

PROJECT MANUAL FOR:

A MODIFIED BITUMEN ROOF REPLACEMENT FOR: CITY OF OAK RIDGE WATER TREATMENT PLANT

1515 Bear Creek Road
Oak Ridge, Tennessee 37830

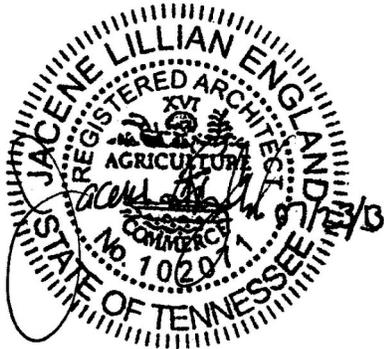
OAK RIDGE PROJECT NUMBER: FY2014-31
JOB NUMBER: PA13008A
DATE: 07/23/13

OWNER:

THE CITY OF OAK RIDGE
100 WOODBURY LANE
OAK RIDGE, TENNESSEE 37831
CONTACT: PAT FALLON
865.425.1815

PROFESSIONAL IN RESPONSIBLE CHARGE:

JACENE ENGLAND, AIA
ARCHITECT
865.964.8405



PERSPECTIVE ARCHITECTURE

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A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant

1515 Bear Creek Road, Oak Ridge, TN 37830

| SECTION | | PAGE |
|--|---|--------------|
| DIVISION 0 . PROCUREMENT AND CONTRACTING REQUIREMENTS | | |
| 00 01 15 | List of Contract Drawings | 00 01 15.1-1 |
| 00 41 14 | Bid Envelope | 00 41 14.1-1 |
| 00 45 47 | Prohibition of Illegal Immigration | 00 45 47.1-1 |
| | Electronic Files Release Form | 1 page |
| 00 63 25 | Substitution Request | 00 63 25.1-1 |
| | General Conditions of the Contract for Construction (AIA Document A201-2007 Ed.) | 38 pages |
| 00 73 00 | Supplementary Conditions | 00 73 00.1-7 |
| DIVISION 1 . GENERAL REQUIREMENTS | | |
| 01 10 00 | Summary of the Work | 01 10 00.1-4 |
| 01 16 00 | Regulatory Requirements | 01 16 00.1-2 |
| 01 25 00 | Substitution Procedures | 01 25 00.1-3 |
| 01 31 00 | Project Management and Coordination | 01 31 00.1-1 |
| 01 32 50 | Weather Delays | 01 32 50.1-2 |
| 01 33 00 | Submittals | 01 33 00.1-7 |
| 01 35 00 | Special Project Procedures | 01 35 00.1-2 |
| 01 50 00 | Construction Facilities and Temporary Controls | 01 50 00.1-3 |
| 01 60 00 | Product Requirements | 01 60 00.1-1 |
| 01 74 10 | Cleaning | 01 74 10.1-1 |
| 01 77 00 | Contract Closeout | 01 77 00.1-3 |
| DIVISION 7 . THERMAL AND MOISTURE PROTECTION | | |
| 07 52 00 | Modified Bitumen Roofing System | 07 52 00.1-6 |
| 07 62 00 | Flashing and Sheet Metal | 07 62 00.1-3 |
| 07 71 23 | Gutters and Downspouts | 07 71 23.1-2 |
| 07 92 00 | Sealants and Caulking | 07 92 00.1-5 |

SECTION 00 01 15 . LIST OF CONTRACT DRAWINGS

The following drawings, identified as "A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant, 1515 Bear Creek Road, Oak Ridge, TN 37830", comprise the list of Contract Drawings:

| | | |
|------|-----------------|----------|
| CVR | COVER SHEET | 07/23/13 |
| A1.0 | DEMOLITION PLAN | 07/23/13 |
| A1.1 | ROOF PLAN | 07/23/13 |
| A1.2 | ROOF DETAILS | 07/23/13 |

THIS FORM MUST BE FIRMLY ATTACHED TO THE OUTSIDE OF THE ENVELOPE CONTAINING THE BID. NO BID WILL BE CONSIDERED IF THIS FORM IS INCOMPLETE OR NOT ATTACHED TO THE OUTSIDE OF THE BID ENVELOPE.

| | | |
|--|---|---|
| To: | Lyn Majeski The City of Oak Ridge 100 Woodbury Lane Oak Ridge, Tennessee 37831 | A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant 1515 Bear Creek Road Oak Ridge, TN 37830 |
| DATE: | | |
| TIME: | | |
| LOCATION: | | |
| NAME OF BIDDER: | | |
| LICENSE No.*: | | |
| LICENSE CLASSIFICATION OF BIDDER: | | |
| EXPIRATION DATE: | | |
| MONETARY LIMITS: | | |

**If bidder is licensed in more than one classification that applies to the work being bid, include the license number, license classification and expiration date of license of all classifications.*

END OF SECTION

SECTION 00 45 47 . PROHIBITION OF ILLEGAL IMMIGRATION

PART 1 . GENERAL

1.1 PROHIBITION OF ILLEGAL IMMIGRANTS

- A. The requirements of Public Acts of 2006, Chapter Number 878, of the state of Tennessee, addressing the use of illegal immigrants in the performance of any contract to supply goods or services to the state of Tennessee, shall be a material provision of this Contract, a breach of which shall be grounds for monetary and other penalties, up to and including termination of this Contract.
 - 1. The Contractor hereby attests, certifies, warrants, and assures that the Contractor shall not knowingly utilize the services of an illegal immigrant in the performance of this Contract and shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant in the performance of this Contract. The Contractor shall reaffirm this attestation, in writing, by submitting to the State a completed and signed copy of the document as Attachment 1, hereto, semi-annually during the period of this Contract. Such attestations shall be maintained by the contractor and made available to state officials upon request.
 - 2. Prior to the use of any subcontractor in the performance of this Contract, and semi-annually thereafter, during the period of this Contract, the Contractor shall obtain and retain a current, written attestation that the subcontractor shall not knowingly utilize the services of an illegal immigrant to perform work relative to this Contract and shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant to perform work relative to this Contract. Attestations obtained from such subcontractors shall be maintained by the contractor and made available to state officials upon request.
 - 3. The Contractor shall maintain records for all personnel used in the performance of this Contract. Said records shall be subject to review and random inspection at any reasonable time upon reasonable notice by the State.
 - 4. The Contractor understands and agrees that failure to comply with this section will be subject to the sanctions of Public Chapter 878 of 2006 for acts or omissions occurring after its effective date. This law requires the Commissioner of Finance and Administration to prohibit a contractor from contracting with, or submitting an offer, proposal, or bid to contract with the State of Tennessee to supply goods or services for a period of one year after a contractor is discovered to have knowingly used the services of illegal immigrants during the performance of this contract.
 - 5. For purposes of this Contract, "illegal immigrant" shall be defined as any person who is not either a United States citizen, a Lawful Permanent Resident, or a person whose physical presence in the United States is authorized or allowed by the Department of Homeland Security and who, under Federal immigration laws and/or regulations, is authorized to be employed in the U.S. or is otherwise authorized to provide services under the Contract.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

Electronic File Transfer Agreement

At your request, Perspective Architecture (PA) will provide electronic files for your convenience and use in the preparation of documents related to **A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant, 1515 Bear Creek Road, Oak Ridge, TN 37830** project subject to the following terms and conditions:

File(s)/Sheet(s) to be transmitted: _____

Electronic File Format (Select Format):

Adobe PDF (\$25 for first file/drawing and \$10 for each additional file/drawing): _____

Autodesk DWF (\$60 for the first file/drawing and \$30 for each additional file/drawing): _____

Perspective Architecture's electronic drawing files are DWF files created with **AutoCAD, Release 2011**. PA makes no representation as to the compatibility of these files with your hardware or software beyond the specified release of the referenced software. Data contained on these electronic files is part of PA's instruments of service and shall not be used by you or anyone else receiving this data through or from you for any purpose other than as a convenience in the preparation of documents pertaining to the referenced project. Any use by you or others, will be your sole risk and without liability or legal exposure to Perspective Architecture. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against PA or sub-consultants which may arise out of, or in connection, with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold harmless Perspective Architecture from all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from your use of these electronic files. These electronic files are not Contract Documents. Significant differences may exist between these electronic files and corresponding hard copy Contract Documents due to addenda, change orders or other revisions. PA makes no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed Contract Documents prepared by Perspective Architecture and Electronic Files, signed Contract Documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other Contractors for the project.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale of the file(s) by Perspective Architecture and PA makes no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. In no event shall PA be liable for any loss of profit or any consequential damages. Usage by any parties of the data contained in the electronic files released shall constitute agreement to these terms.

Please return this completed form via email to jacene@perspectivearchitecture.com

Once the release form has been signed and payment received via check or money order payable to Perspective Architecture, the file(s) will be transferred to the indicated e-mail address.

Email Address:

Name, Company Name, & Address of Recipient:

Signature & Date

SECTION 00 63 25 . SUBSTITUTION REQUEST

PROJECT: "A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant
1515 Bear Creek Road, Oak Ridge, TN 37830"

SPECIFIED ITEM:

| Section | Page | Paragraph | Description |
|---------|------|-----------|-------------|
|---------|------|-----------|-------------|

The undersigned request consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The undersigned certifies that the following statements, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by: _____ For use by the A/E: _____

Signature: _____

Firm: _____

Approved _____ Approved as noted _____

Address: _____

Not Approved _____ Received too late _____

By: _____

Date: _____

Date: _____

Telephone: _____

Remarks: _____

Attachments:

SECTION 00 73 00 . SUPPLEMENTARY CONDITIONS

PART 1 . GENERAL

1.1 The following amendments modify, change, delete from or add to the General Conditions of the Contract for Construction (AIA Document A201, 2007 Edition), hereinafter referred to as the General Conditions. Where any part of the General Conditions is modified or voided by these amendments the unaltered provisions of that part shall remain in effect.

1.2 INTENT OF CONTRACT DOCUMENTS

A. Add the following Subparagraphs 1.2.4 and 1.2.5 at the end of Paragraph 1.2, Execution, Correlation, and Intent:

1.2.4 **If there is any conflict or discrepancy within or between any of the Contract Documents involving the quality or quantity of work required, it is the intention of the Contract that the work of highest quality or greatest quantity shown or specified shall be furnished**, unless such conflict or discrepancy shall have been brought to the Architect's attention and clarified by Addendum prior to the opening of bids.

1.2.5 Whether or not the word "ALL" is used in the specifications, coverage is intended to be complete, except where partial coverage is specifically and expressly noted. In all cases where an item is referred to in the singular number, it is intended that the reference shall apply to as many such items as are required to complete the work. **Words such as "Install", "Provide", "Furnish", and "Supply" shall be construed as meaning complete furnishing, installing, and constructing unless modified by additional information.**

1.3 DRAWINGS FURNISHED TO THE CONTRACTOR

A. Revise Subparagraph 2.2.5 to read as follows: Drawings and Specifications furnished to the General Contractor are subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service. All Drawings and Specifications furnished to the Contractor shall be subject to the provisions of Paragraph 1.5, Ownership and use of Drawings, Specifications, and other Instruments of Service.

1.4 REVIEW OF CONTRACT DOCUMENTS

A. Add the following Subparagraph 3.2.5 at the end of Paragraph 3.2, Review of Contract Documents and Field Conditions by Contractor:

3.2.5 **Should discrepancies or conflicts in the requirements of the Drawings and Specifications be discovered after the work has started, the Contractor shall report such discrepancies or conflicts to the Architect immediately and no work affected thereby shall be started, of if started, shall be stopped immediately until the Contractor and the Architect agree upon clarification of the discrepancy or conflict.**

1.5 PERMITS, FEES AND NOTICES

A. Add the following Subparagraph 3.7.6 at the end of Paragraph 3.7, Permits, Fees, Notices, and Compliance with Laws:

3.7.6 The Contractor shall obtain a Certificate of Occupancy from the Building Inspection Department having jurisdiction for each phase of the project as it is completed and ready for occupancy and shall deliver such certificate to the Owner.

