

Contract Documents and Specifications

For

Williams-Brice South Upper Concessions Re-Roof and Ceiling Replacement

For

University of South Carolina

Project # CP00326762

July 16, 2012

Design Team:

Jumper-Carter-Sease Architects, PA

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SE-311

Invitation for Minor Construction Quotes

SCBO NOTES 2, 4 and 5 APPLY TO THIS INVITATION FOR QUOTES

PROJECT NAME: Williams-Brice South Upper Concessions Re-Roof and Ceiling Replacement

PROJECT NUMBER: CP00326762 PROJECT LOCATION: Williams-Brice Stadium, Columbia, SC

BID SECURITY REQUIRED? Yes No

PERFORMANCE BOND REQUIRED? Yes No

PAYMENT BOND REQUIRED? Yes No CONSTRUCTION COST RANGE: < \$ 50,000

DESCRIPTION OF PROJECT:
Renovations to south upper deck concessions ceiling and roof and misc additional roof repairs.
Small and minority business participation is encouraged.
Contractors are responsible for obtaining bid documents and all updates from the USC purchasing website
http://purchasing.sc.edu See Facilities/Construction Solicitations and Awards

A/E NAME: Jumper-Carter-Sease Architects, PA A/E CONTACT: Keith Myhand
 ADDRESS: 412 Meeting Street PHONE: 803-791-1020 Fax: 803-791-1022
 CITY: W Columbia STATE: sc ZIP: 29169 E-MAIL: KMyhand@jcsarchitects.com

PLANS ON FILE AT: AGC: _____
 DODGE: _____
 OTHER: _____

PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu See Facilities/Construction Solicitations and Awards

PLAN DEPOSIT AMOUNT: \$ 0 IS DEPOSIT REFUNDABLE? Yes No

PRE-QUOTE CONFERENCE? Yes No MANDATORY ATTENDANCE? Yes No
 DATE: 7/27/12 TIME: 10:00am PLACE: 743 Greene St, Cola., SC 29208, Conf rm 53

AGENCY: University of South Carolina

NAME AND TITLE OF AGENCY COORDINATOR: Kay Keisler
 ADDRESS: 743 Greene St PHONE: 803-777-5812 Fax: 803-777-8739
 CITY: Columbia STATE: SC ZIP: 29208 E-MAIL: kkeisler@fmc.sc.edu

IFQ CLOSING DATE: 8/3/12 TIME: 2:00pm LOCATION: 743GreeneSt,Cola,SC29208, CR 53

IFQ DELIVERY ADDRESSES:
HAND-DELIVERY:
743 Greene St
Columbia, SC 29208
Attn: Kay Keisler
MAIL SERVICE:
743 Greene St
Columbia, SC 29208
Attn: Kay Keisler

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? (Agency MUST check one) YES NO

APPROVED BY: _____ (State Engineer) _____ (Date)

SE-331
Quote Form

2011 Edition

Quotes shall be submitted only on SE-331

QUOTE SUBMITTED BY: _____
(Offeror's Name)

QUOTE SUBMITTED TO: University of South Carolina
(Agency Name)

FOR PROJECT: CP00326762 Wms Brice S Upper Concessions Re-Roof/Ceiling Replacem
(Number) (Name)

OFFER

1. In response to the Form SE-311, *Request for Minor Construction Quotes*, and in compliance with the *Instructions to Bidders* for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the **AGENCY** in the form included in the Solicitation Documents, and to perform all Work as specified or indicated in the Solicitation Documents, for the prices and within the time frames indicated in the Solicitation and in accordance with the other terms and conditions stated.

2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, **OFFEROR** has submitted Bid Security as follows in the amount and form required by the Solicitation Documents:

Bid Bond with Power of Attorney Electronic Bid Bond Cashier's Check
(OFFEROR check one, if Bid Security is required)

3. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote:

ADDENDUM No: _____

4. **OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of 60 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the **AGENCY**.

5. **OFFEROR** agrees that from the compensation to be paid, the **AGENCY** shall retain as Liquidated Damages the amount of for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.

6. **OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

6.1 **BASE BID** _____
(enter BASE BID in figures only)

6.2 **ALTERNATE NO. 1** _____ to be ADDED/DEDUCTED from BASE BID.
(circle one)

6.3 **ALTERNATE NO. 2** _____ to be ADDED/DEDUCTED from BASE BID.
(circle one)

FEIN/SSN: _____

SC Contractor's License Number: _____

Address: _____

Telephone/Fax _____

E-mail _____

This Quote is hereby submitted on behalf of the Offeror named above.

BY: _____
(Signature of Offeror's Representative)

(Print or Type Name of Offeror's Representative)

ITS: _____

USC SUPPLEMENTAL GENERAL CONDITIONS
FOR CONSTRUCTION PROJECTS

1. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies and stairs. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the building to the work area. Providing safe, accessible, plywood pedestrian ways around construction may be required if a suitable alternative route is not available.
2. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited-zero tolerance!
3. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
4. Contractor's employees must adhere to the University's policy of maintaining a drug-free and smoke-free/tobacco free workplace.
5. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.
6. A welding permit must be issued by the University Fire Marshall before any welding can begin inside a building. Project Manager will coordinate.
7. Contractor must notify the University immediately upon the discovery of suspect material such as those potentially containing asbestos or other such hazardous materials. These materials **must not** be disturbed until approved by the USC Project Manager.
8. At the beginning of the project, the USC Project Manager will establish the Contractor's lay-down area. This area will also be used for the Contractor's work vehicles. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site that are not regular or authorized parking lots. Personal vehicles must be parked in the perimeter parking lots. Parking permits can be obtained at the USC Parking Office located in the Pendleton Street parking garage. The lay down area will be clearly identified to the contractor by the PM, with a sketch or drawing provided to Parking. In turn, the contractor will mark off this area with a sign containing the project name, PM name, Contractor name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the PM. The area will be maintained in a neat and orderly fashion. Vehicles parked in the lay down area (or designated parking areas) will be clearly marked or display a CPC furnished placard for identification.

9. Contractor will be responsible for providing its own temporary toilet facilities, unless prior arrangements are made with the USC Project Manager.
10. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.
11. For all projects over \$100,000, including IDC's, an SE-395, Contractor Performance Evaluation, will be completed by the USC Project Manager and reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed and a Construction Performance rating will be established.
12. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied at least 1 times per week. Construction waste must not be placed in University dumpsters. THE CONSTRUCTION SITE MUST BE THOROUGHLY CLEANED WITH ALL TRASH PICKED UP AND PROPERLY DISPOSED OF ON A DAILY BASIS AND THE SITE MUST BE LEFT IN A SAFE AND SANITARY CONDITION EACH DAY. THE UNIVERSITY WILL INSPECT JOB SITES REGULARLY AND WILL FINE ANY CONTRACTOR FOUND TO BE IN VIOLATION OF THIS REQUIREMENT AN AMOUNT OF UP TO \$1,000 PER VIOLATION.
13. **Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until this is completed.**
14. The contractor will comply with all regulations set forth by OSHA and SCDHEC. Contractor must also adhere to USC's internal policies and procedures (available by request). As requested, the contractor will submit all Safety Programs and Certificates of Insurance to the University for review.
15. Tree protection fencing is required to protect existing trees and other landscape features to be preserved within a construction area. The limits of this fence will be evaluated for each situation with the consultant, USC Arborist and USC Project Manager. The tree protection fence shall be 5' high chain link fence unless otherwise approved by USC Project Manager. No entry or materials storage will be allowed inside the tree protection zone. A 4" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone.
16. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of 3/4" plywood is required.
17. For projects requiring heavy loads to cross walks tree root zones or lawns. A construction entry road consisting of 10' X 16' oak logging mats on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep

matting structurally functional.

