. First violation: Verbal warning followed by written warning. 2. Second violation for same offence: Verbal and written warning, work stops until violation is corrected, safety conference scheduled with foreman, Contractor's Superintendent, Architect and Project Coordinator. 3. Third violation for same offence: All work stops, foreman is removed from the job, and before work resumes the new foreman will attend a safety conference at the Architects office with Architect and Project Coordinator. 4. Three (3) safety violations in one site visit:
   Jobs are shut down and a safety conference must be held in the Architects office before work resumes.
   c. Debris Removal: All debris shall be removed daily from the project site and shall be taken to a legal dumping area authorized to receive such materials.
   d. Site Conditions: All job site clean-up including building interior, exterior and landscaping, where affected by the construction, shall be completed to the Owner's satisfaction.

1.9 SEQUENCING AND SCHEDULING

A. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies, including roof accessories, flashing, trim, and joint sealers, are protected against damage from effects of weather, corrosion, and adjacent construction activity. Sequence roofing so that finished areas are not used for traffic for materials movement or other trades as much as possible.

1.10 WARRANTY

A. Roofing system Warranty for areas of reroofing over roof board and polyisocyanurate insulation: Upon Substantial Completion of the project, and after all post installation procedures have been completed, the Contractor shall furnish the Owner with the Manufacturer's ten (10) year, no dollar limit, non pro-rated, labor and materials warranty including roofing and flashing membranes, temporary roofing and base sheet fasteners. The warranty shall cover all components of the system down to but not including the existing wood or metal decks however, the warranty shall include in the body or by attached addendum provisions that require the manufacturer to repair or replace all substrate (such as rigid insulation, nailable wood decking, etc. down to the structural decking) that is damaged as a result of any failure of the products supplied by them or the result of improper installation by their approved applicator. The Liquid

Applied Roofing Membrane system warranty shall be a part of the roofing system warranty. The roofing system warranty shall be for the required period without deductibles or limitations on coverage amount. The cost of this warranty shall be included in the contract amount. Clauses in Manufacturer's or Contractor's warranties which limit judgment of damage or conditions for warranty work to be performed solely to the Contractor or Manufacturer are not acceptable and shall be stricken from the warranty. Specific items covered under the roof system guarantee include:

1. The manufacturer's warranty shall provide for replacement or repair, at no cost to the Owner, of any or all components of the roofing system damaged as a result of a leak due to material failure or improper workmanship. If the membrane manufacturers or installers product(s) fails and damage is incurred to the substrate, then the manufacturer or installer shall correct or replace the substrate damage. After the system is returned to a watertight condition the balance of the warranty shall remain in effect.
2. Response to roofing problems shall be made within 24 hours after notification by the Owner.
3. The roof system contractor and his sub-contractors shall jointly and unconditionally warrant the roof system including accessories and metal work for labor and materials for a period of five (5) years after the date of Substantial Completion. This warranty is in addition to the manufacturer's warranty.
4. Warranties shall be acceptable to the Owner and executed by the Contractor and Manufacturers prior to final payment.
5. The roof system guarantee will not limit, by geographic location, the Owner's rights for claims, actions, and/or proceedings.

## PART 2 PRODUCTS

### 2.1 MODIFIED BITUMINOUS SHEET ROOFING SYSTEM

A. Description of Work: The basic work descriptions (components, layering and attachment methods) required in this specification are referenced below.
   1. Project type: Partial Tear off and New Construction.

B. Modified Bitumen Membrane:
   1. Manufacturers: Subject to compliance with requirements, provide products/systems by one of the following:
      Soprema, Inc.
      Johns Manville Roofing
      Systems Siplast
      GAF

2. Roofing Membrane Assembly. The roof membrane assembly for this work shall consist of two (2) plies of prefabricated, fiberglass or polyester reinforced, homogeneous Styrene-Butadiene- Styrene (SBS) block copolymer modified asphalt membrane secured to a prepared substrate.
   The assembly shall possess waterproofing capability, such that a phased roof application, with only the modified bitumen base ply in place, can be achieved for prolonged periods of time without detriment to the watertight integrity of the entire roof system. The modified bitumen finish ply shall be fully adhered to the modified bitumen base ply and the seams and T-laps heat welded. Each sheet of the roof assembly shall meet the following physical requirements as a minimum. The two plies referred to in this paragraph refers to a 12" wide stripping ply at the perimeter of the roofing system per the details and a continuous ply of cap sheet over the designated roof area.