1.6 SUBMITTALS

A. Add the following Subparagraphs 3.12.11 and 3.12.12 at the end of Paragraph 3.12, Shop Drawings, Product Data and Samples:

- B. 3.12.11 Additional provisions pertaining to shop drawings and samples are included in Division 1, General Requirements.
- C. **3.12.12 Submittals that have not been marked as reviewed, signed and dated by the Contractor may be returned by the Owner without action.**

1.7 SUBCONTRACTURAL RELATIONS

- A. Add the following Subparagraphs 5.3.1 and 5.3.2 to Paragraph 5.3, Subcontractual Relations:

5.3.2 The Contractor shall be directly responsible for all of the work included in the Contract, whether performed by his own forces or by his subcontractors. Except in extreme emergencies, all instructions, clarifications, and approvals will be given by the Architect to subcontractors only through the Contractor and all shop drawings, samples, and correspondence from the subcontractor shall be submitted to the Architect through the Contractor.

5.3.3 Insofar as it does not affect the quality of workmanship or materials, the Contractor shall settle all questions of responsibility arising among his various subcontractors and shall determine the extent of work and responsibility of each of the subcontractors.

1.8 CHANGES IN THE WORK

- A. Add the following Subparagraph 7.4.1 to Paragraph 7.4, Minor Changes in the Work:

7.4.1 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and subcontractors. **Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over \$500.00 be approved without such itemization.**

- B. Change Sub-subparagraph .5 of Subparagraph 7.3.7 to the following:

.5 Overhead and profit of which the maximum amount of allowable given in this Subparagraph shall be considered to include, but is not limited to, job-site staff and office expense, incidental job burdens, small tools, and home office overhead allocation. The percentages for overhead and profit shall not exceed the following:

To Contractor on work performed by other than its own forces - 5% profit;

To first-tier Subcontractor on work performed by its Sub-subcontractors - 5% profit; and

To Contractor and/or Subcontractors for that portion of the work performed with their respective forces - 10% overhead and 5% profit.

1.9 APPLICATIONS FOR PAYMENT

- A. Add the following Clauses 9.3.4 and 9.3.5, in Paragraph 9.3, Applications for Payment:

9.3.4 The Owner will pay ninety-five percent (95%) of the amount due the Contractor on account of progress payments, such that the retainage amount will not exceed five percent (5%) of the amount of such Contract.

9.3.5 The Contractor is to use the 1992 Edition of AIA Document G702, Application and Certificate for Payment. **Beginning with the second Application for Payment, the Contractor shall verify that he has paid all subcontractors and major material suppliers those respective amounts representing all work and materials which have formed the basis of previous progress payments.** The application shall be submitted in three notarized copies.

1.10 PROGRESS PAYMENTS

- A. Revise Subparagraph 9.6.1, to read as follows:

Unless otherwise provided in the agreement, the Owner will make progress payments to the Contractor on or about the twenty-fifth (25th) day of each calendar month on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month. In preparing estimates, materials delivered to and properly stored on the site shall be given consideration. **Materials stored off-site shall not be paid for by the Owner unless the Contractor furnishes a certificate of insurance for that material showing the Owner as the Owner of said material.**

- 1.11 Add Subparagraph 9.6.8 at the end of Subparagraph 9.6, Progress Payments.

9.6.8 Upon commencement of the work, an escrow account as provided by Tennessee Code Annotated, Section 4-15-102; Section 66-11-144 and Title 66, Chapter 34, shall be established in a financial institution chosen by the Contractor and approved by the Owner. The escrow agreement shall provide that the financial institution will act as escrow agent, will pay interest on funds deposited in such account in accordance with provisions of the escrow agreement and will disburse funds from the account upon the direction of the Owner as set forth below. Compensation to the escrow agent for establishing and maintaining the escrow account shall be paid from interest accrued to the escrow account.

1.12 FINAL PAYMENT

- A. In Subparagraph 9.10.2, item (5), delete the words "if required by the Owner"; and replace the words "releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner" with the following: "Contract Close Out Submittals as enumerated in Section 017700 Contract Closeout and as reviewed and approved by the Architect.

1.13 COSTS FOR DELAYS IN COMPLETION

- A. Add the following Subparagraph 9.8.6 at the end of Paragraph 9.8, Substantial Completion:

9.8.6As actual damages for any delay in completion are impossible of determination, the Contractor and his sureties shall be liable for and shall pay to the Owner the sum of Five Hundred Dollars (\$500.00) as fixed, agreed, and liquidated damages for each calendar day of delay until a Certificate of Substantial Completion is executed by the Owner, Architect, and Contractor.

- B. Add the following Subparagraph 9.10.6 at the end of Paragraph 9.10, Final Completion and Final Payment:

9.10.6 If after Substantial Completion of the work and issuance of the Punch List, Final Completion of the Work is delayed beyond the time allotted for completion of the Punch List through no fault of the Owner or the Architect, the Contractor shall be liable for such ongoing costs as the Architect shall incur on the Project. Such costs shall be computed and billed to the Contractor at the Architect's standard hourly rates in effect at the time the work is executed. Payment shall be required within thirty (30) days of invoice. Interest shall accrue at one percent (1%) per month on past due amounts. Contractor shall be liable for all legal fees if legal action is required for collection of unpaid amounts.

1.14 CONTRACTOR'S LIABILITY INSURANCE

- A. In Subparagraph 11.1.1 in the second line, following the phrase "in which the Project is located", insert the following clause: ", and to which the Owner has no reasonable objections,".

1.15 LIMITS OF CONTRACTOR'S LIABILITY INSURANCE

Add the following Clause 11.1.2.1 to Subparagraph 11.1.2:

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:

A. Workmen's Compensation:

- 1. State: Statutory
- 2. Employer's Liability: \$100,000.00 Each Accident
 \$500,000.00 Disease - Policy Limit
 \$100,000.00 Disease - Each Employee

B. Comprehensive General Liability (including Premises-Operations; Independent Contractors' Products/Completed Operations; Contractual; Personal injury):

- 1. Bodily Injury & Property Damage, combined single limit:
 Each Occurrence: \$1,000,000.00
 Annual Aggregate: \$4,000,000.00
- 2. Products/Completed Operations to be maintained for One Year After Final Payment.
 \$4,000,000.00 Aggregate
- 3. Property Damage Liability Insurance shall provide X, C, and U Coverage, and Coverage for any Special Hazards such as Blasting.

C. Comprehensive Automobile Liability (including Owned, Hired and Non-Owned):

- 1. Bodily Injury and Property Damage Combined: \$500,000

D. Umbrella Liability: \$4,000,000

1.16 OWNER'S LIABILITY INSURANCE

A. Replace Paragraph 11.2. with the following:

11.2. The Contractor shall take out and furnish to the Owner and maintain during the life of this Contract complete Owner's Protective Liability Insurance in amounts as specified in the limits of Contractor's Liability Insurance for Bodily Injury and Property Damage. This policy shall be made out in the name of the Owner and the Architect.

1.17 PROPERTY INSURANCE (BUILDER'S RISK)

A. In Subparagraph 11.3.1, in the phrase: "Unless otherwise provided, the Owner", change the word "Owner" to "Contractor".

B. Delete Subparagraph 11.3.1.2.

1.18 PROPERTY INSURANCE DEDUCTIBLES

A. Revise Subparagraph 11.3.1.3 to read as follows:

11.3.1.3 If by the terms of this insurance any mandatory deductibles are required, the Contractor shall be responsible for payment of the amount of the deductible in the event of a paid claim.

1.19 INSPECTIONS AND CORRESPONDENCE

- A.** Add the following Subparagraph 13.5.7 to the end of Paragraph 13.5, Tests and Inspections:

13.5.7 Inspections and or correspondence by the Architect required due to failure by the Contractor to obtain inspections and approval from the Public Authorities having jurisdiction are beyond the scope of Construction Contract Administration for the Architect. As additional services, the Contractor will be billed a minimum fee of Five Hundred Dollars (\$500.00) per occurrence plus the Architect's time at the Architect's standard hourly rate for the personnel required to perform these functions.

1.20 INTEREST

- A.** Revise Paragraph 13.6 to read as follows:

"Payments due and unpaid for thirty (30) days under the Contract Documents shall bear interest from the date thirty (30) days after payment is due at the rate of 1/2% (0.5 percent) per month.

1.21 ARBITRATION

- A.** Delete Paragraph 15.4 Arbitration, entirely and delete all references to arbitration elsewhere in the General Conditions.

1.22 TIME

- A.** Time is an essential consideration of the Contract and work shall commence on the date to be specified in a written notice to the Contractor to proceed and shall progress with a proper and sufficient force of workmen and ample supply of materials and equipment to complete the Contract within the time limit agreed to in the Contract for Construction as stipulated on the Bid Form.
- B.** As actual damages for any delay in completion are impossible of determination, the Contractor and his sureties shall be liable for and shall pay to the Owner the sum of Five Hundred Dollars (\$500.00) as fixed, agreed, and liquidated damages for each calendar day of delay until a Certificate of Substantial Completion is executed by the Owner, Architect, and Contractor.

1.23 SUBSTITUTIONS

- A.** All requests shall be submitted to the Architect in writing with a fully executed substitution request form and shall clearly define and describe materials, methods or equipment for which approval is requested.
- B.** Prior to Execution of a Contract for Construction:
1. If any Contractors desire to substitute any firms, materials, brands, methods, etc., other than specified, he may have the privilege at any time prior to ten days before bidding, of submitting these matters to the Architect for approval.
 2. Requests shall be submitted by the General Contractor. Direct requests by manufacturer or material suppliers will not be considered.
 3. If such submissions are approved by the Architect or if the Architect shall decide to enlarge the scope of the Specifications, such approvals or additional information will be made by Addendum to the Contractor.
- C.** After Execution of a Contract for Construction:
1. Substitutions after execution of a Contract for Construction will, generally, not be considered, except under unusual circumstances, such as strikes, lockouts, bankruptcy, discontinuing of a product, etc.

2. Requests for substitutions shall be made in writing to the Architect within ten (10) days of the date that the Contractor ascertains that he cannot obtain the material or equipment specified.
3. Requests shall be accompanied by complete description of the material or apparatus to be submitted. On request from the Architect, samples of any of all such items shall be submitted and/or set up as directed for inspection and consideration. The amount of credit or extra cost to the Owner on account of the substitution shall be a part of this request.
 - a. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - i. Statement indicating why specified material or product cannot be provided.
 - ii. The amount of credit or extra cost to the Owner on account of the substitution
 - iii. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - iv. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - v. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - vi. Samples, where applicable or requested.
 - vii. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - viii. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - ix. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - x. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - xi. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

D. "Or Approved Equal" or "Or Approved Substitution"

1. Where the phrase "or approved equal" or "approved substitution" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Architect unless the item has been specifically approved for this work by the Architect
 - a. Color choices will be one of the determining factors for approval.
2. The decision of the Architect will be final.

1.24 STANDARDS

- A.** Any material or other work specified by reference to the number, symbol, or title of a specific standard, such as American National Standards Institute (ANSI) Standard, a Federal Specification, a trade association standard, or other similar standard, shall conform to the requirements in the latest revision thereof or any amendment or supplement thereto in effect on the date of the drawings and specifications, except as limited to type, class or grade, or as modified in such reference.
- B.** The standards referred to, except as modified in the specification, shall have full force and effect as though recited for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Architect will furnish, upon request, information as to how copies of the standards referred to may be obtained.
- C.** Where material or work is specified by reference to conform to standards such as listed in Paragraph A above, or to Codes, Laws, and Regulations, but specific provisions of the Contract Drawings or Contract Specifications exceed the requirements of such references, the Contract Drawings and Specifications shall govern.

1.25 MANUFACTURER'S DIRECTIONS

- A.** All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's instructions and recommendations. Any conflicts between such manufacturer's instructions and recommendations and the specifications shall be brought to the attention of the Architect and the procedures reconciled before proceeding with the work.

1.26 GUARANTEE

- A.** All work under this Contract shall be guaranteed for a period of one (1) year after execution of Certificate of Substantial Completion against defects caused by the use of inferior materials or workmanship. Guarantee period of incomplete items at time of execution of Certificate of Substantial Completion shall commence on date of installation into building. Repair and/or replace all such defective materials or equipment and any work damaged thereby or make any other adjustment necessary without additional cost to the Owner.

