ARIZONA BOARD OF REGENTS
NORTHERN ARIZONA UNIVERSITY

PROJECT MANUAL
BIDDING DOCUMENTS AND SPECIFICATIONS
FOR

Bilby Roof Repair

NAU PROJECT NO. 09.001.166

NORTHERN ARIZONA UNIVERSITY
FLAGSTAFF, ARIZONA
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Solicitation
Advertisements and Invitations

Invitation to Bid

Sealed bids are being solicited by Facility Services, Office of Planning, Design and Construction, Northern Arizona University, for and on behalf of the Arizona Board of Regents, for the furnishing of all labor, material, transportation and services required for the Bilby Roof Replacement 09.001.166 on the Campus of Northern Arizona University, Flagstaff, Arizona, in accordance with the plans and specifications on file at Facility Services, Office of Planning, Design and Construction.

Bids will be received at Facility Services, Building #77, Work Control Center, Room 108, Northern Arizona University, Flagstaff, Arizona, until April 22, 2016 @ 10:00AM. Bids will be opened publicly directly thereafter and read aloud in the Facility Services conference room A. A mandatory Pre-Bid Conference will be held at April 12, 2016 @ 10:00 AM in the Facility Services Conference Room A. Plans and Specifications for the proposed work may be inspected at Facility Services, Work Control Center, Room 108. The scope of work for this project is the removal and the replacement of the existing single ply roofing system. A more detailed scope of work will be provided at the mandatory pre-bid meeting.

All vehicles parking on campus must have a permit. Parking permits for the pre-submittal meeting are available at the parking kiosks at the entrances to campus. See http://nau.edu/parking-shuttle-services/ for more information.

A certified check, cashier’s check or NAU Bid Bond Form FS#9 for ten percent (10%) of the amount of bid, must accompany each proposal, as a guarantee that the Contractor will enter into a contract to perform the proposal in accordance with the plans and specifications or as Liquidated Damages in the event of failure or refusal of the Contractor to enter into the contract. Checks or bonds will be returned to the unsuccessful bidders, and to the successful bidder upon the execution of a satisfactory bond and contract, as prescribed by Arizona Revised Statutes.

The Contractor, to whom the contract is awarded, shall, after receipt of Notice of Intent to Award, furnish to the aforesaid Board of Regents a satisfactory performance and payment bond in an amount equal to one hundred percent (100%) of the full amount of the proposal, such bond not to be expressly limited as to time in which action may be instituted against the surety company for possible nonperformance of the Contractor. Bonds must be from a corporate surety company licensed to issue surety bonds in the State of Arizona. Individual sureties will not be accepted.

Work shall commence immediately after receipt of Notice to Proceed and shall be Substantially Complete by July 1, 2016, and shall be Finally Complete by July 30, 2016. Bonds and insurance certificates must be submitted and approved prior to commencement of work.

The Board of Regents reserves the right to reject any or all proposals, to waive or decline to waive irregularities in any bid, or to withhold the award for any reason it may determine, and also reserves the right to hold any or all bids for a period of 60 days after the date of the opening thereof. No bidder may withdraw a bid during this 60-day period without forfeiture of the bid bond.

Women owned and minority owned firms are encouraged to apply. Persons with a disability may request a reasonable accommodation by contacting Facility Services, (928) 523-4227.

ARIZONA BOARD OF REGENTS
Bid should be addressed to:
NAU Planning, Design and Construction
Attention: Joshua Spear
PO Box 5637
Flagstaff, Arizona 86011

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INSTRUCTIONS FOR PROCUREMENT

00 20 00

00 21 00 Instructions

00 21 13 Instructions to Bidders

00 21 13.1 Correspondence

All correspondence relating to the project should be addressed to:

Facility Services
Planning, Design, and Construction
Attn: Stephanie Bauer
Northern Arizona University
P.O. Box 5637
Flagstaff, AZ 86011
Stephanie.bauer@nau.edu

All correspondence should reference Project by both name and NAU project number.

00 21 13.2 Sealed Proposals

Northern Arizona University will receive sealed bids (at the time and place specified in Section 00 21 13, Notice to Contractors of Intent to Receive Bids) for the labor, equipment and materials necessary to perform all functions and work indicated on the drawings and specified herein. Proposals shall be submitted on the required forms included in Section 00 43 00 of these specifications.

00 21 13.3 Execution of Contract and Bonds

The Contract Agreement, which the successful bidder, as Contractor, will be required to execute, is referenced in Section 00 52 00 of this manual. The form of Bonds and insurance certificates required to be furnish are included in Section 00 62 16 of this manual and shall be carefully examined by the bidder. The successful bidder will be required to execute the Standard Form Agreement between Owner and Contractor (Contract) and submit completed bonds and insurance certificates within five (5) working days after Notice of Intent to Award Contract. Failure to execute a Contract Agreement and to file satisfactory payment and performance bonds and insurance certificates issued by companies deemed qualified by the Owner Section 00 61 13 of the Standard Form Agreement Between Owner and Contractor) shall be just cause for the cancellation of the Award of Project and the forfeiture of the Bid Bond which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lower responsible bidder, canceled, or re-advertised as the Owner may elect.
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<td>Bidders may obtain from the Office of Facility Services, Administrative Services, complete sets of Bidding Documents stated in the Invitation to Bid, section 00 11 13 of this document. Electronic copies of these documents can be found at: <a href="http://nau.edu/Facility-Services/Bids_RFQ/">http://nau.edu/Facility-Services/Bids_RFQ/</a>.</td>
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<td>Bidders shall notify Owner and/or DP promptly of any ambiguity, inconsistency or error discovered upon examination of Bidding Documents or of site and local conditions. <strong>Failure to so notify Owner/DP is deemed a waiver of any claim by Contractor</strong>, based upon any such ambiguity, inconsistency or errors. The DP shall maintain a log of all inquiries and shall provide written notification of such to the Facility Services Project Manager.</td>
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<td>Each Bidder by making their Bid represents that:</td>
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<td>They have read and understand the Bidding Documents and all Contract Documents and that Bid is made in accordance therewith.</td>
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<td>They have visited the site and are familiar with local conditions under which Work is to be performed, including verification of all field measurements, and have inspected all accessible spaces.</td>
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They have thoroughly familiarized themselves with all specific products and their proposed uses.

Their bid is based upon the materials, systems and equipment described in the Bidding Documents without exceptions.

They have satisfied themselves that the products specified are appropriate for the uses proposed.

Their subcontractors with project involvement exceeding $100,000 are bondable.

They have advised each subcontractor to become thoroughly familiar with the Contract Documents, including the specifications and referenced standards, insofar as they affect each subcontractor.

They will install all Work properly, will place their warranty on the Work, and provide guarantees required.

Bid Period
Unless otherwise noted, all bids and bid prices shall remain firm for a period of sixty (60) days after the date of Bid opening and the Contractor shall be prepared to begin construction within ten (10) calendar days of receipt of notice to proceed.

Contractor Qualifications
The Contractor shall submit with bid package the Statement of Qualifications included in Section 00 45 13 of these specifications.

The competency and responsibility of Bidders, of their proposed Subcontractors, and of the Surety issuing the Contractor’s performance and payment bonds, will be reviewed prior to award.

Bidding Procedure
Form and Style of Bids
Bids must be submitted on Form of Proposal (FS#1) provided in Section 00 41 13 of these specifications.
Blanks on the Form of Proposal shall be typed in or printed legibly in ink.

Where indicated on Form of Proposal, express sums both in words and digits; in case of discrepancy between the two, the written amount shall govern.

Signer of Bid must initial any insertion, alteration or erasure.
Each copy of Bid shall include (on the FS #2) the legal name of Bidder and statement whether Bidder is sole proprietor, partnership, corporation or other legal entity. Each copy shall be signed by person, or persons, legally authorized to bind Bidder to a contract. Bid by a corporation shall give the state of incorporation and have corporate seal affixed. Bid bonds submitted by agent must have current Power of Attorney attached certifying agent's authority to bind Bidder.

Other required forms include:

**Required Bid Forms**
1. Form of Proposal (FS#1)
2. Contractor Statement of Qualifications (FS#2)
3. Subcontractor List (FS#3)
4. Bid Bond (FS#9)
5. Notification & Confirmation of Asbestos Containing Materials (FS#13)

All additional forms that are standard for the University and must be used throughout the Contract for Construction are noted in Section 00 52 00 of these specifications and available through the office of Facility Services, Planning, Design and Construction.

00 21 14.2 Supplements to Bid Forms

00 21 14.21 Bid Bond
A Certified or Cashier's Check or Bid Bond (NAU form FS#9, see Section 00 43 13) of a corporate surety acceptable to the Arizona Board of Regents, payable to Northern Arizona University for Ten (10%) percent of the amount of the bid, is required as a guarantee that the bidder will enter into the contract if awarded and shall be declared forfeited as Liquidated Damages if the successful bidder refuses to enter into said contract after being requested to do so by the Arizona Board of Regents/Northern Arizona University.

00 21 14.22 Bidders Qualifications
Bids will be accepted only from those Contractors who are licensed in the State of Arizona and qualified under the laws of the State of Arizona to perform the work specified. All work performed under the Contract by such licensed Contractors must be made to comply with all applicable laws and requirements of any governing bodies or regulatory agencies having jurisdiction over such Work.

The General Contractor shall determine that subcontractors are licensed, insured, and qualified to perform their respective work under the contract and shall determine that they are bondable, as required in Section 00 43 36. Each Bidder shall also submit a Subcontractor List (form included in Section 00 43 36 of these specifications) as outlined below in Section 00 43 00.

00 21 14.3 Subcontractors
Subcontractor List Form
In compliance with Contract, the Contractor shall list on the Subcontractor list form provided in Section 00 43 36, the names of all qualified subcontractors and/or suppliers he will employ for the various portions of the work indicated for this Project. All technical sections of this specification shall be included. Failure to provide complete list of subcontractors (FS#3) may be considered non-responsive. In addition to the general information required on that form, the Contractor shall provide the license number and class for each subcontractor proposed to do work under the contract. Failure on the part of the Contractor to completely list the names of all anticipated subcontractors will constitute sufficient grounds to reject the bid.

If the Contractor is going to do any portions of the work himself, he shall enter the word "Self" opposite that item in the list; list only one name for each item.

The Subcontractor List must be included inside bid packet. No subcontractor substitutions will be permitted without prior written approval by the Owner.

A complete up-to-date revised list of Subcontractors shall be submitted to the Owner with indications of any work performed by Subcontracting firms classified as minority owned or small businesses, and final contract values, as part of the close-out procedures prior to Final Payment.

The Owner will promptly reply to the Contractor in writing stating if the Owner or the DP, after due investigation, has any objection to any such proposed subcontractor or supplier. The Contractor shall not employ any subcontractor or supplier against whom the Owner or the DP has reasonable objection. If, prior to the award of the Contract, the Owner or DP has a reasonable objection to any subcontractor or supplier and refuses in writing to accept such person or organization, the apparent low bidder may, prior to the award, either withdraw his bid without forfeiture of bid security or may propose an acceptable substitution thereof provided that same results in no change in the bid price. Failure of the bidder to submit an acceptable substitute in a timely manner shall render its bid non-responsive.

No substitution or change shall be made by the Contractor in the subcontractor/supplier list after its submission to the Owner without prior written approval by the Owner. Unapproved or untimely substitutions may be cause for invalidation of the Contractor's bid in the Owner's discretion, thereby rendering the Contract voidable.

All work performed for the Contractor by a subcontractor shall be pursuant to an appropriate written agreement which specifically binds the subcontractor to all applicable terms and conditions of the Contract Documents, but no contractual relationship shall exist between any subcontractor or supplier of any tier and the Owner, unless the Owner invokes
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<td>the assignment provisions of the following subsection. Upon request, the Contractor shall provide fully executed copies of any subcontracts and purchase orders to the Owner.</td>
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<td>The General Contractor shall require all Subcontractors with project involvement in excess of $100,000 to be bonded for 100% of their contract amount to that General Contractor. Bonds will guarantee the faithful performance of the subcontract and the payment of all obligations thereunder by the subcontractor. The General Contractor shall provide Owner with a copy of each required Subcontractor's bond, on the required form FS#4 &amp; FS#5, within fourteen (14) calendar days after the Notice to Proceed is issued by the Owner and prior to the commencement of their work. Copies of all applicable bonds must be received before processing of the first pay application will occur.</td>
<td></td>
</tr>
<tr>
<td>00 21 14.33</td>
<td>Subcontractor Insurance</td>
</tr>
<tr>
<td>All Subcontractors are required to maintain insurance in force according to the Construction Agreement.</td>
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</tr>
<tr>
<td>00 21 14.41</td>
<td>Qualification of Substitutions</td>
</tr>
<tr>
<td>00 21 14.42</td>
<td>Addenda</td>
</tr>
<tr>
<td>Any addenda issued by the Owner during the time of bidding shall be considered to be included in the proposal, and will become a part of the executed contract. Acknowledgement of receipt of Addenda shall be made on the Proposal Form in the space provided.</td>
<td></td>
</tr>
<tr>
<td>Final Addenda shall be issued a minimum of three (3) days prior to the bid date.</td>
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</tr>
<tr>
<td>If a Bidder should fail to receive any addendum, or should fail to acknowledge receipt of same, the Bidder shall have the option of accepting a contract, if offered, including all addenda, at the Bid price, or withdrawing the bid without penalty. NAU and/or the DP are not responsible for assuring delivery of addenda to any Bidder. Failure to receive addenda or failure to acknowledge receipt shall not constitute a basis for claim, protest, or re-issue of the invitation to bid.</td>
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</tr>
<tr>
<td>00 21 14.5</td>
<td>Submittal of Bids</td>
</tr>
<tr>
<td>Copies of the Form of Proposal (FS#1), Bid Bond (FS#9) or Certified Check or Cashier’s Check for ten percent of the amount of the bid, and other documents required to be submitted with Bid per Section 00 43 13 (see required forms, Section 00 43 13) shall be enclosed in sealed, opaque envelope. The Subcontractors List (FS#3) must be included inside the bid package, per requirements of Section 00 43 36. Address envelope to Facility Services, identifying project name, Bidder's name and address.</td>
<td></td>
</tr>
</tbody>
</table>
If Bid is sent by mail to PO BOX 6016, Flagstaff, AZ, 86011, a sealed envelope shall be enclosed within a separate mailing envelope with "BID ENCLOSED" and identification of the Project and date and time for Bid Opening plainly indicated on the face thereof.

Bids must be received at the designated location prior to time and date for receipt of Bids indicated in advertisement. If received after the time and date for receipt of Bids, or any extension thereof made by Addendum, the bid package will be returned unopened.

Bidder assumes full responsibility for timely delivery of bids. Bids sent by mail that have not been delivered to Facility Services, Building 77, Administrative Services, Room 108, by the designated time of the Bid Opening will not receive consideration; including specifically, but not limited to, bids received by NAU Post Office but not delivered to the bid opening location.

Electronic, oral, telephonic, FAXES, or telegraphic Bids are invalid and will be considered non-responsive.

**00 22 00**  
Supplementary Instructions

**00 22 11**  
Drawings and Schedules

**00 22 11.1**  
Complimentary Drawings

Upon award of Contract, the Contractor will be furnished any available sets of Plans, Specifications, and project manuals. Additional sets may be printed from:  
http://nau.edu/Facility-Services/Bids_RFO/.

**00 22 11.2**  
Interpretation of Drawings and Specifications

The Contractor shall study and compare the Contract Documents sufficiently in advance of bidding the work to be performed and immediately report any material error, inconsistency, conflict, ambiguity, or omission that is discovered.

The Drawings are intended to show general arrangements, design and extent of Work and are not intended to serve as Shop Drawings. Where required, the Contractor shall perform no portion of the Work without approved Shop Drawings, Product Data or Samples; any Work performed in violation of this provision will be solely at the Contractor’s risk regardless of DP’s and/or Owner’s knowledge of such Work.

Contract Documents shall be interpreted as being complementary, requiring a complete project or designated portion thereof. Generally, the specifications address quality, types of materials and contract conditions while the drawings show placement, sizes, and fabrication details of materials. In the event of conflict in the Contract Documents, the priorities stated below shall govern:

A. Addenda shall govern over all other Contract Documents;
B. Subsequent addenda shall govern over prior addenda, but only to the extent modified;
C. In case of conflict between drawings and specifications, the specifications shall govern;
D. Conflicts within the plans:
   (1) Schedules, when identified as such, shall govern over all other portions of the plans.
   (2) Specific notes shall govern over all other notes and all other portions of the plans, except the schedules described in 00 22 11.2 D (1) above.
   (3) Larger scale drawings shall govern over smaller scale drawings.
   (4) Figured or numerical dimensions shall govern over dimensions obtained by scaling.

E. Conflicts within the specifications:
   Contract General Conditions shall govern over all sections of the specifications except for specific Modifications thereto that may be stated in Supplementary General Conditions or addenda. No other section of the specifications shall modify the Contract General Conditions.

F. In the event provisions of codes, safety orders, Contract Documents, referenced manufacturer's specifications or industry standards are in conflict, the more restrictive or higher quality shall govern.

G. In the event of any conflict or ambiguity, the Contractor shall request an interpretation by the DP before performing the Work.

H. In the event of any conflict between the Specifications and Northern Arizona University Technical Standards, the Contractor shall notify the Owner for direction prior to bid. Otherwise the more restrictive or higher quality shall govern.

If the Contract Documents are not complete as to any minor detail of a required construction system or with regard to the manner of combining or installing of parts, materials, or equipment, but there exists an accepted trade standard for good and skillful construction, such detail shall be deemed to be an implied requirement of the Contract Documents in accordance with such standard.

“Minor detail” shall include the concept of substantially identical components, where the price of each such component is small even through the aggregate cost or importance is substantial, and shall include a single component which is incidental, even though its cost or importance may be substantial.

The quality and quantity of the parts or material so supplied shall conform to trade standards and be compatible with the type, composition, strength, size, and profile of the parts or materials otherwise set forth in the Contract Documents.
Documents. Definitions below are in addition to the definitions of the contract documents and are not considered a replacement.

**Bidding Documents:** Include Advertisement for Bids, Instructions to Bidders, Bid Form, other bidding and Contract forms and Contract Documents including Addenda issued prior to receipt of bids.

**Addenda:** Written or graphic instruments issued by DP, or the Owner, prior to execution of Contract Bidding documents by addition, deletion, clarification or correction.

A **Bid** is a complete and properly signed proposal to do the Work or designated portion thereof for some stipulated sum therein supported by data required in Bidding Documents.

**Base Bid:** A sum stated in the Bid for which Bidder offers to perform Work described as base, to which Work may be added or deducted for sums stated in Alternate Bid(s).

**Alternate Bid(s):** A sum stated in addition to the base bid for which Bidder offers to perform Work described as the alternate. The university may select all, none or any combination of alternates.

**Bidder:** One who submits a Bid for prime Contract with Owner for Work described in the Contract Documents.

**Design Professional:** The DP is the individual or legal entity identified in the Contract Documents and/or otherwise designated by the Owner who is retained by the Owner to design and/or oversee the Project. Where used in these Documents, the term "DP" or “Architect” shall be interchangeable with NAU assigned Project Manager for such projects that are designed by Facility Services personnel.

**General Conditions:** The General Conditions apply to the entire work of the Contract and, where so indicated, to other elements of work which are included in the project.

**Approved:** Where used in conjunction with the DP’s response to SUBMITTALS, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to the limitations of the DP’s responsibilities and duties as specified in the General and Supplementary Conditions. In no case will "approval" by the DP be interpreted as a release of the Contractor from responsibilities to fulfill the requirements of the Contract Documents.

**Project Site:** The space available to the Contractor for the performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.
Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

Install: Except as otherwise defined in greater detail, the term "install" is used to describe operations at the project site including unloading, unpacking, assembly, erection, placing anchoring, applying, working to dimension, finishing, curing, protection, cleaning and similar operations, as applicable in each instance.

Provide: Except, as otherwise defined in greater detail, the term "provide" means furnish and install, complete and ready for the intended use, as applicable in each instance.

Installer: The entity (person or firm) engaged by the Contractor or its subcontractor or sub-subcontractor for the performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in the operations they are engaged to perform.

Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the work, both at the project site or elsewhere; and to report and (if required) interpret the results of those inspections or tests.

Owner: The word Owner shall mean the State of Arizona and Northern Arizona University and Arizona Board of Regents.

**Scopes**

**00 24 00**

**00 24 13** Scopes of Bids

**00 24 13.1** Base Scope

*THE PROJECT CONSISTS OF REMOVAL AND REPLACEMENT OF EXISTING ROOF SYSTEM AND ASSOCIATED FLASHINGS IN ACCORDANCE WITH CODES, PLANS, SPECIFICATIONS, NAU STANDARDS AND GENERALLY ACCEPTED INDUSTRY STANDARDS. SEE SUMMARY OF WORK SECTION 01100 FOR ADDITIONAL DESCRIPTION.*

**00 24 13.2** List of Alternates

na

**Procurement Meetings**

**00 25 00**

**00 25 13** Pre-Bid Meeting

A Mandatory Pre-Bid Meeting will be held at the Conference Room X, Facility Services (Capital Assets and Services), Building 77, Northern Arizona University, Flagstaff, Arizona, for benefit of all plan holders on **April 12th, 2016 at 10:00 a.m.** Facility Services, Planning, Design, and Construction Staff and DP will be present to discuss technical aspects of the...
00 25 13.1 Pre-Bid Site Inspection
The Pre-Bid Site Inspection will be held immediately after the Pre-Bid Meeting. Each Bidder must be represented. No other formal inspection tours should be anticipated. Bidders should come prepared with Project Manual, tools, measuring devices, personnel, etc., as desired to gather all on-site information necessary for preparing proposal. A Bidder may arrange for supplemental site visits as necessary to prepare a responsive proposal. It is the responsibility of the Bidders to thoroughly familiarize themselves with all conditions and matters, which may in anyway affect the Work or cost thereof.

No allowance shall be made on behalf of any contractor or subcontractor for errors due to his/her negligence in not being familiar with existing site and/or project conditions.

00 25 13.1.1 Supplementary Site Visits
Arrangements for supplemental visits to the job site are to be made through:
NAU Facility Services
Planning, Design and Construction
(928) 523-4227
Northern Arizona University
Flagstaff, Arizona 86011

00 26 00 Substitution Procedures
There are currently no approved product substitutions. If contractor wishes to submit a product for consideration, refer to the Substitution Request Form. Product Substitution Requests must be received 10 days before bid opening at Facility Services, Administrative Services.

To obtain approval to use unspecified products, Bidders can request substitutions of items felt to be equal to those listed in the specification and must be submitted, in writing, to Facility Services, Administrative Services for approval. If Owner/DP approves any such alternate product, notification shall be made to all plan holders a minimum of three business days prior to Bid. All such notifications shall be by Addendum.

Identification of material or equipment by manufacturer's name or trade name is not meant to give preference to any manufacturer but merely to establish a standard. In some cases, the specified product is required as it is used campus wide and is the only product stocked for repair and maintenance reasons.

Requests shall clearly describe the product for which approval is asked, including data necessary to demonstrate acceptability. The Owner and DP shall consider and either approve or reject proposals submitted. The Bidder’s request for approval shall include the following:

All Bidders are required to be represented in order for their bid to be accepted by Owner.
a. Complete data substantiating compliance of the proposed substitution with the Contract Documents.
b. Product identification, including manufacturer's name, address and phone number.
c. Manufacturer's literature showing complete product description, performance and test data, and all reference standards.
d. Samples and colors in the case of articles or products, as appropriate.
e. Name and address of similar projects on which the product was used and date of installation.
f. For construction methods, include a detailed description for proposed method and drawings illustrating same.
g. Itemized comparison of proposed substitution with product or method specified.

Substitution requests shall be made on the "SUBSTITUTION REQUEST FORM" included with the Bid Forms.

The decision of the Owner or DP regarding the approval of items for which substitution is requested will be final. In the event an approved substitution is later determined by the Owner or Design Professional to be unacceptable for any reason, including the necessity to perform extended redesign or rework of the project in order to accommodate the substitution, or if it becomes apparent to the Design Professional that the substituted item will not perform or function as well as the specified item, the Bidder will be required to furnish the original specified item or request approval to use another substitution. The Bidder will pay all costs, expenses or damages associated with or related to the unacceptability of a substitution and the resultant utilization of any item. The Bidder further understands and agrees that a time extension will not be granted due to delays associated with or related to the unacceptability of a substitution.

If a substitution is approved, no subsequent change in brand or make will be permitted unless satisfactory written evidence is presented to the Design Professional and approved by the Owner that the manufacturer cannot make scheduled delivery of the approved substitute item.

**END OF SECTION**
00 30 00 Available Information
00 31 00 Available Project Information
00 31 13 Preliminary Schedule
00 31 13.13 Preliminary Project Schedule
  First Advertisement:  April 8th 2016
  Pre-Bid Conferences:  April 12th @ 10:00 AM
  Bid Date:  April 22nd 2016 @ 10:00 AM
  Construction Start:  May 16th 2016
  Substantial Completion:  July 1st 2016
  Final Completion:  July 30th 2016

00 31 13.16 Preliminary Construction Schedule
  NA

00 31 13.23 Preliminary Project Phases
00 31 13.26 Preliminary Project Sequencing
00 31 13.33 Preliminary Project Milestones
00 31 19 Existing Condition Information
  The current construction is a Duralast roofing system that has failed due to hail damage.