18. Any damage to existing landscaping (including lawn areas) will be remediated before final payment is made.
19. Orange safety fence to be provided by the contractor. (USC Arborist, Kevin Curtis may be contacted at 777-0033 or 315-0319)

Campus Vehicle Expectations

1. All motorized vehicles on the University campus are expected to travel and park on roadways and/or in parking stalls.
2. All motorized vehicle traffic on USC walkways must first receive the Landscape Manager=s authorization. Violators may be subject to fines and penalties.
3. All motorized vehicles that leak or drip liquids are prohibited from traveling or parking on walks or landscaped areas.
4. Contractors, vendors, and delivery personnel are required to obtain prior parking authorization before parking in a designated space. Violators may be subject to fines and/or penalties. See Item 10 below.
5. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held personally responsible for damages and restoration expense.
6. Vehicle drivers who park on landscape or drives must be able to produce written evidence of need or emergency requiring parking on same.
7. All vehicles parked on landscape, hardscape, or in the process of service delivery, must display adequate safety devices, i.e. flashing lights, cones, signage, etc.
8. All drivers of equipment and vehicles will be respectful of University landscape, equipment, structures, fixtures and signage.
9. All incidents of property damage will be reported to Parking Services or the Work Management Center.
10. Parking on campus is restricted to spaces designated by Parking Services at the beginning of the project. Once the project manager and contractor agree on how many spaces are needed, the project manager will obtain a placard for each vehicle. This placard must be hung from the mirror of the vehicle, otherwise a ticket will be issued and these tickets cannot be “fixed”. Parking spaces are restricted to work vehicles only; no personal vehicles.

Project Name: Williams-Brice South Upper Concessions Re-Roof and Ceiling Replacement

Project Number: CP00326762

University of South Carolina

CONTRACTOR'S ONE YEAR GUARANTEE

STATE OF _____

COUNTY OF _____

WE _____
as General Contractor on the above-named project, do hereby guarantee that all work executed under the requirements of the Contract Documents shall be free from defects due to faulty materials and /or workmanship for a period of one (1) year from date of acceptance of the work by the Owner and/or Architect/Engineer; and hereby agree to remedy defects due to faulty materials and/or workmanship, and pay for any damage resulting wherefrom, at no cost to the Owner, provided; however, that the following are excluded from this guarantee;

Defects or failures resulting from abuse by Owner.

Damage caused by fire, tornado, hail, hurricane, acts of God, wars, riots, or civil commotion.

[Name of Contracting Firm]

*By _____

Title _____

*Must be executed by an office of the Contracting Firm.

SWORN TO before me this
_____ day of _____, 2____ (seal)

_____ State

My commission expires _____

- 1.0 GENERAL
- 1.1 RELATED DOCUMENTS:
 - A. Drawings and general provisions of Contract including General & supplementary conditions & other division-1 specification sections, apply to work of this section.
- 1.2 SCOPE: This section describes the unit prices that are to be included in the contractor's bid and entered on the Form of Proposal
- 1.3 UNIT PRICES: The following unit prices shall be incorporated into this contract should conditions occur that would require the work as stated below. unit prices shall be considered actual costs and the contractor's profit, insurance, taxes, and installation cost will be figured in the bids, except as otherwise noted.
- 1.4 UNIT PRICE NO. 1: THE AMOUNT TO RESET OR REPLACE COPING SPLICES FOR WATER TIGHT CONDITION AND REPLACE SEALANT AS INDICATED ON SHEET A800 AND PHOTO NUMBER 7, SHEET A803 FOR UP TO SEVEN SIMILAR CONDITIONS/LOCATIONS AND AS SHOWN ON SECTION 1 SHEET A800..

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
 - 1. Primary operational systems and equipment.
 - 2. Air or smoke barriers.
 - 3. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017310

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Demolition and removal of selected portions of a building or structure.
2. Repair procedures for selective demolition operations.

- B. Related Sections include the following:

1. Division 1 Section "Summary" for use of the premises and phasing requirements.
2. Division 1 Section "Construction Progress Documentation" for preconstruction photographs taken before selective demolition.
3. Division 1 Section "Photographic Documentation" for preconstruction photographs taken before selective demolition.
4. Division 1 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
5. Division 1 Section "Cutting and Patching" for cutting and patching procedures for selective demolition operations.
6. Division 23 Sections for demolishing, cutting, patching, or relocating mechanical items.
7. Division 26 Sections for demolishing, cutting, patching, or relocating electrical items.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's school faculty and students on-site operations are uninterrupted.
 - 2. Interruption of utility services.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of temporary partitions and means of egress.
 - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- E. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- F. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.

- D. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
- E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.7 PROJECT CONDITIONS

- A. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- B. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. Storage or sale of removed items or materials on-site will not be permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
 - 1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage

original Installer or fabricator, engage another recognized experienced and specialized firm.

- a. Preformed metal panels.
- b. Firestopping.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 2. Use materials whose installed performance equals or surpasses that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.

1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 2. Arrange to shut off indicated utilities with utility companies.
 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 3. Protect existing site improvements, appurtenances, and landscaping to remain.
 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.

- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished items and materials promptly.
 9. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Removed and Salvaged Items: Comply with the following:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Comply with the following:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.
- F. Roofing: Remove no more existing roofing than can be covered in one day by new roofing. Refer to applicable Division 7 Section for new roofing requirements.

3.6 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
 - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
- D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
- E. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Burning: Burning of demolished materials will be permitted only at designated areas on Owner's property, providing required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Transport demolished materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 017320

LIST OF DRAWINGS:

<u>DRAWING</u>	<u>DESCRIPTION</u>
T101	TITLE, INDEX & ABBREVIATIONS
A800	OVERALL ROOF PLAN
A801	ROOF PLAN - SOUTH UPPER CONCESSIONS
A802	ROOF DETAILS
A803	EXISTING PHOTOGRAPHS
A901	DEMOLITION CEILING PLAN & REFLECTED CEILING PLAN - SOUTH UPPER CONCESSIONS

END OF SECTION 018000

- 1.0 GENERAL:
- 1.1 SCOPE: This section covers carpentry work, complete. The extent of carpentry work is shown on the drawings.
- 1.2 CONDITIONS: Installer must examine all parts of the supporting structure and the conditions under which the carpentry work is to be installed, and notify the contractor, in writing, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until satisfactory conditions exist in a manner acceptable to the installer.
- 1.3 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 proper attachment of other work.
- 1.4 DELIVERY AND STORAGE: Keep materials dry during delivery and storage. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood and provide air circulation within stacks.
- 1.5 FACTORY MARK each piece of lumber and plywood to identify the type, grade, agency providing the inspection service, the producing mill, and other qualities as specified herein.
- 1.6 SUBMITTALS: For each type of preservative treatment specified, furnish certification by treating plant stating chemicals and process used, net amounts of salts retained and conformance with applicable standards. For waterborne preservative, include statement that moisture content of treated materials was reduced to a maximum of 15% prior to shipment to project site.
- 2.0 PRODUCTS
- 2.1 PRESERVATIVE TREATMENT: Where lumber or plywood is indicated as "treated" or it is specified herein to be treated, comply with the applicable requirements of the American Wood Preserves Institute (AWPI). Mark each treated item to comply with AWPI Quality Mark requirements for the specified requirements. Pressure-Treat Aboveground items with water-borne preservatives complying with AWPI LP-2. After treatment, kiln-dry to a maximum moisture content of 15%. Treat indicated items and the following: Nailers, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers and waterproofing; also, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
- 2.2 STANDARD FOR LUMBER: For each use, comply with the "American Softwood Lumber Standard" PS 20 by the U.S. Department of Commerce. Nominal sizes are shown or specified. Provide actual sizes complying with the minimal size requirements of PS 20 for the moisture content specified for each use.
- A. Provide Dressed Lumber, S4S, unless otherwise shown or specified.
- B. Provide Seasoned Lumber, with 19% maximum moisture content at time of dressing and complying with dry size requirements of PS 20, unless otherwise specified.
- 2.3 MARKING: "Grade Mark", "Trade Mark" and "Mill Identification Mark" of the association specified above shall appear on each piece of yard dimension lumber (not boards) and plywood.
- 2.4 HANDLING: Protect all material in transit and at site. Store above ground under cover.
- 2.5 STANDARD FOR PLYWOOD: For each use, comply with the requirements of "Softwood/Plywood/Construction and Industrial" PS 1 by the US Department of Commerce. For

backing panels for electrical or telephone equipment, provide standard grade plywood with exterior glue.