1.27 LAYING OUT WORK

- A.** The Contractor shall, immediately upon entering the projects for the purpose of beginning work, locate all general reference points and be responsible for all lines, elevations, and measurements.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 10 00 . SUMMARY OF THE WORK

PART 1 . GENERAL

1.1 WORK INCLUDED

- A.** Furnish all labor, materials and equipment and perform all work associated with the project entitled "A Modified Bitumen Roof Replacement for: City of Oak Ridge Water Treatment Plant, 1515 Bear Creek Road, Oak Ridge, TN 37830" as specified herein and shown on the accompanying drawings. The work shall be constructed complete and ready for occupancy including, but not limited the following:
 - 1. Removal of the existing ballasted EPDM roofing and insulation.
 - 2. Installation of new modified bitumen roof system.
 - 3. Installation of new scupper and downspout system.
 - 4. Installation of new roof drains, new ladders and re-finishing existing ladders.
- B.** Patch any existing work damaged by construction.
- C.** Summary by References: Work of the Contractor can be summarized by references to the City of Oak Ridge, Tennessee Invitation to Bid and Instruction to Bidders, the City of Oak Ridge Contract, General Conditions, Architects Supplemental Conditions, Specifications, Drawings, Addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and including, but not necessarily limited to printed material referenced by any of these.

1.2 OCCUPANCY OF THE BUILDING DURING CONSTRUCTION

- A.** The Contractor shall have limited access to the site. Coordinate access with the representative of the City of Oak Ridge.
- B.** The Contractor shall schedule and organize his work in such a manner and use such methods that will interfere as little as possible with all other work in the building.
- C.** Building will remain in operation and Contractor shall coordinate their construction schedule with the Owner and shall schedule his work in a manner to minimize disruption of use of existing facilities by his construction activities.

1.3 CONTRACTOR'S USE OF PREMISES

- A.** Before construction is started the Contractor shall confer with the representative of the City of Oak Ridge and arrange for available trucking, storage and staging space for the delivery of materials, storage space for materials and equipment, and parking space for his workmen.
- B.** Construction operations and storage of materials and equipment shall be restricted to areas of the site mutually agreed upon and in such a manner as not to block access of fire fighting equipment to the building and facilities.
- C.** Construction vehicular traffic and the operation of construction equipment such as cranes, bulldozers, and other similar equipment shall be carefully supervised and controlled to avoid damage to existing structures and facilities which are to remain in place.

1.4 VERIFICATION OF DIMENSIONS

- A.** Dimensions, elevations, and locations shown on the drawings in reference to existing structures and utilities are the best available data obtainable but are not guaranteed by the Architect or the Owner and the Architect and the Owner will not be responsible for their accuracy.

- B. Before proceeding with any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, line levels, or other conditions of limitations at the site and building to avoid construction errors. If any work is performed by the Contractor or by his Subcontractors prior to adequate verification of applicable data, any resultant extra cost for adjustment of work to conform to existing limitations shall be borne by the Contractor without reimbursement or compensation by the Owner.

1.5 CONTROL POINTS AND LAYOUT

- A. The initial lines, grades, and dimensions necessary for the location and control of the work under the Contract are shown on the Contract Drawings.
- B. The Contractor shall provide for himself all additional and supplementary lines and grades as may be necessary to layout the work and insure proper control of the work until completed. It shall be the Contractor's responsibility to satisfy himself as to the accuracy of all measurements before construction.

1.6 SUBSTANTIAL COMPLETION OF THE WORK

- A. Upon substantial completion of any phase of the work, the Owner shall assume complete responsibility for the maintenance and operation of the heating, ventilating and air conditioning system and service utilities in that portion of the project.
- B. The Owner shall also become responsible for all other maintenance and damage and ordinary wear and tear and, with the exception of items under guarantee, the cost of repairs or restoration during the period between substantial and final completion.
- C. The Owner shall have the responsibility to have in effect all necessary insurance for protection against any losses not directly attributable to the Contractor's negligence.
- D. Upon substantial completion, payments for work in the substantially complete portion of the work shall be released to the Contractor, except for the retainage and an amount to cover the cost of the incomplete or deficient items included in the punch list made at the inspection to determine substantial completion. This amount shall be approximately the value of the punch list items as estimated by the Architect.
- E. The Contractor shall arrange a schedule so that punch list items are completed in the designated time by working during regular working hours. The Contractor shall be afforded access to the occupied portion of the building to perform this work during regular working hours.

1.7 ENVIRONMENTAL HAZARDOUS PRODUCTS, MATERIALS, WASTE

- A. Do not incorporate in the Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended, unless the Contract Documents give no other option than to provide a material or product which contains a hazardous material, component, constituent, waste, or leachate. In studying the Contract Documents and carrying out the Work, report at once to the Designer the discovery of a product or material which contains hazardous materials, components, constituents, waste, or leachate.
- B. Do not incorporate in the Work a product or material which contains concentrations of a constituent, component, or material above the threshold levels which would require adherence to hazardous waste disposal regulations as currently defined, or could cause a release or threat of release of a hazardous substance at a level that would require a remedial response or removal action as currently defined by RCRA, CERCLA, or the EPA.

- C. Select materials and products meeting specified requirements which comply with EPA requirements as regards hazardous materials content. In making requests for substitutions, determine that materials and products proposed for substitution comply with RCRA, CERCLA, and EPA requirements.

1.8 BUILDING PRODUCTS USE

- A. It is the responsibility of the Contractor to inform himself concerning the application of the products he uses to follow the directions of the Architect and manufacturer.
- B. In the event of disagreement between the Contract Documents and the manufacturer's directions, the Contractor will obtain written instructions from the Architect before proceeding with the installation.
- C. If the Contractor has knowledge of or reason to believe the likelihood of failure, he will transmit such knowledge to the Architect, and ask for written instructions before proceeding with the work.

1.9 OWNERSHIP OF REMOVED MATERIALS AND EQUIPMENT

- A. All removed existing materials and equipment designated to be removed which are not to remain the property of the Owner or are not noted to be reused in the new work shall become the property of the Contractor and shall be removed from the premises and site and disposed of by him.

1.10 SEPARATE CONTRACTS

- A. The Owner plans to award separate contracts in connection with the project. The work in these separate contracts will proceed simultaneously with the execution of this Contract. The Contractor shall coordinate operations with the separate contractors. The Contractor will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep himself informed of the progress and the detailed work of the separate contractors and shall notify the Architect immediately of the lack of progress or defective workmanship that will interfere with his own operations. Failure of the Contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by the separate contractors shall be construed as acceptance of him of the state of the work as being satisfactory for proper coordination with his own work.
- B. The separate contractors will provide competent foremen or supervisors for the installation of their equipment and they are to confer with the Contractor and his subs and other separate contractors where required in regard to connections and installations.

1.11 DISCRETIONARY FUND

- A. The General Contractor shall include in the base bid an amount equal to **three percent (3%)** of the Base Bid amount which shall constitute a discretionary fund. This fund shall be used at the discretion of the Architect and the Owner. Upon completion of the work, the Contractor shall credit his final request for payment in the amount of all or any unused portion of this fund.
 - 1. Use the discretionary fund only as directed by the Architect for the Owner's purposes and only by Field Orders Construction Change Directive (AIA Document G-714 which indicate amounts to be charged to the allowance.
 - 2. The Contractor's related costs for products and equipment ordered by the Owner under the discretionary fund are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

3. Field Orders Construction Change Directive (AIA Document G-714 authorizing use of funds from the discretionary fund will include Contractor's related costs and reasonable overhead and profit margins.
4. At Project closeout, credit unused amounts remaining in the discretionary fund to the Owner by Change Order.

NOT USED - PART 2 . PRODUCTS

NOT USED – PART 3 . EXECUTION

END OF SECTION

SECTION 01 16 00 . REGULATORY REQUIREMENTS

PART I . GENERAL

1.1 GENERAL

- A.** Where codes and standards are referenced in this and other sections of the specifications or on the drawings, whether or not a particular edition is referenced, it is the intention that these be the latest editions as adopted by the governing agency under whose jurisdiction the project is to be constructed. The latest edition shall be the edition in effect on the date approval is granted for construction to begin.

1.2 CODES

- A.** Work shall conform to the requirements of the latest edition of the International Building Code.
- B.** Work shall conform to the requirements of the latest edition of the Life Safety Code (NFPA 101).
- C.** Plumbing and gas piping work shall conform to the requirements of the Southern Standard Plumbing and Gas Codes, latest revisions.
- D.** Electrical work shall conform to the requirements of the National Electrical Code, NFPA No. 70- latest edition.
- E.** Work shall conform to the requirements of the latest edition of ICC/ANSI A117.1 Standard on Accessible and Usable Buildings and Facilities.
- F.** Work shall conform to the requirements of the latest edition of ADA: Americans with Disabilities Act.

1.3 CODE STANDARDS

- A.** Fire doors shall conform to requirements of NFPA No. 80, Standards for Fire Doors and Windows.
- B.** Heating, ventilating and air conditioning work shall conform to requirements of NFPA NO. 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

1.4 REGULATIONS

- A.** Electrical work shall conform to applicable regulations of the State, Department of Insurance, Division of Fire Prevention and to applicable regulations of the Local Utility Company.
- B.** Work shall be performed in a manner approved by the Occupational Safety and Health Administration. The Contractor shall be responsible for job-site safety and training of workman as required by Occupational Safety and Health Administration.

1.5 MATERIAL AND TESTING STANDARDS

- A.** Components of the work shall conform to requirements of American Society for Testing and Materials (ASTM) Standards, American National Standards Institute (ANSI) standards, and Trade Association Standards, as listed in the various other sections of the specifications.

1.6 MANUFACTURER'S RECOMMENDATIONS

- A.** When work in accordance with manufacturer's recommendations is specified, a copy of those recommendations shall be kept in the job office.

1.7 STORM WATER DISCHARGE PERMIT

- A.** If Construction Operations will disturb the ground, the Contractor must file a "Notice of Intent" for and obtain a National Pollutant Discharge Elimination System Permit from:
1. Stormwater NOI Processing
Division of Water Pollution Control
401 Church Street
Department of Environment and Conservation
Nashville, Tennessee 37243-1534
- B.** Any fines levied because of the Contractor's failure to obtain the necessary permit will be the responsibility of the Contractor.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 25 00 . SUBSTITUTION PROCEDURES

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 GENERAL

- A.** This Section includes administrative and procedural requirements for submittal and approval of substitutions.

1.3 DEFINITIONS

- A.** Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

- A.** Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in the Project Manual.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures. Include any data for operational efficiency and energy consumption for equipment and appliances.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations if requested, for completed projects with project names

and addresses and names and addresses of architects and owners.

- h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 . PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.

- d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience:** Architect will consider requests for substitution if received within 10 days prior to the date of the Bid. Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction if applicable.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

NOT USED - PART 3 EXECUTION

END OF SECTION

SECTION 01 31 00 . PROJECT MANAGEMENT AND COORDINATION:

PART 1 . GENERAL

1.1 COORDINATION OF WORK OF SUBCONTRACTORS

- A. The Contractor shall carefully check the work of his subcontractor in order to deliver to the Owner the contract work complete and properly installed in conformance with the Contract requirements.

1.2 CUTTING AND PATCHING

- A. Cut and patch existing work that is to remain in place as necessary for the installation of new work.
- B. Cutting of new work shall be held to the minimum necessary and shall be done neatly. The Contractor shall be responsible for the proper patching and finishing of all cut work whether or not cut by his own workmen or by subcontractors.
- C. Furr out walls or ceilings where necessary for the new work. Thicken walls as required to accommodate wall-mounted equipment including but not limited to electrical panel boxes, fire extinguisher cabinets, communications, security system, and fire alarm panels. Consult with the Architect about any furr outs not shown on the drawings to keep furr outs to a minimum.

1.3 PROJECT COORDINATION

- A. Large Equipment: When possible, equipment which is to be installed in the building that may be too large to pass through doorways, shafts, or other restrictions shall be brought on the job and placed in the proper location before the enclosing structure is completed, otherwise, arrange with other Contractors to permit access at a later date, at no additional cost to the Owner.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 32 50 . WEATHER DELAYS

PART 1 . GENERAL

1.1 DESCRIPTION

- A. Work Included: Prepare and submit request for extensions of Time based on weather conditions.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not limited to General Conditions, Supplementary General Conditions and Sections in Division 1 of these Specifications.
 - 2. Applications for Payment.

1.2 EXTENSIONS OF CONTRACT TIME

- A. If the basis exists for an extension of Time in accordance with Article 8, Paragraph 8.3 of the General Conditions and Supplementary General Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed in the standard Baseline for that month.