00 31 19.13 Movement and Vibration Information
00 31 19.16 Acoustic Information
00 31 19.19 Traffic Information
00 31 21 Survey Information
00 31 21.13 Site Survey Information
00 31 21.16 Measured Drawing Information
00 31 21.19 Photographic Information
00 31 24 Environmental Assessment Information
00 31 24.13 Soil Contamination Report
00 31 24.23 Environmental Impact Study Report
00 31 24.26 Environmental Impact Report Evaluation
00 31 24.29 Record of Environmental Impact Decision
00 31 24.33 Environmental Impact Mitigation Report
00 31 25 Existing Material Information
00 31 25.16 Existing Concrete Information
00 31 25.19 Existing Masonry Information
00 31 25.23 Existing Metals Information
00 31 25.26 Existing Wood, Plastics, and Composites Information
00 31 25.29 Existing Thermal and Moisture Protection Information
00 31 26 Existing Hazardous Material Information

00 31 26.23 Existing Asbestos and Lead Information
This inspection does not waive the supervisor/contractor responsibility to provide adequate worker training/ppe. The Requestor is responsible for submitting an inspection request with adequate time prior to commencing work to arrange and complete any necessary hazard abatement activities BEFORE other work begins. Inspection request form is located on the Engineering/Inspections website. Supervisors shall make this form or the information contained within it available for review by all employees present at the work site.

The purpose of this form is to notify Contractors and Subcontractors and their employees working at Northern Arizona University of known or anticipated workplace hazards. NAU maintains comprehensive material/safety inspections and safety programs for campus buildings. Test results and safety programs are available for review in the NAU offices of Material Safety or Environmental Health and Safety. The following known and assumed hazards have been identified to be present in the work area located in Building(s): **Chemistry #20, Performing Arts #37, Bilby #52, Bio-Sci #21, ROTC #47A**

Some roofing materials on these buildings have been documented to contain asbestos/lead which may only be removed by certified workers and disposed of as asbestos/or hazardous lead waste. Please refer to the attached survey summary forms to determine the specific requirements for each involved building. Any abatement work and all lead removal must be coordinated through the Material Safety office to ensure that applicable laws and NAU policies are complied with.

If the planned scope of work changes or increases, or if materials not listed on the attached summary forms is scheduled for disturbance, contact the material safety office for guidance or a supplemental inspection before proceeding. Failure to do this may result in violation of state/federal safety and environmental regulations, NAU Policies, and the terms of the vendor's service agreement.

NAU is responsible for informing you of the presence of hazards in your project work area on the NAU campus. If you encounter any previously unidentified hazard stop all work immediately and contact the NAU Project Manager or Material Safety Official (928-523-6435). By law, Employers must provide adequate training and protection for employees who will be exposed to hazards including those in this notification. The responsible party signing below agrees that it is the responsibility of the Contractor or Subcontractor to be knowledgeable of and comply with all applicable local, state, and federal safety regulations, and with university policies related to the hazards detailed in this form.

Your signature below acknowledges that you have received notice from NAU that hazardous materials or conditions are or may be present in your work area(s), and that you agree to fully assume the responsibility for ensuring the safety of yourself and your employees, which includes ensuring that you comply with all applicable local, state, and federal laws, and with university policies governing hazardous materials or conditions.

If you have any questions, please contact the NAU Material Safety Official at 928-523-6435.

**COMPANY NAME:**

<table>
<thead>
<tr>
<th>NAME OF RESPONSIBLE PARTY:</th>
<th>TITLE:</th>
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<tbody>
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</table>

**SIGNATURE:**

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<tr>
<th>DATE:</th>
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</table>

No work shall be authorized nor shall it commence prior to completion and return of Form FS#13 by the vendor and return of the completed form to the NAU Project Manager or the party authorizing the work.
PLEASE ALLOW UP TO TWO (2) WEEKS PROCESSING TIME FOR INSPECTIONS REQUIRING SAMPLE COLLECTION

PROJECT #: 09.001.153/09.001.166  
REQUESTOR: Joshua Spear  
DATE: 3/29/2016

PROJECT NAME: Re-roof Bilby Research Center #52  
AHERA CERTIFIED BLDG INSPECTOR: ______________

INITIAL INSPECTION AND A FOLLOW-UP (IF REQUIRED) IS AT NO COST TO THE REQUESTOR.
SAMPLE ANALYSIS FEES MAY BE CHARGED, AT THE STANDARD RATE TO THE CLIENT DEPARTMENT OR PROJECT

This inspection does not waive the supervisor/contractor responsibility to provide adequate worker training/ppe.
The Requestor is responsible for submitting an inspection request with adequate time prior to commencing work to arrange and complete any necessary hazard abatement activities BEFORE other work begins. Inspection request form is located on the Engineering/Inspections website. Supervisors shall make this form or the information contained within it available for review by all employees present at the work site.

Supervisors shall make this form or the information contained within it available for review by all employees present at the work site.

If any materials not listed above are scheduled for disturbance or are discovered to be in a disturbed state, contact the Material Safety Office for a supplemental inspection prior to proceeding.

If any materials not listed above are scheduled for disturbance or are discovered to be in a disturbed state, contact the Material Safety Official at 928-523-6435 for guidance or a supplemental inspection before proceeding with any additional work.

<table>
<thead>
<tr>
<th>MATERIAL SUMMARY</th>
<th>ASBESTOS</th>
<th>LEAD</th>
<th>PCB</th>
<th>ABATEMENT/SPECIAL PRACTICES?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling Materials</td>
<td></td>
<td></td>
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<td>Y=YES N=NO A=ASSUMED P=PENDING NA=NOT APPLICABLE</td>
</tr>
<tr>
<td>Wall Materials</td>
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<tr>
<td>Flooring Materials</td>
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<tr>
<td>Thermal System Insulation (TSI)Materials</td>
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<tr>
<td>Other Materials</td>
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</table>

**COMMENTS/SPECIAL REQUIREMENTS**

The scheduled activities are not anticipated to disturb any known/assumed asbestos/lead/pcb and the work may proceed with no additional controls for these materials. If any materials not listed above are scheduled for disturbance or become disturbed, please contact the Material Safety Office for a supplemental inspection prior to proceeding.

If any materials not listed above are scheduled for disturbance or are discovered to be in a disturbed state, contact the Material Safety Official at 928-523-6435 for guidance or a supplemental inspection before proceeding with any additional work.
<table>
<thead>
<tr>
<th>Section Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 31 26.29</td>
<td>Existing Polychlorinate Biphenyl Information</td>
</tr>
<tr>
<td>00 31 26.33</td>
<td>Existing Mold Information</td>
</tr>
<tr>
<td>00 31 26.36</td>
<td>Existing Hazardous Waste Drum Information</td>
</tr>
<tr>
<td>00 31 31</td>
<td>Geophysical Data</td>
</tr>
<tr>
<td>00 31 31.13</td>
<td>Seismic Investigations Information</td>
</tr>
<tr>
<td>00 31 31.16</td>
<td>Gravity Investigations Information</td>
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<tr>
<td>00 31 31.19</td>
<td>Magnetic Investigations Information</td>
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<td>00 31 31.23</td>
<td>Electromagnetic Investigations Information</td>
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<tr>
<td>00 31 31.26</td>
<td>Electrical Resistivity Investigations Information</td>
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<tr>
<td>00 31 31.29</td>
<td>Magnetotelluric Investigations Information</td>
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<tr>
<td>00 31 32</td>
<td>Geotechnical Data</td>
</tr>
<tr>
<td>00 31 32.13</td>
<td>Subsurface Drilling and Sampling Information</td>
</tr>
<tr>
<td>00 31 32.16</td>
<td>Material Testing Information</td>
</tr>
<tr>
<td>00 31 32.19</td>
<td>Exploratory Excavation Information</td>
</tr>
<tr>
<td>00 31 32.23</td>
<td>Geotechnical Monitoring Information</td>
</tr>
<tr>
<td>00 31 43</td>
<td>NAU Permit Application</td>
</tr>
</tbody>
</table>

The NAU permit application and procedure can be found at [http://nau.edu/Facility-Services/DP_Contract/](http://nau.edu/Facility-Services/DP_Contract/).

00 31 46 Other Permits

**END OF SECTION**
The undersigned hereby proposed, and agrees to furnish all labor, material, transportation, supervision and services necessary to complete all work as called for in the plans and specifications, and that the lump sum bid includes all applicable costs of bonds, insurance, permits, fees, and sales tax, or any applicable taxes.

We acknowledge the following addenda and have included their provisions in this proposal.

Addendum No. ___________________ Dated __________
Addendum No. ___________________ Dated __________
Addendum No. ___________________ Dated __________
Addendum No. ___________________ Dated __________

**BASE BID**: The undersigned proposes to complete all work as required per the Specifications, for a lump sum of:

($_________________________).

Enclosed herewith is a cashier's check or Bid Bond (NAU form FS#9) made payable to the Owner in the amount of $__________, which is not less than 10% of the amount of the total bid proposal, as a guarantee that the undersigned will furnish required Performance Bond and Labor and Material Bond, and enter into contract, on basis of above proposal.

Undersigned further agrees that said check (or Bid Bond) shall be forfeited as Liquidated Damages (no penalty) if undersigned fails to enter into contract after requested to do so by Owner.

Bids shown above are valid for a period of 60 days after the date of opening bids, and may be withdrawn following that date if no contract has been awarded.

The undersigned understands that the Owner reserves the right to reject any or all bids, or to waive any informality in receipt of the above Proposal. **Owner reserves the right to award by Base Bid alone, by the sum of Base Bid and any combination of Alternate Bid Group Amounts, or as the sum of the Base Bid and all the Alternate Bid Group Amounts, whichever is deemed most advantageous to Owner.**

It is hereby understood and mutually agreed by and between the Contractor and the Owner that the date of beginning, rate of progress, and time of completion of the Work as set forth in the contract documents are of the essence of the contract. The amount of $100 per calendar day will be assessed against the contract for work not completed at the Substantial Completion date. Said amounts shall accrue until such time as...
time that the Work covered under this contract is complete, not as a penalty, but as Liquidated Damages.

In addition, it is mutually agreed by and between the Contractor and the Owner, the amount of $100 per calendar day will be assessed against the contract for work not completed at the Final Completion date. Said amounts shall accrue until such time that the Work covered under this contract is complete, not as a penalty, but as Liquidated Damages.

The Proposer hereby certifies that he/she is the holder of a valid Contractor’s License in accordance with Arizona State Law and that such license classification allows the Contractor to perform the type of construction identified by these Bid Documents. The proposer also certifies that he/she holds all of the required certifications and licenses outlined in the bidding documents and shall provide proof of all certifications, licenses and warranties within 5 days of Owner notification to the apparent low bidder with the intent to Award.

If corporation,

______________________________
Company/Corporation

______________________________
Signature Date

______________________________
Signature

Arizona License Class and Number
KNOW ALL MEN BY THESE PRESENTS, that we ________________________________ (Here insert full name and address or legal title of Contractor)
as Principal, hereinafter called the Principal, and ________________________________ (Here insert full name and address or legal title of Surety)
a corporation duly organized under the laws of the State of ____________________________ as Surety, hereinafter called the Surety, are held and firmly bound unto ________________________________ (Here insert full name and address or legal title of Owner) as Obligee, hereinafter called the Obligee, in the sum of Dollars ($__________________), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for ________________________________ (Here insert full name, address and description of project)

NOW, THEREFORE, if the obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contractor and give such bond or bonds, it the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _______________________ day of ____________________________, 20__.

__________________________    __________________________
(Principal)                   (Seal)

__________________________
(Witness)

__________________________
(Title)

__________________________    __________________________
(Surety company)              (Seal)

__________________________
(Witness)
<table>
<thead>
<tr>
<th>Section Number</th>
<th>Title</th>
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<tbody>
<tr>
<td>00 43 21</td>
<td>Allowance Form</td>
</tr>
<tr>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>00 43 22</td>
<td>Unit Prices Form</td>
</tr>
<tr>
<td></td>
<td>NA</td>
</tr>
<tr>
<td>00 43 23</td>
<td>Alternates Form</td>
</tr>
<tr>
<td></td>
<td>NA</td>
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</tbody>
</table>
TO: ______________________________________________________________

PROJECT: __________________________________________________________

We hereby submit for your consideration the following product instead of the specified item for the above project:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
<th>Paragraph/Line</th>
<th>Specified Item</th>
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Proposed Substitution: ______________________________________________________

Attached complete product descriptions, drawings, photographs, performance and test data, and other information necessary for evaluation.

A. Will changes be required to building design in order to properly install proposed substitution? Yes ___ No ___. If Yes, explain: ____________________________________________________________

B. Will the undersigned pay for changes to the building design, including engineering and drawing costs, caused by requested substitution? Yes ___ No ___.

C. What differences exist between proposed substitution and specified item? ____________________________________________________________

D. Does substitution affect Drawing dimensions: Yes ___ No ___. If yes, explain. ____________________________________________________________

E. What affect does substitution have on other trades? ____________________________________________________________

F. Does Manufacturer’s warranty of proposed substitution differ from that specified? Yes ___ No ___. If yes, explain. ____________________________________________________________

G. Will substitution effect progress schedule? Yes ___ No ___. If yes, explain: ____________________________________________________________

H. Will substitution require more license fees or royalties than specified product? Yes ___ No ___. If Yes, explain ____________________________________________________________
I. Will substitution cost more than specified product? Yes ___ No ___ If yes, explain how much ____________________________

II. Will maintenance and service parts be locally available for substitution? Yes ___ No ___. If no, explain ____________________________

Submitted By:

____________________________  For DP's Use Only: Signature
Signature

____________________________  ___ Accepted  ___ Accepted As Noted
Firm

____________________________  ___ Not Accepted  ___ Received Too Late
Address

____________________________  By __________________________
Date __________________________
Remarks _______________________
Telephone ______________________

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Project 09.001.166.161 – Bilby Roofing Replacement
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<tr>
<th>Section Number</th>
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<td>00 43 26</td>
<td>Estimated Quantities Form</td>
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<tr>
<td>00 43 27</td>
<td>Separate Prices Break-Out Form</td>
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</tbody>
</table>
Proposer is to list every subcontractor and supplier proposed to be employed on the above project as required by the bidding documents. **All Sections of the specifications must be included below.** Any work proposed to be done by the Proposer should be listed as a line item with the word "Self" inserted under firm name. Designation of subcontractors is subject to University approval. No change in subcontractor's list will be permitted without the University's prior written consent. **Failure to provide a complete list with all information may be considered non-responsive.** Subcontractor List must be enclosed inside bid package per Section 00 43 36. **All bidders must sign page 3 of this subcontractor list, even if all work will be self performed.**

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I submit that the preceding is correct and current as of ________________________________.

[BID OPENING DATE]

[COMPANY] [AUTHORIZED REPRESENTATIVE] [DATE]
<table>
<thead>
<tr>
<th>Section Number</th>
<th>Title</th>
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<tbody>
<tr>
<td>00 43 83</td>
<td>Proposed Construction Schedule Form</td>
</tr>
<tr>
<td>00 43 93</td>
<td>Bid Submittal Checklist</td>
</tr>
</tbody>
</table>
CONTRACTOR STATEMENT OF QUALIFICATIONS FS#2

(Failure to include the statement of qualifications within the bid packet will be considered non-responsive)

Fill in all blanks. If not applicable, insert "N.A."

COMPANY NAME: ____________________________

CONTACT: __________________ PHONE: __________________ FAX: __________________

YEARS IN BUSINESS UNDER ABOVE NAME: ________________ YEARS IN BUSINESS IN ARIZONA: __________________

ADDRESS: ______________________________________

CITY, STATE, ZIP: ________________________________

[ ] SOLE PROPRIETORSHIP  [ ] PARTNERSHIP  [ ] CORPORATION  [ ] STATE OF INCORPORATION
[ ] WOMEN-OWNED BUSINESS  [ ] MINORITY-OWNED BUSINESS  [ ] SMALL BUSINESS (LESS THAN $4M GROSS/YR OR LESS THAN 100 FTE)  CHECK ANY THAT APPLY TO YOUR BUSINESS

CONTRACTOR LICENSE NO: _________________________ CLASS: __________________________ STATE: ____________

BONDING COMPANY: _____________________________ AGENT: ____________________________

ANY OTHER BUSINESS NAMES USED: ___________________ YEARS ___ TO ______________________

PLEASE CHECK AREAS OF SPECIALTY:

GENERAL  [ ]  PAVING  [ ]  CONCRETE  [ ]
ASBESTOS  [ ]  ROOFING  [ ]  ELECTRICAL  [ ]
PLUMBING  [ ]  EXCAVATING  [ ]  MECH/HVAC  [ ]
OTHER  [ ]

PREFERRED PROJECT SIZE:
[ ] 1. $10,000 - $100,000  # OF PROJECTS COMPLETED IN PAST 5 YEARS __________________________
[ ] 2. $100,000 - $500,000  # OF PROJECTS COMPLETED IN PAST 5 YEARS __________________________
[ ] 3. $500,000 - $2,000,000  # OF PROJECTS COMPLETED IN PAST 5 YEARS __________________________
[ ] 4. $2,000,000 +  # OF PROJECTS COMPLETED IN PAST 5 YEARS __________________________

PERCENTAGE OF WORK NORMALLY ACCOMPLISHED WITH YOUR OWN FORCES: __________________________

PRESENT NUMBER OF PERSONNEL: __________________________

WILL YOU EXPAND YOUR WORK FORCE FOR THIS PROJECT? _____ HOW MANY? __________________________

COMPUTER SOFTWARE USED FOR SCHEDULING PURPOSES: __________________________
COMPUTER SOFTWARE USED FOR DOCUMENT TRACKING PURPOSES:

REFERENCES: (BANK, TRADE, PROFESSIONAL)

1. [NAME] [ADDRESS] [PHONE NO.]

2. [NAME] [ADDRESS] [PHONE NO.]

3. [NAME] [ADDRESS] [PHONE NO.]

MY MY NOTARIZED SIGNATURE BELOW I HEREBY SWEAR THAT THE ANSWERS TO THE FOREGOING QUESTIONS AND ALL STATEMENTS HERE CONTAINED AND ATTACHED ARE TRUE AND CORRECT.

[CONTRACTOR NAME OR AGENT] [DATE]

SUBSCRIBED AND SWORN BEFORE ME THIS ___________ DAY OF ______________, 20____.

NOTARY PUBLIC: ________________________________

MY COMMISSION EXPIRES: ____________________
The form of agreement between the Owner and Contractor shall be the Construction Agreement Between Owner and Contractor, Arizona Board of Regents. A copy of the latest version is available for review at on the website for information purposes only.

The aforementioned forms are hereby made a part of this Document and shall be binding to the same extent as if they were written in full herein.
<table>
<thead>
<tr>
<th>Section Number</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>00 60 00</td>
<td>Project Forms</td>
</tr>
<tr>
<td>00 61 00</td>
<td>Bond Forms</td>
</tr>
<tr>
<td>00 61 13</td>
<td>Performance and Payment Bond Forms</td>
</tr>
</tbody>
</table>
SECTION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS

PURSUANT TO BOARD OF REGENTS POLICY 3-804E
(Penalty of this bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, ____________________________ (hereinafter called the Principal), as Principal, and ____________________________ a corporation organized and existing under the laws of the State of ____________________________, with its principal office in the City of ____________________________ (hereinafter called the Surety), as Surety, are held and firmly bound unto the Arizona Board of Regents, (hereinafter called the Obligee), in the amount of ____________________________ Dollars ($_____________), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the ___ day of ____________________________, 20___, to construct and complete a certain work described as ____________________________, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extension thereof, with or without notice to the Surety and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived; then the above obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Board of Regents Policy Section 3-804E, and all liabilities on this bond shall be determined in accordance with the provisions of the section, to the same extent as if copied at length herein.

The prevailing party in a suit on this bond, including any appeal thereof, shall recover as a part of his judgment such reasonable attorneys’ fees as may be fixed by a judge of the Court.

Witness our hands this ______ day of ____________________________, 20___.

__________________________  ____________________________
PRINCIPAL  SEAL  SURETY  SEAL

By: ____________________________  BY: ____________________________

____________________________________________
Bond Number

____________________________________________
Agent Name & Telephone  Bonding Company & Telephone

____________________________________________
Agent Address  Bonding Company Address

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KNOW ALL MEN BY THESE PRESENTS:

That, ____________________________ (hereinafter called the Principal), as Principal, and ____________________________ a corporation organized and existing under the laws of the State of ____________________________, with its principal office in the City of ____________________________ (hereinafter called the Surety), as Surety, are held and firmly bound unto the Arizona Board of Regents, (hereinafter called the Obligee), in the amount of ____________________________ Dollars ($__________________), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the ______ day of ____________________________, 20___, to construct and complete a certain work described as ____________________________, which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall promptly pay all monies due to all persons supplying labor or materials to him/her or his/her subcontractors in the prosecution of the work provided for in said contract, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Board of Regents Policy Section 3-804E, and all liabilities on this bond shall be determined in accordance with the provisions of the section, to the same extent as if copied at length herein.

The prevailing party in a suit on this bond, including any appeal thereof, shall recover as a part of his judgment such reasonable attorneys' fees as may be fixed by a judge of the Court.

Witness our hands this ____________ day of _________________, 20__.

__________________________
PRINCIPAL

__________________________
SURETY

__________________________
Agent Name & Telephone

__________________________
Bonding Company & Telephone

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<table>
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<tr>
<th>Section Number</th>
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<tr>
<td>00 62 00</td>
<td>Certificates and Other Forms</td>
<td>00 62 00</td>
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<tr>
<td>00 62 11</td>
<td>Submittal Transmittal Form</td>
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</table>
DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS

Section Number: 00 62 16  Certificate of Insurance Form (FS#6)

---

ARIZONA BOARD OF REGENTS
CERTIFICATE OF INSURANCE (FS#6)

PROJECT NAME: Bilby Roofing Replacement  NAU PROJECT #: 09.001.166

<table>
<thead>
<tr>
<th>PRODUCER</th>
<th>COMPANIES AFFORDING COVERAGE</th>
<th>CURRENT A.M. BEST RATING</th>
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<tr>
<td></td>
<td>Insurance is to be placed with duly licensed or approved non-admitted insurers in the State of Arizona with an A.M. Best rating of not less than A- VII</td>
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Contractor shall furnish Northern Arizona University with certificates of insurance (ACORD form or equivalent approved by the State of Arizona). The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates of endorsements are to be received and approved by Northern Arizona University before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract, or to provide evidence of renewal, is a material breach of contract.

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<thead>
<tr>
<th>CO LTR</th>
<th>TYPE OF INSURANCE</th>
<th>NUMBER</th>
<th>POLICY</th>
<th>POLICY EFFECTIVE DATE (MM/DD/YY)</th>
<th>POLICY EXPIRATION DATE (MM/DD/YY)</th>
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THIS CERTIFICATE APPLIES TO ANY AND ALL PROJECTS AT NORTHERN ARIZONA UNIVERSITY. DESCRIPTION OF OPERATIONS/LOCATIONS/Vehicles/SPECIAL ITEMS:

>THE POLICIES FOR GENERAL LIABILITY AND AUTOMOBILE LIABILITY SHALL BE ENDORSED TO INCLUDE THE FOLLOWING ADDITIONAL INSURED LANGUAGE: “THE STATE OF ARIZONA, ITS DEPARTMENTS, AGENCIES, BOARDS, COMMISSIONS, UNIVERSITIES AND ITS OFFICERS, OFFICIALS, AGENTS, AND EMPLOYEES SHALL BE NAMED AS ADDITIONAL INSUREDS WITH RESPECT TO LIABILITY ARISING OUT OF THE ACTIVITIES PERFORMED BY OR ON BEHALF OF THE CONTRACTOR.

>IT IS AGREED THAT COVERAGES AFFORDED UNDER THE POLICIES CERTIFIED IN THIS CERTIFICATE SHALL BE PRIMARY FOR THE PERSON OR ORGANIZATION SHOWN IN THE SCHEDULE, BUT ONLY WITH RESPECT TO LIABILITY ARISING OUT OF YOUR WORK FOR THAT INSURED BY OR FOR YOU. OTHER INSURANCE AFFORDED TO THAT INSURED WILL APPLY AS EXCESS AND NOT CONTRIBUTE AS PRIMARY TO THE INSURANCE AFFORDED BY THIS ENDORSEMENT.

>IT IS FURTHER AGREED THAT SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.

>POLICIES FOR GENERAL LIABILITY, AUTO LIABILITY, AND WORKERS’ COMPENSATION SHALL CONTAIN A WAIVER OF SUBROGATION AGAINST THE STATE OF ARIZONA, ITS DEPARTMENTS, AGENCIES, BOARDS, COMMISSIONS, UNIVERSITIES & ITS OFFICERS, OFFICIALS, AGENTS, & EMPLOYEES FOR LOSSES ARISING FROM WORK PERFORMED BY OR ON BEHALF OF THE CONTRACTOR.

CERTIFICATE HOLDER/ADDITIONAL INSURED
NORTHERN ARIZONA UNIVERSITY
THE ARIZONA BOARD OF REGENTS
THE STATE OF ARIZONA
FACILITY SERVICES
BOX 5637
FLAGSTAFF, AZ 86011

AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY

SIGNATURE DATE

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<td>00 62 23</td>
<td>Construction Waste Diversion Form</td>
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<td>00 62 34</td>
<td>Recycled Content of Materials Form</td>
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<td>00 62 76</td>
<td>Application for Payment Form</td>
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</table>

### Clarification and Modification Forms

Many of the NAU forms will be located at: [http://nau.edu/Facility-Services/DP_Contract/](http://nau.edu/Facility-Services/DP_Contract/).