3.0 EXECUTION:

3.1 GENERAL: Use only sound, thoroughly seasoned materials of the longest practical lengths and size to minimize jointing. Use materials free from warp which cannot be easily corrected by anchoring and attachment. Sort out and discard warped material and material with other defects which would impair the quality of the work.

3.2 SECURELY ATTACH CARPENTRY WORK to substrates by anchoring and fastening as shown and as required by recognized statements. Countersink nail head on exposed carpentry work and fill holes.

3.3 SET CARPENTRY WORK accurately to required levels and lines, with members plumb and true and accurately cut and fitted.

END OF SECTION 061000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section may include the following:

1. Adhered membrane roofing system.
2. Cover board.
3. Roof insulation.
4. Substrate board.

- B. Related Sections may include the following:

1. Division 05 Section "Steel Decking" for furnishing acoustical deck rib insulation.
2. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
4. Division 07 Section "Manufactured Roof Expansion Joints."
5. Division 07 Section "Joint Sealants."

- C. Unit Prices: Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

- D. Existing Conditions are an Existing Fully Adhered Single Ply System:

1. Remove and legally dispose of existing fully adhered single ply roofing system.
2. Remove and legally dispose of existing parapet flashings and gravel stops at appropriate locations.
3. Remove and legally dispose of existing insulation systems.
4. Remove and protect for reinstallation existing bird guards
5. Other work as shown on plans.

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 "Terminology Relating to Roofing and Waterproofing"; glossary of NRCA's "The NRCA Roofing and Waterproofing Manual"; and the Roof Consultants Institute "Glossary of Roofing Terms" for definition of terms related to roofing work in this Section.
- B. Sheet Metal Terminology and Techniques: SMACNA Architectural Sheet Metal Manual.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and Flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Jobsite Safety: Execute all operations and provide a safe work environment in accordance to OSHA standards and regulations. This requirement applies to all contractor personnel, associated subcontractors, workers in other trades, and jobsite visitors.
 - 1. Follow all industry fire prevention guidelines for storage of materials, staging areas, roof access, and application means and methods.
 - 2. Any applicable local fire codes supersede industry guidelines.
- D. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7. Roof uplift shall meet or exceed a UL I-90.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Flashings and membrane terminations.
 - 2. Tapered insulation, including slopes.
 - 3. Insulation fastening patterns.
 - 4. Sheet layout with perimeter and corner defined.
- C. Samples for Verification: For the following products:
 - 1. Manufacturer's standard sample size of sheet roofing, of color specified, including T-shaped side and end lap seam.
 - 2. Manufacturer's standard sample size of roof insulation.
 - 3. Manufacturer's standard sample size of metal termination bars.
 - 4. Six insulation fasteners of each type, length, and finish.
 - 5. Six roof cover fasteners of each type, length, and finish.
 - 6. Six fasteners of each type, length and finish used for complete roofing installation.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.

- F. Qualification Data: For Installer and manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Research/Evaluation Reports: For components of membrane roofing system.
- I. Maintenance Data: For roofing system to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Test Reports:
 - 1. Roof drain and leader test or submit plumber's verification.
 - 2. Core cut.
 - 3. Roof deck fastener pullout test.
- E. Source Limitations: Obtain all components from single source roofing manufacturer.
- F. 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.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
 - 2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- G. Pre-installation Conference: Conduct conference at Project site. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with Owner, Architect, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate, existing conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review Flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 GUARANTEE

- A. Provide manufacturer's system guarantee equal to Johns Manville's Peak Advantage No Dollar Limit Roofing System Guarantee.
 1. Single-Source special warranty includes roofing membrane, flashings, roofing membrane accessories, roof insulation, fasteners, and other single-source components of roofing system marketed by the manufacturer.
 2. Warranty Period: Fifteen (15) years from date of Substantial Completion.
- B. Installer's Guarantee: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, Flashing, roof insulation, fasteners, and other roofing components supplied by the manufacturer for the following warranty period:

1. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Johns Manville Roofing Systems
- B. Equal products by: Carlisle, Mule Hide

2.2 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE

- A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric or scrim reinforced. Product: JM TPO
 1. Thickness: 60 mils (1.5 mm), nominal.

2.3 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's sheet flashing of same material, type, reinforcement, thickness, and color as sheet membrane. Product: JM TPO
- C. Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for membrane, and solvent-based bonding adhesive for Flashings. Product: JM TPO Membrane Adhesive (Solvent Based)
- D. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.
- E. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors. Product: JM Termination Systems
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, battens, T-joint covers, termination reglets, cover strips, and other accessories as required for a complete system.

2.4 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Product: ENRGY 3
 - 1. Provide insulation package with R Value greater than an R-19.
 - 2. Provide insulation package with minimum thickness of 1".
 - 3. Install no boards thicker than 1.5". If insulation package required is thicker than 1.5", install in multiple layers.

2.5 TAPERED INSULATION

- A. Tapered Insulation: ASTM C 1289, provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48)], unless otherwise indicated. Product: Tapered ENRGY 3

2.6 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Provide factory preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and provided by roofing system manufacturer.
- D. Cold Fluid-Applied Adhesive: Manufacturer's No VOC, two-component cold fluid-applied adhesive formulated to adhere roof insulation to substrate.
- E. Insulation Cant Strips: ASTM C 728, perlite insulation board.
- F. Wood Nailer Strips: Treated wood nailers as noted on plans.

2.7 SUBSTRATE BOARD

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant, type X, gypsum substrate 5/8 inch (16 mm)] thick. Product: Securock or equal.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening substrate panel to roof deck.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- E. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 RE-ROOF PREPARATION

- A. Remove all roofing membrane, surfacing, coverboards, insulation, fasteners, asphalt, pitch, adhesives, etc.
 - 1. Remove an area no larger than can be re-roofed in one day.
- B. Tear out all Flashings, counterflashings, pitch pans, pipe flashings, vents and like components necessary for application of new membrane.
- C. Remove abandoned equipment curbs, skylights, smoke hatches, and penetrations.
 - 1. Install decking to match existing as directed by Owner's Representative.
- D. Raise, (disconnect by licensed craftsmen, if necessary) all HVAC units and other equipment supported by curbs to conform with the following:

1. Modify curbs as required to provide a minimum 8" Flashing height measured from the surface of the new membrane to the top of the flashing membrane.
 2. Nail top of flashing and install new metal counterflashing prior to re-installation of unit.
 3. Perimeter nailers must be elevated to match elevation of new roof insulation.
- E. Immediately remove all debris from roof surface. Demolished roof system may not be stored on the roof surface.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.4 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
1. Fasten substrate board to top flanges of steel deck according to recommendations in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to roofing system manufacturer's written instructions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.5 INSULATION INSTALLATION

- A. Coordinate installing roof system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes greater than 45 degrees per manufacturer's instruction.
- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- F. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 1.5 inches (38 mm) or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- H. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

- I. Mechanically Fastened Insulation: Secure uppermost layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Loose lay all other layers below with staggered joints.
 - 1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 - 2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- J. Mechanically Fastened with Subsequent Layers Adhered Insulation: Secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten first layer according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 - 2. Fasten first layer to resist uplift pressure at corners, perimeter, and field of roof.
 - 3. Install subsequent layers in a cold fluid-applied adhesive.
 - 4. Install subsequent layers in a two-part urethane adhesive.
- K. Proceed with installation only after unsatisfactory conditions have been corrected.

3.6 COVER BOARD INSTALLATION

- A. Coordinate installing membrane roofing system components so cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install cover board with long joints of cover board in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
 - 1. Cut and fit cover board within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- D. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
 - 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Mechanically Fastened Cover Board: Install each layer of cover board and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof cover board to deck type.
 - 1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
 - 2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.7 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane specification ST6RA over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply solvent-based bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. Bonding Adhesive: Apply water-based bonding adhesive to substrate at rate required by manufacturer and immediately install roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- F. Mechanically fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- H. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - a. Remove and repair any unsatisfactory sections before proceeding with Work.
 - 3. Repair tears, voids, and lapped seams in roofing membrane that do not meet requirements.
- I. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- J. Install roofing membrane and auxiliary materials to tie in to existing roofing.
- K. Proceed with installation only after unsatisfactory conditions have been corrected.

3.8 FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.

- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.
- G. Reinstall Bird Guards in manufacturer's approved adhesive at their original locations.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

1.0 GENERAL

1.01 SCOPE: This Section covers all flashing and sheet metal, including continuous soffit vents, other than exposed pre-finished trim, flashing and sheet metal to be furnished.

1.02 SUBMITTALS:

- A. Shop Drawings: Indicate material types, sizes, shapes, thicknesses, finishes, fabrication details, anchors, connections, expansion joints and relation to adjacent work. Details and profiles shall be drawing at full size scale.
- B. Product Data: Indicate product description, finishes and installation instructions, including interface with adjacent materials and surfaces.
- C. Samples: Submit as follows:
 - 1. Special finishes: 6" x 6" samples of manufacturer's standard colors for Architect's color selection.
 - 2. Manufactured items: 1'-0" length in style and finishes specified.

1.03 DELIVERY, STORAGE AND HANDLING:

- A. Handle materials to prevent damage to surfaces, edges and ends of sheet metal items. Reject damaged material and remove from project site.

1.04 JOB CONDITIONS:

- A. Protect prefinished and previously finished surfaces from damage or staining during performance of flashing and sheet metal work. Repair or replace damaged work to original condition.
- B. Prevent accumulation of solder, sealant, bitumen, or other materials on finished or exposed surfaces. Remove misplaced materials immediately.

1.05 WARRANTIES:

- A. Warrant flashing and sheet metal work to be free of defects in materials and workmanship. Warranty period shall be two years.
- B. Finish warranty: Warrant fluoropolymer coating to be free of checking, crazing, or peeling, chalking and fading, in accordance with coating manufacturer's standard warranty.

2.0 PRODUCTS

2.01 SHEET METAL MATERIALS:

- A. Architectural Metals: Shall be .040 pre-finished aluminum where shown on plans and as required for details. Colors shall be selected by the architect. Acceptable manufacturers:
 - 1. MBCI
 - 2. AMS
 - 3. McElroy
 - 4. Morin

5. Approved equal

- B. Pitch Pockets: Shall be manufactured of 16 oz. copper in size as required for conditions. Solder all seams. Provide circular copper covers soldered to or mechanically attached to all penetrations. Covers shall extend 2" beyond all edges.
- C. Parapet Covers: Where indicated, shall be by the metal roofing manufacturer as listed above. Joint covers of same metal shall have a 40 mil TPO membrane strip below them fully adhered to parapet covers in addition to caulk. The covers shall be anchored at the prescribed rate to achieve FM I-120 uplift resistance and in accordance with the wind uplift requirements of IBC2006.
- D. Lead Flashing at Plumbing Vents: Shall be of 4 lb lead turned into vent 1" minimum.
- E. Miscellaneous Metals: Shall be by the metal manufacturer or approved equal of colors as selected by architect from manufacturer's standard colors. All penetrations through metal roof must match the finish and color of the metal roof.

2.02 Fasteners: Same material or compatible with sheet metal being fastened.

- A. Nails: Flathead, needle point, not less than 12 ga. and of sufficient length to penetrate substrate 1" minimum.
- B. Expansion shields: Lead or bronze sleeves.
- C. Screws: Self-tapping type, with round heads.
- D. Bolts: Furnished complete with nuts and washers.
- E. Rivets: Round head, solid shank.
- F. Blind clips and cleats: Same gauge as sheet metal.
- G. Termination Bar: 1" high, continuous.

2.03 FINISHES:

- A. Pre-finished Metals: Manufacturer's standard Kynar 500 finish. Color as selected by architect.
- B. Copper: Natural Finish.

2.04 SHEET METAL FABRICATION:

- A. Fabricate sheet metal work in accordance with approved shop drawings and industry standards. Form sheet metal work with clear, sharp and uniform arises. Hem exposed edges.
- B. Make joints in aluminum sheets less than 0.040" thickness using flat seams, 3/4" in width. Fill seams with exterior sealant. Make joints in thicker sheets using seams or by Tungsten Arc Welding (TIG) or Gas Metal Arc Welding (MIG) process, using appropriate filler alloy.

- C. Provide linear sheet metal items in minimum 10'-0" sections except as otherwise noted. Form flashing using single pieces for the full width. Install coping covers, gravel stops, etc. in symmetrical distances from edges. Verify layouts with the architect prior to installation.

3.0 EXECUTION

3.01 SHEET METAL INSTALLATION:

- A. Install work in accordance with approved shop drawings and industry standards and SMACNA Sheet Metal Practices. Sheet metal items shall be true to line, without buckling, creasing, warp, wind or other deformation in finished surfaces.
- B. Perform field joining of lengths as specified for shop fabrication. Factory form and join interior and exterior corners and similar transactions.
- C. Isolate dissimilar materials to prevent electrolysis. Separate using bituminous paint or roofing felt, or uncured 40 mil membrane waterproofing.
- D. Seaming: Form seams in direction of flow. Seams shall be flatlock with cleats filled with exterior sealant. Lap seams occurring in members sloping 45° or more 4" minimum and bed in flashing cement.
- E. Secure sheet metal items using continuous cleats, clips and blind fasteners as indicated. No exposed face fastening shall be performed.
- F. Fastening:
 - 1. Nails: Confine to one edge only of flashing 1'-0" or less in width. Space Nails at 4" o.c. maximum. Provide neoprene washers for nails.
 - 2. Cleats: Continuous, formed to profile of item being secured.
 - 3. Clips: Minimum 2" wide by 3" long formed to profile of item being secured. Space at 2'-0" o.c. maximum.
- G. Form joints in linear sheet metal to allow for 1/2" minimum expansion at 20'-0" o.c. maximum and 8'-0" from corners. Provide 6" wide backup plate at intersections. Form plates to profile of sheet metal item. Set plate in three beads of sealant in addition to 40 mil uncured Permaply.