1.3 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

- A. The State of Tennessee has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the State of Tennessee.
- B. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.
- C. Standard Baseline for each month of the year is as follows (the anticipatable delay days follow the month):

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 12 | 11 | 8 | 7 | 7 | 6 | 7 | 5 | 4 | 5 | 6 | 11 |

1.4 ADVERSE WEATHER AND WEATHER DELAY DAYS

- A. Adverse Weather is defined as the occurrence of one or more of the following conditions, substantiated by NOAA data, which prevents exterior construction activity or access to the site within twenty four (24) hours:
 - 1. Precipitation threshold (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure. Snow to liquid measure ration is 10:1.
 - 2. Standing snow is excess of one inch (1.00").
- B. Additional extension of Time may be granted for drying days following periods of two or more consecutive days of precipitation for the following conditions:
 - 1. At a rate of one day extension of Time for each period of two or more consecutive days of precipitation of 1.0 inch or more (liquid measure).
 - 2. Only if there is a hindrance to site access or site work, such as excavation, backfill and footings and the like and then only when no such work is performed.

- C. A Weather Delay Day may be counted only if adverse weather prevents work on the Project for fifty percent (50%) or more of the contractor's scheduled work day, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.5 DOCUMENTATION AND SUBMITTALS

- A. Contractor shall submit on a monthly basis daily job site work logs (daily reports) showing which, and to what extent, construction activities have been adversely affected by weather.
- B. Submit actual weather data, if requested by Architect to support claim for time extension, as obtained from the nearest NOAA weather reporting station to the project site.
- C. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.
- D. Organize claim and documentation to facilitate evaluation of a basis of calendar month periods, and submit in accordance with the procedures for Claims established in Paragraph 4.3 of the General Conditions.
- E. Extensions of Time requested by the Contractor and approved by the Architect on the basis of conditions stated above shall be acknowledged and communicated in writing to the Contractor periodically.
- F. For extensions of Contract Time granted, a modification shall be issued in accordance with the provisions of Article 7 of the General Conditions, and the applicable General requirements. Modifications for extensions of Time may be issued quarterly or held to the end of the Project as appropriate based on Architect's approval of such extensions as noted in E above.
- G. Extensions of Time not requested in a timely manner by the Contractor will not be granted at a later time.

NOT USED - PART 2 . PRODUCTS
NOT USED – PART 3 . EXECUTION
END OF SECTION

SECTION 01 33 00 . SUBMITTALS

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 GENERAL

- A. Work Included:

1. Wherever possible, throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.
2. To ensure that the specified products are furnished and installed in accordance with the design intent, procedures have been established for advance submittal of design data and for its review and approval or rejection by the Architect.
3. Shop drawings, product data and samples will be required for items listed hereinafter in the various sections of the specifications. The Architect reserves the right to request samples of proposed substitutions for materials or equipment specified, whether or not samples of the materials and equipment specified are called for.

1.3 DESCRIPTION OF REQUIREMENTS

- A. The types of submittals controlled by these General Requirements include shop drawings, product data, samples and miscellaneous work-related submittals. The individual submittal requirements are specified in applicable section for each unit of Work.
- B. Definitions: the work-related submittals of this section, in addition to the definitions of the General Conditions and elsewhere in the Contract Documents for the requirements of administrative submittals.
 1. **Shop drawings** include custom-prepared data of all forms including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements, and similar information not in standard printed form applicable to other projects.
 2. **Product data** includes standard printed information on materials, products and systems, not custom-prepared for this project, other than the designation of selections from available choices.
 3. **Samples** include both fabricated and unfabricated physical samples of materials, products and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.
 4. **Miscellaneous submittals** related directly to the Work (non-administrative) include warranties, guarantees, maintenance agreements, workmanship bonds, quality testing and certifying reports, copies of industry standards, record drawings, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work and not defined as shop drawings, product data or samples.

1.4 GENERAL SUBMITTAL REQUIREMENTS

- A. Coordination and Sequencing: Coordinate the preparation and processing of submittals with the performance of the Work so that Work will not be delayed by submittals. Coordinate and

sequence different categories of submittals for the same Work, and for interfacing units of Work, so that one will not be delayed for coordination with another. Do not proceed with purchasing, fabrication and delivery of work related to a submittal until submittal procedure has been successfully completed.

- B. Preparation of Submittals: provide permanent marking on each submittal to identify it by project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Show Contractor's approval marking prior to Architect's design intent review. Package each submittal appropriately for transmittal and handling. Submittals which are received directly from sources other than through the Contractor's office will be returned "without action".
- C. The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's approval of submittals unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for error or omissions in the submittals by the Architect's approval thereof.
- D. Verbal discussion between the Contractor and the Owner or the Architect of a proposed deviation and any subsequent agreements thereto shall not be considered valid unless confirmed in writing by the Owner or the Architect.
- E. The Contractor shall direct specific attention, in writing or on resubmitted submittals, to revisions other than those requested by the Architect on previous submittals.
- F. Delivery: All submittals shall be accompanied by a letter of transmittal containing an enumeration and description of the submittals and, unless otherwise specified, shall be delivered to the Architect. **The transmittal letter shall indicate whether the submittal is for a product as specified; is a pre-approved substitution; or is a request for substitution offered with supporting documentation in accordance with the Contract Documents.**

Unless directed otherwise, all submittals shall be delivered to:

Jacene L. England, AIA
Perspective Architecture
8414 Richland Colony Rd
Knoxville, TN 37923

1.5 SCHEDULE OF VALUES

- A. The schedule of values specified in Subparagraph 9.2.1 of the General Conditions shall be divided into not less than one line item for each section of the specifications (except Division 1 sections). Coordinate line items in the schedule of values with portions of the contract documents which identify units or subdivisions of work. Specifically, correlate with the project manual table of contents. Divide major subcontracts into individual cost items. Where applications for payment are likely to include products purchased or fabricated but not yet installed, provide individual line items for material cost, installation cost, and other applicable phases of completion. Submit Schedule of Values within 20 days after execution of the Contract.

1.6 APPLICATIONS FOR PAYMENTS

- A. Applications for payments shall be submitted on AIA Document G702, Application and Certificate for Payment, supported by AIA Document G702A, continuation sheet, and by separate lists of materials stored at the site and materials stored off the site. Three (3) original notarized copies of Applications for Payment shall be submitted.

1.7 CONTRACTORS PROGRESS SCHEDULE

- A. Prepare a fully developed, horizontal bar-chart type, contractor's progress schedule. Submit within twenty (20) days after the date established for Commencement of the Work.
- B. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated in the Schedule of Values.
- C. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
- D. Prepare the schedule on a sheet or series of sheets , of paper of sufficient width to show data for the entire construction period.
- E. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
- F. Coordinate the Contractor's Progress Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
- G. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
- H. Revise the schedule monthly. Issue the updated schedule concurrently with the Application and Certification for Payment.

1.8 SHOP DRAWINGS

- A. General: See Paragraph 3.12 of the General Conditions for provisions pertaining to shop drawings.
- B. Preparation of Shop Drawings: Submit newly prepared information drawn accurately to scale. **Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings.** Standard information prepared without specific reference to the Project is not a Shop Drawing. **Provide a space approximately 4 inches by 5 inches on the label or beside the title block on Shop Drawings to record the Architect's approval markings and recording action taken. Do not allow shop drawing copies without appropriate final review markings by the Architect or Engineer to be used in connection with the Work.**
- C. Identification: All submittals shall be clearly identified with the **name of the project, the supplier's name, the Contractor's name, and the location of material or equipment in the building. All shop drawings shall be dated and numbered.**
- D. Contractor's Review: Shop drawings submitted without evidence that they have been reviewed by the Contractor, as specified in Paragraph 3.12 of the General Conditions, or without proper identification as specified herein, will be returned to the Contractor without action by the Architect and shall be properly resubmitted. **When the phrase "by others" appears on a shop drawing, the Contractor shall indicate on the shop drawing who is to furnish the material or operation so noted, before submitting the drawing. By approving and submitting**

submittals, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

- E. Coordination of Submittals:** Prior to submittal for Owner's review, use all means necessary to fully coordinate all material, including, but not limited to, the following procedures:
1. Determine and verify all field dimensions and conditions, catalog numbers, and similar data.
 2. Coordinate as required with all Trades and with all public agencies involved.
 3. Secure all necessary approval from public agencies and others; signify by stamp or other means that all require approvals have been obtained.
 4. Clearly indicate, in writing, all deviations from the Contract Documents.
 5. Additional copies of approved shop drawings shall be furnished as required for coordination of the work of the various trades.
- F. Number of Shop Drawings Required:** Unless otherwise specifically directed by the Owner, make all Shop Drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.
1. Four (4) prints shall be submitted of each shop drawing. After the shop drawings has been reviewed and approved, one print will be filed at the office of the Owner, one print will be filed at the office of the appropriate consultant or engineer (if applicable) and two (2) prints will returned to the Contractor, from which he shall make as many copies as he feels is needed for the prosecution of the Work. The Owner will not furnish additional copies to the Contractor.
- G. Review of Submittals:** The Owner shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Owner's review shall be conducted with reasonable promptness while allowing sufficient time in the Owner's to permit adequate review. Review of a specific item shall not indicate that the Owner has reviewed the entire assembly of which the item is a component. The Owner shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Owner in writing by the Contractor. The Owner shall not be required to review partial submissions or those for which submissions of correlated items have not been received.
- H. Time Required for Review:** Shop drawings shall be submitted in time to allow **not less than two weeks for processing by the Owner, plus an additional week for any Submittals requiring an Consultant/Engineer's review.**

1.9 PRODUCT DATA

- A. General:** See Paragraph 3.12 of the General Conditions for provisions pertaining to shop drawings.
- B. Collect the required data into one submittal for each material, product or system; and mark each copy to show which choices and options are applicable to the project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and**

special coordination requirements. Maintain one set of product data (for project site, available for reference by the Architect, Engineer or others).

- C. Information not exclusively pertinent to the Project shall be deleted so that there is no possible area of confusion as to what product, series or model is to be examined. The Architect or Owner will not take responsibility for having examined a product that was not intended by the Contractor to be judged.

1.10 SAMPLES AND MOCKUPS

- A. Samples and mockups shall faithfully represent the product or the assembly as it is proposed to be installed. This shall include, but not be limited to, materials, finishes, method of construction or assembly, relationship to adjacent construction, method of attachment to adjacent construction, plus any electrical or mechanical connection that are required for the product or assembly to function. Include "range" samples (not less than 3 units) where variations occur, and identify each unit of each set.
- B. All samples shall have a label or tab containing the required information firmly affixed thereto.
- C. Unless the precise color and pattern is specifically described in the Contract Documents, whenever a choice of color or pattern is available in specified product submit accurate color charts and pattern charts to the Architect for his review and selection. Provide full sets of optional samples where Architect's selection is required. Prepare samples to match the Architect's sample where so indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.
- D. Samples and color charts shall be physical specimens of materials or colors proposed to be provided. Selections and approval of samples will be made by the Architect from these submitted samples and color charts, without increase in costs to the Owner or Architects. Should be Contractor desire a sample returned, he shall submit a sufficient number in order for the Architect to retain one (1) sample and return the remainder to the Contractor.
- E. In order for the Owner to make a color schedule as quickly as possible and to avoid delivery and pricing problems, the Contractor shall be required to submit all items that require a color selection within 40 days of the Notice to Proceed. Delivery and pricing problems that develop because an item was not submitted within the forty (40) day time limit, shall be the sole responsibility of the Contractor and not that of the Owner.
- F. The color selection on any one item will not be made until after samples of all items that require a color selection have been submitted.

1.11 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.
- B. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's
- C. Prepare the schedule in chronological order. Provide the following information for each submittal.
 1. Scheduled date for the first submittal.
 2. Related Section Number

3. Submittal category (Shop Drawing, Product Data, or Sample)
 4. Name of the subcontractor
 5. Description of the part of the Work covered
 6. Scheduled date for Architect's final release or approval.
- D. Following approval of initial submittal, print and distribute copies to the Architect, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
- E. Revise the schedule monthly and issue the updated schedule concurrently with each Application and Certificate for Payment.

1.12 SUBMITTAL SEQUENCE

- A. The right is reserved by the Architect to examine submittals and samples in a proper sequence that reflects the logical sequence of erection, installations, and proper assembly. Submittals of products or materials that are the responsibility of separate Trades yet must be assembled in conjunction one with another, shall be submitted at the same time so that they may be examined all together. Should these not be submitted simultaneously, the Architect reserves the right to hold one set while awaiting the arrival of other submittals.
- B. All submittals within the responsibility of one Trade must be submitted at one time together (i.e. millwork). Numerous submittals of one product or item of construction over a period of time is not acceptable. In the event of this occurrence, the Architect will hold the submittal data arriving first until the last of the material has arrived. Then, and only then, will he make his examination.