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<tbody>
<tr>
<td>00 63 13</td>
<td>Request for Interpretation Form</td>
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<td>00 63 19</td>
<td>Clarification Form</td>
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<td>00 63 25</td>
<td>Substitution Request Form (During Construction)</td>
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<td>00 63 33</td>
<td>Supplemental Instruction Form</td>
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<td>00 63 36</td>
<td>Field Order Form</td>
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<td>00 63 43</td>
<td>Written Amendment Form</td>
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<td>00 63 46</td>
<td>Construction Change Directive Form</td>
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This form can be located on the NAU Facility Services website.

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<tr>
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<tbody>
<tr>
<td>00 63 57</td>
<td>Construction Change Proposal Request</td>
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<td>00 63 63</td>
<td>Change Order Form</td>
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<td>00 63 66</td>
<td>Contingency Use Authorization Form</td>
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This form can be located on the NAU Facility Services website.

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<tbody>
<tr>
<td>00 63 69</td>
<td>Allowance Use Authorization Form</td>
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This form can be located on the NAU Facility Services website.

### Closeout Forms

Closeout Forms and Other Project Closeout Requirements - may include but are not limited to the following:

#### A. Substantial Completion

1. Fire Marshal Acceptance Alarm/Sprinkler and State Fire Marshal Acceptance Report
2. State Elevator Inspection Report
3. Insurance Carrier Certificate for Boiler Inspection
4. Preliminary Balance Report
5. Preliminary As-Builts
6. Attic Stock
7. Substantial Completion Project Inspection (FS #15)
8. Punchlist Issued (FS#24)
9. Certificate of Substantial Completion (FS#81)
10. Schedule of Required Maintenance (FS#88)

#### B. Final Completion

1. Final Balance Report
2. Final As-Builts
3. First Season Commissioning Complete
4. Second Season Commissioning Complete
5. Operations and Maintenance Manuals
6. Electronic Copy of All Approved Submittals and Shop Drawings
7. Special Warranties
8. Keys Returned (FS#10)
9. Project Final Inspection (FS#15)
10. Punchlist Complete (FS#24)
11. Project Warranty (FS#80)
12. Certificate of Final Completion (FS#81A)
13. Affidavit Non Use Asbestos Certificate (FS#83)

C. Final Payment
1. Contractor Final Payment Application
2. Final Subcontractor List (FS#82)
3. All Subcontractor Lien Releases (FS#84)
4. Consent of Surety to Final Payment Received (FS#88)
5. General Contractor Lien Release (FS#89)
6. Contractor Affidavit of Payment (FS#99)

Templates of the forms (FS#) can be found at: http://nau.edu/Facility-Services/DP_Contract/

00 65 14  Punchlist Form (FS#24)
00 65 15  Project Inspection Form (FS#15)
00 65 16  Certificate of Substantial Completion Form (FS#81)
00 65 17  Schedule of Required Maintenance Form (FS#88)
00 65 19  Certificate of Final Completion Form (FS#81A)
00 65 19.13 Affidavit of Payment (FS#99)
00 65 19.16 General Contractor Lien Release Form (FS#89)
00 65 19.17 Subcontractor Lien Release Form (FS#84)
00 65 19.19 Consent of Surety to Final Payment Form (FS#87)
00 65 19.19 Final Subcontractor List (FS#82)
00 65 36  Warranty Form (FS#80)

**END OF SECTION**
The General Conditions of the Standard Form Agreement Between Owner and Contractor, Arizona Board of Regents are hereby made part of the Contract Documents, as if they are included in the following pages. A copy is appended to the construction agreement and available for review at [http://nau.edu/Facility-Services/DP_Contract](http://nau.edu/Facility-Services/DP_Contract) or information purposes only.

The General Conditions are a part of the Contract and shall be binding on the General Contractor and all Subcontractors as if bound into this document.

**Supplementary Conditions**

**Bonds and Certificates**

The Bid price shall include the cost of Payment and Performance Bonds. Bonds shall cover the faithful performance, labor and material (100%) of the Contract and payment of all obligations (100%) arising thereunder in the form prescribed in Arizona Board of Regents Policy 3-804E. Bonds shall be executed by Corporate Sureties licensed in Arizona. **Bonds must be submitted on the forms included in Section 00 61 13.**

**Performance Bond**

Pursuant to Arizona Board of Regents Policy, the Contractor shall file with the Owner at or prior to the time of execution of the Contract, a Performance Bond on the Owner approved Form, referenced in, Section 00 61 13.13 in the full amount of the Contract. The Performance Bond must be executed on the noted form. Substitutions will not be allowed. The Surety furnishing this bond shall be satisfactory to the Owner and shall be authorized to do business in the State of Arizona.

**Payment Bond**

Pursuant to Arizona Board of Regents Policy, the Contractor shall file with the Owner at or prior to the time of execution of the Contract, a Payment Bond on the Owner approved Form, referenced in Section 00 62 13, in the full amount of the Contract. The Payment Bond must be executed on the noted form. Substitutions will not be allowed. The Surety furnishing this bond shall be satisfactory to the Owner and shall be authorized to do business in the State of Arizona.

**Certificates of Compliance with Applicable Laws and Regulations**

**Lien Releases**

Upon completion of this Project and before final payment is made, the Contractor will furnish to the Owner written 100% Unconditional Lien Releases from all subcontractors, material dealers and other participants doing work under this Contract.

If payment to Subcontractors is outstanding pending final payment by the University, or if for any other reason 100% Unconditional Lien Releases cannot be obtained from all subcontractors, the Contractor may provide the University with an indemnity bond.
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<tr>
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<tr>
<td>00 73 16</td>
<td>Insurance Requirements</td>
<td>Insurance Requirements are defined by the contract. Please refer to <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a> for specific language.</td>
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<tr>
<td>00 73 34</td>
<td>Affirmative Action for Disabled Workers</td>
<td>Refer to <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a> for specific requirements within the Construction Agreement.</td>
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<tr>
<td>00 73 36</td>
<td>Equal Employment Opportunity Requirements</td>
<td>Northern Arizona University is an equal opportunity employer and all contracts with the University are subject to the conditions and requirements of Executive Order No. 99-4 as stated below.</td>
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**EXECUTIVE ORDER No. 99-4**

**PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS, NON-DISCRIMINATION IN EMPLOYMENT BY GOVERNMENT CONTRACTORS AND SUBCONTRACTORS**

**PART I:**

Non-discrimination in employment by government contractors and subcontractors.

All government contracting agencies shall include in every government contract hereinafter entered into the following provisions:

A. The contractor will not discriminate against any employee or applicant for employment because of race, age, color, religion, sex or national origin. The contractor will take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, age, color, religion, sex or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

B. The contractor will in all solicitations or advertisement for employees placed by or on behalf of the contractor state that all qualified applicants will receive consideration for employment without regard to race, age, color, religion, sex or national origin.

C. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided by the agency contracting officer advising the labor union or workers' representative of the
contractor's commitments under this Executive Order and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The contractor will furnish all information and reports required by the contracting agency and will permit access to his books, records and accounts by the contracting agency and the Civil Rights Division for purposes of investigation to ascertain compliance with such rules, regulations and orders.

E. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations or order of the Arizona Civil Rights Division said noncompliance will be considered a material breach of the contract and this contract may be canceled, terminated or suspended in whole or in part, and the contractor may be declared ineligible for further government contracts until said contractor has been found to be in compliance with the provisions of this order and the rules and regulations of the Arizona Civil Rights Divisions, and such sanctions may be imposed and remedies revoked as provided in Part II of this order, and the rules and regulations of the Arizona Civil Right Division.

F. The contractor will include the provisions of paragraphs A through E in every subcontract purchase order so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect in the subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the State of Arizona to enter into such litigation to protect the interests of the State of Arizona.

G. Each contractor having a contract containing the provisions prescribed in this section shall file and shall cause each of his subcontractors to file compliance reports with the contracting agency or the Civil Rights Division, as may be directed. Compliance reports shall be filed within such ties and shall contain such information as the practices, policies, programs and employment policies, programs and employment statistics of the contractor and each subcontractor and shall be in such form as the Arizona Civil Rights Division may prescribe.

H. Bidders or prospective contractors or subcontractors shall be required to state whether they have participated in any previous contract subject to the provisions of this order or any preceding similar Executive Order and in that event to submit on behalf of themselves and the proposed subcontractors compliance reports prior to, or as an initial part of negotiation of a contract.

I. Whenever the contractor or subcontractor has a collective bargaining agreement or other contract or understanding with a labor union or an agency referring workers or providing or supervising apprenticeship or training for such workers, the compliance report shall include such information from such labor unions or agency practices and policies affecting compliance as the contracting agency or Civil Rights Division may prescribe; provided that, to the extent such
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information is within the exclusive possession of a labor union or an agency referring workers or providing supervision apprenticeship or training and such labor union or agency shall refuse to furnish such information to the contractor, the contractor shall so certify the contracting agency as part of its compliance report and shall set forth what efforts he has made to obtain such information.

J. The contracting agency or the Civil Rights Division shall require that the bidder or prospective contractor or subcontractor shall submit as part of his compliance report a statement in writing signed by an authorized officer or agent on behalf of any labor union or any agency referring works or providing or supervising apprenticeship or other training with which the bidder or prospective contractor deals with supporting information to the effect that the signer’s practices and policies do not discriminate on the ground of race, color, religion, sex or national origin, and that the signer either will affirmatively cooperate in the implementation of the policy and provisions of this order or that it consents and agrees that recruitment employment and the terms and conditions of employment under the proposed contract shall be in accordance with the purpose and provisions of this order. In the event that the union or the agency shall refuse to execute such a statement, the compliance shall so certify and set forth what efforts have been made to secure such a statement and such additional factual material as the contracting agency or the Civil Rights Division may require.

PART II

Enforcement

The parties to the contract agree that the Civil Rights Division may investigate the employment practices of the contractor or any subcontractor employed by the contractor or initiate an investigation by an appropriate contracting agency or determine whether or not any of the contractual provisions pertaining to discrimination in this contract have been violated. Such investigations shall be conducted in accordance with the procedures established by the Civil Rights Division, and the investigation agency shall report to the Civil Rights Division any action taken or recommended. The Civil Rights Division may receive and investigate or cause to be investigated complaints by employees or prospective employees of the contractor or subcontractor under this agreement which allege discrimination contrary to the contractual provisions of this agreement. If the investigation is conducted for the Civil Rights Division by an agency other than the Civil Rights Division, that agency shall report to the Civil Rights Division what action has been taken or is recommended with regard to such complaint.
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<td>00 73 50</td>
<td>Liquidated Damages</td>
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<td>It is hereby understood and mutually agreed, by and between Contractor and Owner, that the date of beginning, rate of progress and the time for completion of the work to be done hereunder are essential conditions of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on the date to be specified in the Notice to Proceed.</td>
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<td>The Contractor agrees that said work shall be prosecuted regularly, diligently and uninterruptedly at such rate of time he specifies. It is expressly understood and agreed, by and between the Contractor and Northern Arizona University, that the time for completion of the work will be set by the substantial and final completion dates as identified in Invitation to Bid.</td>
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<td>Now, if the said Contractor shall neglect, fail, or refuse to complete the work by the specified date, then the Contractor does hereby agree, as a part consideration for the awarding of the Contract, to pay the Owner a certain sum, as outlined hereafter, per calendar day, until the Project is completed, not as a penalty, but as Liquidated Damages for each breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work.</td>
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<td>For each calendar day that any part of the work remains uncompleted after the expiration of the time specified and/or allowed for completion of the work stipulated in the contract or approved increase by the additional work or materials ordered after the contract is signed, effecting the critical path schedule of the project, the sum per day shall be deducted from any monies due the Contractor, or if no money is due the Contractor, the Owner shall have the right to recover said sum or sums from the Contractor, from the surety or from both.</td>
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<td>It shall be understood that the time to complete the Project, beyond the contractual date of completion is in itself prima facie evidence of actual damages incurred, and the amount of these deductions are to cover the Liquidated Damages caused by the loss of use, or limited use, of the building and other additional Owner incurred losses, or expenses, including supervisory and consulting services, due to the failure of the Contractor to complete the work within the time specified.</td>
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|                | The said amount is fixed and agreed upon by and between Contractor and Owner because of the impracticality and extreme difficulty of fixing and ascertaining the actual damages Owner would
in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain.

It is further agreed that time is of the essence of each and every portion of this contract and of the specifications where a definite and certain length of time is fixed for the performance of any act whatsoever; and when under the Contract an additional time is allowed as hereinbefore mentioned for the completion of any Work, the new time limit fixed by such extension shall be of the essence of this Contract, provided that the Contractor shall not be charged with Liquidated Damages or any excess cost when the delay in completion of Work is due:

To unforeseeable cause beyond the control and without fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather. The unusualness of the weather shall be determined by statistics from the local Weather Bureau over a period of the last 10 years. Upon request of the DP, the Contractor shall obtain statistical information from the Weather Bureau to support his claim for extension caused by unusual weather condition.

If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner or the DP, or by any separate Contractor employed by the Owner, or by changes in the Work, or by labor disputes, fire, unusual delay in transportation, unusually severe weather conditions, adverse soil conditions, unavoidable casualties, delays specifically authorized by the Owner, or by causes beyond the Contractor's control, avoidance, or mitigation, and without any fault or negligence of the Contractor or Subcontractor or Supplier at any tier, then the Contract Time shall be extended by Change Order for such reasonable time as the Owner may determine that such event has delayed the critical path of the Work or individual milestone or overall completion of the Work after considering the advice of the DP, if the Contractor complies with the notice and documentation requirements set forth below. The Contractor shall pay any additional fees or costs incurred by the Owner or DP as the result of delays caused by the Contractor for circumstances not excused as provided herein.

Initial notice of any delay in the Work shall be made in writing to the DP and Owner immediately but in no event later than 24 hours after discovery of the event giving rise to the delay. Then, Contractor shall provide additional details of the delay in writing to the DP and the Owner within seven (7) calendar days from the beginning of the delay. Failure to meet these time requirements shall absolutely bar any and all later claims. The detailed notice shall indicate the cause of the delay, the anticipated length of the delay, the probable effect of such delay upon the progress and cost of the Work, and potential mitigation plans. If the cause of the delay is continuing, the Contractor must give written notice every month at the same time it submits the updated progress Narrative Report to the DP. Within fifteen (15) days after the elimination of any such delay, the Contractor shall submit further documentation of the delay and, if applicable, a formal written request covering an extension of time for such delay. The written request for time
extension shall state the cause of the delay, the number of days extension requested and provide a fully documented analysis of the Progress Schedule, including a fragment and any other data demonstrating a delay in the critical path of the Work or individual milestone or the overall project completion. If the Contractor does not comply with the notice and documentation requirements set forth above, the claim for delay is absolutely barred.

Schedule of Liquidated Damages shall be as follows:

Substantial Completion: $100 (Dollar Amount)
for every day beyond the scheduled date of Substantial Completion through to and including the date indicated on the Official Certificate of Substantial Completion when issued by the DP.

Final Completion: $100 (Dollar Amount)
for every day beyond the date of Final Completion as established in the Contract Documents and per Sections 31 and 32 of the Construction Agreement. Work to be completed prior to a determination of Final Completion includes the fulfillment of all Contractual requirements, including the completion of all punch list items and Contract Closeout documents.

00 73 60  Value Engineering Change Proposals (VECP)

General
This clause applies to any cost reduction proposal (hereinafter referred to as a Value Engineering Change Proposal (VECP)) initiated and developed by the Contractor for changing the drawings, designs, specifications, or other requirements of this contract. This clause does not, however, apply to any such proposal unless it is identified as a VECP by the Contractor at the time of its submission to the Owner.

Definition
All VECP’s must:
Result in a savings to the Owner by providing a decrease in the cost of the performance of this contract without impairing any required functions and characteristics such as service life, reliability, economy of operation, ease of maintenance, desired appearance, standardized feature, fire protection features, safety features.

Require, in order to be applied to this contract, a change order to this contract.

Proposal Screening
The Contractor will present anticipated proposals to the DP for proposal screening. During this screening, the DP will render an opinion as to the relative merits of the proposal.

The DP will provide as a part of the screening, the minimum technical content requirements to be submitted by the Contractor as a part of the formal VECP.

Concurrence by the Owner and the DP with merits of the proposal during the screening is not to be assumed that the VECP will automatically be accepted.

In the event a VECP is received which has not had the proposal screening, it may be rejected without review.

**VECP Content**

As a minimum, the following information must be submitted by the Contractor with each VECP.

A description of the difference between the existing contract requirement and that proposed, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effect of the change on the end item's performance.

A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

A separate, detailed cost estimate for (1) the affected portions of the existing contract requirement and (2) the VECP.

A description and estimate of costs the University may incur in implementing the VECP, such as test and evaluation and operating and support costs.

A prediction of any effects the proposed change would have on collateral costs to the agency.

A statement of the time by which a Change Order accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous University actions, if known.

The Contractor may withdraw, in whole or in part, a VECP that has not been accepted by the Owner within the period specified in the VECP.

**Owner Action**

The DP shall notify the Contractor of the status of the VECP within 30 days after submitted for review. If additional review time is required, the DP shall notify the Contractor of this within the...
original 30-day period. The Owner or DP shall not be held liable for any delays in acting upon a VECP.

If a VECP is not accepted, the DP shall notify the Contractor in writing, explaining the reasons for rejection. The notice of rejection shall be submitted within the review period referenced above.

Any VECP may be accepted, in whole or in part by the Owner. The Owner may modify a VECP, with the concurrence of the Contractor, to make it more acceptable. If any modification increases or decreases the savings resulting from the VECP, the Contractor’s fair share will be determined on the basis of the VECP as modified. Unless and until a change order applies a VECP to this contract, the Contractor will remain obligated to perform in accordance with the terms of the existing contract. The Owner may accept in whole or in part any VECP submitted pursuant to this clause by issuing a change order which will identify the VECP on which it is based.

**Payment**
If a VECP submitted pursuant to this clause is accepted under this contract an equitable adjustment in the contract price shall be made. The equitable adjustment shall be determined by the following method: subtract any ascertainable costs to the Owner, multiply this amount by 50 percent and subtract from the original contract price to determine the adjusted contract price.

**Rights to Data**
The Contractor may restrict the Owner’s right to use any sheet of a VECP or of the supporting data, submitted pursuant to this clause, in accordance with the terms of the following legend if it is marked on the sheet:

These data furnished pursuant to a value engineering incentive clause and shall not be disclosed to other than the Owner and DP, or be duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under said clause.

This restriction does not limit the Owner’s right to use information contained in these data if it is or has been obtained from another source, or is otherwise available, without limitations. If such a proposal is accepted by the Owner by issuance of a change order under the "Changes" clause of said contract after the use of these data in such an evaluation, the Owner shall have the right to duplicate, use, and disclose any data pertinent to the proposal as accepted in any manner and for any purpose whatsoever and have other so do.

In the event of acceptance of a VECP, the Contractor hereby grants to the Owner all rights to use, duplicate, or disclose in whole or part, in any manner and for any purpose whatsoever, and to have or permit others to do so, any data reasonably necessary to fully utilize such proposal. Contract modifications made as a result of this clause will state that they are made pursuant to it.

**Payment for Rejected Proposals**
In the event that the DP and the Owner accept a VECP presented by the Contractor which is subsequently withdrawn by the Contractor, the DP’s costs realized for evaluating the VECP will be reimbursed by the Contractor.

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DIVISION 1 – GENERAL REQUIREMENTS

01 10 00 SUMMARY

01 11 00 Summary of Work

01 11 13 Work Covered by Contract Documents

THE PROJECT CONSISTS OF REMOVAL AND REPLACEMENT OF EXISTING ROOF SYSTEM AND ASSOCIATED FLASHINGS IN ACCORDANCE WITH CODES, PLANS, SPECIFICATIONS, NAU STANDARDS AND GENERALLY ACCEPTED INDUSTRY STANDARDS.

SECTION 01 11 00 - SUMMARY

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Requirements stated in the General Conditions of these Specifications apply to all work in this Section.

B. Provide the administration, facilities, materials, equipment, labor, services, and expertise necessary to integrate the Work into the total building system so that no leakage into the roof system or building occurs.

1. One fully staffed crew, of sufficient size to complete the work within the contract schedule time, working on-site continually throughout the project.

2. Consultant will monitor the daily production of the Contractor. If production rates do not meet the Contractor’s schedule, consultant will require the Contractor to adjust their crew size to maintain their schedule at no additional cost from the Contractor.

C. Manufacturer’s Representation

1. The Contractor is to coordinate the roofing manufacturer representative site visit’s in accordance to the following schedule:

   a. Attendance at the pre-construction meeting. Manufacturers technical representative shall provide on-site training and quality assurance in conjunction with the beginning of membrane installation.

   b. Manufacturers technical representative shall visit the site a minimum of every week thereafter for technical review.

   c. Manufacturers technical representative shall attend the final inspection.
2. During each visit, the manufacturers technical representative shall check all work installed since the last visit, mark defects for repair and provide a written report listing deficient work and corrective action required by Contractor. The manufacturer technical representative, within two (2) business days, shall provide reports of their findings and observations upon completion of each site visit.

D. Code Compliance and Standards

1. The completed roof system shall meet the following requirements:
   b. International Existing Building Code 2012 (IEBC)
   c. International Plumbing Code 2012 (IPC)
   d. International Mechanical Code 2012 (IMC)
   e. National Electrical Code 2011 (NEC) (NFPA 70)
   f. International Fuel Gas Code 2012 (IFGC)
   g. International Fire Code 2012 (IFC)
   h. National Fire Alarm Code 2013 (NFPA 72)
   i. Installation of Sprinkler Systems 2013 (NFPA 13)
   j. NAU Fire Code (Most recent edition unless otherwise required)
   k. Arizona State Fire Code
   l. 2010 ADA Standards for Accessible Design as approved by the Department of Justice on July 26, 2010 (published in the Federal Register on September 15, 2010) and any more recent related Federal and State requirements with their related standards as they may apply.
   n. NAU Design Guidelines for Disabled Access Parking and Accessible Route at Vehicular Traffic Areas (Most recent edition unless otherwise required)
   o. 2007 ASME A17.1, Safety Codes for Elevators and Escalators (unless otherwise required)
   p. AZ Elevator Act (Title 23, Chapter 2, Article 12)
DIVISION 1 – GENERAL REQUIREMENTS

Section Number Title

q. Latest ADOSH Arizona Elevator Rules

r. AZ Executive Order 2008-29 (FYI: Reaffirms Executive Order 2005-05. Requires all new state-funded buildings to meet the Silver LEED standard, at a minimum.)

s. ASHRAE 90.1 – Most recent edition (FYI: 2004 is mandatory for AZ state-owned and state-funded buildings.)

t. ASHRAE Design Codes 189/1 (Most recent edition unless otherwise required)

u. Arizona Revised Statutes, including:
   (1) 34-451 (energy conservation standards)
   (2) 34-452 (solar design standards and energy life cycle costing)

v. Occupational Safety and Health Administration Regulations

w. NAU Material Safety Policies (e.g. Program Manuals such as Asbestos, Lead, PCB, etc.) (Most recent edition unless otherwise required)

x. IAQ Guidelines for Occupied Buildings Under Construction (SMACNA) (Most recent edition unless otherwise required)

y. ACGIH Industrial Ventilation Manual of Recommended Practices (Most recent edition unless otherwise required)

z. ANSI/AIHA Z9.5 Laboratory Ventilation (Most recent edition unless otherwise required)

aa. NAU Technical Standards (Most recent edition unless otherwise required)

2. The completed roof system shall meet the following minimum requirements:

a. External Fire Rating: UL Class A

b. Factory Mutual:
   Field FM 1-90
   Perimeter FM 1-135
   Corner FM 1-180

c. At a minimum, perimeter edge metal shall be tested and approved in accordance with ANSI/SPRI-ES1.

d. At a minimum, fastener attachment and perimeter and corner zones shall be as defined in FM LPDS 1-28 and 1-29.
e. Nailers shall be installed in general accordance with FM 1-49.

1.02 NAME OF PROJECT

A. Bilby Roof Replacement, Flagstaff, AZ

1.03 COORDINATION

A. The term "Contractor" applies only to that person, company or corporation signatory, with the Owner, to an Agreement for the execution of all work for the respective categories described by the Specifications. They are employed to provide scheduling, coordination, direction and supervision for their respective category or categories of the work and to deliver a complete piece of work within the contract time.

1.04 GENERAL DESCRIPTION OF WORK SCOPE

A. This section is for the convenience of the Contractor and shall not be construed as complete accounting of all the work to be performed.

B. The extent of the work scope is indicated on the drawings and by the requirements of each section of specifications.

C. The Contractor shall visit and examine the site and shall be responsible for verifying existing conditions.

D. Without force and effect on requirements of the contract documents, the description of the work of the Contract can be summarized as follows:

   1. All staging, scaffolding and erection necessary to complete specified restoration and roof replacement work. Roofing Contractor shall properly barricade staging work areas and shall protect the building and materials from damage at all times.