   a. Inner Ply torched:
      Elastophene
      Sanded
      Manville Dyna
      Base Siplast
      Paradiene 20
      GAF Ruberoid 20

   b. Cap Sheet in cold adhesive:
      Soprema
      Elastophene FR
      GR Manville
      Dyna Glas FR
      Siplast Paradiene
      30FR
      GAF Ruberoid 30FR

   c. Stripping Ply - (Same as roof system inner ply unless noted otherwise.)

3. Flashing Membrane Assembly: The flashing membrane assembly shall consist of a prefabricated, fiberglass and/or polyester scrim-mat reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane granular surfacing.

   a. 1st Ply in Cold Adhesive:
      Soprema Elastophene
      180 Sanded Manville
      (no first ply required)
      Siplast (no first ply
      required)
      GAF (no first ply required)

   b. 2nd Ply in Cold Adhesive.
      Soprema Sopralene
      180 GR Manville
      DynaFlex
      Siplast Veral
      Ruberoid Mop Granule FR

2.2 ROOFING ACCESSORIES

A. Liquid Applied Flashing:
Soprema Alsan
Flashing Manville
Perma Flash System
Siplast Parapro 123
GAF Topcoat MajorSeal

B. Cold Applied Adhesive:
Soprema (as recommended by manufacturer) Manville MBR Cold Adhesive
Siplast PA311m
adhesive GAF
Matrix 102
adhesive

C. Cold-Applied Flashing Adhesive:
Soprema (as recommended by manufacturer) Manville MBR Flashing Cement
Siplast (as recommended by manufacturer) GAF (as recommended by manufacturer)

D. Mastic Sealant. As required by membrane manufacturers.

E. Ceramic Granules: Ceramic granules of color scheme matching the granule surfacing of the cap sheet.

F. Perlite Cant Strips: A Cant strip composed of expanded volcanic minerals combined with waterproofing binders. The top surface shall be pre-treated with an asphalt-based coating. The face of the Cant shall have a nominal 4-inch dimension.

G. Fasteners:
1. Flashing Reinforcing Sheet Fasteners for Wood/Plywood Substrates to Receive Flashing Coverage: Fasteners shall be approved by the manufacturer of the primary roofing products. Acceptable fasteners for specific substrate types are listed below.
   a. Wood/Plywood Substrates
      A 12 gauge, spiral or annular threaded shank, zinc coated steel roofing fastener having a minimum 1-inch head.
      (1) Square Cap by W.H. Maze Co.; Peru, IL
      (2) 12 Gauge Simplex Nail by the Simplex Nail and Manufacturing Co., Americus, GA

2. Gravel stops at roof edge shall be fastened with stainless steel roof nails.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Examine substrate surfaces to receive modified bitumen sheet roofing system and associated work and conditions under which roofing will be installed with Installer present. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
   1. Verify that roof openings and penetrations are in place and set and braced.
   2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
   3. Ensure general rigidity and proper slope for drainage.
   4. Patch substrate system at any areas of potential ponding or that do not run to roof drainage.

### 3.2 GENERAL INSTALLATION REQUIREMENTS

A. Manufacturers shall conduct weekly inspections of the installation of their product. Written reports shall be submitted with the monthly pay request.

B. Remove roofing membrane per the detail requirements, fasteners, asphalt, pitch, adhesives, etc. Remove an area no larger than can be re-roofed in one day. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

C. Raise, (disconnect by licensed craftsmen) all HVAC units and other equipment supported by curbs to conform with the following:
   1. Modify curbs as required to provide a minimum 8" base flashing height measured from the surface of the new membrane to the top of the flashing membrane.
   2. Nail top of flashing and install new metal counter flashing prior to re-installation of unit.
   3. Perimeter nailers must be elevated to match elevation of new roof insulation/cover board.

D. Cooperate with inspection and test agencies engaged or required to perform services in connection with installing modified bitumen sheet roofing system.

E. Protect other work from spillage of modified bitumen roofing materials and prevent liquid materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of modified bituminous sheet roofing system work.

F. Coordinate installing roofing system components so that roofing plies are not exposed to precipitation or left exposed overnight. Provide cut offs at end of each day's work to cover exposed ply sheets and insulation with a course of coated felt with joints and edges sealed with roofing cement. Remove cut offs immediately before resuming work.

3.3 ROOF MEMBRANE INSTALLATION

A. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

B. Membrane Application: Application of roofing shall be in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing shall immediately follow application of base sheet and/or insulation as a continuous operation.

C. Aesthetic Considerations: The overall appearance of the finished roof application is a standard requirement for this project. The Contractor shall make necessary preparations, utilize recommended application techniques, apply the specified materials including granules, and exercise care in ensuring that the finished application is acceptable to the Owner.

D. Priming. Prime metal and concrete and masonry surfaces with a uniform coating of the specified primer.

E. Consistency. Cutting or alterations of adhesives, primer, and sealants willnot be permitted.

F. Roofing Application. All layers of roofing shall be laid free of wrinkles, creases or fishmouths. Sufficient pressure shall be exerted on the roll during application to ensure prevention of air pockets.
   1. Apply all layers of roofing perpendicular to the slope of the deck.
   2. The base ply shall be fully bonded to the prepared substrate.
   3. Fully bond the cap sheet to the inner ply.
   4. Flashing application: Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:
      Prime substrates with asphalt primer if required by roofing system manufacturer. Backer Sheet Application: Mechanically fasten backer sheets to walls or parapets. Adhere backer sheet over roofing membrane at cants in cold-applied adhesive.
      Backer Sheet Application: Install backer sheet and adhere to substrate in cold-applied adhesive at rate required by roofing system manufacturer.
      Flashing Sheet Application: Adhere flashing sheet to substrate in cold-applied adhesive at rate required by roofing system manufacturer.
      Extend base flashing up walls or parapets a minimum of 8 inches (200 mm) above roofing membrane and 4 inches (100 mm) onto field of roofing membrane. Mechanically fasten the top of base flashing securely at terminations and perimeter of roofing. Seal top termination of base flashing with a strip of glass-fiber fabric set in manufacturer's recommended flashing cement.
   5. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds one-quarter inch per foot. The Manufacturer shall provide acceptable sheet lengths and the required schedule for all roofing sheet applications to applicable roof slopes.

G. Granule Embedment. Mineral granules shall be broadcast over all bitumen overruns on the cap sheet surface, while the bitumen is still hot, to ensure a monolithic surface color.

3.4 PROTECTING ROOFING

A. Protect roofing during remainder of construction period.

B. Repair or replace (as required) deteriorated or defective work found at time of Punch List or Final Inspection to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements. Roofing shall provide for positive drainage. Ponding water in excess of 3/8" still present on the roof 30 minutes after a rain shall be corrected.

C. Issuance of The Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

**END OF SECTION**

**THERMOPLASTIC SINGLE-PLY ROOFING - 075423**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY - EXISTING ROOF TO REMAIN, NOTED AREA'S TO BE REMOVED AND REPLACED, PREP EXISTING ROOF PER MANUFACTURERS RECOMMENDATIONS, RECOVER WITH 60 MIL TPO FLEECEBACK IN 2-PART ADHESIVE.

A. Thermoplastic Polyolefin Single-Ply Roofing Membrane

B. Thermoplastic Polyolefin Flashings

C. Thermoplastic Polyolefin Accessories

1.3 RELATED SECTIONS

A. Section 06100 Rough Carpentry: for treated wood nailers, curbs, and wood cants, etc.

B. Section 07620 Sheet Metal Flashing and Trim

1.4 REFERENCES

A. ASTM D751 - Standard Test Methods for Coated Fabrics.

B. ASTM D2137 - Standard Test Methods for Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics.

C. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM D1204 - Standard Test Method for Linear Dimensional Changes of Norigid Thermoplastic Sheeting or Film at Elevated Temperature.

E. ASTM D471 - Standard Test Method for Rubber Property - Effect of Liquids.

F. ASTM D1149 - Standard Test Methods for Rubber Deterioration - Cracking in an Ozone Controlled Environment.

G. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.

H. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometeres.

I. ASTM E903 – Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres

J. ASTM G155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non- Metallic Materials.

K. ASTM D573 - Standard Test Method for Rubber - Deterioration in an Air Oven.

L. SMACNA (Sheet Metal and Air Conditioning Contractors National Assoc., Inc.)

M. NRCA (National Roofing Contractors Association

N. ASCE (American Society of Civil Engineers)

0. USGBC (U.S. Green Building Council) & LEED (Leadership in Energy & Environmental Design)

P. FM Global (Factory Mutual) - Approval Guide

Q. UL (Underwriters Laboratories) - Roofing Systems & Materials Guide (TGFU R1306)

R. California Title 24 Energy Efficient Standards

S. Energy Star

T. CRRC (Cool Roofing Rating Council)

U. Miami-Dade County

1.5 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

B. Shop Drawings: Provide manufacturer's standard details and approved shop drawings for the roof system specified.

C. Product Data: Provide physical characteristics, thermal values, product limitations, methods of mixing and application instructions. Provide product data sheets for each type of product indicated in this section.

D. Certificates: Installer shall provide written documentation from the manufacturer of their authorization to install the roof system, and eligibility to obtain the warranty specified in this section.

E. Submit documentation showing compliance with Florida Building Code Assembly.

F. Submit a sample copy of the roof system guarantee covering the proposed Thermoplastic Single- Ply Roofing membrane system.

G. Submit a letter from the roof membrane manufacturer confirming the intention to issue the roof system guarantee covering the proposed/existing substrate/roof membrane system at project completion.

H. Submit written documentation from the thermoplastic single-ply roofing manufacturer confirming that the installer is approved to install the proposed thermoplastic single-ply roofing system and their eligibility to obtain the warranty specified in this section.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Thermoplastic single-ply roofing manufacturer shall provide a roofing system that meets or exceeds all criteria listed in this section.

B. Installer Qualifications: Minimum five years' experience and regularly engaged and properly equipped for the application of thermoplastic single-ply roofing, and as certified by the thermoplastic single-ply roofing manufacturer in writing.

C. Source Limitations: All components shall be obtained from the single source roofing manufacturer guaranteeing the roofing system. All products used in the system shall be labeled by the single source roofing manufacturer issuing the guarantee.

D. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E329.

E. Test Reports:

1. Roof drain and leader test or submit plumber's verification.
2. Core cut (if requested).
3. Roof deck fastener pullout test.

F. Moisture Survey:
1. Submit prior to installation, results of a non-destructive moisture test of roof system completed by approved third party. Utilize one of the approved methods: Infrared Thermography or Nuclear Backscatter.

G. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
1. Exterior Fire-Test Exposure: Class A; ASTM E108, for application and roof slopes indicated.
2. Fire-Resistance Ratings: ASTM E119, for fire-resistance-rated roof assemblies of which roofing system is a part.

H. Final Inspection: Manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed, and the final punch list completed.

I. Performance Requirements:
   1. Provide an installed roofing membrane and base flashing system that does not permit the passage of water and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.
   2. Roofing Manufacturer shall provide all roofing materials that are physically and chemically compatible when installed in accordance with manufacturer's current application requirements.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original unopened, undamaged packages or acceptable bulk containers fully identified as to manufacturer, brand or other identifying data and bearing the proper Underwriters Laboratories and Factory Mutual labels.

B. Store all liquid materials (pail goods) in their original undamaged containers in a clean, dry location and within their specified temperature range.

C. Do not expose materials to moisture in any form before, during or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.

D. Protect roof membrane system materials from physical damage. Use 'breathable' type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each workday. Do not remove any protective tarpaulins until immediately before the material shall be installed. Materials shall be stored above 55°F a min. of 24 hrs. prior to application

1.8 PROJECT CONDITIONS

A. Verify and strictly adhere to manufacturer's conditions for work to be performed.

B. Ambient temperatures shall be above 45°F when applying hot asphalt or water-based adhesives.

C. Proceed with installation only when current and forecasted weather conditions permit the roofing system to be installed in accordance with manufacturer's written instructions and guarantee requirements.

D. Notification: Give a minimum of five (5) day notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

E. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

F. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

## 1.9 WARRANTY

A. Thermoplastic single-ply roofing manufacturer shall provide a letter in the bid proposal certifying and approving the thermoplastic single-ply roofing installer for the specified and detailed system.

B. Roof System Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the roof system manufacturer's twenty (20) year labor and materials roof system guarantee. The roof system guarantee shall include both the roofing and flashing membranes, and any base sheet fasteners (if required). All repair or replacement costs covered under the guarantee shall be borne by the roofing membrane manufacturer. The guarantee shall be an "NDL" No Dollar Limit term type, without deductibles or limitations on coverage amount, and be issued at no additional cost to the Owner. Specific items covered under the roof system guarantee include:

1. The actual resistance to heat flow through the roof insulation will be at least 80% of the design thermal resistance, provided that the roofing membrane is free of leaks;

2. Should a roof leak occur, the insulating performance of the roof insulation will be at least 80% of the design thermal resistance within a two (2) year period following repair of the leak.

3. The roof membrane system will remain in a re-roofable condition should the roof membrane system require replacement.

4. The roofing material will not cause structural damage to the building as a result of expansion from thermal or chemical action.

# PART 2 PRODUCTS

## 2.1 MEMBRANE MATERIALS

A. Fabric-reinforced (fleece-backed) thermoplastic polyolefin sheet: ASTME D6878, uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced equal to GAF:

GAF Specification TFARN60FB

1. Thickness: 60 mils (nominal 0.060 inch).

2. Fabric Fleeced-backed (60 mils, [nominal 0.060 inch]).

3. Exposed face color: White.

Carlisle Syntec is an approved equal for the specified TPO membrane system. Provide Carlisle (or approved substitution) TPO Diamond Plated Walk Pads below downspouts discharging onto roof, 3' x 3' adhered to the roofing per manufacturers requirements.

Johns Manville TPO is an acceptable alternate as long as it meets the requirements of the above description.

Duro-Last fleece-backed PVC Roofing is an approved equal and must meet a minimum thickness of 50 mils and provide a roof system manufacturer's twenty (20) year labor and materials roof system guarantee.

Other manufacturers that desire approval during bidding shall submit their specific requirements and changes to these specifications for review.

## 2.2 AUXILIARY ROOFING MATERIALS

A. All products/accessories shall be obtained from the single source roofing manufacturer guaranteeing the roofing system and shall be compatible with and approved by single source roofing manufacturer.

B. Sheet Flashing: Manufacturer's internally reinforced or scrim reinforced, smooth backed membrane with same thickness and color as sheet membrane equal to GAF.

C. Termination Bars: Manufacturer's standard pre-drilled stainless steel or aluminum bars (min. .040 thickness) with stainless steel anchors.

D. 2-Part polyurethane spec equal to GAF.

E. Primer and solvent based adhesive spec equal to GAF.

F. Perforated venting base sheet equal to GAF Stratavent at detail areas.

# PART 3 EXECUTION

## 3.1 EXAMINATION

A. Examine substrates, areas, and conditions for compliance with the requirements affecting performance of roofing system.

1. Verify that roof openings and penetrations are in place, and set, and braced and that roof drains are securely clamped in place.

2. Verify that wood/fiber cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3. Ensure general rigidity and proper slope for drainage.

4. Verify that deck/substrate has no projecting fasteners and with no adjacent units in excess of 1/16 inch out of plane relative to adjoining deck/substrate.

## 3.2 PREPARATION

A. Remove no area larger than can be re-roofed/capped in one day.

B. Tear out all base flashings, counter flashings, pitch pans, pipe flashings, vents, and like components necessary for application of new membrane.

C. Raise all curbs to conform with the following: a min. of 12" curb height, secure flashing and install new metal counter flashing prior to reinstallation of units, and perimeter nailers must be elevated to match elevation of new roof system.

D. Clean and remove from substrate sharp projections, dust, debris, moisture, and other substances detrimental to roofing installation in accordance with roofing system manufacturer's written instructions. Sweep loose granules.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. General: Provide equipment and application procedures conforming to the material supplier's application instructions.

B. Install roofing membrane in accordance with roofing system manufacturer's written instructions, applicable recommendations of the roofing manufacturer and requirements in the section.

C. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

D. Start the application of membrane plies at the low point of the roof or at the drains so that the flow of water is, over or, parallel to, but never against the laps.

E. Place membrane so that wrinkles and buckles are not formed. Any wrinkles or buckles must be removed from the sheet prior to permanent attachment. The roof membrane shall be fully adhered immediately after it is rolled out, followed by welding to adjacent sheets.

F. Overlap roof membrane a minimum of 3" (15 cm) for side laps and 3" (15 cm) for end laps.

G. Install membrane so that the side laps run across the roof slope lapped towards drainage points.

H. All exposed sheet corners shall be rounded a minimum of 1".

I. Use full width rolls in the field and perimeter region of roof.

J. Use appropriate bonding adhesive for substrate surface, applied with a solvent-resistant roller, brush, squeegee, or in 'spatter pattern' by spray application - refer to manufacturer's written instructions/installation methods.

K. Prevent seam contamination by keeping the adhesive application a few inches back from the seam area.

L. Adhere approximately one half of the membrane sheet at a time. One half of the sheet's length shall be folded back in turn to allow for adhesive application. Lay membrane into adhesive once the bonding adhesive is tacky to the touch.

M. Roll membrane with a weighted roller to ensure complete bonding between adhesive and membrane.

N. Membrane laps shall be heat-welded together. All welds shall be continuous, without voids or partial welds. Welds shall be free of burns and scorch marks.

0. Weld shall be a minimum of 1-1/2" in width for automatic machine welding and a minimum 2" in width for hand welding.

P. All cut edges of reinforced membrane must be sealed with manufacturer's roofing sealant.

Q. Supplemental membrane attachment is required at the base of all walls and curbs, and where the angle of the substrate changes by more than five (5) degrees (1" in 12"). Roofing membrane shall be secured to the structural deck with appropriate screws and plates spaced every 12" o.c. The screws and plates must be installed no less than ½" from the membrane edge. Alternatively, the roofing membrane may be turned up the vertical plane a minimum of 3" and secured with screws and termination bar. Fastener spacing is the same as is used for in-lap attachment. The termination bar must be installed within 1-1/2" to 2" of the plane of the roof membrane, with a minimum of 1" of membrane extending above the termination bar.

R. Supplemental membrane attachment to the structural deck is required at all penetrations unless the insulation substrate is fully adhered to the deck. Roofing membrane shall be secured to the deck with appropriate screws and plates.

S. Fasteners must be installed to achieve the proper embedment depth. Install fasteners without leaning or tilt.

T. Install fasteners so that the plate or termination bar is drawn down tightly to the membrane surface. Properly installed fasteners will not allow the plate or termination bar to move (under driving) but will not cause wrinkling of the membrane (overdriving).

U. Protect all partially and fully completed roofing work from other trades until completion.

V. Whenever possible, stage materials in such a manner that foot traffic is minimized over completed roof areas.

W. When it is not possible to stage materials away from locations where partial or complete installation has taken place, temporary walkways and platforms shall be installed in order to protect all completed roof areas from traffic and point loading during the application process.

X. Temporary tie-ins shall be installed at the end of each workday and removed prior to commencement of work the following day.

## 3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner shall engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports

B. Final Roof Inspection: Arrange for roofing system manufacturer's Registered Roof Observer (RRO) to inspect roofing installation on completion and submit report to Architect. Notify Architect or Owner 48 hours in advance of date and time of inspection.

C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

## 3.5 CLEAN-UP

A. All work areas are to be kept clean, clear and free of debris at all times.

B. Do not allow trash, waste, or debris to collect on the roof. These items shall be removed from the roof on a daily basis.

C. All tools and unused materials must be collected at the end of each workday and stored properly off of the finished roof surface and protected from exposure to the elements.

D. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.

E. Properly clean the finished roof surface after completion, and make sure the drains and gutters are not clogged.

F. Clean and restore all damaged surfaces to their original condition.

## 3.6 DEFECTIVE WORK

A. General: Refinish or remove and replace roofing membrane system/accessories where physical properties do not meet specified requirements, as determined by the Architect.

**END OF SECTION**

**SHEET METAL FLASHING AND TRIM - 076200**

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fascias, flashing and trim.

B. Gutters and downspouts.

C. Counter flashings over bituminous membrane base flashings.

D. Counter flashings at roof mounted equipment.

E. Base flashings.

1.2 RELATED SECTIONS

A. Section 06100: Rough Carpentry.

B. Section 07527: SBS - Modified Bituminous Sheet Roofing.

C. Section 07540: Thermoplastic Single-Ply Roofing.

D. Section 07901: Joint Sealants.

1.3 REFERENCES

A. AISI (American Iron and Steel Institute) - Stainless Steel - Uses in Architecture.

B. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate.

C. ASTM B209 - Aluminum and Alloy Sheet and Plate.

D. ASTM D226 - Asphalt saturated organic felt used in roofing and waterproofing.

E. NRCA (National Roofing Contractors Association) - Roofing Manual.

F. SMACNA - Architectural Sheet Metal Manual.

1..4 SUBMITTALS

A. Submit under provisions of Division 1 - Submittals.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations and installation details.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with AISI, SMACNA, NRCA standard details and requirements.

1.6 QUALIFICATIONS

A. Fabricator and Installer: Company specializing in sheet metal flashing work with five (5) years' experience.

1.7 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Division 1 - Material and Equipment.

B. Stack preformed and prefinished material to prevent twisting, bending or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that may cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

A. Aluminum Sheet for Gutters and Downspouts: ASTM B209, .040-inch-thick (except where noted otherwise on drawings); finish: Fluoropolymer paint finish, color selected by Architect from manufacturer's standard colors. Downspout boots: .080-inch-thick x 6' high; finish, baked enamel paint finish, color to match downspout. Match existing discharge location at bottom of downspout boot.

B. Aluminum Sheet for Fascias, Flashings and Trim: ASTM B209, .040-inch-thick (except where noted otherwise on drawings); finish: Fluoropolymer paint finish, color selected by Architect from manufacturer's standard colors.

2.2 ACCESSORIES

A. Fasteners: Stainless Steel with neoprene sealing washers.

B. Sealant: Specified in Section 07901.

C. Gutter and Downspout Anchorage Devices: SMACNA requirements.

D. Gutter Supports: Gutter brackets shall be 3/16" thk. x 1 1/4" alum. spaced at 30" o.c. +/-. Paint to match gutter finish (except where noted otherwise on drawings).

E. Downspout Supports: Brackets 3/16" thick x 1 1/4" alum. Paint to match gutter finish. Minimum 3 per downspout or placed max. 8 feet on center (except where noted otherwise on drawings).

F. Closure at base of downspouts discharging into an underground system: Provide an .080-inch-thick prefinished aluminum closure covering the entry into the underground with a maximum ½" clear space around the downspout. The downspout shall extend a minimum of 1" through the closure.

2.3 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate cleats of stainless steel, interlockable with sheet.

C. Form pieces in longest possible lengths.

D. Hem exposed edges on underside 3/4 inch; miter and seam corners.

E. Form material with flat lock seams.

F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing. Return and brake edges.

G. Laps at gutters and fascias shall be 2", riveted on 2" centers and sealed before riveting. Provide cover plate minimum 5" wide.

H. Expansion joints at gutters shall be butt type with cover plate at joint. The cover plate shall lap gutter 2-1/2" minimum at each side. Width of expansion joint shall be based on length of gutter in the field applied to the appropriate SMACNA table.

2..4 FINISH

A. The back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

**PART 3 EXECUTION**

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts or vents through roof are solidly set, reglets in place and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

A. Install starter, edge strips and cleats before starting installation except as detailed otherwise on drawings.

B. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

3.3 INSTALLATION

A. Conform to drawing details included in the SMACNA, NRCA manual.

B. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines according to profiles.

E. Seal metal joints watertight.

F. Secure gutters and downspouts in place using concealed fasteners with straps placed maximum 8 feet on center.

G. Connect downspouts to existing storm sewer system.

H. Underlayment: Where stainless steel or pre-coated galvanized steel is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.

3..4 FIELD QUALITY CONTROL

A. Field inspection will be performed. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**END OF SECTION**

**JOINT SEALANTS - 079200**

PART 1 - GENERAL

1.1 SUMMARY

A. Extent of each form and type of joint sealer is indicated on drawings and schedules.

B. This Section includes joint sealers for the following locations:

1. Exterior joints in vertical surfaces and non-traffic horizontal surfaces as indicated below:
   a. Control and expansion joints in cast-in-place concrete.
   b. Perimeter joints between unit masonry and frames of doors and windows.
   c. Other joints as indicated.
2. Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:
   a. Perimeter joints of exterior openings where indicated.
   b. Other joints as indicated.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.3 References

A. ASTM C 510 - Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants.
B. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
C. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
D. ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
E. ASTM C 834 - Specification for Latex Sealants.
F. ASTM C 920 - Specification for Elastomeric Joint Sealants.
G. ASTM C 1087 - Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
H. ASTM C 1193 - Guide for Use of Joint Sealants.
I. ASTM C 1247 - Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.
J. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
K. ASTM C 1311 - Specification for Solvent Release Sealants.

1. .4 SUBMITTALS

A. Product data from manufacturers for each joint sealant product required including instructions for joint preparation and joint sealer application.

B. Samples for initial selection purposes in the form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available for each product exposed to view.

C. Samples for verification purposes of each type and color of joint sealant required. Install joint sealant samples in ½-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for use as indicated.

E. Product test reports for each type of joint sealants indicated, evidencing compliance with requirements specified.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

B. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations with a 24-month period preceding date of Contractor's submittal of test results to Architect.

C. Installer Qualifications: Engage an experienced installer who has completed joint sealant applications similar in material, design, and extent to that indicated for projects that have resulted in construction with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4.4 deg C).
2. When joint substrates are wet due to rain, frost, condensation, or other causes.

B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

## PART 2 PRODUCTS

### 2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, 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 sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealers indicated or, if not otherwise indicated, selected by Architect from manufacturer's standard colors.

### 2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses.

B. Multi-part Non-acid Curing Silicone Sealant: Type M; Grade NS; Class 25; Uses T, NT, M, G, A, and as applicable to joint substrates indicated, O; and complying with the following requirements for additional joint movement and compatibility.

1. Additional capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the following percentage changes in joint width as measured at time of application and remain in compliance with other requirements of ASTM C 920 for uses indicated:
2. Fifty percent movement in both extension and compression for a total of 100 percent movement.

C. One-part Non-acid Curing Silicone Sealant: Type S, Grade NS, Class 25, and complying with the following requirements for uses and additional joint movement capability.

1. Uses NT, G, A, and as applicable to joint substrates indicated, O.

D. Available Products: Subject to compliance with requirements, elastomeric sealants which may be incorporated in the work include, but are not limited to the following:

1. Multi-part Non-acid Curing Silicone Sealant: Dow Corning 695; Dow Corning Corp.

2. One-part Non-acid Curing Silicone Sealant: Chem-Calk N-Cure 2000; Bostic Construction Products Div. Dow Corning 790; Dow Corning Corp.
Silglaze N SCS 2501; General Electric Co. Silpruf SCS 2000; General Electric Co.
864; Pecora Corp.
Rhodorsil 5C; Rhone-Poulenc Inc. Spectrum 1; Tremco, Inc. Spectrum 2; Tremco, Inc.

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backing of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

C. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM C 1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to 26 deg F (-32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

2. .4 MISCELLANEOUS MATERIALS

A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated as determined from pre-construction joint sealant substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaners of the type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent non-porous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.

C. Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and surfaces adjacent to joints.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
.4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other non-porous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on pre-construction joint sealant substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 1193-09 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   a. Do not leave gaps between the ends of joint fillers.
   b. Do not stretch, twist, puncture, or tear joint fillers.
   c. Remove absorbent joint fillers that have become wet prior to sealant application and replace them with dry material.

2. Install bond breaker tape between sealants and joint fillers, compression seals, or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per ASTM C1193-09, unless otherwise indicated.

3. .4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 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. If, despite such protection, 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 where repaired areas are indistinguishable from original work.

**END OF SECTION**