1.13 TIMING OF SUBMITTALS

- A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittals, and for placing orders and securing delivery.
- B. Costs of delays occasioned by tardiness of submittals may be back-charged as necessary and shall not be borne by the Owner.

1.14 RECORD DRAWINGS

- A. In addition to the record drawings specified in Paragraph 3.11 of the General Conditions, the Contractor shall assure that the record drawings for the mechanical and electrical work are properly maintained by his subcontractor and upon completion of the work shall deliver them to the Architect for the Owner.

1.15 CONTRACT CLOSE-OUT SUBMITTALS

- A. As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, including the Release of Retainage, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the Architect, in the form and number of copies specified, prior to or with the Contractor's request for final payment. Submittals shall include but not be limited to:
1. General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, to final payment **as well as release of lien statements from all subcontractors and major material suppliers** as specified in Subparagraph 9.10.2 of the General Conditions. **These documents shall be addressed to the Owner, and shall be original signed documents and not reproduced copies. Two (2) sets of these drawings shall be submitted.**

2. Written guarantees and warranties as specified in the various other sections of the specifications.
3. Record drawings as specified in the General Conditions and in Divisions 15 and 16.
4. One copy of each final approved shop drawing submitted during the course of the project.
5. Letter stating that to the best of the Contractor's knowledge, no asbestos containing materials or other Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended
6. Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project. Two (2) sets of these documents shall be submitted.

END OF SECTION

SECTION 01 35 00 . SPECIAL PROJECT PROCEDURES:

PART 1 . GENERAL

1.1 PROGRESS SCHEDULE

- A.** In addition to the progress schedule required by Paragraph 3.10 of the General Conditions, the Contractor shall also submit his proposed scheme of work for approval, describing proposed methods and sequences of work from beginning to completion of the work and their correlation with the Owner's requirements.
- B.** When the Contractor's proposed sequence of work has been approved by the Owner, it shall become the time schedule for the work and shall be adhered to as closely as possible by both the Contractor and the Owner, except that mutually agreeable modifications may be made from time to time to meet unforeseen circumstances.

1.2 TIME OF PERFORMING WORK

- A.** Generally, the Contractor will be permitted to conduct his work in the building and on the premises during his regular working hours.

1.3 OBSTRUCTIONS

- A.** All obstructions encountered during the construction of the Contract work shall be overcome by the Contractor by removal or alteration of work in place, by adjustments in the new work, or by temporary removal and reinstallation of existing work.

1.4 CLEANING UP

- A.** Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- B.** Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- C.** Exposed Surfaces in Finished Areas: Clean exposed surfaces
- D.** Upon completion of the work, remove spots, stains, dirt, and dust from finished surfaces, both new and existing, including the surfaces of all existing machinery, equipment, and exposed piping that have been soiled by the construction. Protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- E.** Comply with all special cleaning instructions contained in the various other sections of the specifications.
- F.** Protect new and existing surfaces from the growth and spread of mold and mildew. If mold and mildew occur, notify Architect prior to proceeding. Retain qualified testing agency to document and direct remediation. Remediate or replace surfaces to stop the growth and spread of mold and mildew as deemed necessary by a qualified testing agency acceptable to the Contractor, Owner and Architect.
 - 1. Pay for necessary testing and perform all abatement work required to remedy condition.

1.5 INSPECTION OF WORK IN PLACE

- A.** The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities. The architect is to be given advanced notification for inspection of Mechanical, Plumbing, and Electrical work prior to said work being covered.

- B. Contractor shall give architect advanced notification for final inspection punch list prior to Owner taking ownership.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 50 00 . CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 . GENERAL

1.1 UTILITIES SERVICES FOR CONSTRUCTION PURPOSES

- A.** The Contractor shall provide all necessary temporary utilities as required for construction purposes. The utility costs will be paid by the Contractor.
- B.** The Contractor shall furnish and install all temporary piping and wiring required for the use of these services during construction and upon completion of the work shall remove such temporary piping and wiring.
- C.** The use of existing services shall be in such a manner and by such methods that will not interrupt the services to any of the Owner's facilities that are to remain in operation during construction.

1.2 BARRICADES AND SPECIAL CONTROLS

- A.** Provide temporary barriers, fences, and warning signs around the sites of new buildings to control access of unauthorized persons to work areas, and as required by law. Special care shall be taken to provide adequate barriers and warning signs to prevent access of unauthorized persons to work areas where hazardous work is being performed.
- B.** Provide temporary barriers and warning signs at excavations that might be left open during nonworking hours, including warning lights at night.

1.3 CONSTRUCTION AIDS

- A.** Provide necessary staging, scaffolding, and hoisting equipment and temporary walkways and ladders required for installation of the work under the Contract.

1.4 TEMPORARY BUILDINGS

- A.** Provide temporary field office and storage sheds as required to carry on the work. Adequate space shall be provided in the field office for convenient use and storage of Contract Drawings and Specifications, approved shop drawings, samples, and field records. Truck trailers may be used for temporary field office and storage enclosures.
- B.** Upon completion of the work, all temporary buildings shall be removed and the area of the site that they occupied shall be restored to its condition at the commencement of work under the Contract.

1.5 SANITARY FACILITIES

- A.** Provide adequate temporary toilet facilities for the use of workmen, conforming to applicable laws, ordinances, and governmental regulations.
- B.** Upon completion of the work, temporary toilet facilities shall be removed from the site.

1.6 TEMPORARY ENCLOSURES

- A.** Provide temporary weathertight closures for all exterior openings after walls and roof of the new building are constructed when it is necessary to protect the work from the weather and to permit the use of temporary heat. Provide weathertight and security protection of the existing building until what time as the new construction is able to provide weathertightness and security. Provide safety barriers as required to protect the occupants of the building.

- B. Water Protection: Provide at all items for protection of excavation, trenches, and building from damage by rain water, spring water, ground water, backing up of drains or sewers, and all other water. Provide all pumps, equipment, temporary drains or dams, and enclosures necessary to provide this protection.

1.7 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation as necessary for protection and drying out of the work and to allow work to be prosecuted in cold weather.
- B. Heat shall be provided by means of approved temporary heating equipment which in installation and operation will not damage the work. Provide adequate and proper fuels and all services required to furnish heat as required. Salamanders shall not be used inside the building. Heaters used to dry out or protect freshly placed concrete shall be of a type and shall be so ventilated as to prevent carbon dioxide from damaging concrete.
 1. After the construction of the building has reached a point where the permanent heating and cooling systems are operable, the Contractor may use the permanent heating and cooling equipment for temporary heating and cooling. The heating and cooling systems shall not be used for temporary heat and cooling until the building is broom clean and shall not be used without all filters in place. Upon the completion of the work, all ducts and equipment shall be internally cleaned and all filters shall be replaced with new filters.
 2. Contractor shall pay the hourly rate of the Engineer's and Testing and Balancing Agent's technical personnel to observe and document the condition of equipment and ductwork (30 minutes average per unit) used for construction term temporary heating and cooling. Engineers inspection of heat transfer coils must be complete prior to start-up, test and balance, and final acceptance. All warranties shall begin upon final acceptance by the Owner, not beneficial usage by the Contractor.
- C. Costs of providing temporary heat shall be borne by the Contractor.

1.8 BULLETIN BOARD

- A. On or near the field office, the Contractor shall install a bulletin board upon which to post legally required notices. The bulletin board shall be of adequate size to contain all required notices and be so constructed as to protect the postings from obliteration by the weather.

1.9 RODENT AND VERMIN CONTROL

- A. Provide on the project site ample and suitable refuse containers with covers. The Contractor shall be responsible for containing and removing from the site all refuse from meals eaten on the site and other rodent or vermin attracting refuse.
- B. During the construction period precaution shall be taken as necessary to control the entry and breeding of rodents and vermin in the new building.

1.10 REMOVAL OF CONSTRUCTION DEBRIS

- A. Provide suitable containers for and maintain a regular schedule for the removal of debris and rubbish from the construction site and surrounding area.
- B. Pay all container rental fees, hauling, and landfill costs associated with the removal of debris and rubbish from the site.

1.11 PROTECTION

- A. Weather Protection: Provide at all times protection against rain, wind, storms, frost, or heat so as to maintain all work, materials, equipment and fixtures free from injury or damage. At end of days work, all new work likely to be damaged by weather conditions shall be covered.
- B. Water Protection: Provide at all times protection of excavation, trenches, and building from damage by rain water, spring water, ground water, backing up of drains or sewers, and all other water. Provide all pumps, equipment, temporary drains or dams, and enclosures necessary to provide this protection.

1.12 TELEPHONE

- A. Install a single party telephone or a cellular phone and a facsimile machine or computer capable of sending and receiving email in the field office. The telephone shall be available for use by all persons concerned with the construction of the project and service shall be maintained from start to completion of the work. The cost of the telephone service shall be paid by the Contractor.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 60 00 . PRODUCT REQUIREMENTS:

PART 1 . GENERAL

1.1 STORAGE OF MATERIALS AND EQUIPMENT

- A. Storage of materials and equipment, location of field office, space for truck deliveries and parking of workmen's cars shall be restricted to areas of the site mutually agreed upon by the Contractor and the Owner prior to commencement of construction.
- B. Storage of materials and equipment and truck deliveries shall not interfere with normal pedestrian and vehicular traffic.
- C. Upon completion of the work, all damage to existing ground cover, paving, site improvements, or existing structures resulting from the storage of materials and equipment, construction vehicular traffic, or other construction operations under the Contract shall be repaired by the Contractor to its condition at commencement of work under the Contract.

1.2 PROTECTION OF MATERIALS AND EQUIPMENT

- A. Material and equipment stored on the site that are to be incorporated in the work shall be adequately protected from damage by the weather or by construction operations.
- B. Materials subject to damage by water shall be blocked off the ground and protected with waterproof coverings, stored in weathertight floored sheds or in the building after it is enclosed.
- C. Material that is subject to damage by soiling or by exposure shall be stored as to prevent physical damage to the materials and equipment.
- D. Materials and equipment shall be so transported, handled, and stored as to prevent physical damage to the materials and equipment.

1.3 SUBSTITUTIONS

- A. All materials and equipment incorporated in the work shall be new and as specified, except such substitutions that are approved as provided by the provisions for substitutions set forth in the Supplementary Conditions.
- B. Where substitutions are implemented, the Contractor shall be responsible for insuring that:
 - 1. The proposed substitution does not affect dimensions shown on Drawings.
 - 2. He will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
 - 3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
 - 4. Maintenance and service parts will be locally available for the proposed substitution.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 . EXECUTION

END OF SECTION

SECTION 01 74 10 – CLEANING

PART 1 . GENERAL

1.01 DESCRIPTION

- A.** Work Included: Throughout the construction period, maintain the roof buildings and site in a standard of cleanliness as described in this section.
- B.** Related Work Described Elsewhere: In addition to standards described in this section, comply with all requirements for cleaning up as described in various other sections of these specifications.

1.02 QUALITY ASSURANCE

- A.** Inspection: Conduct inspection daily, and more often if necessary, to verify that requirements for cleanliness are being met.

PART 2 . PRODUCTS

1.03 CLEANING MATERIALS AND EQUIPMENT

- A.** Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

1.04 COMPATIBILITY

- A.** Use only cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the A/E.

PART 3 . EXECUTION

1.05 PROGRESS CLEANING

A. General:

1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for the construction of this work.
3. At least once a day and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the ecology.

B. Site:

1. Daily and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restock, tidy, or otherwise service all arrangements to meet the requirements of 3.01.A.I, above.
3. Maintain the site in a neat and orderly condition at all times. Use a magnet to remove small metal objects such as nails, fasteners, etc.

C. Structures:

1. The Contractor will be responsible for maintaining the existing level of cleanliness on any interior areas used by subcontractors or employees.

END OF SECTION

SECTION 01 77 00 . CONTRACT CLOSEOUT:

PART 1 . GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Owner's Operating Instruction Session.
- C. Adjusting.
- D. Operation and Maintenance Data.
- E. Project record documents.
- F. Warranties

1.2 RELATED DOCUMENTS

- A. Applicable provisions of the General Conditions, Supplementary Conditions and Division 1, General Requirements, apply to the work under this section.