   2. All protection necessary for the building’s exterior/interior not being adversely affected by the Work.

   3. All stipulations in the General, Special and Supplementary conditions shall be considered.

   4. Full compliance with all applicable safety requirements including:

      a. OSHA, CFR 851,

      b. OSHA 29, CFR 1926

      c. State and local safety requirements.
5. Roofing Contractor to provide supervision and coordination of the Work with the Owner. The Roofing Contractor’s onsite foreman is responsible for coordinating their project schedule as well as coordinating with their sub-Contractors to ensure continuation of all project schedules.

6. Roofing Contractor’s operations shall at all times be conducted to protect contents and persons within the facility and to prevent spread of materials or debris into the interior of the building.

7. The building will be occupied during construction. Start times, work locations and noise producing operations may be adjusted to better accommodate occupant activities.

8. Roofing Contractor’s parking will be as directed by the Owner. Vehicles entering the site may be subject to search.

9. The Roofing Contractor, Consultant and Owner, prior to staging at individual buildings, will meet to review the existing conditions of the building and grounds. The Contractor shall take photographs and document existing conditions prior to staging equipment and/or materials.

10. Roofing Contractor must keep the grounds clean. Any damage including but not limited to, the green belt area or surrounding pavement shall be the sole responsibility of the Roofing Contractor. Roofing Contractor is responsible for keeping the roof watertight throughout the construction process. Special care shall be taken during the demolition phase to minimize the level of debris accumulation.

11. The Summary of Work is for Roofing Contractor’s reference only. Roofing Contractors shall visit the site, analyze and measure specific work items. Roofing Contractors shall be otherwise knowledgeable of the building envelope repair, maintenance and restoration work required. Roofing Contractors are responsible for all measurements, quantities and labor required to complete the work in a thorough and complete manner per the project documents.

12. Various equipment and electrical conduit is present below the roof deck. The Roofing Contractor is responsible for verifying locations of existing equipment and electrical conduit. Do not damage, penetrate, or disturb equipment and conduit below the roof deck. The Roofing Contractor is fully responsible for repairing any damage to the existing electrical conduit and/or below deck equipment.

13. Roofing Contractor is responsible for coordination for removal and reinstallation of security cameras, control panels, unistrut brackets, etc., and conduits with Owner or Consultant.
14. The Roofing Contractor must submit a roof demolition and staging plan for review and approval prior to work start up.

15. Prior to the project start, the Roofing Contractor shall ascertain to his satisfaction that all aspects of these Specifications and modifications are workable and do not conflict with manufacturer’s requirements for the specified guarantee. Upon commencement of the work, it will be presumed that these Specifications and drawings, addenda and modifications are satisfactory to both the Roofing Contractor and the Manufacturer in their entirety.

16. The Roofing Contractor shall include all interior protection, mechanical, electrical and plumbing work required to complete the roof replacement.

17. The Roofing Contractor shall include all utilities required to complete the roof replacement including but not limited to, electrical power, water, and bathroom facilities.

1.05 STAGING AREA

A. Construction staging area shall be enclosed with well-maintained barricades for the duration of the construction.

B. Dumpsters, bathroom facilities, and ground material storage shall be located within the construction staging area.

C. The location of the staging area or areas will be determined by the Owner and addressed during the Pre-Bid Meeting and finalized at the Pre-Construction meeting.

1.06 DEMOLITION AND ROOF PREPARATION:

A. Contractor shall coordinate all demolition work with Owners Representative and all other trades.

B. Prior to beginning work, contractor shall provide adequate interior and exterior protection in and around the building.

C. Contractor shall provide competent person within the building during all demolition work until such time debris may not enter the building. Maintain contact with crew supervisor on roof at all times.

D. Contractor shall coordinate the removal and/or securement of all unsecured equipment and penetrations prior to the start of demolition. Eliminate all unused and unnecessary roof top equipment and penetrations as identified by Owner.

E. Remove and properly dispose of existing roof system and associated flashings in accordance with plans and specifications.
F. Properly prepare existing structural deck for installation of new roof system. Repair and/or replace damaged and deteriorated decking as required. Do not install new roof system until roof deck is acceptable.

G. Trim, modify and/or extend pipes, curbs, wall flashings and other penetrations to facilitate a minimum 12-inch base flashing height.

H. Remove debris from roof area and properly dispose of materials offsite.

I. At the end of each shift and/or prior to inclement weather ensure all roof drains, gutters and downspouts are in proper working order and that drain lines are unrestricted.

J. Roof shall be made water and weather tight at the end of each shift and/or prior to inclement weather. Keep emergency dry in materials on hand.

K. At the end of each shift and/or prior to inclement weather, leave premises in broom clean condition.

1.07 LOW SLOPE ROOF SYSTEM:

A. Contractor shall properly prepare existing substrate in preparation for the installation of a new thermoplastic roof system and associated flashings in accordance with plans, specifications, manufacturers recommendations and industry standards:

   1. Dome Roof

      a. Properly prepare existing structural deck for installation of new roof system. Repair and/or replace damaged and deteriorated decking as required. Do not install new roof system until roof deck is acceptable.

      b. Install new wood deck to match existing type and construction in areas where unused roof top equipment and penetrations were eliminated or where damaged and deteriorated was replaced.

      c. Properly install self-adhered air/vapor barrier over the existing wood deck and properly seal at all penetrations and perimeters.

      d. Install new wood nailers as shown on the drawings to match insulation thickness and as required at top parapet walls.

      e. Properly extend existing penetrations and equipment as required to provide for a minimum 12-inch base flashing height.

      f. Mechanically attach thermal insulation into the existing wood deck.

      g. Adhere the coverboard to thermal insulation with low rise foam.

      h. Adhered 50 mil feltback KEE membrane to cover board.

      i. Install adhered KEE membrane flashings at all perimeters and penetrations and properly terminate.

      j. Install walkway protection pad at all access points and around all serviceable roof top equipment and/or as directed by Owner.
1.08 SHEET METAL FLASHING AND TRIM:

A. Install roof system related sheet metal in accordance with plans and specifications.

B. Re-use existing sheet metal flashings only where specifically noted as such on drawings.

C. Provide all necessary sealants, primers, tapes and fasteners to provide a weather-tight installation.

1.09 PLUMBING, MECHANICAL, AND ELECTRICAL

A. All plumbing, mechanical and electrical work as required to complete the installation of the new roof system.

B. Install all plumbing, mechanical and electrical extensions to piping, duct work, conduits, finishes, etc. as required to provide 12" minimum base flashing height at all penetrations.

C. Provide all plumbing, mechanical, and electrical disconnects and reconnects as required to complete roof replacement. Coordinate all equipment shut offs with Owners representative.

D. Remove and replace roof hatch and skylight.

1.10 WARRANTIES

A. ROOFING CONTRACTOR: 2 YR (WORKMANSHIP)

B. MANUFACTURER TOTAL SYSTEM NDL: 20 YR (NO-DOLLAR LIMIT)
   1. 1.5” HAIL WARRANTY
   2. 120 MPH WIND WARRANTY

PART 2 – PRODUCTS - Not Used

PART 3 – EXECUTION - Not Used

END OF SECTION
Section 01 11 16  Work by Owner
This section is to include project specific information which will be provided by the Project Manager if applicable.

The Owner reserves the right to award other contracts related to the Project, or to perform certain work itself. Any such other work may or may not be known to the Owner or disclosed to the contractor prior to execution of the Agreement. The Contractor shall afford the Owner and such other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly coordinate its Work with theirs in such manner as the Owner or Design Professional may direct. The Contractor shall also assure at its own cost reasonable access of other contractors to their site and their work.

01 12 00  Multiple Contract Summary
This section is to include project specific information which will be provided by the DP (if applicable).

01 12 13  Summary of Contracts

01 12 16  Work Sequence

01 12 19  Contract Interface

01 14 00  Work Restrictions

01 14 13  Access to Site
This section is to include project specific information which will be provided by the DP.

Truck washing stations, truck tire scraping grates and street sweeping may be required. Access to site shall be provided as to keep construction activity, dirt and mud on site.

01 14 16  Coordination with Occupants
Communication with the occupants is to be sent through the NAU Project Manager. Impact requests should be requested a minimum of 72 hours prior to the proposed starting time. Requests may not be approved and may be rescheduled to meet occupant needs.

01 14 19  Use of Site
This section is to include project specific information which will be provided by the DP.
Use of the site is restricted to materials and equipment necessary to completion of the Work. It is the contractor’s responsibility to ensure enclosure of the site from the general public.

01 18 00 Project Utility Sources

This section is to include project specific information which will be provided by the DP.

The Contractor shall prearrange time with the DP and Owner whenever it becomes necessary to energize new services or interrupt any service to make connections, alterations or relocations and shall fully cooperate with the Owner in doing Work so as to cause the least annoyance and interference with the continuous operation of the Owner's business or official duties. Following this meeting the Contractor shall submit a work authorization request that will include a detailed procedure, schedule for each task within the procedure, any safety controls being implemented and signoff locations for tasks completed. The work authorization request will be similar to the document identified in 29 CFR 1910.147 App A and must be approved by the trade supervisor for the intended utility. The work authorization document is considered a submittal subject to the review periods indicated in the contract and must be approved prior to scheduling work.

Any existing plumbing, heating, ventilating, air conditioning or electrical disconnections which may affect portions of existing buildings or other construction projects must be coordinated with the DP and Owner to avoid any disruption of operation. While bidding, the Contractor shall assume that all shutdowns shall occur during afterhours and/or weekends unless specifically stated otherwise in the contract documents. In no case, unless previously approved in writing by Owner, shall utilities be left disconnected at the end of a work day or over a weekend. Any interruption of utilities shall be reported immediately to the NAU Project Manager. Such interruptions, whether negligently, intentionally, or accidentally, shall not relieve the Contractor’s responsibility for the interruption or from liability for loss or damage caused by such interruption even though such loss or damage was not foreseeable by Contractor or subcontractor, or from responsibility for repairing and restoring the utility to normal service. Repairs and restoration shall be made before the Contractor leaves the project site.

**END OF SECTION**
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The Contractor's price for the Work shall include all of the Contractor's costs associated with such allowance or allowances. If the actual costs to the Contractor of such allowance or allowances is different from the specified sum, increases or decreases in the cost of the allowance and associated Contractor's cost shall be adjusted in accordance with the Construction Agreement.
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<td>Contract Modification Procedures</td>
<td>Requests for Interpretation (RFI) will be sent electronically the NAU Project Manager and the DP concurrently. The RFI must indicate the NAU project number, RFI #, spec section and plan sheet impacted, trades involved, images if applicable, a proposed solution and potential cost or time impact.</td>
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<td>01 26 46</td>
<td>Construction Change Directives</td>
<td>A construction change directive (CCD) may only be used at Owner’s discretion when the identified field change must be completed before a formal change order can be issued to the Contractor. The Contractor shall provide the Owner a description of the required change and a not to exceed value. When signed by the Owner and Design Professional and received by the Contractor, the CCD becomes effective immediately and the contractor shall proceed with the change(s) described. The appropriate adjustments to the contract will be made through a change order amendment. Actual costs must be fully substantiated before an amendment will be issued.</td>
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<td>Construction Change Proposal Request</td>
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The CCPR form is required to be completed by the contractor with a detailed description and cost breakdown for each individual requested change. Please refer to FS#12 available at: http://nau.edu/Facility-Services/DP_Contract/.

### Change Orders

No changes in the work shall be undertaken by the Contractor without written direction by the Owner or DP. Any changes made without such written direction are done so at the Contractor’s own risk. Change Orders shall be processed as identified in the construction agreement.

Change procedures must follow the requirements outlined in the Construction Agreement Between Owner and Contractor. A copy of the latest version of the Construction Agreement between Owner and Contractor is available at http://nau.edu/Facility-Services/DP_Contract/.

After the Contract is signed, modifications in the Contract Price, the Contract Time or scope of the Work may only be made by written Change Order.

### Payment Procedures

### Schedule of Values

Individual construction activities which are indicated by the Schedule of Values shall coincide with activities presented on the Contractor’s Construction Schedule. Contractor shall submit proposed schedule of values for review and approval by DP and by Owner, per the Construction Agreement between Owner and Contractor, prior to submission of first pay application.

### Progress Payment Procedures

Contractor will submit payments electronically to the Project Manager, DP and Owner’s Designated Contracts Administrator concurrently and then follow up with a physical copy to the Project Manager. Payments will be measured against the Schedule of Values as approved by the DP, Owner and CM (as applicable).

For all Testing and Inspection Services, the Testing and Inspection Log (FS#105) shall be completed and shall accompany each pay app for that billing period.

Payment procedures shall be per the Construction Agreement. The Pay Application form can be found at: http://nau.edu/Facility-Services/DP_Contract/.
01 30 00  ADMINISTRATIVE REQUIREMENTS

01 31 00  Project Management and Coordination

01 31 13  Project Coordination
Project coordination and communication procedures will be discussed in detail at the Pre-Construction Conference. The minutes of this meeting shall serve as
reference and documentation of proper coordination and communication channels.

01 31 14 Facility Services Coordination
An emergency contact sheet will be provided to the Contractor with contacts for the different departments in Facilities. The Contractor will fill out with their emergency numbers and return to the Owner for distribution.

01 31 16 Multiple Contract Coordination

01 31 19 Project Meetings
Please refer to the required project meetings in the Construction Agreement.

01 31 19.13 Preconstruction Meetings
A preconstruction conference shall be held for all projects. Notification of the time and date of such conference shall be made to the selected Contractor in the Letter of Intent To Award.

01 31 19.14 Inspection Meeting
A preconstruction meeting will be held between NAU Project Manager, NAU Lead Building Inspector, all Trades Inspectors and the General Contractor to discuss inspection procedures and establish expectations.

01 31 19.15 Blue Stake Meeting
Contractor and earthwork/underground foreman will attend a Blue Stake Kickoff Meeting lead by the NAU Blue Stake Coordinator prior to starting work.

01 31 19.16 Site Mobilization Meetings

01 31 19.23 Progress Meetings
Progress meetings shall occur on a regular basis (weekly) according to a schedule determined at the pre-construction conference or as established in the contract.

01 31 19.33 Pre-Installation Meetings
The contractor shall schedule a pre-installation meeting before starting any major trade, between the Inspector, General Contractor and Subcontractor. For projects over $100,000 schedule a 10 - 15% Installation Completion Meeting to verify proper installation practices are implemented. The pre-installation meeting will review the inspection protocol and review project specifications and drawings with the General Contractor and Subcontractor. The preinstallation meetings, to be scheduled the same day of the weekly construction meeting, shall be specified when applicable:
- Concrete formwork and placing
- Waterproofing
- Mortar / masonry
 DIVISION 1 – GENERAL REQUIREMENTS

- Flashing
- Roofing
- Sealant
- Vapor Barrier
- Sprinkler
- Ductwork
- Painting

01 31 23  Project Web Site

01 31 26  Electronic Communication Protocols

01 32 00  Construction Progress Documentation

01 32 13  Scheduling of Work

In general, hours of construction activity shall be limited to 7 a.m. until 7 p.m. unless written approval is obtained from the Project Manager. Additionally, the Contractor shall agree to limit any noisy activities during “reading week” and “finals week”. Reading Week and Finals Week generally occurs during the first weeks of May and December.

Project work adjacent to or within Residence Halls shall be more strictly limited to the hours of 8:00 a.m. until 6:00 p.m, unless written approval is obtained from the Owner. This includes any work that may negatively impact students. In addition to these hours, work performed on weekends will not be permitted without prior authorization from NAU’s department of Residence Life.

01 32 16  Construction Progress Schedule

The following requirements shall support and amplify the requirements of the Construction Agreement Between Owner and Contractor.

In conjunction with the Contractor’s Construction Schedule, the Contractor shall provide a Procurement Schedule for all major project components to be purchased and incorporated by the Contractor into the Project.

The Procurement Schedule shall indicate scheduled delivery of major Project components, both equipment and materials, in support of the activities included on the Contractor’s Construction Schedule. Revisions to the Contractor’s Construction Schedule shall be coordinated with revisions to the Procurement Schedule.

In the event significant delays or lags in schedule, as determined by the Owner, are encountered, the Contractor shall provide to the Owner a revised Contractor’s
Construction Schedule indicating proposed rescheduling of subsequent activities to achieve project completion by the Contract Completion Time or Amended Completion Time.

Additions to or deletions from the Contract, authorized through Change Orders, shall be reflected in the Contractor’s Construction Schedule if such changes affect the critical path of project completion.

**Owner’s Approval of Phasing**
The Owner reserves the right to review and approve scheduling or phasing of construction activities which have an impact on University functions or operations.

Contractor shall be aware of the impact of such construction activities and shall advise the Owner when they are indicated by the schedule. The Contractor shall act to lessen or avert impact to University operations through alternative phasing of activities or other measures.

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<td>The contractor is required to make submittals for the DP and Project Manager review in a prompt and timely manner. A schedule of submittals is to be delivered to the NAU project manager within 4 days of the notice to proceed. Submittals are required for each subsection detailed in the individual sections of Divisions 2 through 48.</td>
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<td>Project Manager to determine if all underground utilities exposed by their project will be located and documented by GPS.</td>
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<td>The Contractor shall maintain a written daily log in accordance with the Construction Agreement.</td>
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Photos are required on all projects, submitted electronically with pay application, and representative of the work for which the Pay Application is for. Photographs shall be a minimum of 5 megapixels, the number of photos and different views is to be selected by the Owner at the preconstruction meeting. The file name will be labeled with first with the location of the photo, direction of view and then description. For example, a civil project will have the GPS coordinates, direction and description.

**Video Monitoring and Documentation**

**Procurement Tracking**

In conjunction with the Contractor’s Construction Schedule, the Contractor shall provide a Procurement Schedule for all major project components to be purchased and incorporated by the Contractor into the Project. The Procurement Schedule shall indicate scheduled delivery of major Project components, both equipment and materials, in support of the activities included on the Contractor’s Construction Schedule. Expediting Reports shall be provided by the Contractor to the Owner in the event that scheduled deliveries, of a significant nature, do not arrive as planned and the Contractor shall make all reasonable effort to expedite deliveries in accordance with the Procurement Schedule.

Reports shall indicate the Contractor’s efforts in this regard.

Claims for extension of Contract Completion. Time submitted by the Contractor on the basis of delayed material or equipment deliveries, shall be accompanied by documentation from the Vendor/Supplier indicating the date order was placed, usual time required for delivery and the date of scheduled delivery.

**Submittal Procedures**

**Certificates**

*This section is to include project specific information which will be provided by the DP if applicable.*

**Design Data**

**Field Test Reporting**

Copies of Field Test Reports will be turned over monthly along with the Pay Application.

**Shop Drawings, Product Data, and Samples**

The Submittal Procedure shall be per the requirements of the Construction Agreement.
DIVISION 1 – GENERAL REQUIREMENTS

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<td>The contractor’s Responsibility for Project Safety is according to the Construction Agreement. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with Contractor’s Work.</td>
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<td>The Contractor shall designate an employee as Safety Officer at the Project Site whose duties shall include prevention of accidents and monitoring/enforcement of the Contractor’s safety program. This person shall be the Contractor's Superintendent unless otherwise designated in writing by the Contractor and shall be acceptable to the Owner.</td>
</tr>
</tbody>
</table>
The Contractor’s Safety Officer shall attend the Preconstruction Conference and shall be designated as such to the Owner.

The Contractor’s Safety Officer will be responsible for continued monitoring of the job site to maintain safe working conditions in strict compliance with State of Arizona Occupational Safety and Health Standards for the Construction Industry (29 CFR Part 1926). Specific attention is called to Housekeeping (Section 1926.25, ADOSH, 29 CFR Part 1926).

The General Contractor and all Subcontractors shall clear away all debris which poses an unsafe condition as required in Section 1926.25 on a daily basis.

Failure of the Contractor to promptly correct unsafe conditions, subsequent to written notification by the Owner, shall constitute violation of the standards indicated herein. The Owner reserves the right, in the event of such violation, to correct unsafe conditions through the most expedient means available. Any costs incurred by the Owner for such corrective work shall be reimbursed by the Contractor, via deductive Change Order.

01 35.26 Governmental Safety Requirements
All workmen employed by the General Contractor or subcontractors shall have adequate safety training for their respective facets of the work as specifically required by document #2254, Training Requirements and OSHA Standards and Training Guidelines (USDA, OSHA 1985).

01 35.29 Health, Safety, and Emergency Response Procedures
NAU's Emergency Response Call Sheet can be found at: http://nau.edu/Facility-Services/DP_Contract/

01 35.29.13 Health, Safety, and Emergency Response Procedures for Contaminated Sites
This information can be obtained from the Office of Environmental Health & Safety.

01 35.43 Environmental Procedures
The Owner shall have first right of refusal on all materials and equipment which are salvaged as part of the Project construction process to include materials both above and below the existing ground surface.

Contractor shall notify the Owner prior to disposing of such materials and equipment. Owner will notify the Contractor promptly if possession is to be taken by the Owner. Materials not claimed by the Owner within three working days shall be removed from the Project site by the Contractor and disposed of appropriately.
DIVISION 1 – GENERAL REQUIREMENTS

Hazardous Materials Procedures
This information can be obtained at the following link: http://nau.edu/Facility-Services/Operations/Ops/

Lead Abatement
This information can be obtained from the Office of Environmental Health & Safety.

Asbestos Abatement
NAU has completed asbestos surveys for the majority of buildings currently present on the Flagstaff Campus and remote campuses. Survey results are housed in the NAU Asbestos Program office and are available for review or notification purposes.

To maintain compliance with all applicable state and Federal EPA and OSHA regulations, NAU Policy requires that a site specific asbestos inspection be completed to determine the need for abatement before any work involving the disturbance of pre-existing building components is conducted. This inspection and any other required asbestos information and guidance may be requested directly by calling the Asbestos Program office at (928) 523-6435, or by completing the online asbestos inspection request (http://www.orc.nau.edu/Asbestos.html). Asbestos inspections may involve additional sampling of previously untested materials, and may facilitate the need for NESHAP notified abatement work, so an appropriate amount of lead time must be allotted in the project schedule.

All asbestos-containing materials (ACM) in the work area are to be removed, containerized, and disposed of in accordance with all applicable Federal, State, and Local regulations. This work must be performed by NAU or by a licensed asbestos abatement contractor before any other work which may impact the materials in question. Work must be scheduled and performed in a manner which minimizes the chance of contamination of non-asbestos materials. The asbestos removal work must comply with the NESHAP (40 CFR 61, subpart M), AHERA (40 CFR 763, subpart E), and OSHA Asbestos construction standard (29 CFR 1926.1101) and general industry standard (29 CFR 1910.1001), whichever may apply.

Abatement oversight must be conducted by NAU, or by an approved third party oversight contractor. No additional demolition or renovation activities may proceed in the selected abatement area until appropriate clearance of the work by the oversight contractor and/or NAU. The oversight contractor or NAU will have the authority to stop work immediately if abatement or demolition procedures are found to be inadequate to control the release of asbestos fibers, or if asbestos is being disturbed in an uncontrolled or unsafe manner.
NAU will issue a written or verbal authorization to proceed with non-asbestos demolition/renovation activities following achievement of acceptable clearance of the asbestos abatement. Prior to authorization to proceed, the oversight contractor or NAU Asbestos Program Manager must complete a visual inspection and/or analytical sampling of the area to document completeness of the work. If contamination is found following abatement, the abatement contractor will be required to perform additional cleaning until acceptable levels are achieved, at no additional cost to the University.

Abatement activities are the responsibility of NAU and may not be subcontracted as part of the larger abatement project. When abatement is necessary, the Project Manager shall work in cooperation with EH&S to develop specifications, collect bids, and contract/complete any necessary abatement independently from the larger construction contract and unless otherwise authorized by EH&S, abatement shall be completed prior to any other construction activities at the work site.

It is the responsibility of the construction or demolition contractor to furnish an accurate work schedule to the University in order to allow for timely abatement and good coordination between vendors. The construction/demolition contractor may be held accountable for additional fees incurred by the university due to improper scheduling or communication on the part of the contractor.

In cases which abatement is performed by the renovation/construction contractor, or by a subcontractor retained by the construction contractor, the construction contractor or abatement subcontractor must meet the minimum qualifications and insurance for abatement contractors under the Arizona state purchasing system.

Following completion of all abatement activities, the contractor shall provide copies of closeout documents including the date, location, and scope of work, negative exposure assessment and air sampling data, daily logs, and waste shipment records. Copies of all closeout documents shall be furnished to both the Project Manager and Asbestos Program office.

To satisfy its obligations under OSHA, NAU will issue a written notification of the presence of asbestos in the work area and building which work is being conducted in; and specific abatement requirements which may be required for the project. The contractor is responsible for the health and safety of its own employees and for meeting OSHA communication of hazard, training, and PPE requirements. Worker compliance with all applicable regulations will be enforced by the contractor.
The contractor shall comply with the provisions of the following regulations:

The National Emission Standard for Hazardous Air Pollutants (NESHAP), 40 CFR 61, subpart M, enforced by the Arizona Department of Environmental Quality, regulating the removal and disposal of asbestos-containing materials.

The contractor will be required to notify the State of Arizona Department of Environmental Quality NESHAP office 10 business days before removal of threshold amounts of friable asbestos or RACM as specified in 40 CFR 61.145. The Contractor shall send a copy of this notice to the NAU Asbestos Program Manager. A NESHAP notification is also required 10 days prior to commencement of demolition of any building on NAU campus even if no asbestos abatement is required.

When applicable, or requested by NAU, the contractor shall follow the guidelines and procedures of the Asbestos Hazard Emergency Response Act (AHERA). 40 CFR 763.subpart E, regulating identification and management of asbestos in schools.