END OF SECTION 076000

1.0 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1, apply to work of this section.
- B. See also Section 075500 Four Ply Modified Bitumen Membrane Roofing – Steel Deck
Section 076000 Flashing and Sheet Metal
Section 074113 Metal Roofing
Section 079000 Caulking and Sealants

1.02 SUBMITTALS:

- A. **Manufacturer's Data:** Submit two copies of manufacturer's specifications, recommendations and installation instructions for each type of roof accessory. Show by transmittal that one copy of each recommendation and instruction has been distributed to Installer.

1.03 WEATHER CONDITIONS: Do not proceed with installation of roof accessories under adverse weather conditions.

2.00 PRODUCTS

2.01 ROOF DRAINS: Re-use existing roof drains. At existing roof drains, water test prior to starting construction in the presence of the architect and owner.

2.02 PIPE AND PLUMBING VENT FLASHINGS AT ROOFS: Pipe and plumbing vent flashings shall be of one piece construction and fabricated from a TPO membrane and shall have an aluminum base that can be field conformed to any panel configuration. Pipe flashings shall be flexible for mounting on any roof slope. Service temperature ranges shall be -30° F to +250° F. Three standard flashing sizes shall accommodate pipe sizes from 1/4" diameter up to 13" diameter. Pipe shall be located between roof seams at sufficient distance from seams to permit pipe flashing to rest flat on roof panel. Pipe flashing shall be isolated from the metal roof to prevent galvanic reactions from dissimilar metals. This product shall be as manufactured by Dektite or approved equal.

3.0 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified.

3.02 INSPECTION

- A. Installer must examine substrate and conditions under which roof accessories are to be installed and must notify contractor in writing of any conditions detrimental to proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.03 CLEANING:

- A. Clean completed systems promptly after erection, and protect from damage during construction.

END OF SECTION 078000

1.0 GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SCOPE OF WORK

- A. Work includes sealing (caulking) of joints where indicated on drawings, specified herein, and where required for a complete weather tight installation. Typical locations include, but are not necessarily limited to, the following:
1. Control and Expansion Joints.
 2. Metal Cap Flashings
 3. Where one partition or wall abuts another and is not structurally bonded.

1.03 DEFINITIONS:

- A. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extendibility under tension, compressibility and recovery; shall be designed to make joints air and water tight. Material is designed generally for application to joints at exterior of structures and for other joints subject to movement.
- B. Caulking compound: A material used in filling joints and seams, having properties of adhesion and cohesion; shall not be required to have extensibility and recovery properties, usually applied to joints at interior of structures.
- C. Caulk: The process of filling joints, without regard to type of material.
- D. Joint failure: A caulked joint exhibiting one or more of the following characteristics:
1. Leaks air and/or water
 2. Sealant migrates
 3. Sealant loses adhesion
 4. Sealant loses cohesion
 5. Sealant does not cure
 6. Sealant discolors
 7. Sealant stains adjacent work
 8. Sealant develops bubbles, air pockets or voids.

1.04 SUBMITTALS:

- A. Manufacturer's Data: Submit two copies of manufacturer's specifications, recommendations and installation instructions for sealant and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that material complies with requirements and is intended generally for applications shown. Show by transmittal that one copy of each recommendation and instruction has been distributed to Installer.
- B. Approval of Applicator: A letter on manufacturer's letterhead signed by an active company administrator certifying that applicator is approved at the time of bidding by manufacturer.

C. Color Samples:

1. Submit samples of manufacturer's standard and special colors as indicated at least 30 days prior to commencement of application.
2. Samples shall be actual materials or literature depicting actual material colors. Architect reserves the right to reject work not in conformance with selected colors, based upon samples submitted.
3. Should Contractor select a manufacturer meeting specified requirements, except for minimum color range requirements, he shall be responsible for furnishing special colors within range requirements. Special colors shall be submitted for Architect's acceptance.

D. Warranty: A warranty from the applicator upon completion guaranteeing the water tightness of the sealant installation for a period of five (5) years assuming responsibility for prompt and complete repair of any leaks occurring during this period. In addition, provide a letter on the manufacturer's letterhead at project close-out stating that work has been accomplished in accord with this specification and with manufacturer's application directive.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's instruction regarding environmental conditions under which materials may be stored.

1.06 JOB CONDITIONS:

A. Weather Conditions

1. Install no materials under adverse weather conditions, or when temperatures are below or above those recommended by the manufacturer.
2. Proceed with work only when forecasted weather conditions are favorable for joint cure and development of high early bond strength.
3. Wherever joint width is affected by ambient temperature variations, install materials only when temperatures are in lower third of manufacturer's recommended installation temperature. Coordinate time schedule with Contractor to avoid delay of project.

B. Protection of adjacent surfaces:

1. Protect by applying masking materials or manipulating application equipment to keep materials in joint. If masking materials are used, allow no tape to touch cleaned surfaces to receive sealant. Remove tape immediately after caulking, before surface skin begins to form.
2. Remove misapplied sealants from surfaces using solvents and methods recommended by manufacturer.
3. Restore surfaces from which sealants have been removed to original condition and appearance.

1.07 SERVICES OF MANUFACTURER'S REPRESENTATIVE

A. Manufacturer of sealant materials shall provide the services of a factory representative who shall conduct on site check of caulking work to determine compliance with manufacturer's application directive.

1.08 APPLICATORS

- A. Subcontract the caulking and sealing work to a firm experienced in the application of the types of materials required, employing skilled tradesmen for the work and who are approved by the manufacturer of the materials.

2.0 PRODUCTS

2.01 MATERIALS

- A. Sealant for Exterior Work: Provide two-component Polyurethane-based elastomeric sealant complying with FS TT-S-00227E, Type II (Non-Sag), Class A, and ANSI A116.1.

These materials shall be of sufficient strength and hardness to withstand stiletto heel traffic without damage or deterioration of sealer system.

DYNATROL II	by Pecora Corporation
SONOLASTIC NP II	by Sonneborn-Contech
DYMERIC II	by Tremco

- B. Caulking for Interior Work: Provide one-part acrylic latex polymer non-sag Caulking Compound complying with ASTM C834.

Products complying with requirements include, but not necessarily limited to:

AC-20	by Pecora Corporation
ACRYLIC LATEX	by Tremco
SONOLAC	by Sonneborn-Contech

- C. Sealant for Interior Horizontal Joints subject to Foot Traffic: Provide two part, cold-applied, chemically-curing, horizontal grade, elastomeric polyurethane Joint Sealant, complying with ASTM D 1850 and FS TT-S-00227E (3), Class A, Type 1.

Products complying with requirements include, but not necessarily limited to:

UREXPAN NR-200	by Pecora Corporation
THC-900	by Tremco
SONOLASTIC	by Sonneborn-Contech

- D. Fire stopping Caulks and Sealants as follows apply to all divisions of these specifications:

1. Penetration Sealants/Putty: Noncombustible penetrating items (metal conduits, steel pipe, EMT, copper):

- a. Biostop 500
- b. Dow Corning Firestop Sealants 2000
- c. 3M Brand "Fire Barrier" Caulk CP-25 and CP-25WB.

2. Intumescent Firestop Materials for use at openings and sleeves involving combustible penetrating items (plastic pipe, insulated pipe, or PVC coated, flexible cable).

- a. Biofireshield wrap strip
- b. Dow Corning Firestop Intumescent Wrap Strip 2002

c. 3M Brand "Fire Barrier" FS-195 Wrap Strip

3. UL Classification: Provide material classified by UL to provide Fire stopping equal to time rating of construction being penetrated.
4. Fire stopping materials shall be asbestos-free, emit no toxic or combustible fumes, and be capable of maintaining an effective barrier against flame, smoke, water and toxic gasses in compliance with U.L standards.
5. Fire stopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating item(s) without affecting the adhesion or integrity of the system.
6. Fire stopping sealants shall be recessed and have acrylic caulking applied over the surface to allow for painting. Verify coverage of acrylic latex caulk with manufacturer.

2.02 COLORS:

- A. As selected by Architect from manufacturer's standard selection.
- B. Colors of caulk are multicolor and shall match masonry, windows, metal roof and other separate finishes as selected by the architect.

2.03 COMPATIBILITY:

- A. Before purchase of the specified sealant, investigate its compatibility with the joint surfaces, joint fillers and other materials behind or below the joint in the construction. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation conditions, as shown by the manufacture's published data or certification.

2.04 ACCESSORY MATERIALS:

- A. Joint Cleaner: Type recommended by sealant manufacturer for substrates indicated.
- B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- C. Bond Breaker Tape (BB-Tp): Polyethylene tape or other plastic tape as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self adhesive tape where applicable.
- D. Sealant Backer Rod: Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam as recommended by sealant mfg. for compatibility with sealant material. Provide size and shape of rod to control joint depth, break bond at bottom of joint, form optimum shape of bead on back size to minimize possibility of extrusion when joint is compressed.
- E. Tooling agent: Agent recommended by sealant manufacturer to insure contact of material with inner joint faces.

- F. Divider strips: Synthetic rubber or closed cell synthetic foam not less than 1/6" thick and full depth of sealant; approved by manufacturers of dissimilar materials as being compatible with each other.

3.0 EXECUTION

3.01 JOB MOCKUP:

- A. Prepare, caulk and finish one sample of each joint condition.
- B. Sample joints shall be accepted by Architect prior to beginning work. Retain approved samples as a standard for work.
- C. Only neat tooled joints will be accepted.

3.02 JOINT SURFACE PREPARATION

- A. Installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and conditions under which sealant work is to be performed and notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. Clean joint surfaces immediately before caulking joints. Remove dirt, insecure coatings, moisture and other substances which could interfere with bond
- C. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's product data indicates that alkalinity does not interfere with bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution; rinse with clean water and allow to dry before caulking.
- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, unless sealant manufacturer's product data indicates equal bond strength as porous surfaces. Rub with fine abrasive cloth or wool to produce dull sheen.

3.03 APPLICATION

- A. Comply with Sealant Manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or Seal joint surfaces where recommended by sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install Sealant Backer Rod for all caulking materials, except where recommended to be omitted by sealant mfg. for application indicated.
- D. Employ installation techniques which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joints to form a slight cove, so that joint will not trap moisture and dirt. Tool sealant as recommended by sealant manufacturer.
- E. Do not allow materials to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces.

- F. Remove excess and misplaced materials as work progresses. Clean adjoining surfaces to eliminate evidence of misplaced materials, without damage to adjacent surfaces or finishes.
- G. Cure Sealants in compliance with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability.
- H. Install sealants to depths as shown, or, if not shown, as recommended by the sealant manufacturer.
- I. Installer shall advise contractor of procedures required for protection of sealants and caulking compounds during construction period, so that they will be without deterioration or damage (other than normal weathering) at time of Owner's acceptance.

END OF SECTION 079000

- 1.00 GENERAL
- 1.01 SCOPE: This section covers normal gypsum drywall systems and gypsum drywall finishing complete.
- 1.02 EXTENT OF WORK: Extent of gypsum drywall work is shown on the drawings as ceilings.
- 1.03 CODES AND STANDARDS: Except as indicated or specified otherwise, comply with applicable requirements of American National Standards Institute (ANSI) Standard Specifications for Application and Finishing of Wallboard (ANSI A97.1-1965.)
- 1.04 DELIVERY AND STORAGE DELIVERY AND STORAGE OF MATERIALS: Coordinate delivery with installation to minimize storage periods at the project site. Deliver in manufacturer's unopened bundles or packages, fully identified with manufacturer's brand, name, type and grade. Protect from weather, soiling and damage using handling equipment and storage techniques recommended by the manufacturer.
- 1.05 EXAMINATION OF SUPPORTING STRUCTURE: Installer must examine all parts of the supporting structure to which gypsum drywall is to be applied and notify contractor, in writing, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- 1.06 TEMPERATURE AND HUMIDITY CONDITIONS: Do not install joint treatment compounds unless installation areas comply with the minimum temperature and ventilation requirements recommended by the drywall manufacturer and conditions are acceptable to the Installer.
- 1.07 CONSTRUCTION TOLERANCES FOR GYPSUM DRYWALL WORK: Do not exceed 1/8" in 8'-0" variation from plumb or level in any exposed line or surface, except at joints between units. Do not exceed 1/16" variation between plans of abutting edges or ends. Shim as required to comply with specified tolerances.
- 1.08 DISCREPANCIES: Architect shall be informed of discrepancies between this specification and manufacturer's printed literature as well as changes in recommendations prior to actual installation.
- 1.09 MANUFACTURERS: In order to define requirements of quality and function of manufactured products, the specifications are generally based upon products of US Gypsum Company. In addition to products of manufacturers named hereinafter, equivalent products of the following manufacturers will be acceptable under the base bid:
- Celotex
Georgia Pacific
Johns-Manville National Gypsum
- 1.10 PROTECTION OF FINISHED WORK: Installer shall advise Contractor of proper procedures for the protection of completed drywall work from damage or deterioration until acceptance of the work.
- 1.11 QUALIFICATION OF MECHANICS: Work of this section shall be performed by mechanics skilled in the erection of fire and sound rated metal drywall components and application of drywall finishing components, as applicable.

1.12 SUBMITTALS: For information only, submit two copies of the manufacturer's specs and installation instructions for each type of gypsum drywall and accessory required including other data as may be required to show compliance with these specifications. Indicate by transmittal form that copy of each instruction has been distributed to Installer.

2.00 PRODUCTS

2.01 MATERIALS FOR NORMAL DRYWALL SYSTEMS:

- A. Studs and Runners: Screw-type complying with ASTM C645-70. Provide studs of sizes shown with runners of compatible size for friction fit to studs. Fabricate from 20 gauge steel or heavier gauges as noted on plans with manufacturer's standard zinc protective coating. Provide cutouts in studs where shown or required to receive horizontal bracing.
- B. Rigid Furring Channels: Screw-type furring channels complying with ASTM C645-70, fabricated from 25 ga. steel with manufacturer's standard zinc protective coating.
- C. Wallboard: Comply with ASTM C36-73 or ASTM C630-70 as applicable to type of drywall board shown and specified.
 - 1. For exposed drywall surfaces, provide gypsum wallboard with paper-face surface suitable for receiving decorator finish and with long edges tapered or radial eased to receive manufacturer's standard joint.
- D. Fiber Rock Panels: Shall be 5/8" fiber rock brand VH1 panels by USG. Comply with ASTM E-119, ASTM E-84 and ASTM D4977.
- E. Laminating Adhesive: USG Joint Compound-taping or Durabond.
- F. Sound attenuation blankets shall be ThermaFiber by USG or approved equal sized to fit walls.

Sound batts to be located at all interior GWB walls for the following spaces: All offices, conference rooms, men and women toilets and other spaces as indicated on drawings. Extend sound blankets to deck above where walls are sealed to deck. Provide 24" perimeter sound isolation blankets of the same material of 2" thickness around the perimeter of the ceilings of each of the above spaces where walls are not sealed to the deck above.
- G. Acoustical Sealant: USG Acoustical Sealant, Tremco Acoustical Sealant of approved equal.
- H. Fasteners: USG Type S-12 and Hi-Lo Type S pan and bugle head screws, sizes as required.
- I. Accessories:
 - 1. USG Series 200 metal trim.
 - 2. USG 093 Control Joint. Install Control Joints at locations suggested by manufacturer, but no less than described in Section 3.04, C in this section. Consult architect for exact locations during drywall layout.

2.02 MATERIALS FOR DRYWALL FINISHING:

- A. Joint Reinforcement: spark perforated, cross laminated fiber tape meeting
- B. Water: Fresh, clean and potable water, free of ice crystals.
- C. Joint Compounds:
 - 1. Taping of embedding: USG Durabond, polyindurate hardening type joint compound.
 - 2. Filling and Finishing: USG Ready-mixed Joint Compound-Topping, vinyl based premixed compound.

3.00 EXECUTION

3.01 GENERAL

- A. Manufacturer's Instructions: Unless otherwise shown or specified, install gypsum wallboard in accordance with manufacturer's printed instructions.

3.02 INSTALLATION OF SCREW-TYPE STUDS:

- A. Runner Tracks: Align runner tracks and secure runner tracks as recommended by the stud manufacturer for construction involved except do not exceed 24" o.c. spacing for nail or power-driven fasteners, or 16" o.c. for other types of attachment. Provide fasteners at all corners and ends of runner tracks. Caulk runner each side with acoustical sealant.
- B. Studs: Use full length studs between runner tracks wherever possible. If necessary, splice studs by nesting with a minimum lap of 8" and fasten laps with two screws through each flange. Friction fit studs to runner tracks by positioning and rotating into place. Provide positive attachment to runner track for studs located at partition corners and intersection and adjacent to openings, using 3/8" self-tapping screws or stud clinching tool on both flanges of studs.
- C. Size and Spacing of Studs: Comply with manufacturer's recommendations and as otherwise shown. Do not exceed 16 inches on center.
- D. Provide Rough Framing at Openings: Consisting of full-length studs adjacent to jambs and horizontal header and sill backs. Cut horizontal tracks to length and split flanges and bend webs at ends for flange overlap and screw to jamb studs. Install cut-to-length, intermediate studs between jamb studs at head and sill sections, at same spacing as full-length studs. Where vertical control joints are shown at jamb lines, provide additional vertical studs located at opening side of jambs and not less than 1/2" from jamb studs. Do not fasten such additional studs to tracks or jamb studs.
- E. Provide blocking for support of hardware, wall mounted items, toilet accessories, and to prevent punch through by door knobs and coat hooks.

3.03 INSTALLATION OF METAL FURRING:

- A. Provide Rigid Metal Furring Channels where gypsum wallboard is to be applied over masonry wall substrates, unless otherwise shown.

- B. Install channels at not greater than 16" o.c. spacing and provide additional framing at openings, cutouts and corners. Fasten to concrete walls with power actuated fasteners.

3.04 INSTALLATION OF GYPSUM WALLBOARD

A. General

1. Standards: Comply with the requirements of ANSI A97.1 "Standard Specification for the Application and Finishing of Wallboard," unless otherwise specified or recommended by the manufacturer. The term "manufacturer" defines the gypsum wallboard manufacturer unless otherwise noted.
2. Provide drywall to the thickness shown, or if not shown, provide not less than the minimum thickness recommended by the manufacturer for the application.
3. Provide additional framing and blocking as required to support gypsum board at openings and cutouts, and to support built in anchorage and attachment devices for other work.

- B. Metal Supports: Fasten gypsum wallboard with screws. Comply with manufacturer's instruction for fastening, but do not exceed 12" o.c. spacing.

- C. Expansion Control: If not shown on plans provide expansion control joints on drywall walls, ceilings, soffit areas and at building control joints. Consult the architect for exact expansion joint locations. Joints shall be located at a minimum of:

1. Where partition runs exceed 30' without a break.
2. Where ceilings and soffits are greater than 30' runs and do not exceed 12' in width.
3. Where ceilings or wall areas exceed 300 sq. ft.
4. At the strike side of doors extending from the top of door frame to 8" above ceiling.

3.05 DRYWALL FASTENING:

- A. Temperature and Humidity Conditions: Do not install joint treatment compounds unless installation areas comply with the minimum temperature and ventilation requirements recommended by the manufacturer and conditions are acceptable to the Installer.
- B. Finish Exposed Drywall Surfaces with Joints, corners, and exposed edges reinforced or trimmed as specified and with all joints, fastener heads, trim accessory flanges and surface defects filled with joint compound in accordance with manufacturer's recommendations for a smooth, flush surface. Drywall finishing work will not be considered acceptable if corners or edges of not form

true, level or plumb lintels, or if joints, fastener heads, flanges of trim accessories or defects are visible after application of field-applied decoration.

3.06 DRYWALL FINISHING:

- A. Use only compatible compounds from one mfg. After mixing, do not use joint compounds if recommended pot-life has expired.
- B. Allow drying time between applications of joint compound in accordance with manufacturer's recommendations for the relative humidity and temperature levels at the time of application. In no case allow less than 24 hours drying time between applications of joint compound.
- C. Drywall shall be finished per the following levels.

Level 1: All joints and interior angles shall have tape embedded in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

Level 2: All joints and interior angles shall have tape embedded in joint compound. And one separate coat of joint compound applied over all joints, angles, fastener heads, and accessories. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

Level 3: All joints and interior angles shall have tape embedded in joint compound. And two separate coat of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compound shall be smooth and free of tool marks and ridges.

Level 4: All joints and interior angles shall have tape embedded in joint compound. And three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compound shall be smooth and free of tool marks and ridges.

As a minimum, Level 4 finishing shall be required for this project where GWB is exposed to view.

END OF SECTION 092600

1.0 GENERAL

1.1 SCOPE: Extent of paint work is shown on drawings and in schedules and as herein specified.

1.2 DEFINITION: The word "paint" as used herein means all coating systems materials, sealers, and fillers, enamels and other applied materials whether used as prime, intermediate or finish coats.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS: The following categories of work are not included as part of the painter-applied finish work or are included in other sections of the specifications except as otherwise shown on drawings or specified herein.

- A. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal items, hollow metal work and shop-fabricated or factory built metal mechanical and electrical equipment or accessories.
- B. Pre-Finish Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switches, gear and distribution cabinets. Mechanical equipment that does not have finish paint will be painted under this section.
- C. Concealed Surfaces: Unless otherwise indicated, painting is not required on wall or ceiling surfaces in concealed areas and inaccessible areas, such as foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts, and elevator shafts, as applicable to this project. Paint all piping, equipment and other items in these spaces as required.
- D. Finish Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials shall not be painted, except as otherwise specified.
- E. Operating Parts and Labels: Do not paint any moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts, unless otherwise indicated. Do not paint over any code-required labels, such as Underwriters Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
- F. Colors: Paint colors will be as selected by the Architect and before any painting is done the Architect will furnish the Contractor with the selected color chips and schedule showing where the various colors will be applied. Finish colors shall exactly match the color chips. There will be a minimum of 14 colors used in this project. Color changes will be made at accent walls in rooms, door frames to walls, soffits in ceilings, breaks in walls, flutes in columns, column details at bases, column detail at capitols and at other breaks, changes in planes and elsewhere as deemed necessary by the Architect.

1.4 DELIVERY AND STORAGE

- A. Deliver materials to job in original containers with labels intact and seals unbroken. Store materials and painters tools in a single room assigned for this use only. Keep storage place clean and neat and damage to it shall be corrected. Keep paint and other volatile material tightly covered at all times when not in actual use. Remove soiled and oily rags and waste from building every night and take every precaution to prevent spontaneous combustion.

1.5 SAMPLES: Submit for approval not less than three weeks before any painting is scheduled to start. New samples shall be submitted to replace rejected samples. Obtain approval in writing before delivering materials.

- A. Plaster and Gypsum Board: Prepare specimens on a 4" x 6" cementitious board, of each type of finish. Apply primer, other base coats, and final coats.
 - B. Concrete Blocks: Prepare specimens 4" x 6, on pieces of concrete block used in the work, of each type of finish, applying prime coats, base coats, and final coats.
 - C. Metals: Prepare specimens 4" x 6" on each metal of each type of finish, applying prime coat, base coats, and final coat.
 - D. Approval: Material furnished shall match approved sample in color and sheen. Insofar as practicable, paint shall be factory mixed for application to surfaces involved without thinning or other adulteration on job, except as modified below.
 - E. Field Adjustments of Final Color: Minor tinting to adjust final coat to either lighter or darker shade shall be done in field as directed. Extensive changes in color shall be done in field if required and an adjustment will be made in contract price to cover cost: A change order amount being agreed upon in advance.
- 1.6 LIST OF PROPOSED MATERIALS: Verify, in writing, that products proposed are from products listed herein. This submittal shall include full identifying product names and catalog numbers. Materials for prime coats, undercoats, finish coats and thinning applied to same surface shall be produced by the same manufacturer.
- 1.7 JOB, WEATHER, AND TEMPERATURE CONDITIONS
- A. Exterior painting: Do no exterior painting when temperature is below 50 degrees F., while surface is damp or during cold, foggy, rainy or frosty weather or when temperature is likely to drop to freezing within 24 hours. Avoid painting surfaces while they are exposed to hot sun. Allow 48 hours drying after rain before commencing painting.
 - B. Interior Painting: Maintain temperature in building at constant 65 degrees F. or above, during drying of plaster and masonry and provide adequate ventilation for escape of moisture from building in order to prevent mildew, damage to other work and improper drying of paint. Once painting has commenced, provide constant temperature of 65 degrees F. or above, and prevent wide variations in temperature which might result in condensation on freshly painted surfaces. Before painting is started in any area, broom clean it and remove excessive dust from all areas to be painted. Broom cleaning, after painting operations begin in a given area will not be allowed; cleaning shall then be done with only commercial vacuum cleaning equipment. Provide adequate illumination in all areas where painting operations are in progress.
- 1.8 COOPERATION WITH OTHER TRADES: Schedule this work and coordinate it with other trades and do not proceed until other work and/or job conditions are as required to achieve satisfactory results. Examine drawings and specs. for the work of various other trades and become familiar with all their provisions regarding painting. Surfaces that are left unfinished by requirement of other sections shall be painted or finished as part of the work covered by this section.
- 1.9 INSPECTION OF SURFACES:
- A. Examine surfaces to receive paint finishes, in accord with Contract Conditions, for defects which cannot be corrected by procedures specified herein under "Preparation of Surfaces" and which might prevent satisfactory painting results. Do not proceed with work until such defects are corrected. Commencing of work constitutes acceptance of surfaces and thereafter, Contractor shall be responsible for satisfactory results as required herein.
 - B. Painting of Previously Painted Surfaces: The painter shall determine paint compatibility with specified products and surfaces previously painted. Should paints be non-

compatible, notify the architect. Otherwise, lightly sand or treat surfaces as recommended by the manufacturer prior to installation of paint.

2.0 PRODUCTS

- 2.1 GENERAL: No claims to unsuitability or unavailability of material specified or his inability to produce first class work with the specified materials will be entertained unless such claims are made, in writing, and submitted to the Architect with substitute material 30 days prior to commencing work. All materials shall be of first quality and label directions followed. All thinning and tinting materials shall be as recommended by manufacturer for the particular material tinted or thinned.
- 2.2 Schedule of Materials: Material shall be selected from the following schedule, except as approved otherwise in accordance with the "Or Equal" Clause. All materials are Sherwin Williams, unless otherwise noted. Colors of distribution to be selected by Architect. Duron Paints, Rose Talbert, and Glidden are approved equals.
- A. Concrete/Masonry (except toilets and locker rooms), Opaque, Latex, 3 Coat:
 - 1. One coat of block filler.
 - 2. Semi-gloss: Two coats of latex enamel
 - 3. Sherwin-Williams
 - a. Primer: 1 coat S-W PrepRite® Block Filler, B25W25
 - b. Finish: 2 coats S-W Pro Industrial Pre-Catalyzed Epoxy, Semi-gloss; K46 Series.
 - B. Ferrous Metals, Unprimed, Latex, 3 Coat:
 - 1. One coat of latex primer.
 - 2. Gloss: Two coats of latex enamel.
 - 3. Sherwin-Williams
 - a. Primer: 1 coat S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - b. Finish: 2 coats S-W Pro Industrial 0 VOC Acrylic, Gloss, B66-600
 - C. Ferrous Metals, Primed, Latex, 3 Coat:
 - 1. Touch-up with latex primer;
 - 2. Gloss: Two coats of latex enamel
 - 3. Sherwin-Williams
 - a. Primer: 1 coat S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (touch-up)
 - b. Finish: 2 coats S-W Pro Industrial 0 VOC Acrylic, Gloss, B66-600
 - D. Galvanized Metals, Latex, 3 Coat:
 - 1. One coat galvanize primer.
 - 2. Gloss: Two coats of latex enamel
 - 3. Sherwin-Williams
 - a. Primer: 1 coat S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - b. Finish: 2 coats S-W Pro Industrial 0 VOC Acrylic, Gloss, B66-600
 - E. Walls - Gypsum Board/Plaster, Latex, 3 Coat:
 - 1. One coat of latex high-build primer sealer;
 - 2. Eggshell: Two coats of latex enamel; for walls;
 - 3. Sherwin-Williams
 - a. Primer: 1 coat S-W Builders Solution System; A63W100
 - b. Finish: 2 coats S-W ProGreen 200 Latex Eg-Shel; B20-650 Series
 - F. Ceilings - Gypsum Board/Plaster, Latex, 3 Coat:
 - 1. One coat of latex high-build primer sealer;
 - 2. Flat: Two coats of latex enamel; for ceilings

3. Sherwin-Williams

- a. Primer: 1 coat S-W Builders Solution System; A63W100
- b. Finish: 2 coats S-W ProGreen 200 Flat, B30-600 Series

- G. Pipe Insulation: All exposed piping insulation shall be finished as specified for the wall or ceiling, whichever is nearer.

3.0 EXECUTION

- 3.1 PREPARATION OF SURFACES: The Painting Contractor is entirely responsible for the finish of this work, & will not commence any part of it until all surfaces are in proper condition.

- 3.2 WORKMANSHIP: All work will be done in an approved workmanlike manner by skilled mechanics. All materials to be applied properly, free from all runs, sags or skips, and no paint will be applied until the preceding coat is thoroughly dry and hard. Touch up and restore all damaged areas. All paint will have full color.

Painting materials are to be applied in strict accordance with the manufacturer's recommendations.

All paint must be rolled or brushed in such fashion as to avoid thin spots full and complete coverage is required.

- 3.4 CLEANING: The Painting Contractor will not only protect his work at all times, but will also protect all adjacent work and materials by suitable covering or other method during the progress of his work. Upon completion of the work, he is to remove all paint and varnish spots from the premises, all rubbish and accumulated materials and he is to leave the work in a clean, orderly and acceptable conditions.

- 3.5 COMPLETION: Contractor to leave left over partial container of paint (2 gallons minimum) for each color with Owner.

END OF SECTION