1.3 SUBSTANTIAL COMPLETION

- A. Notify the owner not less than twenty-one (21) days prior to the date of substantial completion to allow scheduling of occupancy.
- B. Submit written certification to Architect that Project, or designated portion of Project, is substantially complete. Include a list of items to be completed or corrected as a result of his inspection of the work.
- C. Submit the Certificate of Occupancy issued by the local building authority to the Architect for forwarding to the Owner.
- D. The Architect will make an inspection within seven (7) days after receipt of certification, together with Owner's Representative.
- E. Should the Architect consider the work substantially complete:
 - 1. The Contractor shall prepare, and submit to the Architect, a list of items to be completed or corrected, as determined by the Architect's inspection.
 - 2. The Architect will prepare and issue a certificate of substantial completion, AIA document G704, complete with signatures of Owner, Contractor, and Architect, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
 - 3. The Owner will occupy the project, under provisions stated in certificate of substantial completion.
 - 4. The Contractor will complete work listed for completion or correction, within the designated time.
 - 5. Refer to Supplementary Conditions Article 9.10.6 for failure to complete in a timely manner.
- F. Should the Architect consider that the Work is not Substantially Complete:
 - 1. He shall immediately notify Contractor, in writing stating reasons.
 - 2. The Contractor shall complete the Work, and send second written notice to the Architect, certifying that the project or designated portion of project, is substantially complete.

3. The Architect will reinspect the work at the Contractor's expense.

1.4 OWNER'S OPERATING INSTRUCTION SESSION

- A.** Conduct training session for Owner's designated personnel covering operating features for familiarization with the equipment and operation. The minimum areas of instruction shall be:
 1. Roof maintenance/warranty considerations. Traffic cautions.
 2. Notification procedures for Contractor warranty work.

1.5 CLOSEOUT PROCEDURES AT FINAL COMPLETION

- A.** As a precedent to final acceptance of the work and issuance of Certificate of Final Payment, including the Release of Retainage, certain submittals shall be made as specified in the various sections of the specifications. All such submittals shall be delivered to the Architect, in the form and number of copies specified, prior to or with the Contractor's request for final payment. Submittals shall include but not be limited to:
 1. General Contractor's Affidavit, Waiver and Release of Lien Statements and Consent of Surety, to final payment as well as release of lien statements from all subcontractors and major material suppliers as specified in Subparagraph 9.10.2 of the General Conditions. These documents shall be addressed to the Owner, and shall be original signed documents and not reproduced copies. Two (2) sets of these drawings shall be submitted.
 2. Written guarantees and warranties as specified in the various other sections of the specifications.
 3. Record drawings as specified in the General Conditions and in Divisions 15 and 16.
 4. One copy of each final approved shop drawing submitted during the course of the project.
 5. Three copies of operation and maintenance data for mechanical equipment and electrical equipment.
 6. Letter stating that to the best of the Contractor's knowledge, no asbestos containing materials or other Work hazardous materials or products as currently defined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), or Environmental Protection Agency (EPA) regulations, rules, or requirements, as amended
 7. Contract Close-Out Submittals, except for record drawings, shall be submitted in commercial quality three ring binders with durable plastic covers. Identify the project on the face and side of the binders. Provide a cover sheet giving complete Project Title, Contractor's and Architect's name, address, phone number, name of project superintendent, and related general information. Include a Table of Contents to identify material in the Project Data Binders and a complete listing of subcontractors and material suppliers. Provide copies of all Certificates, Warranties and related documents as well as Product Data, Maintenance and Operation Data and related information required by the Contract Documents or furnished with items included in the Project. Two (2) sets of these documents shall be submitted.
- B.** Submit written certification that the Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for final inspection by Owner and Architect.
- C.** Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.6 WARRANTIES

- A.** Provide notarized copies.

- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binders with durable plastic covers. Note: This is in addition to copies of warranties provided with operation and maintenance binders.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as warranty period.

1.7 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

NOT USED - PART 2 . PRODUCTS

NOT USED - PART 3 .EXECUTION

END OF SECTION

SECTION 07 52 00 . MODIFIED BITUMEN ROOFING SYSTEM

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 SUMMARY

- A.** Furnish and install an SBS FR Class A, mineral surface modified bitumen roofing system, including but not limited to; preparation of the roof deck, installation of roofing insulation, installation of a new membrane system, flashing, sheet metal, expansion joints, counter flashing and other related items.

1.3 SUBMITTALS

- A.** Submit manufacturer's product and application data on products specified.
- B.** Product test reports.
- C.** Manufacturer's 20-year warranty.

1.4 QUALITY ASSURANCE

- A.** Engage an experienced installer who has completed roofing applications similar in material, design, and extent to that indicated for the project that have resulted in construction with a record of successful in-service performance.
- B.** Entire system shall be provided by a single manufacturer.
- C.** Materials and/or equipment containing asbestos are prohibited.
- D.** Standards:
 - 1. ASTM C1330-02 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants
 - 2. ASTM D1622-98 Standard Test Method for Apparent Density of Rigid Cellular Plastics
 - 3. ASTM D1621-00 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
 - 4. ASTM D2126-99 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging

1.5 ENVIRONMENTAL CONDITIONS

- A.** Sequencing and Scheduling: Coordinate the modified bitumen roofing and flashing with other work to ensure secure anchorage and watertight seals of connecting work.
- B.** Environmental Requirements: Do not apply modified bitumen roofing and flashing materials to wet surfaces. Apply materials when ambient temperature is above 20 degrees F. When temperatures are below 45° F, consult cold weather application installation criteria.
- C.** Protection: Take necessary precautions against fire and other hazards during delivery, storage and installation of flammable adhesives, solvents and other materials specified herein. Comply with local ordinances and fire regulations in the Installation of materials specified under this

section.

1.6 DELIVERY AND STORAGE

- A.** Deliver materials in manufacturer's unopened containers fully identified to show name, brand, type, grade, and thickness.
- B.** Store, protect and keep materials dry and out of direct sunlight. Determine manufacturer's recommended maximum storage and use temperature and protect materials against temperatures exceeding that limit

PART 2 . PRODUCTS

2.1 ROOFING INSULATION

- A.** Base layer insulation; rigid boards, minimum density 2 lbs/cu.ft. Complying with ASTM C-1289, Type II, Class I, Grade 2, ASTM C-1330 and ASTM D-1621, polyisocyanurate with fiberglass perforated facer sheet, 20-psi compressive strength complying with ASTM D1 621. Dimensional stability shall comply with ASTM D-2126-87. Provide 2.5" x 48" x 96" size.
 - 1. EnergyGuard™ ISO by GAF.
 - 2. Energy 3 polyisocyanurate by Johns Manville, Inc.
 - 3. ISO 95 + GL as manufactured by Firestone.
- B.** Tapered insulation for saddles; sloped 1/2 "/ft, tapered perlite panels.
 - 1. BMCATm Permalite Tapered Roof System by GAF
 - 2. Tapered Fesco Board by Johns Manville Inc.
 - 3. Approved insulation as listed and approved by Firestone

2.2 ROOFING MEMBRANE

- A.** Provide a fire-rated, white mineral surfaced modified bitumen cap sheet membrane.
 - 1. RUBEROID TORCH GRANULE FR by GAF,
 - 2. DYNALASTIC 180 FR by Johns Manville, Inc.
 - 3. SBS Premium FR CAP by Firestone.
- B.** Fiberglass felts conforming to ASTM D-2178 type VI, continuous strand fiberglass mat 60 lb/inch minimum average tensile strength in both machine and cross machine directions.
 - 1. Approved fiberglass base sheet:
 - a. GAFGLAS #75 Base Sheet by GAF
 - b. GlasBase by Johns Manville
 - c. MB Base by Firestone
 - 2. Approved fiberglass two ply base sheet:
 - a. GlasPly Premier by Johns Manville, Inc.
 - b. GAFGLAS PLY 6 by GAF.
 - c. Ply VI (6) M as manufactured by Firestone.
- C.** Asphalt Primer: Conforming to ASTM D-41

- D. Flashing membrane: Smooth surface or mineral surfaced SBS, modified bitumen as manufactured by the membrane manufacturer to be installed.
- E. Interply Bitumen; Type III roofing and asphalt conforming to ASTM D 312.

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners: Gripdek plates and screws as manufactured by ITW Builder Corporation or equal as approved by roof system manufacturer. Provide fastener length sufficient to anchor base layer of insulation and penetrate through the deck 3/4" minimum to achieve a FM 1-60 classification. Provide FM 1-90 with-in 100 miles of the coast or where required by local code. Fasteners shall be factory Mutual listed and approved for use with the insulation used.
- B. Copings, gutters, downspouts, scuppers, etc. as indicated on drawings.
- C. Sealant: As provided by membrane manufacturer.
- D. Termination bars: 0.040 mil finished aluminum with 3 1/2" vertical drop and 1/2" top caulk receiver. Fasten 12" o.c.
- E. Sump pans: Recessed 20 ga. Metal.
- F. Drain and Stack vents: Provide one of the following:
 - 1 4 lb. Desilverized pig lead flashing.
 - 2. Portals plus "Alumi-Flash" XT with C-126 caps.
 - 3. Portals Plus "Pipe Portal System" with RC-4A ABS cover and C-126 cap.
- G. Single Pipe Penetrations (Natural gas and electric): Provide one of the following:
 - 1 Portals plus "Alumi-Flash" XT with EPDM cap sized to fit pipe.
 - 2. Portals Plus "Pipe Portal System" with ABS cover and EPDM cap sized to fit pipe.
 - 3. Pate Pipe Curb with ABS cover #pcc-2 and PVC cap sized to fit pipe.
- H. Condensate Drains (where internal piping is required): Provide Portals plus Alumni-Flash with C-1 26 cap or Pate Pipe Seal #pps-3 with spun aluminum base. Plastic cement: Conform to FS SS-C-153C or ASTM D-4586 type II
- I. Traffic Pads: Provide 3/8" thick DynaTred Plus Roof walkway or approved equal as supplied by the manufacturer of the membrane being installed. Color to contrast with roof surface. See roof plan for areas of walkway.

PART 3 . EXECUTION

3.1 INSPECTION

- A. Examine the substrates and adjoining construction, and the conditions under which the work is to be installed. Do not proceed with the work until unsatisfactory conditions detrimental to the proper and timely completion of the work have been corrected.

3.2 INSTALLATION OF THE INSULATION

- A. Mechanically attach first layer of any multi-layered insulation in compliance with FM Class I construction and 1-90 Windstorm Classification. Install base layer with long dimension of board perpendicular to metal deck flutes. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof, apply no more insulation than can be covered with membrane in same day.

- B. Install the High density fiberboard or perlite board in 30 lb. Of hot asphalt adhesive full adhesion of the board. Install board with long dimension perpendicular to the long direction of base layer and parallel to the deck flutes. Offset insulation joints 6" minimum between top and bottom layers.

3.3 INSTALLATION OF THE MEMBRANE

- A. Install the Two interply base sheet underlayment of fiberglass felt (Type VI) in 25 lbs. of hot asphalt per 100 square feet of roof area. Lap fiberglass base sheets 19" in such a manner that a two ply configuration is attained over all roof areas.
- B. Apply modified bitumen membrane only over all areas of base ply in strict accordance with manufacturer's requirements. In hot climates use type IV asphalt for John Manville and Firestone's SBS systems, otherwise use type III.
- C. Apply and secure walkway pads in strict compliance with manufacturers recommendations as shown on the drawings. Walkway membrane shall have granules colored different from the field membrane for identification.
- D. Terminate the flashings of all roof curb corners with transition flashing or cover with three courses of roofing cement and fabric reinforcement. All exposed roofing cement shall be protected with granules.

3.4 FLASHING

- A. Coordinate the installation of flashing materials and roof accessories so as to provide a complete watertight system complying with the combined recommendations of manufacturers and installers involved in the work. Fasten termination bar 1 2" o.c.
- B. Extend flashings as shown to provide a complete membrane over the area indicated to be flashed. Seal to all projections through the sheet and seal all seams. Bond vertical and horizontal surfaces.

3.5 CLEANING

- A. Repair or replace defaced or disfigured finishes caused by work of this section.