The Contractor shall inform NAU Office of Environmental Health & Safety and the Project Manager of any hazardous chemicals they will be using on campus. The Contractor shall comply with the requirements specified in OSHA's Hazard Communication program (29 CFR 1910.1200). The Contractor shall assume responsibility for the safe and legal disposal of all chemicals used on the job site.

During and following completion of the renovation, all newly installed building materials shall be analyzed for asbestos and a report containing the analytical results shall be furnished to the Asbestos Program Office to maintain complete records of NAU buildings in the future. Testing shall conform to the guidelines set forth in the EPA AHERA regulation. This testing shall be conducted by an AHERA certified building inspector and if requested, shall be conducted by the renovation/construction contractor.

**Blasting Policy**

Blasting is not considered a preferred process on campus. Any use of explosives must be approved in writing by NAU Fire Marshal and must conform to The City of Flagstaff policies and procedures. The City of Flagstaff maintains jurisdiction for all blasting.

Prior to any use of explosives on the University campus, the NAU Project Manager with Facility Services, Planning, Design and Construction will notify Campus Police and NAU Office of Environmental Health & Safety. The Contractor shall submit to
the Facility Services, Planning, Design and Construction, prior to any blasting, appropriate employee certification for use of explosives.

No explosives will be stored on the campus overnight or weekends. No quantity of explosives will be brought to the campus beyond that which will be used on the day blasting operations are to be performed.

No blasting shall take place earlier than 8 a.m. or later than 5 p.m.

Environmental Procedures for Hazardous Materials

Environmental Procedures for Toxic Materials

Indoor Air Quality Procedures

Security Procedures
Contractor is responsible for securing access to all construction areas to prevent damage or theft. This may include but is not limited to securing site fencing, temporary construction and building entrances. After hours and work within tunnels must be coordinated with NAU Project Manager and NAU PD.

Refer to Construction Agreement for any additional security requirements.

Sustainability Certification Project Requirements
This section is to include project specific information which will be provided by the DP if applicable.

Sustainability Certification Project Procedures
This section is to include project specific information which will be provided by the DP if applicable.

Historic Treatment Procedures
This section is to include project specific information which will be provided by the DP if applicable.

**END OF SECTION**

Regulatory Requirements
Any work performed on or within the boundaries of the Northern Arizona University campus shall be subject to special inspections, periodic inspections, Code compliance inspections, and pre-occupancy and/or final inspections by the following agencies as applicable:

- State Fire Marshal's Office (Fire alarm, sprinkler systems, underground fire lines and automatic extinguishing systems)
- Arizona Corporation Commission (Gas line installation)
• State Risk Management Division
• City of Flagstaff (for utilities installations that cross campus boundaries)
• State Elevator Inspector (Elevator installations)
• State Boiler Inspector (Boiler installations)
• NAU Facility Services, Planning, Design and Construction
• NAU Facility Services, Operations / Maintenance Inspectors
• NAU Facility Services, Lead Building Inspector
• NAU Office of Environmental Health & Safety
• NESHAP

It is the responsibility of the General Contractor to provide a complete copy of the construction plans, specifications and other pertinent documents as necessary for review and approval by the NAU Fire Life Safety Division (FLS) and NAU Lead Building Inspector.

No construction shall commence until the General Contractor receives from NAU-FLS and NAU Lead Building Inspector the approved stamped copy of the construction plans, permit, and other documents provided.

01 41 13 Codes

All design and construction work shall be done in such a manner that the completion of project is in compliance with the following codes. When reference is made to "this code" it shall mean all the codes listed below.

• International Building Code 2012 (IBC)
• International Existing Building Code 2012 (IEBC)
• International Plumbing Code 2012 (IPC)
• International Mechanical Code 2012 (IMC)
• National Electrical Code 2011 (NEC) (NFPA 70)
• International Fuel Gas Code 2012 (IFGC)
• International Fire Code 2012 (IFC)
• National Fire Alarm Code 2013 (NFPA 72)
• Installation of Sprinkler Systems 2013 (NFPA 13)
• NAU Fire Code (Most recent edition unless otherwise required)
• Arizona State Fire Code
• 2010 ADA Standards for Accessible Design as approved by the Department of Justice on July 26, 2010 (published in the Federal Register on September 15, 2010) and any more recent related Federal and State requirements with their related standards as they may apply.
  • FYI: Please be advised that where there is a conflict between any applicable accessibility requirements the most restrictive
shall apply (e.g. 2012 IBC, 2010 ADA, 2009 ICC/ANSI A117.1, other NAU, State & Federal requirements, etc.).

- NAU Design Guidelines for Disabled Access Parking and Accessible Route at Vehicular Traffic Areas (Most recent edition unless otherwise required)
- 2007 ASME A17.1, Safety Codes for Elevators and Escalators (unless otherwise required)
  - AZ Elevator Act (Title 23, Chapter 2, Article 12)
  - Latest ADOSH Arizona Elevator Rules
- AZ Executive Order 2008-29 (FYI: Reaffirms Executive Order 2005-05. Requires all new state-funded buildings to meet the Silver LEED standard, at a minimum.)
- ASHRAE 90.1 – Most recent edition (FYI: 2004 is mandatory for AZ state-owned and state-funded buildings.)
- ASHRAE Design Codes 189/1 (Most recent edition unless otherwise required)
- Arizona Revised Statutes, including:
  - 34-451 (energy conservation standards)
  - 34-452 (solar design standards and energy life cycle costing)
- Occupational Safety and Health Administration Regulations
- NAU Material Safety Policies (e.g. Program Manuals such as Asbestos, Lead, PCB, etc.) (Most recent edition unless otherwise required)
- IAQ Guidelines for Occupied Buildings Under Construction (SMACNA) (Most recent edition unless otherwise required)
- ACGIH Industrial Ventilation Manual of Recommended Practices (Most recent edition unless otherwise required)
- ANSI/AIHA Z9.5 Laboratory Ventilation (Most recent edition unless otherwise required)
- NAU Technical Standards (Most recent edition unless otherwise required)

Compliance shall conform to the requirements of the latest editions of all state regulations and the various codes which have been adopted by the University at the time of selection of the Design Professional (or at time of bid if the University does not designate a Design Professional), unless otherwise required by Federal or State regulation (such as ADA code compliance which is required at time of bid).

Contractor will be held to have examined and to have become familiar with these regulations in all ways they apply to the project.

The aforementioned document will be hereby made part of the Contract Document between NAU and DP and between NAU and Contractor, and shall be binding to the same extent as if they were written in full herein.

If a conflict is found between any Code requirement and information given in
DIVISION 1 – GENERAL REQUIREMENTS

written or graphic specifications, Contractor will abide by the more stringent of the two. Such conflict shall be reported in writing to the DP, to NAU FLS Division and NAU Lead Building Inspector.

The issuance of approved plans, specifications, and computations shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of the above-listed codes, the NAU Fire Prevention Manual and the NAU Technical Standards.

The issuance of approved plans, specifications, and other data shall not prevent Facility Services from thereafter requiring the correction of errors in said plans, specifications and other data, nor shall issuance of such approved plans, specifications, or other data preclude the prevention of building operations being carried on there under when in violation of the above-listed codes.

01 41 16 Laws

By signing a contract with NAU or as a subcontractor to a General that has a contract with NAU the contractor agrees to follow NAU’s Blue Stake procedure under ARS 40-360.22-K.

It is the responsibility of the Contractor to make all utility staking requests. To request utility staking for any project the Contractor must call the Arizona811 Center and email FACILITY SERVICES. All requests are given a log number. It is the Contractor’s responsibility to note that number for future reference.

For the complete Bluestake Procedure, Contractor shall refer to http://nau.edu/Facility-Services/DP_Contract/

DO NOT DIG UNTIL BLUE STAKING HAS BEEN CLEARED! ALL KNOWN UTILITIES MUST BE POTHOLLED!

The Contractor is required to pressure wash blue stake marks at the end of the excavation phase and/or at the end of a project in a manner that does not damage finished surfaces.

01 41 19 Rules

01 41 23 Fees

01 41 26 Permit Requirements

NAU permit requirements and applications can be found at: http://nau.edu/Facility-Services/DP_Contract/
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</table>
Please refer to http://nau.edu/Facility-Services/DP_Contract/ for the complete detail of inspection procedures.

Re-inspection of uncompleted work shall be at the contractors expense, via deductive Change Order.

Reinforcing steel or structural framework of any part of any building or structure shall not be covered or concealed without first obtaining approval of the DP or Structural Engineer.

Foundation Inspection: To be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection.

Concrete Slab or Under-Floor Inspection: To be made after all in-slab or under-floor building service equipment, conduit, piping accessories and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the sub-floor.

Frame and Rough-In Mechanical, Plumbing and Electrical Inspection: To be made after the roof, all framing, fire blocking and bracing are in place and all pipes, chimneys and vents are complete and the rough electrical, plumbing, and heating, pipes and ducts, and fire sprinkler piping are approved.

Lath and/or Gypsum Board Inspection: To be made after all lathing and gypsum board, interior and exterior, is in place but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.

Substantial Completion Inspection: Prior to issuance of the Substantial Completion Certificate, all required in progress inspections listed in form FS#15 shall be passed. The contractor must schedule a walkthrough with each trade inspector individually to sign off on the substantial completion lines of the FS#15 and provide a punch list.

Final Completion Inspection: Prior to Final Payment the Contractor must schedule an additional walk with each trade inspector ensure that all punch work is completed and inspected, and all required inspections listed in form FS#15 shall be passed.
**END OF SECTION**
Temporary Fuel Oil

Temporary Heating, Cooling, and Ventilating

Temporary Lighting

Temporary Natural-Gas
Temporary Natural-Gas is not allowed. Propane may be used for temporary heating.

Temporary Telecommunications
Temporary telephone service is available through either NAU Telecomm. Contractor is responsible for all connection, maintenance, and service fees.

Temporary Water
Temporary water connections must have a back flow prevention device installed by the contractor.

Construction Facilities
The Contractor shall provide a staging plan/site logistic plan at the preconstruction meeting. The staging plan shall clearly identify the following items:

- Construction Trailer
- Material Staging
- Wash down areas (concrete, mud, etc.)
- Dumpsters
- Traffic Control including signals and barricades
- Signage
- Site Fencing including gate locations and height of the fence
- Site Access for contractors, material delivery and waste haul off
- Sanitary Facilities
- Temporary Utilities
- Temporary Parking
- SWPPP measures
- ADA accessible routes
- Pedestrian/bikes routes
- Vehicle routes
- Emergency Access

Any other provision, direction or accommodation agreed to and approved by NAU, the CM and DP, shall be clearly noted and conveyed on the staging/site demolition plan.

Field Offices and Sheds
First Aid Facilities

Sanitary Facilities

Contractors shall not use the Universities sanitary facilities. Contractors are responsible for providing and maintaining adequate temporary sanitation facilities and indicate location(s) on the site logistics plan.

Temporary Construction

Temporary Bridges

Temporary Decking

Temporary Overpasses

Temporary Ramps

Temporary Runarounds

Construction Aids

Temporary Elevators

Temporary Hoists

Temporary Cranes

Temporary Scaffolding and Platforms

Temporary Swing Staging

Vehicular Access and Parking

Temporary Access Roads

Optimum truck routes and access roads, including fire department access, to the Project site shall be identified at the pre-construction conference and noted in the site logistics plan.

Haul Routes

Temporary Parking Areas
All persons driving or parking on the NAU campus are subject to NAU parking regulations. NAU parking policies are available at http://nau.edu/Parking-Shuttle-Services/Policies/.

All vehicles parking within campus boundaries must display permits. Vehicles without permits will be ticketed by the NAU Police Department. Vehicles parked within the fenced staging / storage area, identified on the Construction Documents, do require parking permits. The General Contractor will be required to make a written request to the University Project Manager at the preconstruction meeting for parking permits for all vehicles to be parked within the campus boundaries. NAU Parking Services will attempt to meet requests for specific parking areas, however, due to availability; alternative parking areas may be assigned. Storage / Staging areas will be requested in writing to the University Project Manager prior to bidding.

01 55 23 Temporary Roads

01 55 26 Traffic Control
All traffic control shall be coordinated with the Facility Services Project Manager, and shall be approved by: NAU Parking Services, NAU Shuttle Services, NAU Police Department, NAU Fire Marshal, NAU Office of Environmental Health & Safety and City of Flagstaff Fire Department.

All proposed traffic control plans or modifications shall be submitted to the Facility Services Project Manager five (5) working days prior to the change and receive approval, as stated above.

01 55 29 Staging Areas
The Contractor shall submit a site logistics plan at the preconstruction meeting. Storage / Staging Areas must be maintained and returned to the condition they were in prior to occupation by the Contractor. Patch, repair or replace any and all damaged areas upon completion of the work. The area must receive final inspection and approval by the Owner prior to final payment.

01 56 00 Temporary Barriers and Enclosures

01 56 13 Temporary Air Barriers

01 56 16 Temporary Dust Barriers
Dust control is the Contractor’s responsibility at no additional cost to the Owner. The Contractor shall address complaints regarding dust control within four (4) hours. Air, water, surface, and subgrade conditions shall be protected from pollution by the Contractor. Such protection requirements as detailed in all State
and Federal regulations shall apply. Arizona State DEQ, OSHA, and NAU Office of Environmental Health & Safety may inspect for compliance without notice.

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**Project Site Fencing**
Contractor shall erect and maintain in good condition a six-foot high chain link fence of standard construction surrounding the Project site and enclosing the area of work and materials staging. Location of the fence shall be approved by the Owner prior to erection. Fence gates shall remain locked when unattended to discourage access by unauthorized persons.

This applies to large construction projects and small projects with multiple locations.

**Staging Area Fencing**
A commercial grade chain-link fence around the entire perimeter of the staging area will be required.

The fence may be ground-set or tee supported, but must remain stable in high or gust wind conditions and scaling by pedestrians. The Contractor shall coordinate all fence pole locations that are to be pounded into the ground with NAU Grounds and Bluestake to avoid shallow utilities and irrigation. The Contractor is responsible for all repairs required to return to area to original condition after fencing is removed, including, but not limited to, sod, asphalt and concrete repair.

Post holes in asphalt will be repaired using Fastpatch DPR Pourable Asphalt Repair. Using a hot or cold patch for the post holes is not allowed.

An 8’ wide, two section chain-link access gate shall be required in the fence and the Facility Services’ Project Manager and Construction Manager (as applicable) shall be given a key(s) to the gate lock by the Contractor for emergency access.

Fencing shall be placed immediately after or during site preparation, and remain in place for the entire duration of construction.

The staging plan shall note that the Contractor is to maintain the fence in a neat and orderly appearance.
### Temporary Protective Walkways

**Temporary Security Barriers**

**Temporary Security Enclosures**

**Temporary Tree and Plant Protection**

Existing trees and plants designated to remain shall be fenced off outside the drip line (this includes all memorial trees). No construction activity shall occur within fenced area. Provide site maintenance and control of erosion, weeds, snow, debris, etc. Irrigation is not a standard part of the blue stake procedure. The contractor is responsible for coordinating with NAU Grounds to determine location prior to bid. The contractor shall be responsible for relocating/repairing any irrigation equipment.

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### Temporary Controls

- **Temporary Erosion and Sediment Control**
- **Temporary Pest Control**
- **Temporary Environmental Controls**
- **Temporary Storm Water Pollution Control**
- **Site Watering for Dust Control**

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### Project Identification

- **Temporary Project Signage**

Free-standing or hanging signs for General Contractors, Sub-contractors or suppliers are not allowed on University property. Site safety signage is allowed but must be approved by the NAU Project Manager.

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Cutting and patching of asphalt and concrete may necessitate removal of embedded utility survey markers. The Contractor is required to field verify marker locations prior to bidding and include replacement of markers where necessary. Refer to Division 33 for installation standards. Verification of marker location requires signoff on the FS15 prior to substantial completion.

**01 74 00 Cleaning and Waste Management**

01 74 13 Progress Cleaning
The Contractor shall maintain all work and staging areas in a clean and orderly condition to enhance the safety and appearance of the jobsite. Accumulations of refuse will not be permitted except as specifically approved in writing by the Owner.

01 74 16 Site Maintenance
DIVISION 1 – GENERAL REQUIREMENTS

The placing of trash or debris in any University trash container by the General Contractor or any Subcontractor is expressly forbidden. Contractor shall be responsible for costs incurred by the Owner for the removal of trash placed in University trash containers.

01 74 23 Final Cleaning

Provide final cleaning of the Work prior to Owner occupancy. Final cleaning shall mean cleaning each surface or unit of work to conditions expected in a first-class building and maintenance program. Comply with manufacturer's instructions for cleaning operations. Cleaning shall include but not be limited to all of the following as applicable:

- Clean transparent/reflective surfaces to a polished, streak free condition including all mirrors, windows and door glass. Remove all paint, putty, labels or other vision obscuring materials. Replace any broken or damaged surfaces.
- Remove marks, stains, fingerprints, other soil and dirt from painted, decorated or stained work.
- Clean polish and/or wax woodwork as preferred by Owner.
- Clean light fixtures and lamps so as to function at full efficiency. Remove dirt, dust, fingerprints, excess lubrication, drywall, paint etc. and all non-permanent labels.
- Wipe clean all mechanical and electrical equipment; remove excess lubrication and other substances.
- Clean exposed interior and exterior surface finishes to condition free of dirt, dust, stains, films or other noticeable distracting substance.
- Clean exterior and interior metal surfaces, including doors and windows, of oil, stains, dust, dirt, paint and the like.
- Clean and polish all hard floors, remove dirt, material or water stains, scratches etc.; clean and vacuum all carpeted areas.
- Clean plumbing fixtures to polished, sanitary condition free of stains including those resulting from water exposure.
- Except as otherwise indicated or requested by Owner, remove all temporary protection devices and facilities which were installed during the course of the work.

Make building ready for occupancy in all respects. Protect cleaned areas until final inspection and acceptance.

All existing improvements inside or outside the property which have been disturbed, damaged or destroyed by the Work under the Contract shall be restored to the condition in which they originally were, including all storage and staging areas. Final inspection of storage / staging areas used during construction is required prior to final payment.
If the General Contractor fails to clean up during, or at the completion of the Work, or fails to enforce such clean up by subcontractors, the Owner, subsequent to advising the Contractor in writing, may after five (5) working days proceed to perform clean-up of areas which pose a threat to life/safety or are excessively unsightly. The cost of cleaning provided by the Owner under this condition shall be borne by the General Contractor, via deduct Change Order.

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<td>Checkout Procedures</td>
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<td>This information to be provided by the Design Professional.</td>
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<tr>
<td>01 75 16</td>
<td>Startup Procedures</td>
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<td>Signoff from the NAU Director of Utilities is required before any utility is energized. Refer to Division 33 for individual utility requirements.</td>
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<td>The Preliminary Balance Report shall have been submitted by the Contractor to the Owner prior to, and as a requirement of, Substantial Completion.</td>
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<td></td>
<td>The Final Balance Report shall have been submitted by the Contractor to the Owner prior to, and as a requirement of, Final Completion.</td>
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<td>Systems start-up, commissioning, and balancing shall be 100% complete prior to, and as a requirement of, Final Completion.</td>
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<td>Any additional information to be provided by the Design Professional.</td>
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<td>01 76 00</td>
<td>Protecting Installed Construction</td>
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<td>01 77 00</td>
<td>Closeout Procedures</td>
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<td>01 77 13</td>
<td>Preliminary Closeout Reviews</td>
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<td></td>
<td>The Contractor shall request the Owner to schedule a closeout meeting to be scheduled 30 days prior to substantial completion. An example of the project agenda and attendees required can be found at: <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a></td>
</tr>
<tr>
<td>01 77 16</td>
<td>Final Closeout Review</td>
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<td></td>
<td>The contractor will schedule a meeting with the Owner and DP when the all the document packages are ready for the individual substantial completion, final completion and final payment phases.</td>
</tr>
<tr>
<td>01 77 19</td>
<td>Closeout Requirements</td>
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</table>
For all closeout requirements, please refer to the Construction Agreement located at http://nau.edu/Facility-Services/DP_Contract/

All contracts are listed under “Contracts”. Please refer to the appropriate contract’s closeout requirements specific to the project you are contracted for.

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<td>Maintenance Contracts</td>
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<td>01 78 23</td>
<td>Operation and Maintenance Data</td>
</tr>
<tr>
<td>01 78 23.13</td>
<td>Operation Data</td>
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</tbody>
</table>

Upon completion of the installation of all work specified in Construction Documents, and prior to Final Completion, contractor shall furnish to the DP for review; one (1) complete bound copy and one (1) electronic copy of operating and maintenance instructions and parts lists for all material and equipment, including electrical and control items, being supplied. Upon receipt of review, the contractor shall submit three (3) complete bound corrected copies and one (1) electronic corrected copy of the operating and maintenance instructions and parts list for all material and equipment in divisions 2-48. **Operation and maintenance manuals for all specified equipment and systems shall be provided as part of the contractor’s base bid.**

Assemble Maintenance Manual and Operating Instructions in hard-back 3-ring loose leaf binders. Manuals will be organized by division will all warranties in a separate section at the back of the manual. Suitably label and index all material contained therein for ready reference.

Operating instructions shall include complete operating sequence, control diagrams, description of method of operating machinery, machine serial numbers, factory order numbers, parts lists, instruction books, suppliers’ phone numbers and addresses and individual equipment guarantee. Parts lists shall be complete in every respect, showing all parts and part numbers for ready reference.

O&M materials related to any of the following building components (as applicable for each project) are to be provided by the contractor to the project manager to then be submitted to the Office of Regulatory Compliance:

- boilers
- emergency generators
- acid neutralization tanks
- grease interceptors
- sand/oil separators
## DIVISION 1 – GENERAL REQUIREMENTS

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<td>Maintenance Data</td>
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<td></td>
<td>Close-out submittals shall include a completed “Maintenance Check List” (FS#88) indicating all maintenance and frequency required for warranty purposes.</td>
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<tr>
<td>01 78 23.19</td>
<td>Preventative Maintenance Instructions</td>
</tr>
<tr>
<td>01 78 29</td>
<td>Final Site Survey</td>
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<td></td>
<td>At the completion of underground utilities and final site work, the Contractor shall provide an as-built drawing of all work completed. An as-built drawing for underground utilities shall be provided within 30 days of completion of this work. The final site work drawing shall be provided after all site work is complete. The as built drawings shall consist of the following:</td>
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<td>- Drawing must be CAD format, no PDF’s</td>
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<td>- All buried and concealed items must be located with GPS coordinates. This includes tie-in locations, pipe alignments, change in direction, valves, manholes, utility crossings, and depth of utility.</td>
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<td>- The site survey shall also include site as built grades which have been surveyed and verified by a licensed surveyor.</td>
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<td>- The as-builts must be certified by a licensed surveyor who is currently registered in the State of Arizona certifying the drawing and GPS coordinates are accurate.</td>
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<td>01 78 33</td>
<td>Bonds</td>
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<td>01 78 36</td>
<td>Warranties</td>
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<td></td>
<td>The Contractor’s Warranty shall commence on the date of Substantial Completion and remain in effect for two years. Prior to Final Completion the contractor shall schedule a 1 year and 2 year warranty walkthrough with the University.</td>
</tr>
<tr>
<td></td>
<td>All other warranties shall commence at Substantial Completion unless otherwise specified by manufacturer. These warranties are to remain in effect per the Construction Documents.</td>
</tr>
</tbody>
</table>
The General Contractor shall provide 24-hour response to all critical building systems, i.e., loss of heating, cooling and control systems. If applicable, the General Contractor shall provide at Substantial Completion, service agreements between service companies and the University for all critical areas. The service agreement shall include 24-hour phone numbers and contact persons’ names the University may use in case of emergency. The Emergency Service Agreement shall remain in effect for the two-year warranty period. The General Contractor shall provide a contact person’s name and phone number for Contractor’s bonding company for use if the University experiences problems during the warranty.

All other, noncritical warranty items will be corrected within five (5) working days; unless the General Contractor notifies the University in writing that a delay will be experienced due to shipping of materials. A shipping date must be provided to advise the University of the Approximate Date of warranty repair. All warranty work must commence as soon as reasonably possible and be diligently prosecuted to completion.

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<td>For all project record documentation procedures, please reference the</td>
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<td></td>
<td>Construction Agreement located at <a href="http://nau.edu/Facility-">http://nau.edu/Facility-</a></td>
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<td></td>
<td>Services/DP_Contract/</td>
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<td></td>
<td>Refer to FS 76 at <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a> for</td>
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<td>example of As-Builts required.</td>
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<td>Spare Parts</td>
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<td>DP to provide project-specific information on guarantee submittals.</td>
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<td>Extra Stock Materials</td>
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<td></td>
<td>Refer to FS 76 at: <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a></td>
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<td>01 78 53</td>
<td>Sustainable Design Closeout Documentation</td>
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<td>DP to provide project-specific information.</td>
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<td>The NAU Project Manager will be designated as an alternate project</td>
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<td>administrator for all sustainable design programs.</td>
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<td>01 79 00</td>
<td>Demonstration and Training</td>
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<td></td>
<td>Refer to FS 76 at: <a href="http://nau.edu/Facility-Services/DP_Contract/">http://nau.edu/Facility-Services/DP_Contract/</a></td>
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**END OF SECTION**
01 80 00  PERFORMANCE REQUIREMENTS  
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01 81 00  Facility Performance Requirements

01 81 13  Sustainable Design Requirements
The NAU Project Manager will be designated as an alternate project administrator for all sustainable design programs.