3.6 PROTECTION

- A. Protect building surfaces against damage from roofing work. Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

SECTION 07 52 00 . MODIFIED BITUMEN ROOFING SYSTEM

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 SUMMARY

- A.** Furnish and install an SBS FR Class A mineral surface modified bitumen roofing system, including but not limited to; preparation of the roof deck, installation of roofing insulation, installation of new cover board, installation of a new membrane system, flashing, sheet metal, expansion joints, counter flashing and other related items.

1.3 SUBMITTALS

- A.** Submit manufacturer's product and application data on products specified.
- B.** Product test reports.
- C.** Manufacturer's 20-year warranty, no dollar limit.
- D.** Submit samples of roof membrane.
- E.** Submit manufacturer's shop drawing for tapered insulation. Shop drawing shall show complete layout of the tapered insulation system including outline of roof, locations of drains, scuppers, gutters, downspouts, profile of tapered insulation components, indications of minimum and maximum insulation thicknesses and the average "R" value of the completed insulation system.
- F.** Submit letter from the tapered insulation manufacturer that the roofing system to be installed is approved by the tapered insulation manufacturer for use with the roofing system.

1.4 QUALITY ASSURANCE

- A.** Engage an experienced installer who has completed roofing applications similar in material, design, and extent to that indicated for the project that have resulted in construction with a record 5 years of successful in-service performance.
- B.** Entire system shall be provided by a single manufacturer.
- C.** System supplier must have ISO 9002 certification.
- D.** Materials and/or equipment containing asbestos are prohibited.
- E.** Standards:
 - 1. ASTM C1330-02 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants
 - 2. ASTM D1622-98 Standard Test Method for Apparent Density of Rigid Cellular Plastics
 - 3. ASTM D1621-00 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
 - 4. ASTM D2126-99 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging

5. International Building Code and ASCE-7 for wind design
6. ANSI/SPRI ES-1 for all edge securement system installation
7. Underwriters Laboratories, Inc. (UL): Class A Fire Hazard Classification

1.5 ENVIRONMENTAL CONDITIONS

- A.** Sequencing and Scheduling: Coordinate the modified bitumen roofing and flashing with other work to ensure secure anchorage and watertight seals of connecting work.
- B.** Environmental Requirements: Do not apply modified bitumen roofing and flashing materials to damp or wet surfaces. Apply materials when ambient temperature is above 20 degrees F. When temperatures are below 45° F, consult cold weather application installation criteria.
- C.** Protection: Take necessary precautions against fire and other hazards during delivery, storage and installation of flammable adhesives, solvents and other materials specified herein. Comply with local ordinances and fire regulations in the Installation of materials specified under this section.

1.6 DELIVERY AND STORAGE

- A.** Deliver materials in manufacturer's unopened containers fully identified to show name, brand, type, grade, and thickness.
- B.** Store, protect and keep materials dry and out of direct sunlight. Determine manufacturer's recommended maximum storage and use temperature and protect materials against temperatures exceeding that limit

PART 2 . PRODUCTS

2.1 ROOFING INSULATION

- A.** Base layer insulation; rigid boards, minimum density 2 lbs/cu.ft. Complying with ASTM C-1289, Type II, Class I, Grade 2, ASTM C-1330 and ASTM D-1621, polyisocyanurate with fiberglass perforated facer sheet, 20-psi compressive strength complying with ASTM D1 621. Dimensional stability shall comply with ASTM D-2126-87. Provide 2.5" x 48" x 96" size.
 1. EnergyGuard™ Polyiso by GAF.
 2. Energy 3 polyisocyanurate by Johns Manville, Inc.
 3. ISO 95 + polyisocyanurate insulation as manufactured by Firestone.
- B.** Tapered insulation for saddles; sloped 1/4 "/ft, tapered perlite panels.
 1. EnergyGuard™ Tapered Polyiso by GAF
 2. Tapered Energy 3 Board by Johns Manville Inc.
 3. Tapered ISO 95 + polyisocyanurate insulation as manufactured by Firestone.
- C.** Insulation Adhesive
 1. Base, Intermediate and Top Layers: Two part polyurethane adhesive (Part A is isocyanate side and Part B is polyol side) designed to attach insulation to approved decks.
 - a. Oly-Bond 500 by GAF
 - b. MBR Bonding Adhesive
 - c. I.S.O. TWIN or ISO Stick by Firestone

2.2 ROOFING COVERBOARD

- A. Roof Coverboard; uniform density roof insulation consisting of glass mat facer on a core of non-combustible, water resistant, silicone treated gypsum meeting ASTM ASTM C 165. Provide 1/2" x 48" x 96" size.
 - 1. GP Dens-Deck Roof Board or by GAF
 - 2. JM Securock Glass Mat Roof Board by Johns Manville, Inc.
 - 3. Firestone 1/2" Dens-Deck Prime Roof Coverboard by Firestone

2.3 ROOFING MEMBRANE

- A. Provide a fire-rated, white mineral surfaced modified bitumen cap sheet membrane.
 - 1. RUBEROID 30 FR by GAF
 - 2. DYNALASTIC 180 FR by Johns Manville, Inc. in cold adhesive with heat welded seams
 - 3. SBS Premium FR CAP by Firestone in cold adhesive with heat welded seams
- B. Base sheets with continuous strand fiberglass mat 58 lb/inch minimum average tensile strength in both machine and cross machine directions.
 - 1. Approved fiberglass base sheet:
 - a. Rubberoid 20 by GAF
 - b. Dynabase sheet by Johns Manville
 - c. SBS Base Modified Bitumen Base Sheet by Firestone
- D. Flashing membrane: Two ply system consisting of a base ply and SBS cap sheet as manufactured by the membrane manufacturer to be installed and meeting ASTM D 5147.
- E. Cold Adhesive: Multi-purpose Cold Adhesive consisting of an asphalt matrix blended with fibers and selected performance additives designed to meet adhesion characteristics necessary for horizontal applications. Conform to ASTM D 3019 and ASTM D 4479.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners: as approved by roof system manufacturer. Provide fastener length sufficient to anchor base layer of insulation and penetrate through the deck 3/4" minimum to achieve a FM 1-90 classification. Fasteners shall be approved for use with the insulation used.
- B. Copings, gutters, downspouts, scuppers, etc. as indicated on drawings.
- C. Sealant: As provided by membrane manufacturer.
- D. Termination bars: 0.040 mil finished aluminum with 3 1/2" vertical drop and 1/2" top caulk receiver. Fasten 12" o.c.
- E. Sump pans: Recessed 20 ga. Metal.
- F. Drain and Stack vents: Provide one of the following:
 - 1. 4 lb. Desilverized pig lead flashing.
 - 2. Portals plus "Alumi-Flash" XT with C-126 caps.
 - 3. Portals Plus "Pipe Portal System" with RC-4A ABS cover and C-126 cap.

- G. Single Pipe Penetrations (Natural gas and electric): Provide one of the following:
 1. Portals plus "Alumi-Flash" XT with EPDM cap sized to fit pipe.
 2. Portals Plus "Pipe Portal System" with ABS cover and EPDM cap sized to fit pipe.
 3. Pate Pipe Curb with ABS cover #pcc-2 and PVC cap sized to fit pipe.
 4. Liquid applied two part polyurethane/urethane elastomer. UltraFlash Liquid Flashing by Firestone
- H. Condensate Drains (where internal piping is required): Provide Portals plus Alumni-Flash with C-1 26 cap or Pate Pipe Seal #pps-3 with spun aluminum base. Plastic cement: Conform to FS SS-C-153C or ASTM D-4586 type II
- I. Traffic Pads: Provide SBS granule surface sheet (adhered to finished roof surface) or approved equal as supplied by the manufacturer of the membrane being installed. Remove smooth, selvage edge if left exposed. Color to contrast with roof surface. See roof plan for areas of walkway.

PART 3 . EXECUTION

3.1 INSPECTION

- A. Examine the substrates and adjoining construction, and the conditions under which the work is to be installed. Do not proceed with the work until unsatisfactory conditions detrimental to the proper and timely completion of the work have been corrected.
- B. Provide a final inspection of the roofing system by a Technical Representative employed by the roofing system manufacturer.
 1. Technical Representative shall not perform any sales functions
 2. Contractor shall complete any necessary repairs required for issuance of warranty

3.2 INSTALLATION OF THE INSULATION

- A. Mechanically attach first layer of any multi-layered insulation in compliance with FM Class I construction and 1-90 Windstorm Classification. Install base layer with long dimension of board perpendicular to any deck flutes. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof, apply no more insulation than can be covered with membrane in same day.
- B. Install the coverboard with long dimension perpendicular to the long direction of base layer and parallel to the deck flutes. Offset insulation joints 6" minimum between top and bottom layers.
- C. Apply adhesive only when ambient temperatures and deck surfaces range between 50° F minimum and 110° F. Adhesive shall be a minimum of 70° F during dispensing.
- D. Apply beads of adhesive on the substrate in the specified patterns and coverage rate in accordance with the application specifications for adhesive. In general, an increased number of beads will be required at the perimeter of the roof, depending on the building's overall height and parapet. Each bead of adhesive shall be continuous, and ¾" – 1" in diameter.

3.3 INSTALLATION OF THE MEMBRANE

- A. Install asphalt primer undiluted unless recommended by producer. Apply by brush, spray or roller at the rate of ¾ to 1-1/4 gallons per 100 square feet. Allow to dry before resuming work in primed area.

- B. Apply cold adhesive with 1/4" notched neoprene squeegee at a rate of 1-1/2 to 2 gallons per 100 square feet, or per manufacturer's recommendations.
- C. Starting at the low point of the roof, embed one ply of SBS Base Sheet in a uniform application of Modified Bitumen MB Cold Adhesive. Embed the a full width of SBS Base Sheet in cold adhesive at a rate of 1-1/2 to 2 gallons per 100 square feet. Apply the cold adhesive using a 1/4" notched neoprene squeegee. Apply adhesive over the lap area as well before installing subsequent rolls of base sheet. Keep sheet free of wrinkles, buckles and fish mouths. Brooming in may be required to eliminate voids and obtain proper embedment. Lap fiberglass base sheets 19" in such a manner that a two ply configuration is attained over all roof areas.
- D. Starting at the low point of the roof, embed one ply of SBS Base Sheet in a uniform application of Modified Bitumen Cold Adhesive. Embed the a full width of SBS Base Sheet in Modified Bitumen cold adhesive at a rate of 1-1/2 to 2 gallons per 100 square feet. Apply the cold adhesive a 1/4" notched neoprene squeegee. Apply adhesive over the lap area as well before installing subsequent rolls of base sheet. Keep sheet free of wrinkles, buckles and fish mouths. Brooming in may be required to eliminate voids and obtain proper embedment.
- E. Heat fuse side and end laps using automatic heat welding equipment in accordance with Manufacturer's recommendations.
- F. Apply granules to areas of bleed out while it remains hot.
- G. Apply modified bitumen membrane only over all areas of base ply in strict accordance with manufacturer's requirements.
- H. Apply and secure walkway pads in strict compliance with manufacturers recommendations as shown on the drawings. Walkway membrane shall have granules colored different from the field membrane for identification.
- I. Terminate the flashings of all roof curb corners with transition flashing or cover with three courses of roofing cement and fabric reinforcement. All exposed roofing cement shall be protected with granules.

3.4 FLASHING

- A. Coordinate the installation of flashing materials and roof accessories so as to provide a complete watertight system complying with the combined recommendations of manufacturers and installers involved in the work. Fasten termination bar 12" o.c.
- B. Extend flashings as shown to provide a complete membrane over the area indicated to be flashed. Seal to all projections through the sheet and seal all seams. Bond vertical and horizontal surfaces.
- C. Pipes, bars or projections through roof not considered curbs shall be flashed using liquid applied flashings from roofing manufacturer. Follow all manufacturer directions for reinforcement and 2 part component application.
- D. Base flashings may be applied with cold adhesive or torched directly to non-combustible surfaces that have been primed. Combustible surfaces require the application of a mechanically fastened base sheet prior to the application of the base flashing cap sheet.
- E. Base flashings may be adhered to Base Sheet using Modified Bitumen Flashing cement.
- F. Where flashing laps onto field cap sheet, the lap area shall be completed by heat fusing in accordance with manufacture's requirements.

NOTE: When torching granulated Modified Bitumen sheet, areas such as end laps, base flashings, and patches that have granules on receiving surface embed granules in underlying sheet. Embed granules with a hot trowel by heating surface and troweling-in all granules until a uniform black surface coated with compound is achieved in lap area. Any area of the sheet not protected with a granule surface should be dressed with additional loose granules or patched with an additional piece of granule surfaced modified.