01 81 16  Facility Environmental Requirements

01 81 19  Indoor Air Quality Requirements
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<td>Exterior Enclosure Performance Requirements</td>
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<td>Site Electrical Utilities Performance Requirements</td>
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<td>01 89 29</td>
<td>Other Site Construction Performance Requirements</td>
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<td>Basement Construction Commissioning</td>
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<td>Facility Shell Commissioning</td>
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<td>Superstructure Commissioning</td>
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<td>01 91 19.43</td>
<td>Exterior Enclosure Commissioning</td>
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SECTION 02 41 13 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 GENERAL CONDITIONS AND OTHER CONTRACT DOCUMENTS

   A. The General Conditions and other Contract Documents as set forth in the foregoing pages are hereby incorporated into and become a part of the Specifications for the work under this Section, insofar as they apply hereto.

   B. Due to resident occupancy concerns, noise producing demolition work hours may be restricted.

1.02 WORK INCLUDED

   A. Work generally includes but is not limited to the following. (Refer to Drawings and Specifications for detailed demolition, removal requirements).

   B. Perform selective demolition work in a systematic manner.

      1. Contractor shall provide all labor, materials, equipment, and tools to remove the existing roof system(s) and associated flashings down to the existing wood deck in accordance with plans and specifications.

      2. Remove all unused and unnecessary roof top equipment and penetrations and prepare for installation of new decking, thermal insulation, cover board and new roof system.

      3. Remove and replace all wet, damaged and deteriorated nailers and wood decking.

   C. If unanticipated structural, mechanical or electrical elements, which conflict with intended function or design, are encountered, notify Consultant of conflict. Consultant shall promptly notify Roofing Contractor of any changes or deviations to the Selective Demolition schedule.

   D. Provide for proper disposal of all existing materials to be removed in accordance with plans and specifications.

   E. Provide for cleanup of excess materials, equipment, tools and debris to maintain the project in neat and orderly condition.

1.03 PROTECTION

   A. Make such explorations and probes as are necessary to ascertain any required protective measures before proceeding with demolition and removal.

   B. Take necessary precautions to prevent dust and dirt from entering interior areas of the building and areas outside of the identified interior work areas.

   C. Provide adequate fire protection in accordance with the local Fire Department requirements.

   D. Conduct operations with minimum traffic interference.
E. Be responsible for any damage to the existing structure or contents due to the insufficiency of protection provided.

F. Any demolition work at or around existing conduit, refrigerant lines or gas lines shall be conducted with hand methods only. Provide protection to conduit, refrigerant lines or gas lines to prevent accidental damage due to demolition process.

G. Various equipment and electrical conduit is present below the roof deck. The Roofing Contractor is responsible for verifying locations of existing equipment and electrical conduit. Do not damage, penetrate, or disturb equipment and conduit below the roof deck. The Roofing Contractor is fully responsible for repairing any damage to the existing electrical conduit and/or below deck equipment.

H. If unanticipated structural, mechanical or electrical elements, which conflict with intended function or design, are encountered, notify Consultant of conflict. Consultant shall promptly notify Roofing Contractor of any changes or deviations to the Selective Demolition schedule.

1.04 CLEAN UP

A. Contractor shall clean up excess materials, equipment, tools, trash, and debris as required to maintain the project site in a neat and orderly condition.

B. Contractor shall leave premises in broom clean condition daily and upon project completion.

C. Contractor shall repair damaged areas caused during the work of the project.

1.05 SCHEDULING

A. Before commencing any demolition work notify the Consultant 48 hours in advance.

B. Coordinate the roof demolition work with the new work to keep the new insulation, roofing materials, building, contents and interior completely dry and watertight.

PART 2 – PRODUCTS

2.01 CLEANERS

A. Cleaners used shall meet local requirements for runoff water quality.

PART 3 – EXECUTION

3.01 PROTECTION OF SURFACES

A. Contractor shall take all necessary precautions during demolition and roof preparation to protect the building, its contents, and adjacent surfaces from being soiled or damaged.

B. Restore to original condition any and all damage caused during work performed under this section.

C. Do not allow roof drains to become clogged or blocked by debris. Do not allow debris to block or prevent proper drainage.

D. Prior to demolition, confirm that all pipes, flues, steel members and other similar penetrations are properly secured to the structure.
3.02 DEBRIS HANDLING
   A. No materials, equipment, tools, etc. shall be dropped to any point outside the exterior walls
      at any time unless approved in writing by Owner.

3.03 DISPOSAL
   A. Do not store debris on roof.
   B. Properly dispose of all construction debris on a daily basis or more often if needed to
      maintain the work area neat and orderly.

3.04 PREPARATION OF SURFACES
   A. Properly prepare all surface prior to installation of new work.

3.05 CLEANUP
   A. Properly cleanup all construction debris.
   B. Maintain staging areas neat and orderly.
   C. Return all damaged or soiled areas to original condition as required.

END OF SECTION
SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Special Conditions, General Requirements and Division 1 Specification sections apply to this section.

1.02 DESCRIPTION OF WORK

A. Definition: Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed except as otherwise indicated.

1.03 SUMMARY

A. Types of work in this section include rough carpentry for roof deck replacement, wood insulation stops, sheet metal flange blocking, wood roof curbs, expansion joint curbing, and other nailers as required to achieve a complete roof system.

B. Material Certificates: Where dimensional lumber is provided to comply with minimum allowable unit stresses, submit listing of species and grade selected for each use along with evidence of compliance with specified requirements. Compliance may be in the form of a signed copy of an applicable portion of the lumber producer's grading rules showing design values for selected species and grade. Design values shall be as approved by the Board of Review of the American Lumber Standards Committee.

C. Wood Treatment Data: Submit chemical treatment manufacturer's instructions for the proper use of each type of treated material.

D. Preservative Treatment: For each type specified, include certification by treating plant stating the type of preservative retained and conformance with applicable standards.

E. For water-borne treatment, include statement that moisture content of treated materials was reduced to levels indicated prior to shipment to the job site.

F. Fire Retardant Treatments: Include certification by treating plant that treated material complies with specified standard and other requirements.

1.04 PRODUCT HANDLING

A. Delivery and Storage: Keep materials dry at all times. Protect against weather exposure and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar material stacks.

1.05 PROJECT CONDITIONS

A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.
PART 2 – PRODUCTS

2.01 LUMBER - GENERAL

A. Lumber Standards: Manufacturer lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review.

B. Grade Stamps: Factory mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements of identifying grading agency, grade, species, moisture content at time of surfacing and mill.

C. For exposed lumber, apply grade stamps to ends or back of each piece or omit grade stamps entirely and issue certificate of grade compliance from inspection agency in lieu of grade stamp.

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20 for moisture content specified for each use.

E. Provide dressed lumber, S4S, unless otherwise indicated.

F. Provide seasoned lumber with 19% maximum moisture content at time of dressing shipment for sizes 2" or less in nominal thickness unless otherwise indicated.

G. When replacing deteriorated or damaged roof deck, contractor shall match existing material types, dimensions, finishes, attachment, etc.

2.02 DIMENSION LUMBER

A. Grade: Construction grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 boards per SPIB rules.

2.03 CONSTRUCTION PANELS

A. Chip board panels are not allowed.


C. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.

PART 3 – EXECUTION

3.01 INSTALLATION - GENERAL
A. Discard units of material with defects that might impair the quality of the work and units that are too small to use in fabricating work with minimum joints or optimum joint arrangement.

B. Set carpentry work to required levels and lines with members plumb and true to line and cut and fitted.

C. Securely attach carpentry work to substrate by anchoring and fastening as shown and required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.

D. Use appropriate fasteners for all applications. Do not use incompatible fasteners. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required. Do not penetrate through exposed lower surface of roof deck.

E. Raise mechanical curb heights and/or perimeter parapet heights as required to provide adequate flashing heights with 12-inch minimum and per manufacturers requirements.

F. Nailers shall be installed in general accordance with Factory Mutual Loss Prevention Data Sheet FM 1-49.

G. Nailer thickness shall match thickness of adjacent thermal insulation as applicable.

H. Width of nailers shall exceed the thickness of sheet metal flanges.

I. For wood deck replacement, match existing type, thickness, structural support and attachment.

END OF SECTION
SECTION 07 54 00 – THERMOPLASTIC ROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions, general provisions of the Contract and General and Special Conditions apply to this section.

1.02 DESCRIPTION OF WORK

A. Extent of roofing work is specified as below and indicated on the drawings and is hereby defined to include roof membrane systems intended for weather exposure as primary roofing to replace all existing roof systems for the designated project.

B. This project may be executed as a Single Prime contract.

1. The Owner reserves the right to award this contract to a Single Prime Contractor based upon proposals.

C. Description of work (refer to drawings) and Summary Section 01 11 00:

D. Remove the existing roof system and associated flashings in their entirety in a careful manner to avoid/minimize damage to exterior finishes down to the existing structural deck. All materials shall be properly removed and disposed of in a timely manner at the contractor’s expense.

E. Remove designated obsolete equipment, rail curbs, and penetrations, and patch or replace decking per industry standards, guidelines, and recommendations.

F. Raise all penetrations to achieve a minimum 12” flashing height above finished roof. Raise all plumbing vents to achieve a minimum 12” flashing height above finished roof line to meet the applicable Building Code requirements.

G. All electrical, mechanical, plumbing and other utility disconnects and reconnects shall be performed by a certified electrical and / or mechanical contractor.

1. Contractor shall include all interior and exterior costs for material and labor to extend roof curbs, pipes, rooftop units; etc.

H. Repairs must be made to any deck surface condition that will not allow the new roof system to lie flat and smooth. The deck must be clean and smooth prior to the installation of the new roof system.

I. Curbs, Nailers, Plywood, and Plumbing Vents:

1. Install new wood nailers as detailed on the roof drawings and specifications per Section 06 10 00 Exterior Rough Carpentry.
2. All wood nailers required to accommodate the new specified roofing system installation per drawings, specifications and manufacturer’s requirement are to be included in Contractor’s base bid.

J. Repair any deteriorated roof deck found to be deteriorated with new matching deck materials.

K. Install new specified air/vapor barrier, thermal insulation and cover board on specified roof areas.
   1. Install substrate components as required per specifications and as shown on drawings.

L. Fastening and adhesion patterns shall comply with to meet latest ASCE – 7 requirements, applicable Building Code 120 MPH wind rating, and to meet Manufacturers approved wind uplift requirements.

M. Install a 050 Mil Reinforced adhered KEE feltback membrane over entire roof area to include all wall flashings and accessories for specified Manufacturer’s specified 20 Year NDL warranty.

N. Install all adhered KEE membrane wall base flashing materials, pipe flashings, and other flashings as required to meet manufacturer’s guidelines and the performance standards outlined in this Project Manual and Drawings.

O. Install miscellaneous flashings and accessories to achieve the specified manufacturer’s NDL warranty.

P. Excessive patching or damage to the finished roof membrane is not acceptable and shall be grounds for rejection by the Owner. Excessive patching and/or damage to the finished membrane shall be removed and replaced at the Contractors expense. Damage, punctures or scratches requiring more than three patches per 100 square feet is unacceptable and shall require replacement at the Contractors expense.

Q. No hot asphalt will be allowed in the roof system.

R. Types of roofing referenced in this section include:
   1. Adhered membrane roofing system complying with ASTM D6754.
   2. Air/vapor barrier, board stock isocyanurate insulation board, and cover board below the finished roof system related to the thermoplastic KEE roof system work is specified in this section.
   3. Flashing, sheet metal, sealants and roof accessories related to this work are specified in other Division 7 sections.

1.03 BASE BIDS:

A. GENERAL WORK ITEMS FOR ALL ROOF AREAS:
   1. Remove unused and unnecessary roof top equipment and penetrations and properly repair roof deck to match existing.
2. Repair and replace any and all deteriorated wood deck substrates.
3. Raise units as required to provide a twelve-inch minimum flashing height at all locations.
4. Raise plumbing vents to provide a minimum twelve-inch flashing height at all locations.

B. Install specified snow rails up slope from roof top penetrations to prevent damage to roof top penetrations. Install snow rails in accordance with manufacturers recommendations.

C. Special care and caution shall be used at nightly tie-on locations so as to create an ongoing watertight roof during the entire roofing process. There will be zero tolerance for inadequate tie-on work or other workmanship deficiencies that result in roof leaks during the construction process.

D. Contractor is responsible for providing additional wood blocking member to equal thickness of new insulation system and provide positive slope for sheet metal accessories.

E. Provide additional wood nailers and primed cover board at existing curbs and perimeter walls as required, to achieve a flashing height of 12” minimum.

1. All plumbing vents (soil stacks) shall be raised a minimum of twelve (12) inches above finished roof surface to meet current Building code.

F. Provide additional cover board at curbs and perimeter walls as required to provide an appropriate substrate for adhered base flashings.

G. Install tapered edge strip to accommodate the transition between the cover board and the thermal insulation to provide smooth substrate transition for all roof membranes per specified roof details.

H. Remove and replace roof hatch and skylight.

1.04 SPECIFIC ROOF SYSTEM SUBSTRATES PER ROOF AREA

A. ROOF AREA

1. Wood Deck: Furnish and Install an adhered 050 mil feltback thermoplastic KEE membrane over ½” min. gypsum based cover board substrate adheres in low rise foam over mechanically attached thermal insulation over self-adhered air/vapor barrier over properly prepared wood deck to meet latest ASCE – 7 requirements, applicable Building Code 120 MPH wind rating, and to meet Manufacturer’s approved wind uplift requirements.

2. Furnish and install a tapered polyisocyanurate insulation saddles at uphill side of all roof curbs, penetrations, regardless of size to meet latest ASCE – 7 requirements, applicable Building Code 120 MPH wind rating, and to meet Manufacturer’s approved wind uplift requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer: Obtain primary roof system from a single manufacturer. To participate as a qualified company in production of materials, the company must have a minimum of five (5) years’ experience as the sole manufacturer of the brand named. The manufacturer shall also
furnish a notarized certification that he has been in business and had roofs installed for a minimum of five years.

B. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

C. Roof System Test Data: Each manufacture must submit independent third party test reports on a single-ply roof membrane system.

1. The independent third party test data must be submitted on lab letterhead.

D. All related components of the thermoplastic KEE roofing system shall be compatible and by the same manufacturer where possible.

E. Manufacturer shall provide qualified technical representatives as required for purposes of advising Installer of procedures and precautions for use of roofing materials.

F. Installer: A firm with not less than five (5) years of successful experience in installation of roofing systems. The date of the Contractor's manufacturer applicator approval or license must be five (5) years prior to the date of the bids.

G. Experience shall include all related work and accessories associated with roofing including but not limited to membrane, air/vapor barriers, board type insulation, cover board, membrane base flashings, sheet metal counter-flashings, control joints, joint sealers and all other required components of specified modified bitumen roofing system.

H. Contractor must be able to document the Project Foreman's experience with the roofing systems if required by the Consultant.

I. Pre-Roofing Conference: Prior to installation of roofing and associated work, a meeting shall be held at the site including the roofing contractor, system manufacturer, if necessary, Owner's representative and other entities concerned with roofing performance, including (where applicable) Owner's insurer, test agencies, governing authorities, Consultant and Owner. A Memorandum Record of discussions shall be taken and copies of the pre-roofing conference memorandum shall be distributed to each participant. A 72-hour notice shall be given to participants prior to convening the pre-roofing conference.

J. Manufacturer must have written applicator/installer approval program.

K. The product must have a continuous manufacturing history with the current product formulation of no less than ten years in the United States of America.

L. The roofing system must be applied by a manufacturer approved applicator.

M. During and upon completion of the installation, an inspection(s) shall be made by a technical representative of the membrane manufacturer to review the installed roof system and list all deficiencies.

N. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's Representative and membrane manufacturer.
O. All work shall be completed by personnel trained and authorized by the membrane manufacturer.

P. Roofing membrane manufacturer must have a demonstrated performance history of producing roof membranes no less, in duration of years, than the warranty duration specified.

Q. Contractor to provide written verification indicating that all seams have been probed and are watertight and that seam samples/test cuts were performed on a daily basis.

R. The Contractor shall provide a two-year labor and performance agreement.

S. The Contractor shall be a licensed contractor doing business under that license for a minimum of five years without interruption.

T. The financial stability of the Contractor shall include no filing of bankruptcy during the last five years.

U. The Contractor shall provide proof of insurance as required by the owner.

1.06 CODE COMPLIANCE

A. The Applicator shall submit evidence that the proposed roof system meets the requirements of all local building codes and has been tested and approved or listed by the following test organizations.

B. These requirements are minimum standards and no roofing work shall commence without written documentation of the system's compliance, as required in the "Submittals" section of this specification. Materials and methods shall conform to the following:

1. Roof Slope Requirements: - Reroofing shall result in no less than positive drainage with a minimum ¼" per foot.

2. Low Sloped Perimeter Edge Termination: - ANSI/SPRI ES-1 Compliance
   a. Perimeter edge metal shall be tested and installed in accordance with ANSI/SPRI ES-1

3. External Fire Rating:
   a. UL Listing: Provide labeled materials that have been tested and listed by UL 790 for application indicated with a Class "A" rating.
      (1) Entire roof system shall be listed as a Class Assembly as well as individual components.
      (2) Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
(3) Exterior Fire-Test Exposure: Class A, ASTM E 108, for application and roof slopes indicated.

(4) Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

4. Wind-Uplift Resistance: Provide a membrane roofing system that is designed to resist uplift pressures as determined by the latest edition of ASCE -7, applicable 120 MPH requirement for applicable Building Codes and per Manufacturer's Warranty Requirements. Minimum design pressures:

   a. Field -45 psf
   b. Perimeter -67.5 psf
   c. Corner -90 psf

1.07 SUBMITTALS

A. Product Data: Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

   1. Submit specifications, installation instructions and general recommendations from manufacturers of roofing system materials to include the types of roofing required. Include any data requiring special application considerations by the manufacturer.

B. Shop Drawings: Submit complete shop drawings showing roof configuration, tapered insulation layout, perimeter details and special conditions, along with other manufacturer's details relating to the project. Consultant must approve tapered layout prior to Contractor ordering and installing tapered insulation material. Dimensioned shop drawings which shall include:

   1. Outline of roof with roof size and elevations shown.
   2. Details of flashing methods for penetrations.
   3. Details of flashing methods for perimeters.

C. Material List: A complete listing of all products intended for use on the project shall be submitted along with the shop drawings. List shall include all accessories to be incorporated into the finished roof system.

D. Package and Labels: Deliver materials in sealed package, manufacturer's original labels thereon. Do not remove labels or open packages until the Consultant inspects and approves them. All materials must have MSDS and be labeled as "asbestos free".

E. Installer's Certificate: Signed by Roofing manufacturer certifying that Installer is approved, authorized, or licensed by the Manufacturer to install the specified roofing system.

F. Submit technical literature of all system components and maintenance manuals.
G. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

H. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

I. Warranties: Provide a copy of the Warranty.

J. Qualification Data: For Installer and Manufacturer.

K. Latest edition of the membrane manufacturer’s current material specifications and installation instructions.

L. Samples of each primary component to be used in the roof system and the manufacturer's current literature for each component.

M. Written approval by the insulation manufacturer (as applicable) for use and performance of the product in the proposed system.

N. Certifications by manufacturers of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

O. Certification from the Applicator that the system specified meets all codes and insurance requirements as required by the Specification. Include the following:

1. ICC-ES Evaluation Report
2. FM Roof Nav Number and report
3. Manufactures Approved Acceptance of Notice of Award (ANOA) or similar.

P. Safety Data Sheets (SDS)

Q. Submit results of fastener pull out tests.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.

B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.

C. Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

D. All adhesives shall be stored at temperatures as required by product manufacturer.

E. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
R. Any materials determined to be damaged are to be removed from the job site and replaced at no cost to the Owner.

S. Assignment: The Contractor shall not subcontract any phase of the work without previous approval from the Consultant. Subcontracted work without previous approval is subject to rejection by the Consultant.

T. Product Handling: Use all means necessary to protect all materials before, during and after installation. Storage outside on skids and covered with tarps will be permitted if securely tied at sides (no material visible) and sufficiently above ground to eliminate any water damage. No wet insulation will be installed under any conditions.

1. NOTE: Poly wrap is not considered proper protection. A breathable waterproof tarp must also be used to prevent condensation.

2. NOTE: Shipping wrap and packaging is not considered proper protection.

U. All roofing equipment shall be placed so that the building or premises will not be damaged. The hoist shall be substantial and arranged so as not to deface the building with drippings or scarring. The Contractor shall be responsible for cleaning the building walls. At no time shall any materials not contained by a chute or hydraulic dumpster be thrown from the roof.

V. Do not permit the roofing surface to be used for traffic. Use rubber-tired buggies for transporting heavy materials over insulated surfaces or plywood panels at certain conditions.

W. In the event of damage, immediately make all repairs and replacement necessary to the Consultant's approval and at no additional cost to the Owner. Contractors shall list and document any and all damage prior to the start of their work and file it with the Owner and Consultant.

1.08 JOB CONDITIONS

A. Weather: Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

B. No tear-off shall begin when the threat of rain or snow is above 30% without approval from Consultant. Re-roofing shall not take place when the average temperature for the day is to be below 32 degrees F without approval from the Consultant or Owner.

C. Wet Materials: Insulation and roofing materials that have become wet before or after installation shall be removed and replaced. Drying out of wet insulation or roofing membranes will not be permitted or acceptable for installation.

D. Workers: All workers shall be thoroughly experienced in the particular class of work employed on this project and all materials shall be securely fastened in place in a watertight, neat and workmanlike manner. All work shall be done in accordance with these specifications and shall meet the approval in the field of the Owner's Representative and the Consultant.

1. The Contractor's Representative or Job Superintendent shall have a complete copy of specifications and drawings on the job site at all times.
E. The Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of that day or prior to the onset of inclement weather.

F. The Contractor must review the scope of work with the Consultant. Any incomplete areas left over 24 hours must have the Consultant's approval.

G. All seams shall be heat welded before leaving the job site that day.

H. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.

I. All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.

J. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

K. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

L. The Applicator is cautioned that certain membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with membranes.

M. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over felt or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

N. Prior to and during application, all dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air or similar methods.

O. The Applicator shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.

P. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable City, State and Federal requirements.

Q. All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
R. The Applicator shall take precautions that storage and application of materials and equipment does not overload the roof deck or building structure.

S. Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

T. All rooftop contamination that is anticipated or that is occurring shall be reported to membrane manufacturer and consultant to determine the corrective steps to be taken.

U. The Applicator shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work and upon completion of work. Applicator shall report any such blockages in writing to the Owner's Representative for corrective action prior to the installation of the Manufacturers roof system.

V. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owners Representative.

W. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.

X. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.

Y. The Applicator shall conduct fastener pullout tests in accordance with the latest version of the SPRI/ANSI Fastener Pullout Standard to verify condition of the deck/substrate and to confirm expected pullout values.

Z. The membrane shall not be installed under the following conditions without consulting Manufacturers Technical Dept. for precautionary steps:

1. The roof assembly permits interior air to pressurize the membrane underside.

2. Any exterior wall has 10 percent or more of the surface area comprised of opening doors or windows.

3. The wall/deck intersection permits air entry into the wall flashing area.

AA. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.

BB. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

CC. Membranes are slippery when wet or covered with snow, frost, or ice. Working on surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow OSHA and other relevant fall protection standards when working on roofs.

DD. Contaminants such as grease, fats, oils, and solvents shall not be allowed to contact the roof membrane.
1.09 WRITTEN GUARANTEE

A. The Roofing Contractor and the material manufacturer shall furnish to the Owner the specified written NDL (No Dollar Limit) guarantee on the complete roof installation to include all installed components and materials. The guarantee shall be sent in triplicate to Owner’s Associate Consultant for review and filing. Said Guarantee shall begin when the project is completed and accepted by the Owner and Consultant.

B. The Roofing Contractor shall furnish to the Owner an additional written Five (5) year workmanship guarantee on all work items. The guarantee shall be sent in triplicate to Owner’s Associate Consultant for review and filing. Said Guarantee shall begin when the project is completed and accepted by the Owner and Consultant. Contractors warranty shall meet the State of Arizona’s requirements.

C. The Guarantee shall cover, at no cost to the Owner, all labor and materials required to repair or replace roofing, flashing, sheet metal, coping and metal work against leaks or faulty workmanship.

D. The Manufacturers and Contractor Guarantees shall be issued and include the following as applicable:
   1. Warranty shall cover 100% of all labor and materials including all accessories incorporated into the finished roof system. No exclusions will be allowed.
   2. Warranties shall not be pro-rated.
   3. Warranties shall not be limited to the cost of original application.
   4. Warranties shall cover entire roof system, not just roof membrane.
   5. Warranties shall be fully transferable.
   6. Warranty to include but not be limited to membrane, cover board, insulation, air barrier, adhesives, fasteners, sealants, flashings, sheet metal flashings, clad metal flashings, etc.
   7. Warranty to remain in effect for wind speeds up to and including the design wind speed but no less than 120 MPH.
   8. Warranty to remain in effect for up to and including 1.5” hail.
   9. Warranties requiring the Owners signature are not acceptable.
  10. Warranties that limit the right to trial by jury in any way are not acceptable.
  11. Warranties that define jurisdiction or venue outside of the State, County or City where the building is located are not acceptable.
  12. Warranty shall not include exclusions for ponding water.

E. WARRANTY DURATIONS
   1. Manufacturer’s Warranty shall be in effect for a twenty (20) year duration.
   2. Contractor’s Warranty shall be in effect for a two (2) year duration.

F. Recommended Maintenance: In addition to the guarantee, the Contractor shall furnish to the Owner, the Manufacturer's printed recommendations for proper maintenance of the
specified roof system, including, inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.10 BIDDING REQUIREMENTS

A. Pre-Bid Meeting:

1. A pre-bid meeting shall be held with the Owner’s Representative and involved trades to discuss all aspects of the project.

B. Site Visit:

1. Bidders shall visit the site and carefully examine the areas in question as to conditions that may affect proper execution of the work. All dimensions and quantities shall be determined or verified by the Applicator. No claims for extra costs will be allowed because of lack of full knowledge of the existing conditions.

C. Pre-Construction Meeting:

1. Preconstruction Meeting: The manufacturer’s Technical Representative and the roofer shall conduct a pre-roofing meeting to discuss the work. Architect, Owner, and Owner’s facility representative shall be present. Discussion shall include:

   Schedule of the work.
   Review of submittals.
   Review of material handling procedures, including site utilization and coordination, and roof loading constraints.
   Coordination with building HVAC system.
   Review of roof safety protocols.
   Review of flashing and edge conditions.
   Other issues of importance.

1.11 INSPECTION

A. During application of the materials, the Contractor shall have the manufacturer’s representative accompanied by the Consultant on the job site for job meetings as required.

B. Upon Completion, a final inspection will be made by the Consultant, a representative of the Owner, the material representative and the Contractor. No final payment will be authorized for work done until such inspection has been made and all work is found to have been performed in accordance with the Specifications, manufacturer’s requirements and to the satisfaction of the Consultant and Owner.

C. The approved Manufacturer shall make weekly site visits to the job during construction by a Certified Technical Representative of the Company. Sales Representative site visits will not be considered an official Technical site visit.

1. Weekly site visits do not include pre-construction meeting or final inspections.
2. Site visit reports shall be provided to consultant and Owner.
3. Manufacturer shall provide an Inspection Report for each site visit.
a. Reports shall be distributed to Owner and Consultant.

D. The Owner and Consultant must be notified 48 hours prior to the Roof Membrane Manufacturer’s Final inspection and be present. A letter of the inspection results must be issued by the manufacturer representative to the Owner and Consultant.

1. Failure to properly notify the Consultant of the manufacturer’s inspection could be cause to require a re-inspection of the project.

**PART 2 - PRODUCTS**

2.01 GENERAL

A. Components of the roof system are to be products of Manufacturers as indicated on the Detail Drawings and specified in the Contract Documents.

B. Components to be used that are other than those supplied or manufactured by Manufacturers may be submitted for review and acceptance by the manufacturer. Manufacturer’s acceptance of any other product is for a determination of compatibility with Manufacturers products and for inclusion in the Manufacturer’s warranty. The specifications, installation instructions, limitations, and restrictions of the respective manufacturers must be reviewed by the Owner’s Representative for acceptability for the intended use with Manufacturers products.

2.02 MATERIALS

A. Provide products recommended by manufacturers to be fully compatible with the various components of the single ply roof system.

B. General: Provide insulating materials to comply with requirements indicated for materials and referenced standards in sizes to fit indicated applications selected from manufacturer's standard thickness, widths and lengths.

C. Comply with Quality Assurance, References, specification, and Manufacturer's Data. Where conflict may exist, more stringent requirements govern

D. No asbestos containing material shall be allowed on this project.

E. The following single-ply roofing products are approved for this project:

1. Approved Manufacturers: Seaman Corp. – Fibertite

2. Provide products by the manufacturers specified that meet or exceed stated manufacturer qualifications, performance requirements and warranty requirements

3. Requests for substitutions may be considered in accordance with provisions of the contract documents. Subject to compliance with requirements, substitution request must be seven (7) days prior to bid date.

2.02 SCOPE / APPLICATION

A. Roof System: Provide a weather-tight, water-tight, waterproof roof system, capable of withstanding uplift forces as specified in Design Criteria.
B. Membrane Attachment: Adhered

C. Base Flashing: Provide a weather-tight, water-tight, waterproof, adhered base flashing system at all penetrations, plane transitions and terminations.

2.03 INSULATION BOARD

A. Fesco Tapered edge strip
   1. Size: 0” to .5” x 1’

B. Closed-cell tapered polyisocyanurate, ASTM C1289-06, Type II Class 2, Grade 2.
   1. Board size - 4 feet by 8 feet. Fiberglass reinforced facer.
   2. Tapered insulation:
      a. Saddles: ¼” per foot min
   3. Flat stock insulation thickness: Provide two (2) layers of three (3) inch insulation.
   4. Foam core shall have a rated flame spread of 25 or less according to ASTM E 84. Insulation shall have minimum compressive strength of 20 psi. board size.
   5. Both sides of the Isocyanurate foam shall have a glass fiber mat facing compatible with specified adhesive. Insulation must also meet Federal Specification HH1-1972/Gen, and HH-I-1972/2 and must be approved by the roof membrane manufacturer for use in their roof system.

C. GYPSUM COVER BOARD

1. Cover board shall be approved by manufacturer and part of an approved tested assembly:
   a. Densdeck Prime – to comply with ASTM C 1177/C-1177M glass-mat, water resistant gypsum substrate. Also meets Factory Mutual 4450 criteria for Class 1 insulated roof decks. ASTM C 1177.
      i. Board thickness: ½ ” Min.
      ii. Maximum board size 4’ x 8’.
   b. Gypsum Fiber Securerock – to comply with ASTM C1278
      i. Board thickness: ½ ” Min.
      ii. Maximum board size 4’ x 8’.
   c. Or approved equal in accordance with Division 0 requirements.

2.04 MEMBRANE

A. KEE Sheet: ASTM D 6754, polyester reinforced felt-backed, as follows:
   1. Fibertite XT FB
DIVISION 7 – THERMAL AND MOISTURE PROTECTION

2. Or approved equal in accordance with Division 0 requirements.

B. Thickness:

1. FIELD: Reinforced 050 MIL Feltback Membrane Sheet, nom.
2. FLASHINGS: Reinforced 050 MIL Membrane Sheet, nom.

C. Membrane Color and Radiative Properties:

1. White
   a. Initial solar reflectance of 0.83 – ASTM E1918
   b. Emittance of 0.95 – ASTM E408
   c. Solar reflective index (SRI) of 98 – ASTM E 1980
   d. ENERGY STAR listed.

D. Performance: Membrane Properties: Thermoplastic KEE Membrane.

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<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>MINIMUM REQUIREMENT</th>
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<td>125 lbs x 50 lbs</td>
</tr>
<tr>
<td></td>
<td>(8” x 10” Sample)</td>
<td></td>
</tr>
<tr>
<td>Puncture Resistance</td>
<td>Fed Std. 101B</td>
<td>30 joules</td>
</tr>
<tr>
<td></td>
<td>Method 2031</td>
<td></td>
</tr>
<tr>
<td>Dimensional Stability</td>
<td>ASTM D 1204</td>
<td>0.5%</td>
</tr>
<tr>
<td>Low Temperature</td>
<td>ASTM D 2136</td>
<td>-40F</td>
</tr>
<tr>
<td>Flexibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerated Weathering</td>
<td>Carbon Arc with</td>
<td>5,000 hours – no cracking</td>
</tr>
<tr>
<td></td>
<td>water spray</td>
<td>blistering, or crazing</td>
</tr>
<tr>
<td>Seam Strength</td>
<td>ASTM D 751</td>
<td>500 lbs</td>
</tr>
</tbody>
</table>

2.05 FLASHING ACCESSORIES

A. Bonding Adhesive: Manufacturer recommended solvent or water-based adhesive.

B. Water Cut-Off Sealant: Used as sealant to prevent moisture migration at drains, compression
terminations and beneath conventional metal edging (at a coverage rate of approximately 10' LF per tube).

C. Single-Ply Sealant: A 100% solids, solvent free, one-part, polyether sealant that provides a weather tight seal to a variety of building substrates. Can be used as a termination bar sealant or for use in counterflashing, coping, and scupper details. Sealants exposed to UV shall be DOW 790 Silicone or equal.

D. Pourable Sealer: A one-part or two part, moisture curing, elastomeric polyether sealant used to fill Molded Sealant Pockets.

E. Foil Grip Aluminum Tape: A general-purpose pressure-sensitive sealant used as a bond break at joints in Coated Metal. Packaged in rolls 2" wide by 100' long.

F. Membrane Cleaner: Used to prepare roof membrane that has been exposed to the elements for approximately 7 days prior to heat welding or to remove general construction dirt at an approximate coverage rate of 400 square feet per gallon (one surface).

G. Flashing/Stripping Membrane – Shall be a 050-mil minimum thickness thermoplastic membrane with reinforcement.

H. Cover strip – Shall be 6" min. wide pre-cut polyester reinforced flashing strip.

I. Membrane Fasteners and Plates/Attachment Bar: Shall be approved and provided by membrane manufacturer for the deck type and membrane configuration.

J. Flashing Adhesive: Shall be approved and provided by membrane manufacturer for the deck type and membrane configuration.

K. Pipe Flashing: Shall be the membrane manufacturers pre-formed pipe boot flashing that is hot air welded to the membrane and secured with stainless steel draw band and sealant.

L. Walkway Pad: Manufacturer standard walkway pad.

M. Polymer Clad Metal: 24 gauge, G90 galvanized metal sheet with a 20 mil membrane laminated to one side.

N. T Joint Patches: 050 mils thick prefabricated circle patch. 4 ½” round, min.

O. Inside/Outside Corners: 050 mil thick prefabricated corners.

P. Open Post Flashings: 050 mils thick prefabricated flashing.

2.06 FASTENERS AND PLATES

A. No. 15 fasteners and three, (3) inch metal insulation plates.
   1. 3" - 26-gauge plate for insulation
   2. 2-3/8" - 26-gauge plate for roof membrane attachment
B. Screws shall be of sufficient length to penetrate the wood deck substrate per the Manufacturer's minimum requirements. All fasteners shall penetrate 1 inch into the wood deck.

D. An oversized diameter (.315) steel threaded fastener with a #3 Phillips drive used in conjunction with Plates for roof membrane securement into steel or wood decks.

E. Term Bar Nail-Ins: A 1-1/4” long expansion anchor with a stainless steel drive pin used for fastening the Termination Bar or Seam Fastening Plates to concrete, brick, or block walls.

F. Membrane Plates: A 2-3/8” diameter metal barbed fastening plate with an oversized hole for use with Fasteners for roof membrane securement.

G. All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion.

H. Nails penetrating treated wood must be hot-dipped galvanized meeting ASTM A653, Class G185 as currently recommended by Industry standards.

2.07 METAL EDGING AND MEMBRANE TERMINATIONS

A. Coping: Anchor cleat with pre-slotted holes shall be on gauge thicker than the coping metal and have a concealed joint cover and 10 foot continuous sections of coping cap; to accommodate various width parapet walls. Metal coping cap color shall be as designated by the Owner's Representative. Form coping from heat weldable polymeric coated sheet metal flashing:

1. Product Data
   a. 24 gauge. Hot dipped G-90 Steel
      i. Film Thickness .020 in (0.5 mm)
      ii. Sheet Dimensions 48-in x 120-in (1.2 m x 3.0 m)

B. Termination Bar: a 1” wide and .098” thick extruded aluminum bar pre-punched 6” on center; incorporates a sealant ledge to support Lap Sealant and provide increased stability for roof membrane terminations.

C. Edge Metal: A heat weldable, polymeric coated sheet metal flashing for use with all Membrane Roofing Systems.

1. Product Data
   a. 24 gauge. Hot dipped G-90 Steel
      i. Film Thickness .020 in (0.5 mm)
      ii. Sheet Dimensions 48-in x 120-in (1.2 m x 3.0 m)

D. Pre-Manufactured Sheet Metal Coping: For use as Alternate 2 Pricing.
   1. Metal Era – Permatite Gold Coping
2. Requests for substitutions may be considered in accordance with provisions of the contract documents.

2.08 OTHER MATERIALS

A. Air/Vapor Barrier – Manufacturer recommended self-adhered air/vapor barrier as part of a complete and tested roof assembly.
   i. 31 mil min.
   ii. Self-adhered
   iii. SBS modified adhesive bottom surface
   iv. Polyethylene top surface

B. Skylight – Wasco Skylights Curb Mounted Model DDCCM or approved equal.

C. Snow Rail – To be installed at the high side of all equipment penetrations in accordance with manufacturers recommendations. Alpine Snow Guards Model No. PP215 to be compatible with membrane roof system.

D. Roof hatch with ladder up safety post – Bilco Type S, 14 ga. Type 304 Stainless Steel with Ladder up Safety post or approved equal.

E. Lumber: Install new wood blocking as needed to complete this project meeting NRCA and SMACNA recommendations, specifications and details.

F. New wood blocking to be installed and attached per local building codes and per FM Loss Prevention Data Sheet 1-14 and 1-49.

G. Fasteners: Non-corrosive, screw type supplied by installer meeting wind rating required.

H. Metal to Wood: Stainless steel.

I. Metal to Metal: Factory-coated steel or aluminum fasteners corrosion-resistant and designed for sheet metal fabrication per SMACNA and metal system manufacturer. Standard Color to be selected by Owner.

J. FS FF-N-105B, Type II, Style 20, roofing nails; galvanized steel wire, flat head, diamond point, round, barbed shank.


L. Sheet metal to wood: 10-16 x 1-1/4 inch indented hex washer head stainless steel sheet metal screw with a stainless steel bonded washer assembly by Triangle Fastener Corp., Cleveland, OH.

PART 3 – EXECUTION

3.01 GENERAL WORKMANSHIP
A. Workmanship: In the event these Specifications deviate from the manufacturer's current specifications, these specifications shall prevail.

B. Insulation shall be attached to resist the designed uplift forces as determined by this specification as approved by roof system manufacturer for state and local building codes and project requirements.

C. Protection: Use tarpaulins or other approved means to protect work from spillage or dropping of roofing materials. Take care to prevent clogging drains and conductors. Protect from concentrated loads or traffic during construction.

D. Cutoffs: At end of each day's work protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering.

E. Traffic: Place plywood over new roofing and existing roofing if in contact with repeated foot and equipment traffic.

F. Debris: Not permitted within roof system or new roof membrane.

G. Blocking: Specification detail drawings are not to scale. Contractor shall be responsible for total blocking units and thickness necessary to satisfy specified flashing height and detail design.

H. Roof membrane: All roofing shall be laid free of wrinkles, creases or fishmouths and shall be laid at right angles to the slope of the insulation.

I. Install only as much roofing as can be properly covered the same day. If any unusual condition (such as deteriorated deck) is discovered promptly report this finding to the Owner's Representative. Do not proceed with new roof installation if decking is not suitable or structurally sound.

J. Substrate surfaces must be dry, clean and smooth. Any damaged insulation must be replaced with material to match existing. Gaps greater than 1/8 inch are to be filled with insulation.

K. Proceed with flashing work concurrently with roof membrane installations to prevent water entry at flashing locations. Terminate top edge of base flashing daily. Extend membrane over edge to cover exposed blocking at perimeters. Face nail 8 inches min on center daily.

L. Base flashing height: Not less than 8 inches above finished roof surface.

3.02 PRE-CONSTRUCTION CONFERENCE

A. The Applicator, Owner's Representative/Designer and Manufacturer(s) shall attend a pre-construction conference.

B. The meeting shall discuss all aspects of the project including but not limited to:
   1. Safety
   2. Set up
   3. Construction schedule
4. Contract conditions

5. Coordination of the work

3.03 INSPECTION OF SUBSTRATE

A. Prior to the bidding, the Contractor shall ascertain to his satisfaction that all aspects of these Specifications and possible modifications are workable and do not conflict with manufacturer's requirements for the specified guarantee. Upon submitting a bid, it will be presumed that these Specifications and drawings, addenda and modifications are satisfactory to both the Contractor and the manufacturer in their entirety.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform field tests and inspections, and prepare test reports.

3.05 DEFECTIVE WORK

A. Refinish, or remove and replace any defective work as noted by Owner or Consultant if surfaces are not smooth and flat to receive roofing according to roofing membrane manufacturer's written requirements

3.06 SURFACE PREPARATION

A. Do not cut or damage existing deck. Damaged or cut deck shall be replaced at contractor's expense. Removal of all existing debris down to the existing deck and wall substrates. Contractor must use extreme caution being careful not to cause damage to the exterior or interior of the buildings.

B. Repairs must be made to any surface condition that will not allow the new roof system to lie flat and smooth. The deck must be clean and smooth, without structural defect prior to the installation of the new roof systems. Replace any defective decking. Replace any wet, damaged, deteriorated or defective existing insulation.

C. It is mandatory that the work be done in a manner that no weather element (rain, wind, dirt, snow, etc.) penetrates through the roof assembly into the enclosed building space. Special care is to be taken to limit the work of a day so that such weather protection occurs. A watertight tie on is required at the end of each workday.

D. It shall be the sole responsibility of the contractor to maintain special care so as to limit the work of a day so that such weather protection occurs at all times.

   1. The contractor shall take all necessary precautions to maintain a watertight transition at all times.

   2. Contractor shall be responsible to repair any and all damage caused by moisture infiltration at this or any area during the course of the project.

3.07 PREPARATION FOR ROOF INSTALLATION

A. Repair any deteriorated roof deck found to be severely deteriorated with new matching deck materials.
B. Replace any wet, damaged, deteriorated or defective existing insulation.

C. The substrate must be dry, relatively smooth, free of protrusions, debris, sharp edges or foreign materials and must be free of accumulated water, ice and snow. Cracks or voids in the substrate greater than 1/4" (6 mm) must be filled with a suitable material.

D. Remove any existing debris and clean existing roof surfaces per Manufacturer’s requirements. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

E. Do not commence work until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment.

3.08 AIR/VAPOR BARRIER PLACEMENT

A. Install air/vapor barrier in accordance with manufactures recommendations.

B. Properly prepare substrate prior to placement of self-adhered air/vapor barrier.

C. Properly seal air/vapor barrier at all perimeters and penetrations.

3.09 POLYISOCYANURATE INSULATION PLACEMENT

A. Mechanically attach two layers of 3 inch polyisocyanurate insulation boards per specification and Manufacturer’s requirements.

B. Install polyisocyanurate tapered insulation saddles on the high side of all curbs.

C. Do not install wet, damaged or warped insulation boards.

D. Stagger joints in one direction unless joints are to be taped. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). Fill all gaps in excess of 1/4 inch (6 mm) with same insulation material.

E. Wood nailers must be at least 3 1/2 inches (89 mm) wide or 1 inch (25 mm) wider than adjacent metal flange. Thickness must equal that of insulation but not less than 1 inch (25 mm) thickness. Nailers shall be anchored to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons per lineal meter) in any direction. Individual nailer lengths shall not be less than 3 feet (0.9 meter) long. Nailer fastener spacing shall be at 12 inches (0.3 m) on center or 16 inches (0.4 m) on center if necessary to match the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches (0.15 m) of each end. Two fasteners shall be installed at ends of nailer lengths. Nailer attachment shall also meet the requirements of the current Factory Mutual Loss Prevention Data Sheet 1-49.

F. Thickness shall be as required to match substrate or insulation height to allow a smooth transition.

G. Any existing nailer woodwork which is to remain shall be firmly anchored in place to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons per lineal meter) in any direction and shall be free of rot, excess moisture or deterioration.

H. Stainless steel, corrosion resistant, fasteners are required when mechanically attaching any Manufacturers product to wood nailers and wood products treated with ACQ (Alkaline copper Quaternary). When ACQ treated wood is used on steel roof decks or with metal edge detailing, a separation layer must be placed between the metal and ACQ treated
I. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.

J. Do not install any more insulation than will be completely waterproofed each day.

K. Boards shall be mechanically attached at a rate according to the board manufacturer's and Manufacturers recommendations for fastening rates and patterns. The quantity and locations of the adhesive shall also cause the boards to rest evenly on the roof deck/substrate so that there are no significant and avoidable air spaces between the boards and the substrate.

L. Fasteners must be tight enough so plates do not turn, but not so tight as to deform them.

M. Fasteners are to be installed consistently in accordance with fastener manufacturer's recommendations. Fasteners are to have minimum penetration into structural deck recommended by the fastener manufacturer and Manufacturer.

N. Use fastener tools with a depth locator and torque-limiting attachment as recommended or supplied by fastener manufacturer to ensure proper installation.

3.09 COVER BOARD PLACEMENT

A. Over prepared isocyanurate insulation substrate, adhere specified cover board per specification and Manufacturer’s requirements in low rise foam adhesive.

B. Do not install wet, damaged or warped boards.

C. Stagger joints in one direction unless joints are to be taped. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). Fill all gaps in excess of 1/4 inch (6 mm) with same insulation material. Consult manufacturer for proper spacing and gapping of cover board.

D. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.

E. Do not install any more cover board than will be completely waterproofed each day.

F. Boards shall be properly adhered in low rise foam at a rate according to the board manufacturer's and Manufacturers recommendations for fastening rates and patterns. The quantity and locations of the adhesive shall also cause the boards to rest evenly on the roof deck/substrate so that there are no significant and avoidable air spaces between the boards and the substrate.

3.10 ROOF MEMBRANE PLACEMENT AND ATTACHMENT (Adhered)

A. Install membrane in accordance with manufacturers published installation instructions.

B. Begin the installation at the lowest point of the project and work to the highest point. Contractor shall prevent water infiltration into the new roof system at all times. Execute the work so the completed splices and daily seals will not buck water.

C. Position the membrane over the acceptable substrate without stretching. Allow the
membrane to relax approximately a minimum of thirty minutes prior to bonding the membrane.

D. Position and unroll successive sheets and align to provide for a **minimum 3 inch (75 mm)** wide overlap.

E. Apply the membrane manufacturer’s approved bonding adhesive in accordance with the manufacturer’s requirements. The Bonding Adhesive should be applied at 100% coverage rate and evenly applied without puddles or globs. Note: Do not apply adhesive to splice area.

F. The adhesive shall be applied at a rate according to Manufacturer’s requirements. No adhesive is applied to the back of the feltback membrane. Do not allow adhesive to skin-over or surface-dry prior to installation of feltback membrane.

G. Unroll feltback roof membrane carefully into wet/tacky adhesive. Adjacent rolls overlap previous rolls by 3 inches (75 mm). This process is repeated throughout the roof area. The membrane is then immediately broomed into place with a medium bristle push broom to work out any air bubbles. Push the broom down the center of the sheet followed by brooming out from the center on both sides. Immediately after brooming, roll the membrane in two directions with a minimum 100 lb (45 kg), steel, membrane roller. Clean any adhesive residue on the seams while still wet and before welding. If the adhesive dries in the seam it will require a solvent to clean it.

H. Weld coverstrips at all feltback seams that do not have a factory selvage edge.

I. Notes:
   1. Do not apply adhesive if temperatures below 40°F (5°C) are expected during application or subsequent drying time.
   2. No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.
   3. Care must be taken to insure that the adhesive has not dried before the membrane is laid in place. This is especially important during hot temperatures. Adjustments may be needed in the application technique to insure a wet lay in. It is recommended that only 6-10 feet (2-3 m) at a time is coated out ahead of the membrane to prevent dry laid membrane. Overlapping edges shall be installed in shingle fashion to avoid bucking of water.

J. Contractor shall submit test weld samples each day. Two samples per day are required from both Automatic Heat Welding equipment and hand welding equipment.
   1. Contractor shall test equipment and welds daily without fail.
   2. Samples shall be dated and supplied to Consultant as directed.

K. Peel Stops: To attain the specified warranty provide manufacturer recommended “peel-stops” at the perimeter of the roof. These shall consist of anchor/termination bar or deck plates fastened at 12” o.c. through to the structural deck (either concrete or steel deck). Provide a ply of the thermoplastic membrane welded continuous over the termination bar or over each plate, or as otherwise required by manufacturer’s details.

3.11 MEMBRANE HOT AIR WELDING

A. Heat weld the membrane using an Automatic Heat Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's specifications. At all splice intersections, roll the seam with a silicone roller immediately after the welder causes the membrane step off to ensure a continuous hot air welded seam.
B. All splice intersections shall be overlaid with membrane “T” Joint Covers.
C. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).
D. Repair all seam deficiencies the same day they are discovered.
E. Minimum weld width: 1.5 Inches

3.12 FLASHING
A. Flashing of all parapets, curbs, expansion joints and other parts of the roof must be performed using reinforced membrane.
B. All flashings shall be adhered without exception.
C. Non-reinforced membrane can be used for flashing pipe penetrations, sealant pockets, inside and outside corners when the pre-molded accessories are not feasible.
D. Follow manufacturer’s typical flashing details for all walls, curbs, penetrations, and metal edging and roof drain applications.
E. Roof drains shall be cleaned of all debris and proper sealant shall be applied prior to installation of the drain clamping ring. (One complete tube per drain)
F. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Manufacturers. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.

3.13 FASTENING PLATES
A. Where the use of securement strips is not feasible (at smaller curbs) seam fastening plates (2 inch diameter metal plates) may be used.
B. Plates may be installed horizontally into the structural deck or vertically into walls or curbs.
C. If horizontal wood nailers are provided, secure the plates to the wood nailer with the specified fastener. Roofing nails are not acceptable for securement.
D. After mechanically fastening the plate, flash in accordance with the appropriate detail.

3.14 SURFACE SPLICES
A. Correction of splices, cuts and tears may be accomplished by splicing a membrane section over the affected area.
B. Select a repair membrane which is the same material as that to be repaired.
C. Extend the repair membrane section at least 3 inches in every direction from the splice, cut or tear to be corrected.

3.15 DAILY WATERSTOP/TIE-INS
A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100 percent watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. Waterstop shall be sealed to the deck or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be
sealed in a continuous heavy application of sealant. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of off-site. None of these materials shall be used in the new work.

B. If inclement weather occurs while a temporary waterstop is in place, the Applicator shall provide the labor necessary to monitor the situation to maintain a watertight condition.

C. If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Applicator's expense.

D. Ensure that water does not flow beneath or through any completed sections of the roof membrane system.

E. At the end of each work day or when precipitation is threatening the newly installed roof system. Utilize proper sealant as necessary to furnish a complete watertight night seal.

F. Completely remove night tie-ins prior to commencing new work.

G. Any areas exposed to water or moisture shall be torn out and replaced to the satisfaction of the Consultant.

H. Special care and effort must be taken to insure that the new installation does not leak. Temporary seals must be carefully checked every day.

3.16 FLASHING

A. Refer to specification details and manufacturer's flashing details for membrane terminations, curbs, pipes, and drains.

B. Flash all penetrations and walls with reinforced membrane or flashing which incorporates heat welded seams.
   1. Use uncured flashing materials at inside/outside corners or unusually shaped penetrations.
   2. Application of flashings and sealant must be completed at the end of each day after seam has been probed and accepted by Owner.

C. Flashings at perimeters and curbs
   1. Use the longest pieces of flashing material which are practical. All wall and curb flashings shall be done in accordance with the manufacturer's detail.
   2. Apply bonding adhesive evenly, without globs or puddles, with a 9-inch wide plastic core short nap paint roller.
   3. The bonding adhesive shall be applied to both the roof membrane and the surface to which it is being bonded to achieve a coverage rate of approximately 45-60 square feet per gallon.
   4. After the bonding adhesive has dried to the point that it is tacky but does not string or stick to a dry finger touch, roll the membrane into the adhesive. Care must be taken to set the membrane so it does not bridge where there is a change of direction. This can be accomplished by creasing the membrane into the angle change prior to adhering up the wall.
   5. Terminate the edges of the installed flashing in accordance with the project specifications and Manufacturer's Termination Details

3.17 WALKWAYS
A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, mechanical equipment, etc.) and all locations as identified on the Contract Drawings.

B. Install walkways pads to the membrane in accordance with the manufacturer's current application guidelines.

3.18 DAILY SEAL
A. Ensure that water does not flow beneath or through any completed sections of the roof membrane system.

B. Completely remove night tie-ins prior to commencing new work.

C. Any areas exposed to water or moisture shall be torn out and replaced to the satisfaction of the Consultant.

D. Special care and effort must be taken to insure that the new installation does not leak. Temporary seals must be carefully checked every day.

3.19 CAULKING
A. Caulking for all areas not directly related to the roof membrane system shall be a premium grade silicone sealant or approved equal. Approved materials are - See Section 07 92 00 – Joint Sealants.

3.20 WEATHER CONDITIONS AND CAUTIONS
A. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations. The Roofing Contractor shall have on site covering materials and shall take all necessary precautions to protect the Owner's property.

B. Do not allow waste products of petroleum, grease, oil and solvents to come in contact with the roofing system.

C. Contractor's personnel should employ proper safety procedures when dealing with roof membrane materials.

D. Cold temperatures may restrict installation. Follow specified precautions for storage or materials and expose only enough adhesive to be use within a four (4) hour period. No work shall commence when the average daily temperature is below 32 degrees F without the Consultant's approval.

3.21 PROTECTION AND CLEAN UP
A. It shall be the Contractor's responsibility to protect all property and surfaces from drippings by means of masking, shielding or screening. Any drippings adhering to surfaces not intended to receive materials, including automobiles, shall be removed by the Contractor to the satisfaction of the Owner.

B. During the course of the job, the Contractor shall maintain good housekeeping practices. Debris shall not be allowed to accumulate, but will be removed from the site on a daily basis. At the completion of the job, all areas shall be left clean to the satisfaction of the Owner's representative.
C. Immediately upon job completion, the roof membrane and flashing surfaces shall be cleaned of debris and all marred surfaces.

D. Immediately upon completion of the project, the contractor shall be responsible for thoroughly cleaning all dust and debris that was caused by the re-roof. The contractor shall clean all joists, duct, and light fixtures in the ceiling. The contractor shall clean all floor areas ensuring to leave no foreign particles in place. The cleaning is required to be done by an approved subcontractor and all cleaning shall be included in the bid price. The cleaning shall be inspected with owner, contractor, and consultant present before final payment is released.

E. Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of Manufacturers shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and Manufacturer prior to demobilization.

F. Immediately upon job completion, the area surrounding exterior of the building shall be cleaned of debris and any damage or deficiencies shall be repaired and the price shall be included in the bid price.

3.22 INTENT OF SPECIFICATIONS

A. It is the intent of these specifications to call out the performance criteria desired for the roof membrane system and insulation on this project. It is the Contractor's responsibility to make all measurements and supply materials for all areas on the project as specified, including all changes made in writing prior to the bid.

B. The Contractor shall also be responsible for providing approved drawings and details meeting the manufacturer's requirements so that a warranty will be issued upon completion. This specification shall cover all roof areas and related items necessary to complete the roofing project and must accommodate any current detail changes or deviations by the manufacturer necessary to insure that the Warranty will be issued as specified upon completion.

END OF SECTION
SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SCOPE

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications sections, apply to this sections.

B. Requirements of all other sections apply to this section.

C. Work under this section includes furnishing and installing sheet metal flashings to be incorporated into the membrane roofing system per the drawings and specifications, including clips, sealant, fasteners, etc. and joining to make weather and watertight.

1.02 DESCRIPTION OF WORK

A. Extent of each type of flashing and sheet metal work is indicated on drawings and by provisions of this Section.

B. Fabrication and installation of new sheet metal flashings and trim to provide a permanently watertight condition.

C. Related work specified elsewhere:
   1. Summary of Work Section 01 10 00
   2. Selective Demolition Section 02 49 13
   3. Thermoplastic Roofing Section 07 54 00
   4. Joint Sealants Section 07 92 00

1.03 ROOF ACCESSORIES

A. System accessories installed integral with the waterproofing membrane are specified in waterproofing system sections as waterproofing work or in other Division 7 sections.

1.04 APPLICABLE STANDARDS

A. At a minimum, materials and workmanship shall conform to the following standards:
   1. Installation shall comply with the current SMACNA Architectural Sheet Metal Manual.
   2. Fabricate edge metal and coping in accordance with ANSI/SPRI ES – 1 requirements.
   4. The NRCA Roofing and Waterproofing Manual
   5. Annual Book of ASTM Standards, ASTM International

1.05 QUALITY ASSURANCE

A. Field verify all dimensions and measurements prior to placing orders for materials or fabrication. The materials specified herein shall be inspected upon delivery. Metal that
exhibits dents; scratches, excessive oil-canning or improper fabrication shall be removed from the site and replaced at no additional cost to the Owner.

B. Workmanship shall be first-class in every respect. The various sections shall be uniform with joints at corners and angles mitered and the different sections accurately fitted and rigidly secured. Completed work will be free of leaks under all weather conditions.

C. Qualifications of Installers: Use proper number of skilled workers who are trained and experienced in the crafts and who are familiar with the specified requirements and methods needed for proper installation and performance. The Owner will make no allowances in the acceptance or rejection of the work of this section for the lack of skill on the part of the workers.

D. Dissimilar Metals: Separate or protect contact between dissimilar metals subject to electrolysis. Protective materials shall not be visible after installation.

1.06 SUBMITTALS

A. Product Data: Flashing, Sheet Metal, and Accessories: Submit manufacturer’s product data, installation instructions, and general recommendations for each specified sheet material and fabricated product.

B. Samples: Flashing, Sheet Metals, and Accessories: Submit 8” square samples of specified sheet materials to be exposed as finished surfaces. Submit 12” long completely finished units of specified factory-fabricated products exposed as finished work.

C. Latest edition of the Manufacturer’s current material specifications and installation instructions.

D. Shop Drawings: Flashing, Sheet Metal, and Accessories: Shop drawings are required to show layout, joining profiles, and anchorages of fabricated work including major counter-flashings, trim/fascia units, gutters, downspout, and scuppers. New expansion joints in flashing and sheet metal shall align with existing expansion joints and control joints in adjacent construction. Layouts at 1/4” scale, details at 3” scale.

E. Assignment: The Roofing Contractor shall not subcontract any part or phase of the work without prior approval by the Consultant and the Owner

1. Roofing Contractor must provide a complete set of sheet metal shop drawings prior to fabrication and installation of all sheet metal components, for approval by Consultant and Owner.

F. Submit evidence of compliance with ANSI/SPRI ES-1 for all perimeter edge metal including drip edge, copings, etc.

1.07 JOB CONDITIONS

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

B. Protect building and its contents from the elements at all times during the project.

C. Coordinate all phases of work to allow continuity of work without delays.
1.08 WARRANTIES

A. Contractor to provide the pre-finished sheet metal manufacturers twenty (20) year finish warranty.
B. Contractor to provide wind and water tight warranty as applicable.
C. Contractor to provide a two (2) year written warranty against defects in workmanship and materials.

1.09 PRODUCT DELIVERY STORAGE AND HANDLING

A. All material shall be delivered to the site in original manufacturer packaging. Metal sections shall be properly supported and handled to avoid bending, crushing and denting. Metal shall be supplied free from scratches, dents, and defects. Cover materials and protect from weather, excessive heat, and wind. Remove protective films after installation.

B. Store materials within areas designated or approved by the Owner. Ensure the materials remain dry, covered and not in contact with the ground. Do not overstress the deck.

C. Handle materials in such a manner as to preclude damage and contamination with moisture or foreign material. Follow the manufactures recommendations for the storage of temperature sensitive materials.

D. In the event of damage materials, immediately make repairs to the satisfaction of the Owner at no additional cost.

PART 2 - PRODUCTS

2.01 PRODUCTS

A. PRE-FINISHED STEEL – All sheet metal flashings shall be prefinished steel as shown on the drawings unless otherwise noted.

1. 24-gauge min., AIAI G 90 galvanized, commercial steel, extra smooth, primed and finished on one side with Kynar/Hylar based fluoropolymer coating of 1.0 mil total dry film thickness, and on reverse side, with a wash coat of 0.3 to 0.4 mil dry film thickness. A strippable plastic film should protect the finish during fabrication and installation. Color to be selected by Owner from manufacturers standard color chart.

   a. Counter flashing
   b. Receiver Flashing
   c. Slip Flashing

B. GALVANISED STEEL

1. 22-gauge min., AISI G 90 galvanized steel, mill finish

   a. Continuous Cleat

C. MEMEBRANE CLAD SHEET METAL
1. 24-gauge min., G90 galvanized metal sheet with a 20 mil (0.5 mm) unsupported membrane laminated on one side.
   a. Vertical transition flashing
   b. Edge Metal Flashing
   c. Drip Edge Flashing

D. FASTENERS: Size and type required.

1. Same metal as flashing/sheet metal or other non-corrosive metal as recommended by the sheet metal manufacturer. Match finish of exposed heads to material being fastened. All materials must be of the same metal as the flashing. No dissimilar materials will be accepted. All fasteners must be of the same material as the metal trim or gravel stop.

2. All fasteners to be rust resistant and compatible with materials to be joined.

3. All exposed fasteners into wood or metal shall be stainless steel screws and washers fastened through predrilled holes.

4. All exposed fasteners into concrete or masonry shall be metal based expansion anchor with stainless steel pin and washers through predrilled holes.

5. Exposed horizontal surface fasteners are not acceptable.

6. Screws: #12 Stainless steel hex or pan head with length required to penetrate substrate a minimum of 1 ½”.

7. Concrete and Masonry Anchors: ¼” diameter metal based expansion anchor with stainless steel pin of length as required to penetrate substrate minimum of 1 ½”.

8. Washers: Shall be stainless steel with neoprene gasket backing. Shall be 9/16” diameter for use with #12 screws and 5/8” diameter for use with ¼” diameter concrete and masonry anchors.

E. RELATED MATERIALS

1. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.

2. Silicone Sealant: Dow 790

3. Sealant Caulking: Tremco Vulkem 116 or FTR-101 – Polyurethane Sealant

4. Epoxy Seam Sealer: Two-part non-corrosive metal seam cementing compound recommended by metal manufacturer for exterior/interior immobile joints, including riveted joints.

5. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.

6. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work matching or compatible with material being installed, non-corrosive, with size and gauge required for performance.

7. Aluminum Tape, 2” minimum

8. Sealant tape, two-sided
9. Backer rod, closed cell foam rod, size minimum 1.5 times the opening.

2.02 FABRICATED UNITS

A. General Metal Fabrication: Shop fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA Architectural Sheet Metal Manual and other recognized industry practices. Fabricate for waterproof and weather-resistant performance with expansion provisions for running work sufficient to permanently prevent leakage, damage, or deterioration of work.

B. Form work to fit substrates. Comply with material manufacturer’s instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line, and levels indicated with exposed edges folded back to form hems.

C. Form all work to be secured with concealed fastening when possible. Use neoprene washers on all exposed fasteners.

D. Counter-flashing shall be lapped 3” minimum to provide for expansion. Counter-flashing shall overlap base flashings a minimum of 4” and shall be bent to provide spring action against the base flashings, fold the lower edge back a minimum of ½”.

2.02 SEAMS

A. Fabricate immobile seams in sheet metal with flat-lock seams. For metal other than aluminum, trim edges to be seamed, for seams, and solder. Form aluminum seams with epoxy seam sealer, rivet joints for additional strength where required.

B. Fabricate, rivet, and fully solder all stainless steel seams and connections.

2.03 EXPANSION PROVISIONS

A. Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water-weatherproof, form expansion joints of intermeshing-hooked flanges not less than 1” deep and filled with mastic sealant (concealed within joints). Alignment of joints shall coincide with control joints in adjacent construction.

2.04 SEALANT JOINTS

A. Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant in compliance with SMACNA standards.

2.05 SEPARATIONS

A. Provide for separation of metal from incompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with bituminous coating or other permanent separation as recommended by the manufacturer/fabricator.

2.06 WORKMANSHIP
A. General: Form the work to Project Document details and dimensions indicated, straight and true to line with flat surfaces, free of warping and bulging. All SMACNA recommendations and guidelines are to be incorporated into details.

B. Most stringent detail requirements prevail.

C. As far as practicable, design all work to be secured with concealed fastenings.

D. Make all lap seams in the direction of water flow.

E. Fastening: Secure metal per detail drawings. Do not in any case install exposed fasteners on a horizontal plane. All clips and cleats are to be fastened a minimum of 6” O.C. unless more stringent fastening is required and/or noted.

2.07 CONTINUOUS WIND CLEAT

A. At a minimum, perimeter edge metal shall comply with ANSI/SPRI ES-1.

B. Fabricate continuous wind cleats as indicated on drawings and one gauge thicker than the coping material specified.

C. Continuous wind cleats shall be fastened every six (6) inches on center MINIMUM with screws.

2.08 EDGE METAL

A. At a minimum, perimeter edge metal shall comply with ANSI/SPRI ES-1.

B. Fabricate edge metal flashing as indicated on drawings.

C. Provide sections in one-piece assemblies around internal and external corners, with vertical portion bent and horizontal portion mitered and welded.

D. Flashings shall be fabricated to extend a minimum of (2) inches below any and all nailers.

2.09 COUNTER FLASHING

A. Fabricate counter flashing as indicated on drawings for units, curbs, perimeter wall flashings, and pipe penetrations.

B. Provide sections in one-piece assemblies around internal and external corners, with vertical portion bent and horizontal portion mitered, soldered and/or welded.

C. Pipes, angles, wide flanges, curbs, penetrations, etc. through the roof shall receive thermoplastic membrane base flashings. Flashing shall extend a minimum of 12” above the finished roof surface and a minimum of 6” onto the roof surface. After base flashings and/or coating has been installed, counter-flashing shall be installed in accordance with drawings. Seal counter-flashing as required to make it watertight with sealant.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION
DIVISION 7 – THERMAL AND MOISTURE PROTECTION


B. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently waterproof and weather tight.


D. Metal shall be handled and fabricated to field measured dimensions and shall be free from excessive bends, warping and surface damage. Metal shall be stiffened and reinforced in accordance with the recommended fabrication procedures. Installation shall include uniform joints and seams that allow for normal expansion and contraction of the materials used.

E. All new sheet metal work shall be coordinated with the installation of new roofing, sheet metal counter flashings shall be installed directly after roofing work.

3.02 EXAMINATION

A. Verify that contact surfaces of masonry or concrete are dry, smooth and free of loose materials and projections which might puncture flashing.

3.03 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

B. Installer shall advise Roofing Contractor of required procedures for surveillance and protection of flashings and sheet metal work done during construction to ensure that work will be without damage or deterioration other than natural weathering at the time of substantial completion.

3.04 PREPARATION

A. General

1. Surfaces to be flashed or covered with sheet metal shall be clean and free from defects. Clean foreign matter from surfaces. Drive projecting nails flush.

2. Metal flashings shall be weather tight.

3. All sealant joints shall be properly tooled to create a convex finish and not a concave finish.

   a. Sealant will be removed and replaced until desired finish is provided.

3.05 CAULKING

A. Color to match sheet metal color.
B. Continuous tooled joint.

3.06 CONTINUOUS WIND CLEAT
A. Install continuous wind cleat with a minimum 1/8" gap between sections for expansion provisions.
B. Fabricate in ten foot sections or sections as long as possible.
C. Do not install smaller than three foot sections at all inside and outside corners.
D. Continuous wind cleats end joints shall offset metal joints a minimum of two foot.
E. Continuous wind cleats shall be fastened every six (6) inches on center minimum with ring shank type nails or screws.

3.07 GRAVEL STOP/DRIP EDGE METAL
A. Roof area edge metal flashing shall be as specified.
   1. Install new specified membrane coated sheet metal drip edge or gravel stop flashing in accordance with manufacturers recommendations.
   2. All flanges shall be nailed or screwed in place.
      a. All flanges shall be screwed or nailed in place six (6) inches on center minimum in a one (1) inch stagger pattern.
B. Match profile, size and dimensions as required to accommodate new roof system.
C. Perimeter edge metal including drip edge, coping shall be installed in accordance with ANSI/SPRI ES-1.

3.08 COUNTER FLASHING AND REGLET
A. Install reglet and counterflashling in accordance with manufacturers recommendations.
B. Fabricate in ten foot sections or sections as long as possible.
C. Do not install smaller than three foot sections at all inside and outside corners.
D. Continuous end joints shall offset metal joints a minimum of two foot.

3.09 TERMINATION BAR
A. Heavy-weight Aluminum Bar pre-punched and fastened minimum one hole every 6".
SECTION 07 92 00 – JOINT SEALANTS

PART 1 - GENERAL

1.01 SCOPE

A. Work required under this Section shall include the installation of sealants at locations as detailed on the Drawings or specified herein.

B. The General Conditions and other Contract Documents as set forth in the foregoing pages are hereby incorporated into and become a part of the Specifications for the work under this Section, insofar as they apply hereto.

1.02 SUBMITTALS

A. Product Data: Submit specifications and general recommendations from manufacturers of masonry waterproofing materials.

B. Package and Labels: Deliver materials in sealed cans or packages with the manufacturer's original labels thereon. Do not remove labels until the Consultant inspects and approves them.

C. Color Selection: Submit sealant color charts for Consultant's review and selection.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Sealants shall be delivered to the building site in manufacturer's original sealed packages. Sealants and accessories shall be stored at a minimum temperature of 60 degrees F for a minimum of 48 hours prior to use. Storage conditions and useful shelf life shall be as recommended by the sealant manufacturer.

1.04 HEALTH AND SAFETY

A. Material Safety Data Sheets:

1. Roofing Contractor/Applicator shall obtain and become fully familiar with manufacturer's material safety data sheets that comply with OSHA 29 CFR 1910.1200.

2. Data sheets shall be posted at work area. Data sheets shall be submitted to Owner prior to beginning masonry cleaning work.

B. Workers: All workers shall be thoroughly experienced in the particular class of work employed on this project. All work shall be done in accordance with these specifications and shall meet the approval in the field of the Owner's Representative and the Consultant. The Roofing Contractor's Representative or Job Superintendent shall have a complete copy of specifications and drawings on the job site at all times.

C. The Roofing Contractor shall plan and conduct the operations of the work so that each section started on one day is complete and thoroughly protected before the close of the day.

D. The Roofing Contractor shall provide all barricades, caution signs and other temporary measures necessary to protect persons and property from injury and damage during the
execution of work under this contract and upon completion of the work, remove all such barricades, caution signs and other temporary measures of every nature. The Roofing Contractor shall be responsible for any and all damages to existing work caused by him or his employees during the execution of Work under this Contract.

1.05 QUALITY ASSURANCE

A. Manufacturer shall provide qualified technical representatives as required for purposes of advising Installer of procedures and precautions for use of sealant materials.

1.06 MANUFACTURER

A. Manufacturer shall provide qualified technical representatives as required for purposes of advising Installer of procedures and precautions for use of sealant materials.

B. Manufacturer shall provide qualified technical representatives as required for purposes of sealant joint adhesion testing as required to ensure proper installation and product to substrate compatibility.

1.08 INSTALLER

A. A firm with not less than ten (10) years successful experience in installation of sealant joints. Experience shall relate to all other related work and accessories associated with the exterior restoration work. Roofing Contractor must be able to document the Project Foreman’s experience with the application of sealant joints.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Sealants shall be supplied to match the color of adjacent materials. Obtain sealant materials from a single manufacturer for each different product required. Do not mix products of multiple manufacturers.

B. Roofing:

1. Sealants

   a. Sealants shall be used as indicated on the Drawings or specified herein.

      (1) Heat Resistant Sealant (Roofing curbs as required-heat exhaust, etc.).

      (2) Sealant for use for high temperature applications shall be a one-part non-sag silicone base heat resistant sealant. Sealant shall be Dow Corning 736 Heat Resistant Sealant as manufactured by Dow Corning Corporation of Midland, Michigan, or equal. Sealant shall not be painted or used in contact with masonry surfaces.

   b. Silicone Sealant – Dow 790

      (1) Silicone sealant shall be used for UV exposed sheet metal components such as termination bars, top of pipe flashings, counter-flashings, etc.
c. Urethane Sealant – Roofing Sheet Metal.

   (1) Urethane sealant shall be a one-part gun grade elastomeric joint sealant, 
       moisture cured, non-sag, meeting Federal Specification TT-S-00230C Type II 
       Class A. Sealant shall be Sikaflex-1a as manufactured by Sika Corporation of 
       Lyndhurst, New Jersey, or equal.

   (2) Urethane sealant shall be used for roofing.

       (a) Tremco Vulkem 116, FTR-101 or NP-1

d. Primers for Urethane Sealant.

   (1) Primers for use with urethane sealant shall be by the manufacturer of the 
       sealant used. Primers shall be used where required or recommended by the 
       sealant manufacturer or where field-testing shows a need for priming.

C. Joint Bond Breaks

   1. Joint bond breaks where required by the sealant manufacturer shall be polyethylene 
      sheets or polyethylene backed tapes.

PART 3 – EXECUTION

3.01 PREPARATION

   A. Sealant shall be applied at all joints as detailed on the Drawings, stipulated in the 
      Specifications, or required by project conditions to provide a complete, weatherproof joint 
      between materials. Where conditions exist, not specifically detailed on the Drawings, the 
      Roofing Contractor shall contact the Consultant for a determination of the type of sealant to 
      be used.

   B. Preparatory Work (Cleaning): Surface to receive sealant must be structurally sound, dry, 
      clean, free of dirt, moisture, loose particles, oil, grease, asphalt, tar, paint, wax, rust, 
      waterproofing, curing and parting compounds, membrane materials, etc.

   C. Masonry: Concrete, stone and other masonry must be cleaned where necessary by wire 
      brushing to expose sound surface free of contamination and laitance.

   D. Metal: Scale, rust and coatings must be removed to expose bright metal. Protective 
      coatings shall be removed with solvent and all chemical residue or film removed. A variety 
      of protective coatings or finishes are frequently specified for metals that could interfere with 
      the bond (adhesion) of the sealant. Sealant manufacturer should be consulted for proper 
      surface preparation requirements and primer recommendations prior to the installation of the 
      sealant.

   E. Fabricate sheet metal components to allow installation of sealant. Sealants shall be 
      concealed whenever possible.

   F. Blow joints out just prior to sealant installation.
3.02 INSTALLATION

A. Application shall be made in accordance with manufacturer's recommendations and best trade practices. Surfaces to receive sealants shall be dry.

B. Prime all surfaces before installation of sealant when recommended by the manufacturer.
   1. Shake or stir primer well before using.
   2. Prime all joints substrates with a brush, covering entire joint surface.
   3. Allow primer to dry adequately, 1-4 hours.

D. Tool joint to assure correct bead configuration, a neat joint and maximum adhesion to the sides of the joint. Mask areas along sealant joints to prevent sealants from contaminating adjacent materials and to provide a neat finished appearance.
   1. Install sealant into prepared joints. Fill all joints and avoid air entrapments.
   2. Tool all sealant joints in to achieve proper joint size and adhesion.

END OF SECTION