3.5 CLEANING

- A. Repair or replace defaced or disfigured finishes caused by work of this section.

3.6 PROTECTION

- A. Protect building surfaces against damage from roofing work. Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

SECTION 07 62 00 . FLASHING AND SHEET METAL

PART I . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 SUMMARY

- A.** Provide all labor, equipment, and materials to fabricate and install sheet metal work as indicated in the drawings.

1.3 REFERENCES

- A.** American Society for Testing and Materials (ASTM)
 - 1. B209-00 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. B221-00 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- B.** Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - 1. 1993 Edition - Architectural Sheet Metal Manual, 5th edition

1.4 SUBMITTALS

- A.** Submit under provisions of Section 013300 - Submittals.
- B.** Product Data
- C.** Metal material characteristics and installation recommendations.
- D.** Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.
- E.** Provide 6" square sample of specified sheet materials for Owner approval.
- F.** Shop Drawings
 - 1. Shop drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashing, termination's, and installation details.
 - 2. Indicate type, gauge and finish of metal.

1.5 QUALITY ASSURANCE

- A.** Engage an experienced contractor specializing in sheet metal flashing work with a minimum of five (5) years experience.
- B.** Successful contractor is required to maintain a full-time supervisor/foreman who is on the job-site at all times during installation of flashing. Foreman must have a minimum of five (5) years experience with the installation of similar system to that specified.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
- B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials which may cause discoloration or staining.

1.7 JOB CONDITIONS

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements.

1.8 WARRANTIES

- A. Owner shall receive warranty covering all of the following criteria.
 1. Pre-finished metal material shall require a written 10-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D-2244 or chalking excess of 8 units per ASTM D-659. If either occurs material shall be replaced per warranty, at no cost to the Owner.
 2. Warranty shall commence on date of substantial completion.

PART 2 . PRODUCTS

2.3 MATERIALS

- A. Aluminum Sheet: ASTM B 209 (ASTM B 209M), Alloy 3003, 3004, 3105, or 5005, Temper suitable for forming and structural performance required, but not less than H14, .032 inch thickness unless otherwise noted, finished as follows:
 1. Mill Finish: One-side
 2. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.

2.4 RELATED MATERIALS

- A. Metal Primer: Zinc chromate type.
- B. Plastic Cement: ASTM D 4586
- C. Sealant: Non-hardening sealant shall be Temco Mono 1-part acrylic terpolymer sealant or approved equal.
- D. Fasteners:
 1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.

PART 3 . EXECUTION

3.3 COORDINATION

- A. Coordinate the installation of sheet metal work with the work of other trades, e.g. flashing and counterflashing with installation of windows.

3.4 PROTECTION

- A. Dissimilar metals shall not be allowed to come in contact with each other. Isolate any dissimilar metals, masonry or concrete, from metals using bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive actions.

3.5 GENERAL

- A. Fastening of metal to walls and wood blocking shall comply with SMACNA Architectural Sheet Metal Manual and/or manufacturer's recommendations whichever is of the highest standard.
- B. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.
- C. Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. No exposed face fastening shall be accepted.

3.6 INSPECTION

- A. Beginning of installation means acceptance of existing conditions.
- B. Field measure site conditions prior to fabricating work.
- C. Metal installation shall not disrupt other trades. Verify that substrate is dry, clean and free of foreign matter.

3.7 SHOP FABRICATED SHEET METAL

- A. Installing Contractor shall be responsible for determining if the sheet metal systems are in general conformance with roof manufacturer's recommendations.
- B. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.
- C. Hem exposed edges.
- D. All corners for sheet metal shall be lapped with adjoining pieces fastened and set in sealant.
- E. Install sheet metal to comply with Architectural Sheet Metal manual, Sheet Metal and Air Conditioning Contractor's National Associations, Inc.

END OF SECTION

SECTION 07 71 23 . GUTTERS AND DOWNSPOUTS

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 SUMMARY

- A.** Furnish all labor, materials and equipment, and perform all work to install gutters, downspouts and related accessories.

1.3 QUALITY ASSURANCE

- A.** Installer Qualifications: Certified and approved installer of the sheet metal roofing manufacturer
- B.** Perform Work in accordance with SMACNA Manual

1.4 DELIVERY, STORAGE, AND HANDLING

- A.** Store products in manufacturer's unopened packaging until ready for installation.
- B.** Store products to prevent twisting, bending, and abrasion, and to provide ventilation. Slope stored materials to drain.
- C.** During storage prevent contact with materials capable of causing discoloration, staining, or other damage.

1.5 PROJECT CONDITIONS

- A.** Coordinate installation with installation of adjacent roofing, siding and related materials.

1.6 WARRANTY

- A.** Provide the Manufacturer's 35-Year finish warranty.

1.7 COORDINATION

- A.** Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed underlayment and membrane materials.

PART 2 . PRODUCTS

2.1 MANUFACTURERS

- A.** All components shall be provided by the same manufacturer that is providing the metal roofing panels.

2.2 STANDING SEAM ROOF- GUTTER AND DOWNSPOUT COMPONENTS

- A.** Seamless Box Gutter: Roll-formed 24 steel sheet, with gutter straps, fasteners and joint sealant; manufacturer's standard color.
- B.** Downspouts: 24 gage 4 inches by 6 in 10 foot lengths, with downspout elbows and downspout straps.
- C.** Scupper and Conductor Heads: 24 gage in configuration shown on the drawings.

- D. Splash Blocks: Provide 30" concrete splash block at bottom of each downspout.

2.3 FABRICATION

- A. Continuously form seamless gutters to the profiles and sizes specified.
- B. Form downspouts of profiles and sizes specified.
- C. Hem exposed edges of metal.

PART 3 . EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify governing dimensions at building.
- C. Verify surfaces are ready to receive gutters and downspouts.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Clean and repair if necessary any adjoining work on which this work is in any way dependent for its proper installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions
- B. Install gutters using appropriate hangers to allow normal expansion and contraction
- C. Install gutter hangers using two screws minimum.
- D. All gutters shall be in continuous length for each elevation (run). No end laps are allowed
- E. Provide bond breaking material or coating and exercise care in placing aluminum in contact with other dissimilar metals or materials that are not compatible with aluminum.
- F. Providing adequate insulation/separation where ever necessary, such as by painting or otherwise protecting when they are in contact with aluminum or when drainage from them passes over aluminum surfaces.
- G. Install sealants where indicated to clean dry surfaces only without skips or voids.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 92 00 . SEALANTS AND CAULKING

PART 1 . GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Additional Sections contained within this Project Manual may also be related to this Section as they may contain corresponding materials and/or methods, ancillary requirements and/or coordination necessities.

1.2 SUMMARY

- A.** Furnish all labor, materials, equipment and supervision necessary to provide and install joints in exterior vertical surfaces and non-traffic horizontal surfaces as indicated below:
 - 1. Perimeter joints between wall materials and frames of doors and windows.
 - 2. Joints between different materials.
 - 3. Other joints as indicated on the drawings.
 - 4. Openings around pipes projecting through exterior walls.
- B.** Joints in exterior horizontal traffic bearing surfaces as indicated below:
 - 1. Control and expansion joints in concrete paving.
- C.** Interior joints in vertical and vertical surfaces as indicated below:
 - 1. Joints between different materials.
 - 2. Joints between plumbing fixtures and adjacent materials.
 - 3. Joints around pipes projecting through interior walls.

1.3 SUBMITTALS

- A.** Submit manufacturer's product and application data on products specified.
- B.** Submit color charts on products requiring color selection.
- C.** Product test reports.

1.4 QUALITY ASSURANCE

- A.** Engage an experienced installer who has completed joint sealant applications similar in material, design, and extent to that indicated for the project that have resulted in construction with a record of successful in-service performance.

1.5 ENVIRONMENTAL CONDITIONS

- A.** 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.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than allowed by joint sealant manufacturer for application indicated.
 - 4. Until contaminant capable of interfering with their adhesion are removed from joint substrates.

2.1 GENERAL

- A.** Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under the conditions of service and application as demonstrated by the manufacturer based on testing and field experience.
- B.** Match colors indicated by reference.

2.2 MATERIALS

- A.** Sealant for caulking of control joints in concrete slabs shall be a two-part, Jet-Fuel-Resistant, non-sag, Polyurethane Rubber Sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements relative to formulation and with ASTM C 920 for Type, Grade, Class, and Uses indicated.
 - 1. Urethane formulation: Type M, Class 25, Uses T, M, and O as applicable to joint substrates.
 - 2. Grade P for joints in horizontal paved surfaces.
 - 3. Grade NS for vertical and other joints where installation of a Grade P (self-leveling) sealant would result in sealant flowing out of joint.
- B.** Sealant for all exterior caulking except as noted, and at cabinets shall be a multicomponent non-sagging urethane sealant complying with ASTM C920 for type M, Grade NS, class 25, Uses A, G, M, and O as applicable to joint substrates. Provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated. Acceptable manufacturers include DAP, Pecora, Sonneborn, and Tremco.
 - 1. Additional Movement Capability: 50 percent movement in extension and 50 percent in compression for a total of 100 percent movement.
- C.** Sealant for exterior caulking in conjunction with exterior insulation and finish system shall be a single component non-sagging, neutral-curing, ultra low-modulus silicone building sealant complying with ASTM C-920 for type 5, Grade NS, class 25, Uses: A, M, and O as applicable to joint substrates. Provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated. Acceptable manufacturers include Dow Corning, Pecora and Tremco.
 - 1. Additional movement capability: 100 percent in extension and 50 percent in compression for a total of 150 percent movement.
- D.** Sealant for interior use unless otherwise specified shall be a paintable type equal to DAP Acrylic Latex Caulk, Pecora AC-20 Acrylic Latex, or Tremco Acrylic Latex Caulk.
- E.** Sealant for interior use in conjunction with plumbing fixtures shall be a low-modulus nonacid-curing silicone sealant, type S, Grade NS, Class 25, uses: A, G, and O as applicable to joint substrates. Provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated. Acceptable manufacturers include DAP, Pecora, Sonneborn, and Tremco.

1. Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.
- F.** Primer shall be the type recommended by the sealant manufacturer and shall be supplied by the manufacturer of the sealant used.
- G.** Backup material and joint fillers shall be non-staining, compatible with sealant and primer used, and of a resilient nature. Raveled strands of non-staining rope fiber or cotton wicking may be used as filler in deep joints but the filler backing up the sealant shall be rod shaped foam neoprene, foam polyethylene, or hollow vinyl extrusions. Filler material impregnated with oil, bitumen, or similar substances shall not be used in any case.
- H.** Bond breakers shall be polyethylene tape, pressure sensitive masking tape, or equal, as recommended by the sealant manufacturer.
- I.** Preformed Foam Sealants: Manufacturer's standard preformed, precompressed, impregnated open cell foam sealant manufactured from high density urethane foam impregnated with a nondrying water repellent agent: factory produced in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop watertight and airtight seal when compressed to the degree specified by the manufacturer, and complying with the following requirements:
1. Permanently mildew-resistant non-migratory, non-staining, and compatible with joint substrates and other joint sealants.
 2. Impregnating Agent: Chemically stabilized acrylic.
 3. Density: Manufacturer's standard.
 4. Backing: None
 5. Product shall be Colorseal as manufactured by Emseal Joint Systems Ltd., Westborough, MA. or equal product of Wil-Seal Construction Foams, Dir., Ill. Bruck.

2.3 JOINT SEALANT BACKING

- A.** General: Provide sealant backings of material and type that 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.** Plastic Foam Joint Fillers: Preformed, compressible, resilient, non-staining, non-waxing, non-extruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance
- C.** Closed-cell polyethylene foam, non-absorbent to liquid water and gas, non-outgassing in unruptured state.
- D.** Elastomeric Tubing Joint Fillers: Neoprene, butyl EPDM, or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to -26° F (-32° 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.
- E.** 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.

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 nonporous 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 preconstruction 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. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install joint filler 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.
 - 1. Do not leave gaps between ends of joint fillers.
 - 2. Do not stretch, twist, puncture, or tear joint fillers.
 - 3. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.

- 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. Install sealants at the time sealant backings are installed.
- 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 Figure 5A in ASTM C 1193, unless otherwise indicated.
- F. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, and to comply with sealant manufacturer's directions for installation methods, materials, and tools that produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in conformation with sealant manufacturer's recommendations.

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 so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION