



Housing Authority of the City of Pittsburgh

Contracting Officer
100 Ross Street
2nd Floor Suite 200
Pittsburgh, PA 15219
(412) 456-5248
Fax: (412) 456-5007
www.hacp.org

July 31, 2015

Caliguri Windows and Façade Replacement PA-1-41

RFP#600-19-15GE

ADDENDUM NO.5

This addendum issued July 31, 2015 becomes in its entirety a part of the Invitation for Bid IFB #600-19-15GE as if fully set forth herein:

Item 1: The bid due date, is revised to **August 18, 2015**. The time and location remain unchanged at 2:00 PM at the HACP Procurement Dept., 100 Ross St. 2nd Floor, Suite 200, Pittsburgh, PA 15219.

Item 2: Please see attached Addendum 5 Specification and Drawing Revisions labeled "Addendum No. 5", dated 7/28/15 (See Attachment A)

Item 3: Replace the following specification sections with the attached revised or new sections labeled "Addendum No. 5, dated 7/28/15 " (See Attachment B)


Section 000110 Table of Contents
Section 012100 Allowances
Section 012200 Unit Prices
Section 072713 Sheet Air Barriers
Section 075323 Ethylene-Propylene-Diene-Monomer (EPDM) Roofing


Item 4: Replace current drawings below and replace them with the attached drawings labeled "Addendum No. 5", dated 7/28/15 (See Attachment C)

AD201	Exterior Demolition Elevations- North & South
AD202	Exterior Demolition Elevations West
AD203	Exterior Demolition Elevations East
A109	Elevator Penthouse Roof Plan
A512	Section Details

*Drawings are available as a separate download at www.hacp.org/business-opportunities/vendors

END OF ADDENDUM NO. 5


Mr. Kim Detrick
Procurement Director/Contracting Officer


Date

ATTACHMENT A

1. SPECIFICATIONS

1.1 TABLE OF CONTENTS - ATTACHED

- A. Delete entire Specification Section and replace with attached Specification Section with HACP Addendum 5, July 28, 2015, indicated in the Header.
- B. Changed 075323 Ethylene-Propylene-Diene-Monomer (EPDM) Roofing number of pages to "19."

1.2 012100 ALLOWANCES - ATTACHED

- A. Delete entire Specification Section and replace with attached Specification Section with HACP Addendum 5, July 28, 2015, indicated in the Header.
- B. 3.3, A Allowance No. 1: Added "/adding" and "Within a total of 5,200 sq footage of exterior wall as indicated on the Exterior Demolition Elevations AD201 through AD203."

1.3 012200 UNIT PRICES - ATTACHED

- A. Delete entire Specification Section and replace with attached Specification Section with HACP Addendum 5, July 28, 2015, indicated in the Header.
- B. 1.3, A: Replaced "bidders" with "apparent low bidder" and deleted "stated on the Bid Form." Added "to be included within the Schedule of Values and as required by the HUD General Conditions" and deleted "added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased."

1.4 072713 SHEET AIR BARRIERS - ATTACHED

- A. Delete entire Specification Section and replace with attached Specification Section with HACP Addendum 5, July 28, 2015, indicated in the Header.
- B. Page 6, 2.3, A: Added "VPS" to Perm-A-Barrier Basis-of-Design Product.

1.5 075323 EDPM ROOFING - ATTACHED

- A. Delete entire Specification Section and replace with attached Specification Section with HACP Addendum 5, July 28, 2015, indicated in the Header.
- B. Page 1: Added section 1.2 Qualification.
- C. Page 1, 1.3, A: Added "6. Walkways, 7. Roof Curb Extensions, and 8. Roof Vent Extensions."

- D. Page 2, 1.3, B, 4: Added "between the roof canopy and the building entrance" and deleted "beneath the roof deck."
- E. Page 2, 1.3, B: Added "5. Section 074216 "insulated-core Metal Wall Panels" for coping at existing canopy.
- F. Page 2-3, 1.4, C: Added sections 6. ASTM International (ASTM), 7. National Roofing Contractors Association (NRCA), and 8. NSF International (NSF).
- G. Page 4, 1.7, A: Added "4. Submit manufacturer's sample of vent pipe extension."
- H. Page 4, 1.7, C, 2: Added "and crickets at penetrations."
- I. Page 4, 1.7, C, 3: Added "existing concrete plank."
- J. Page 4, 1.7, C: Added sections 5 and 6.
- K. Page 11, 2.5, C: Added "and cover board."
- L. Page 12: Added sections 2.8 and 2.9.
- M. Page 15, M: Added "adhere to insulation" and "adhere."
- N. Page 17: Added sections 3.9, 3.10, and 3.11.

2. DRAWINGS

2.1 G-100 COVER SHEET

- A. This drawing has been revised as denoted by Revision 1 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing G-100, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:
 - 1. Added "Addendum 5, July 28, 2015."

2.2 AD102 THROUGH AD103

- A. This drawing has been revised as denoted by Revision 2 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing AD102 through AD103, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:

1. Referenced Demolition Notes, 024119.01: Changed "steel frames" to read "cold metal framing."
2. Referenced Demolition Notes, 024119.07: Changed to read "Demolish, remove, and legally dispose of all existing deteriorated base plates, angles, cold metal track, and all cold metal framing within 8'-8" +/- VIF high by length of each elevation, which varies, where cold metal framing meets top of masonry wall and as indicated. Refer to all elevations, all plans, detail 4/A-514 enlarged elevation and notes for a typical condition where cold metal framing meets the top of masonry and where this note is referenced. Typical around entire building."

2.3 AD104 THROUGH AD108

A. This drawing has been revised as denoted by Revision 2 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing AD104 through AD108, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:

1. Referenced Demolition Notes, 024119.01: Changed "steel frames" to read "cold metal framing."
2. Referenced Demolition Notes, 024119.07: Changed to read "Demolish, remove, and legally dispose of all existing deteriorated base plates, angles, cold metal track, and all cold metal framing within 8'-8" +/- VIF high by length of each elevation, which varies, where cold metal framing meets top of masonry wall and as indicated. Refer to all elevations, all plans, detail 4/A-514 enlarged elevation and notes for a typical condition where cold metal framing meets the top of masonry and where this note is referenced. Typical around entire building."
3. Referenced Demolition Notes, 024119.09: Add "Contractor to assume existing roof has 4" minimum overall insulation with additional tapered insulation at 1/8" per foot slope to drains. Contractor to prepare existing roof curbs and vents where extensions are required for new roofing."

2.4 AD109 ELEVATOR PENTHOUSE AND ROOF DEMOLITION PLAN

A. This drawing has been revised as denoted by Revision 1 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing AD109, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:

1. Referenced Demolition Notes, 024119.09: Add "Contractor to assume existing roof has 4" minimum overall insulation with additional tapered insulation at 1/8" per foot slope to drains. Contractor to prepare existing roof curbs and vents where extensions are required for new roofing."

2.5 AD201 THROUGH AD203 - ATTACHED

A. This drawing has been revised as denoted by Revision 2 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing AD201 through AD203, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:

1. Referenced Demolition Notes, 024119.01: Changed "steel frames" to read "cold metal framing."
2. Referenced Demolition Notes, 024119.07: Changed to read "Demolish, remove, and legally dispose of all existing deteriorated base plates, angles, cold metal track, and all cold metal framing within 8'-8" +/- VIF high by length of each elevation, which varies, where cold metal framing meets top of masonry wall and as indicated. Refer to all elevations, all plans, detail 4/A-514 enlarged elevation and notes for a typical condition where cold metal framing meets the top of masonry and where this note is referenced. Typical around entire building."
3. Added callouts for Referenced Demolition Note 7 to clarify area of work.

2.6 A-102 THROUGH A-108 AND A-201 THROUGH A-203

A. This drawing has been revised as denoted by Revision 1 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing A-102 through A-108, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:

1. Changed General Note 35 to read "Furnish and install all base plates, angles, cold metal track and all cold metal framing within 8'-8" +/- VIF high by length of each elevation, which varies, where cold metal framing meets top of masonry wall, as indicated and where being demolished and removed. Refer to all elevations, all plans, detail 4/A-514 enlarged elevation and notes for a typical condition where cold metal framing meets the top of masonry. Refer to specification section 012100 for allowances and 012200 for unit prices."

2.7 A-109 ELEVATOR PENTHOUSE AND ROOF PLAN - ATTACHED

- A. This drawing has been revised as denoted by Revision 1 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing A-109, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:
1. Delete Entire Drawing and Replace with attached Drawing.
 2. 1/A-109 Elevator Penthouse and Roof Plan:
 - (a) Changed canopy roof note to read "Fully adhered EPDM, mechanically attached tapered insulation 1/4" slope to drain on existing plywood substrate, refer to Detail 2/A-801 for roof drain scope."
 - (b) Added dimension '11'-0" +/-' at canopy.
 - (c) Added room tags "Elevators 1" and "Stair 3 L11-6."
 - (d) Changed scupper note to read "Refer to 2/A-109 for scope of work."
 - (e) Changed scupper note to read "Existing scupper to remain, temporarily move, salvage and replace splash pad and new 24 Ga. Downspout, color and finish to match scupper, refer to Detail 7/A-801 for scope of work."
 3. 2/A-109 Elevator Penthouse Roof Plan:
 - (a) Changed scupper note to read "Existing downspout/scupper, adjust length of downspout for new roof as required, temporarily move, salvage and replace splash pad, replace stainless steel enclosure within existing opening in wall."
 - (b) Added scupper note "Existing scupper to remain, temporarily move, salvage and replace splash pad and new 24 Ga. Downspout, color and finish to match scupper, refer to detail 7/A-801 for scope of work."

4. Changed Roof Plan Note 9 to read "General Contractor to remove, protect and reinstall existing exhaust fans during reroofing. Coordinate with Electrical Contractor to deenergize and reenergize. Extend each existing exhaust fan curbs, so that the top of the curb is a minimum of 8" above the roofing EPDM material as recommended by the roofing industry."
5. Added Roof Plan Note 11 "For all roof locations where indicates as "EX VTR," General Contractor is required to extend all existing roof through vents, so that the top of the roof vent is a minimum of 12" above the roofing EPDM material, as required by Allegheny County Health Department Rules and Regulations for Plumbing and Building Drainage, Article XV."

2.8 A-512 SECTION DETAILS - ATTACHED

- A. This drawing has been revised as denoted by Revision 1 dated 07.28.15 Addendum 5. This drawing revision supersedes previously issued Drawing A-203, dated 05.01.15. Please take the action as required by this revision. All items described become a part of the Project and are governed by the general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections. The following revisions have been made:
1. Changed Detail 1/A-512 to clarify scope of work.
 2. Changed Detail 5/A-512 to clarify scope of work.

3. CLARIFICATIONS/QUALIFICATION

- A. General Contractor is to assume that all the existing roofs, except the entrance canopy roof, have 4" insulation overall with 1/8" per foot tapered insulation, a cover board and EPDM roofing membrane on top of existing concrete plank roof. New roofing is to be minimum overall insulation R-30, which equals 5" plus tapered insulation of 1/4" per foot and 1/2" thick cover board and EPDM roofing system. General Contractor is responsible to furnish and install, as required per GC's new roof design, all extensions of all existing roof exhaust fan curbs, so that the minimum height is 8" from the top of the curb to the top of the finished EPDM roofing material; all extensions of all existing roof vent pipes, so that the minimum finished height requirement of 12" clear from the top of the vent to the top of the EPDM roofing; and all other miscellaneous rooftop penetration extensions.

END OF HACP ADDENDUM NO. 5

ATTACHMENT B

CALIGUIRI PLAZA
 WINDOW AND FAÇADE REPLACEMENT PA-1-41
 HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
 R3A PROJECT NO. 14021

TABLE OF CONTENTS
 000110
 HACP ADDENDUM NO. 5
 JULY 28, 2015

DIVISION	SECTION TITLE	PAGES
	COVER SHEET	1
DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS		
000110	TABLE OF CONTENTS	2
000115	LIST OF DRAWINGS	2
000116	INVITATION TO BID	BY OTHERS
002113	INSTRUCTIONS TO BIDDERS	BY OTHERS
004113	BID FORM	BY OTHERS
DIVISION 01 - GENERAL REQUIREMENTS		
010500	GENERAL CONDITIONS RESPONSIBILITY MATRIX	1
011000	SUMMARY	8
011200	MULTIPLE CONTRACT SUMMARY	3
012100	ALLOWANCES	4
012200	UNIT PRICES	3
012500	SUBSTITUTION PROCEDURES	4
012500.2	SUBSTITUTION REQUEST	1
012600	CONTRACT MODIFICATION PROCEDURES	3
012600.1	CHANGE ORDER PROPOSAL FORM	1
012900	PAYMENT PROCEDURES	7
013100	PROJECT MANAGEMENT AND COORDINATION	11
013200	CONSTRUCTION PROGRESS DOCUMENTATION	14
013233	PHOTOGRAPHIC DOCUMENTATION	6
013300	SUBMITTAL PROCEDURES	14
014000	QUALITY REQUIREMENTS	8
015000	TEMPORARY FACILITIES AND CONTROLS	12
016000	PRODUCT REQUIREMENTS	6
017300	EXECUTION	9
017329	CUTTING AND PATCHING	5
017700	CLOSEOUT PROCEDURES	6
017823	OPERATION AND MAINTENANCE DATA	8
017839	PROJECT RECORD DOCUMENTS	5
017900	DEMONSTRATION AND TRAINING	5
DIVISION 2 - EXISTING CONDITIONS		
024119	SELECTIVE STRUCTURE DEMOLITION	6
024120	SELECTIVE DEMOLITION SITE OBSERVATIONS	24
DIVISION 4 - MASONRY		
040120	MAINTENANCE OF UNIT MASONRY	17
DIVISION 5 - METALS		
054000	COLD-FORMED METAL FRAMING	14
055000	METAL FABRICATIONS	9
057000	DECORATIVE METAL	7

**CALIGUIRI PLAZA
WINDOW AND FAÇADE REPLACEMENT PA-1-41
HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
R3A PROJECT NO. 14021**

**TABLE OF CONTENTS
000110
HACP ADDENDUM NO. 5
JULY 28, 2015**

DIVISION 6 – WOOD AND PLASTICS

061053	MISCELLANEOUS ROUGH CARPENTRY	8
061600	SHEATHING	5

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

070150.19	PREPARATION FOR RE-ROOFING	5
072100	THERMAL INSULATION	5
072413	POLYMER-BASED EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)	17
072713	SHEET AIR BARRIERS	11
074216	INSULATED-CORE METAL WALL PANELS	20
075323	ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING	19
076200	SHEET METAL FLASHING AND TRIM	12
078413	PENETRATION FIRESTOPPING	7
078446	FIRE-RESISTIVE JOINT SYSTEMS	6
079200	JOINT SEALANTS	13

DIVISION 8 – DOORS AND WINDOWS

081113	HOLLOW METAL DOORS AND FRAMES	9
083326	OVERHEAD COILING GRILLES	7
084113	ALUMINUM FRAMED ENTRANCES AND STOREFRONTS	16
084229	AUTOMATIC ENTRANCES	16
084229.23	SLIDING AUTOMATIC ENTRANCES	14
085413	FIBERGLASS WINDOWS	9
087100	DOOR HARDWARE	21
087113	AUTOMATIC DOOR OPERATORS	9
088000	GLAZING	13
089000	LOUVERS AND VENTS	5

DIVISION 9 – FINISHES

090000	SCHEDULE OF FINISHES	1
092900	GYPSUM BOARD	8
099123	PAINTING	9

DIVISION 10 – SPECIALTIES

109000	LIGHTNING PROTECTION FOR STRUCTURES	5
--------	-------------------------------------	---

DIVISION 12 – FURNISHINGS

122113	HORIZONTAL LOUVER BLINDS	6
--------	--------------------------	---

DIVISION 26 – ELECTRICAL

260500	COMMON WORK RESULTS FOR ELECTRICAL	5
--------	------------------------------------	---

END OF TABLE OF CONTENTS

SECTION 012100 - ALLOWANCES

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. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
 - 2. Quantity Allowances
- C. Related Requirements:
 - 1. Section 012200 "Unit Prices" for procedures for using unit prices.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials selected by HACP and Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to HACP, after installation has been completed and accepted.

1.8 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for HACP's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by HACP under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to HACP by Change Order.

1.9 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
 - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Quantity Allowance: Include removing and replacing/adding a full story of all cold metal framing steel studs, steel track, single and double deflection track

CALIGUIRI PLAZA
WINDOW AND FAÇADE REPLACEMENT PA-1-41
HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
R3A PROJECT NO. 14021

ALLOWANCES
012100
HACP ADDENDUM NO. 5
JULY 28, 2015

and associated vertical deflection clips and drift clips to secure to structure; welded steel plates, angles; furnishing and installing anchor bolts and grouting masonry cells, where cold metal framing meets the masonry building base or as indicated, typical around the entire building where the EIFS system is being removed. Welded plates and angles. Cold metal framing of 3-5/8" with minimum base thickness of .0538" and 1-5/8" flanges. Refer to Drawings and Specifications for additional information, details and elevations, including specification section 05400 Cold-Formed Metal Framing to determine allowance. **Within a total of 5,200 sq footage of exterior wall as indicated on the Exterior Demolition Elevations AD201 through AD203.**

1. Coordinate quantity allowance adjustment with unit-price requirements in Section 012200 "Unit Prices."
- B. Allowance No. 2: Square Footage Allowance: Include raking existing loose and deteriorated mortar between existing masonry units within exterior building walls and piers; preparing and installing mortar material that matches existing in material texture, color and tooling for a total of 3,000 sq footage.
 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 012200 "Unit Prices."
- C. Allowance No. 3: Square Footage Allowance: Include replacing deteriorate or damaged gypsum drywall, inclusive of corner and J beads, taping, sanding, providing a level 1 finish. for a total of 6,000 sq footage.
 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 012200 "Unit Prices."

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

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. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for coordination with Unit Prices.
 - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 3. Section 014000 "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by the ~~bidders apparent low bidder, stated on the Bid Form,~~ as a price per unit of measurement for materials or services **to be included within the Schedule of Values and as required by the HUD General Conditions.** ~~added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.~~

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. HACP reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at HACP's expense, by an independent surveyor acceptable to Contractor.

**CALIGUIRI PLAZA
WINDOW AND FAÇADE REPLACEMENT PA-1-41
HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
R3A PROJECT NO. 14021**

**UNIT PRICES
012200
HACP ADDENDUM NO. 5
JULY 28, 2015**

- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price 1: Deteriorated steel stud cold metal framing at exterior wall.
1. Description: Replacement of deteriorated exterior wall steel stud cold metal framing secured to existing building structure with vertical deflection clips not otherwise indicated in the Contract Documents, according to Section 054000, Cold Formed Metal Framing. Cold metal framing of 3-5/8" with minimum base thickness of .0538" and 1-5/8" flanges with vertical deflection clips and drift clips.
 2. Unit of Measurement: Linear footage of cold metal framing as indicated on itemized invoice of supplier and verified by Architect.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."
- B. Unit Price No. 2: Deteriorated steel track cold metal framing at exterior wall.
1. Replacement of deteriorated exterior wall steel track cold metal framing track secured to existing building structure with vertical deflection clips not otherwise indicated in the Contract Documents, according to Section 054000, Cold Formed Metal Framing. Cold metal framing of 3-5/8" with minimum base thickness of .0538" and 1-5/8" flanges with vertical deflection clips and drift clips.
 2. Unit of Measurement: Linear footage of cold metal framing as indicated on itemized invoice of supplier and verified by Architect.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."
- C. Unit Price No. 3: Deteriorated steel single deflection track cold metal framing at exterior wall.
1. Replacement of deteriorated exterior wall single deflection track cold metal framing secured to existing building structure with vertical deflection clips not otherwise indicated in the Contract Documents, according to Section 054000, Cold Formed Metal Framing. Cold metal framing of 3-5/8" with minimum base thickness of .0538" and 1-5/8" flanges with vertical deflection clips and drift clips.
 2. Unit of Measurement: Linear footage of cold metal framing as indicated on itemized invoice of supplier and verified by Architect.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

CALIGUIRI PLAZA
WINDOW AND FAÇADE REPLACEMENT PA-1-41
HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
R3A PROJECT NO. 14021

UNIT PRICES
012200
HACP ADDENDUM NO. 5
JULY 28, 2015

- D. Unit Price No. 4: Deteriorated steel double deflection track cold metal framing at exterior wall.
1. Replacement of deteriorated exterior wall double deflection track cold metal framing secured to existing building structure with vertical deflection clips not otherwise indicated in the Contract Documents, according to Section 054000, Cold Formed Metal Framing. Cold metal framing of 3-5/8" with minimum base thickness of .0538" and 1-5/8" flanges with vertical deflection clips and drift clips.
 2. Unit of Measurement: Linear footage of cold metal framing as indicated on itemized invoice of supplier and verified by Architect.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."
- E. Unit Price No. 5: Regrouting existing deteriorated masonry.
1. Description: Raking existing loose and deteriorated mortar between existing masonry units within exterior building walls and masonry piers; prepare and install mortar material that matches existing in material texture, color and tooling.
 2. Unit of Measure: Square footage of area based on materials and labor.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."
- F. Unit Price No. 6: Replacement of Gypsum Drywall.
1. Description: Include replacing deteriorate or damaged gypsum drywall, inclusive of corner and J beads, taping, sanding, providing a level 1 finish.
 2. Unit of Measure: Square footage of area based on materials and labor.
 3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."
- G. Unit Price No. 7: Miscellaneous and structural steel.
1. Description: Miscellaneous lintels and other supports not otherwise indicated in the Contract Documents, according to Section 051200 "Structural Steel Framing" and Section 055000 "Metal Fabrications."
 2. Unit of Measurement: Cost in place of pounds (kilograms) of fabricated steel as indicated on itemized invoice of steel supplier and verified by Architect.
- H. Unit Price No. 8: Lightning Protection Conductors, Raceway and all Accessories.
1. Description: Include replacing deteriorate conductors, raceway and all accessories for each of the 11 conductors. Specification Section 109000 Lightning Protection
 2. Unit of Measurement:
 - a. Provide a unit price for each of the separate 11 conductors, raceways and accessories.
 - b. Linear footage of conductor, raceway and accessories.

END OF SECTION 012200

SECTION 072713 - SHEET AIR BARRIERS

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. Section includes self-adhering, vapor-permeable, sheet air barriers.
- B. Related Requirements:
 - 1. Section 061500 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.
 - 2. Section 076200 "Sheet Metal Flashing and Trim."
 - 3. Section 079200 "Joint Sealants."

1.3 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. The building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of the conditioned space. An air barrier shall also be provided for interior partitions between conditioned space and space designed to

maintain temperature or humidity levels which differ from those in the conditioned space by more than 50% of the difference between the conditioned space and design ambient conditions. The air barrier shall have the following characteristics:

1. It must be continuous, with all joints made airtight.
2. It shall have an air permeability not to exceed 0.004 cfm/ sq. ft. under a pressure differential of 0.3 in. water. (1.57 psf) (equal to 0.021/ sq. m @ 75 Pa), when tested in accordance with ASTM E2178.
3. It shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure. It shall not displace adjacent materials under full load.
4. It shall be durable or maintainable.
5. The air barrier shall be joined in an airtight and flexible manner to the air barrier material of adjacent systems, allowing for the relative movement of systems due to thermal and moisture variations and creep. Connection shall be made between:
 - a. Foundation and walls.
 - b. Walls and windows or doors.
 - c. Different wall systems.
 - d. Wall and roof.
 - e. Wall and roof over unconditioned space.
 - f. Walls, floor and roof across construction, control and expansion joints.
 - g. Walls, floors and roof to utility, pipe and duct penetrations.
6. All penetrations of the air barrier and paths of air infiltration/exfiltration shall be made airtight.

1.5 REFERENCES

- A. The following standards and publications are applicable to the extent reference in the text. The most recent version of these standards is implied unless otherwise stated.
- B. American Society for Testing and Materials (ASTM)
 1. ASTM C920 Specifications for Elastomeric Joint Sealants
 2. ASTM D412 Standard Test Methods for Rubber Properties in Tension
 3. ASTM D570 Test Method for Water Absorption of Plastics
 4. ASTM D903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
 5. ASTM D1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
 6. ASTM D1876 Test Method for Peel Resistance of Adhesives
 7. ASTM D1938 Test Method for Tear Propagation Resistance of Plastic Film and Sheeting
 8. ASTM D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

9. ASTM D4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
10. ASTM D4541 Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
11. ASTM D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics
12. ASTM E96 Test Methods for Water Vapor Transmission of Materials
13. ASTM E154 Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
14. ASTM E1186 Practice for Air Leakage Site Detection in Building Envelopes and Air Retarder Systems
15. ASTM E2178 Standard Test Method for Air Permeance of Building Materials
16. ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
17. AATCC-127 Water Resistance: Hydrostatic Pressure Test (American Association of Textile Chemists and Colorists)

1.6 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier assemblies.
 1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 2. Include details of interfaces with other materials that form part of air barrier.

1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer. Include list of ABAA-certified installers and supervisors employed by the Installer, who work on Project.

- B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with air barrier.
- C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency, for air barriers, submit certified test report showing compliance with requirements specified for ASTM E2178.
- D. Warranty: Submit a sample warranty identifying the terms and conditions stated in Article 1.12.

1.9 QUALITY ASSURANCE

- A. Manufacturer: Air barrier systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing and air barriers. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of project of similar design and complexity completed within the past five years.
- B. Source Limitations: Obtain primary air-barrier material and through wall flashing through one source from a single manufacturer.
- C. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - 1. Installer shall be licensed by ABAA according to ABAA's Quality Assurance Program and shall employ ABAA-certified installers and supervisors on Project.

1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: HACP will engage a qualified testing agency to perform preconstruction testing on field mockups.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect stored materials from damage from direct sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
- C. Sequence deliveries to avoid delays, but minimize on-site storage.

1.12 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air-barrier manufacturer.
 - 1. Protect substrates from environmental conditions that affect air-barrier performance.
 - 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1.13 WARRANTY

- A. Material Warranty: Manufacturer's standard form in which manufacturer agrees to replace self-adhered air barrier membrane materials that fail within specified warranty period when installed and used in strict conformance with written manufacturer's instructions.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to maintain air permeance rating not exceed 0.004 cfm/ sq. ft. (0.02 L/s/sq. m.) when tested per ASTM E2178, within specified warranty period.
 - b. Failure to maintain a vapor permeance rating greater than 15 perms when tested in accordance with ASTM E96, Method B.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
- B. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.
- C. Low-Emitting Materials: Air barriers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-retarding air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of

accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa), when tested according to ASTM E 2357.

2.3 SELF-ADHERING SHEET AIR BARRIER

- A. Basis-of-Design Product: Provide Perm-A-Barrier **VPS** Wall Membrane by Grace Construction Products or equal. Approval by Architect and HACP required.
- B. Modified Bituminous Sheet: 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 36 mils (0.9 mm) of rubberized asphalt laminated to a 4-mil- (0.1-mm-) thick, cross-laminated polyethylene film with release liner on adhesive side and formulated for application with primer that complies with VOC limits of authorities having jurisdiction.
 - 1. Performance:
 - a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E 2178.
 - b. Water Vapor Permeance: ASTM E96; Not less than 15 perms.
 - c. Water Resistance: AATCC-127: No less than 5 hours at 55 cm/ 21 inch.
 - d. Breaking Force: 55 lbf MD, and 44 lbf CD per ASTM D5034.
 - e. Pull Adhesion: ASTM D4541: Min. 15 psi to primed glass faced gypsum sheathing, min. 12 psi to primed CMU.
 - f. Peel Adhesion: ASTM D903: Min. 5 pli to primed glass faced gypsum sheathing, min. 4 pli to sheet air barrier, min. 2.5 pli to primed CMU.
 - g. UV Exposure Limit: Not more than 150 calendar days.
 - h. Water Penetration Resistance Around Nails: ASTM D1970 Modified: Pass.

2.4 ACCESSORY MATERIALS

- A. General: Accessory materials recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier membrane.
- B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.
- C. Counterflashing Strip: Modified bituminous 40-mil- (1.0-mm-) thick, self-adhering sheet consisting of 32 mils (0.8 mm) of rubberized asphalt laminated to an 8-mil- (0.2-mm-) thick, cross-laminated polyethylene film with release liner backing.
- D. Termination Mastic: Air-barrier manufacturer's standard cold fluid-applied elastomeric liquid; trowel grade.

- E. Substrate-Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- F. Adhesive and Tape: Air-barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.
- G. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 - 2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
 - 3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.

1. Install modified bituminous strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).
- G. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- H. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.3 INSTALLATION

- A. General: Install modified bituminous sheets and accessory materials according to air-barrier manufacturer's written instructions and according to recommendations in ASTM D 6135.
 1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, modified bituminous air-barrier sheet produced for low-temperature application. Do not install low-temperature sheet if ambient or substrate temperature is higher than 60 deg F (16 deg C).
- B. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
 1. Install modified bituminous strips centered over vertical inside corners. Install 3/4-inch (19-mm) fillets of termination mastic on horizontal inside corners.
- C. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations with termination mastic and according to ASTM D 6135.
- D. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier sheet on same day. Reprime areas exposed for more than 24 hours.
 1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- E. Apply and firmly adhere modified bituminous sheets horizontally over area to receive air barrier. Accurately align sheets and maintain uniform 2-1/2-inch- (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure airtight installation.
 1. Apply sheets in a shingled manner to shed water without interception by any exposed sheet edges.
 2. Roll sheets firmly to enhance adhesion to substrate.
- F. Apply continuous modified bituminous sheets over modified bituminous strips bridging substrate cracks, construction, and contraction joints.

- G. CMU: Install air-barrier sheet horizontally against the CMU beginning at base of wall. Align top edge of air-barrier sheet immediately below protruding masonry ties or joint reinforcement or ties, and firmly adhere in place.
1. Overlap horizontally adjacent sheets a minimum of 2 inches (50 mm) and roll seams.
 2. Apply overlapping sheets with bottom edge slit to fit around masonry reinforcing or ties. Roll firmly into place.
 3. Seal around masonry reinforcing or ties and penetrations with termination mastic.
 4. Continue the membrane into all openings in the wall, such as doors and windows, and terminate at points to maintain an airtight barrier that is not visible from interior.
- H. Seal top of through-wall flashings to air-barrier sheet with an additional 6-inch- (150-mm-) wide, modified bituminous strip.
- I. Seal exposed edges of sheet at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Install air-barrier sheet and accessory materials to form a seal with adjacent construction and to maintain a continuous air barrier.
1. Coordinate air-barrier installation with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 2. Install modified bituminous strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate.
- K. Connect and seal exterior wall air-barrier membrane continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- L. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply modified bituminous transition strip so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate. Maintain 3 inches (75 mm) of full contact over firm bearing to perimeter frames with not less than 1 inch (25 mm) of full contact.
1. Modified Bituminous Transition Strip: Roll firmly to enhance adhesion.
 2. Elastomeric Flashing Sheet: Apply adhesive to wall, frame, and flashing sheet. Install flashing sheet and termination bars, fastened at 6 inches (150 mm) o.c. Apply lap sealant over exposed edges and on cavity side of flashing sheet.
 3. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and membrane.
- M. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air-barrier membrane with foam sealant.

- N. At end of each working day, seal top edge of air-barrier material to substrate with termination mastic.
- O. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- P. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with air-barrier sheet extending 6 inches (150 mm) beyond repaired areas in all directions.
- Q. Do not cover air barrier until it has been tested and inspected by HACP's testing agency.
- R. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: HACP will engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Continuous structural support of air-barrier system has been provided.
 - 3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 4. Site conditions for application temperature and dryness of substrates have been maintained.
 - 5. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 6. Surfaces have been primed.
 - 7. Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges), with no fishmouths.
 - 8. Termination mastic has been applied on cut edges.
 - 9. Air barrier has been firmly adhered to substrate.
 - 10. Compatible materials have been used.
 - 11. Transitions at changes in direction and structural support at gaps have been provided.
 - 12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 - 13. All penetrations have been sealed.
- C. Tests: As determined by HACP's testing agency from among the following tests:

1. Qualitative Air-Leakage Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186, smoke pencil with pressurization or depressurization.
- D. Air barriers will be considered defective if they do not pass tests and inspections.
 1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
 1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than 30 days, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed membrane according to air-barrier manufacturer's written instructions.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed Work, using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 072713

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

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 QUALIFICATION

- A. General Contractor is to assume that all the existing roofs, except the entrance canopy roof, have 4" insulation overall with 1/8" per foot tapered insulation, a cover board and EPDM roofing membrane on top of existing concrete plank roof. New roofing is to be minimum overall insulation R-30, which equals 5" plus tapered insulation of 1/4" per foot and 1/2" thick cover board and EPDM roofing system. General Contractor is responsible to furnish and install, as required per GC's new roof design, all extensions of all existing roof exhaust fan curbs, so that the minimum height is 8" from the top of the curb to the top of the finished EPDM roofing material; all extensions of all existing roof vent pipes, so that the minimum finished height requirement of 12" clear from the top of the vent to the top of the EPDM roofing; and all other miscellaneous rooftop penetration extensions required by all applicable codes. Refer to drawings and specifications for additional information.
- B. General Contractor is to assume that the Entrance Canopy Roof on the First Floor, has fully adhered EPDM roof, on tapered insulation to drain over 3/4" exterior grade plywood deck substrate on existing steel structure. New roofing is to be EPDM roofing and accessories, tapered insulation at 1/4" per foot slope over existing and new infill 3/4" exterior grade plywood deck substrate. Refer to drawings and specifications for additional information.

1.3 SUMMARY

- A. Section Includes:
 - 1. Thermoset membrane roofing.
 - 2. Vapor retarder.
 - 3. Membrane flashings.
 - 4. Roof insulation.
 - 5. Roof accessories.
 - 6. **Walkways**
 - 7. **Roof Curb Extensions**

8. Roof Vent Extensions

B. Related Sections:

1. Section 024120 "Selective Demolition Site Observations" for existing conditions to be included in scope of work.
2. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
3. Section 070150.19 "Preparation for Re-Roofing" ~~recover board beneath new membrane roofing.~~
4. Section 072100 "Thermal Insulation" for insulation ~~beneath the roof deck.~~ **between the roof canopy and the building entrance.**
5. **Section 074216 "insulated-core Metal Wall Panels" for coping at existing canopy.**
6. Section 076200 "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
7. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
8. **Section 012200 "Unit Prices" for unit pricing for extension of existing vents through roof and exhaust fan curbs.**

1.4 REFERENCES

- A. American Society of Civil Engineers (ASCE) – ASCE 7 – Minimum Design Loads for Buildings and Other Structures, Current Revision.
- B. ANSI/SPRI WD-1 "Wind Design Standard for Roofing Assemblies".
- C. ASTM International (ASTM):
 1. ASTM C 1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 2. ASTM D41 – Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 3. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
 4. ASTM D 624 – Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 5. ASTM D 4637 – Standard Specification for EPDM Sheet Used in Singly-Ply Roof Membrane.
 6. **ASTM International (ASTM):**
 - a. **ASTM C 920 - Specification for Elastomeric Joint Sealants.**
 - b. **ASTM D 2564 – Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.**

- c. **ASTM D 2665 – Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.**
 - d. **ASTM F 656 – Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.**
 - 7. **National Roofing Contractors Association (NRCA):**
 - a. **NRCA Roofing Manual, Latest Edition**
 - 8. **NSF International (NSF):**
 - a. **NSF/ANSI 14 - Plastics Piping Systems Components and Related Materials.**
 - D. **Factory Manual (FM Global):**
 - 1. **Approval Guide.**
 - a. **Factory Mutual Standard 4470 – Approval Standard for Class 1 Roof Covers.**
 - b. **Loss Prevention Data Sheets 1-28, 1-29.**
 - E. **International Code Council (ICC):**
 - 1. **International Building Code (IBC).**
 - F. **National Roofing Contractors Association (NRCA) – Low Slope Roofing and Waterproofing Manual, Current Edition.**
 - G. **Underwriters Laboratories (UL):**
 - 1. **TGFU R1306 – "Roofing Systems and Materials Guide".**
 - 2. **UL-790 – Standard Test Method for Fire Tests of Roof Coverings.**
 - H. **ANSI/ASHRAE/IESNA Standard 90.1 (2007): Energy Standard for Buildings Except Low-Rise Residential Buildings.**
- 1.5 DEFINITIONS
- A. **Roofing Terminology:** See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.
- 1.6 PERFORMANCE REQUIREMENTS
- A. **General Performance:** Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressure calculated according to ASCE/SEI 7.
- D. Fire Resistance Performance: Roof system will achieve a UL Class A rating when tested in accordance with UL-790.
- E. Thermal Performance: Roof system will achieve a minimum R value not less than R30.
- F. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.
- G. Building Codes: Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. **Submit manufacturer's sample of vent pipe extension.**
- B. Roof plan showing
- C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes, and **crickets at penetrations.**
 - 3. Roof plan showing orientation of **existing concrete plank** roof deck and orientation of membrane roofing and fastening spacings and patterns for mechanically fastened membrane roofing.
 - 4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
 - 5. **Roof plan showing heights of tapered insulation above existing concrete plank deck at parapets, at each exhaust fan curb/roof curb and vent through roof (VTR), at each existing fan curb and vent through roof (VTR), at all miscellaneous roof penetrations.**
 - 6. **Extensions of all roof curbs, roof vent/vent through roof and miscellaneous roof top penetrations.**

1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and manufacturer.
- B. Manufacturer Certificate: Signed by roofing manufacturer certifying that membrane roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of complying with performance requirements.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- D. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.
- E. Field quality-control reports.
- F. Warranties: Sample of special warranties.

1.9 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For membrane roofing system to include in maintenance manuals.

1.10 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products specified in this section will be supplied by a single manufacturer with a minimum of twenty (20) years experience.
- B. Installer Qualifications:
 - 1. All products listed in this section are to be installed by a single installer approved by system manufacturer.
 - 2. Installer must be capable of extending the Manufacturer's Labor and Materials guarantee.
 - 3. Installer must be capable of extending the Manufacturer's No Dollar Limit guarantee.
- C. Source Limitations: Obtain components including roof insulation fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

- E. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
 - 1. ~~Retain subparagraphs below if required. If retaining, revise to include Project-specific requirements. Insert additional requirements to suit Project.~~
 - 2. Meet with HACP, Architect, HACP's insurer if applicable, 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.
 - 3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 5. Review requirements for deck substrate conditions and finishes, including flatness and fastening.
 - 6. Review structural loading limitations of roof deck during and after roofing.
 - 7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 - 8. Review governing regulations and requirements for insurance and certificates if applicable.
 - 9. Review temporary protection requirements for roofing system during and after installation.
 - 10. Review roof observation and repair procedures after roofing installation.
- G. Preinstallation Roofing Conference: Conduct conference at Project site.
 - 1. Meet with Construction Manager/HACP's Representative, Architect, and HACP's insurer if applicable, 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 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 base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.11 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, approval or listing agency markings, 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.
- E. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.12 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.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- C. Protect roofing materials from construction traffic. Use:
 1. $\frac{3}{4}$ inch thick plywood, smooth and free of fasteners and splinters.
- D. Roofing to be weathertight at the end of each work day.

1.13 WARRANTY

- A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of membrane roofing system.
 - 2. Warranty Period: 25 years from date of Substantial Completion.
- B. Special Project Warranty: 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 membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE ROOFING

- A. Basis-of-Design Product: Provide Sure-Seal Fully Adhered Roofing System by Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required.
- B. EPDM: ASTM D 4637, Type I, cured, non-reinforced, uniform, flexible EPDM sheet w/FAT (Factory Applied Tape).
 - 1. Thickness: 60 mils (1.5 mm), nominal.
 - 2. Exposed Face Color: Black.
 - 3. Performance:
 - a. Tensile Strength: 1550 psi (10.7 MPa) minimum.
 - b. Tear Resistance: 200 lbf/in (35 kN/m) minimum.
 - c. Elongation: 480 percent.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Gypsum Board and Panel Adhesives: 50 g/L.
 - c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Single-Ply Roof Membrane Adhesives: 250 g/L.
 - f. Single-Ply Roof Membrane Sealants: 450 g/L.
 - g. Nonmembrane Roof Sealants: 300 g/L.
 - h. Sealant Primers for Nonporous Substrates: 250 g/L.
 - i. Sealant Primers for Porous Substrates: 775 g/L.
 - j. Other Adhesives and Sealants: 250 g/L.
 3. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Basis-of-Design Product: Provide accessories per Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required.
 - C. Pressure-Sensitive Pipe Seals: Manufacturer's standard, with factory applied tape on deck flange available for use with roofing system. Coordinate with roofing color.
 - D. Pourable Sealer Pocket: Manufacturer's standard, pre-fabricated, consisting of 2 inch (51mm) wide plastic support strip with factory applied, adhesive backed uncured Flashing.
 - E. Pressure-Sensitive Overlayment Strip: Nominal 40-mil black, semi-cured EPDM membrane laminated to a nominal 35-mil factory applied tape for flashing gravel stops, metal edgings and seam fastening plates.
 - F. Pressure-Sensitive "T" Joint Covers: Manufacturer's standard, Factory cut uncured 60-mil thick EPDM flashing laminated to a nominal 35-mil factory applied tape, used to overlay field splice intersections and to cover field splices at angle changes.
 - G. Pressure-Sensitive Flashing: Manufacturer's standard, 60-mil thick uncured EPDM flashing laminated to a 35-mil factory applied tape used in conjunction with Primer as an option to Flashing.
 - H. Fully Pressure Sensitive Curb Flashing: Manufacturer's standard, 60-mil thick cured EPDM membrane laminated to a 35-mil 6 inch (152mm) and 12 inch (305mm) adhesive strip.
 - I. Bonding Adhesive: Manufacturer's standard, high strength, solvent-based, low VOC contact adhesive that allows bonding of EPDM membranes to various porous and non-porous substrates.

- J. Seaming Material: Manufacturer's standard, 3 inch (76mm) or 6 inch (152mm) wide by 100 foot (30.5 m) long splice tape used for splicing adjoining sections of EPDM membrane.
- K. Lap Sealant: Manufacturer's standard, heavy-bodied material used to seal exposed edges of a membrane splice, colored to match membrane roofing.
- L. Water Cutoff Mastic: Manufacturer's standard one-component, low viscosity, self wetting, butyl blend mastic used as a compression sealing agent between EPDM membranes and applicable substrates.
- M. Contact Adhesive: Manufacturer's standard, multi-purpose contact adhesive recommended for enhancing bond of self-adhering sheet products and for bonding board insulation to various substrates.
- N. Expansion Anchor: Manufacturer's standard, 1 ¼" inch (32mm) long expansion anchor with threaded drive pin used for fastening termination bar or fastening plates to block walls.
- O. Metal Termination Bars: Manufacturer's standard, 1 inch (13mm) wide, 0.098 inch (2.5mm) thick extruded aluminum bar pre-punched 6 inches (152mm) on center with sealant ledge to support Lap Sealant.

2.3 VAPOR RETARDER

- A. Basis-of-Design Product: Provide 725-TR by Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required. Compatible with selected membrane roofing system. Use appropriate primers on roof deck prior to application.
- B. Laminated Sheet: A 40-mil thick composite consisting of 32-mil self-adhering rubberized asphalt membrane laminated to an 8-mil spun bonded polyester fabric which has a permeability rating (ASTM E-96) of 0.05 perms and is fully compatible with urethane based insulation adhesive or approved alternative manufacturer's equal product.

2.4 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- B. Basis-of-Design Product: Provide Polyisocyanurate HP-H by Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required. Compatible with selected membrane roofing system.
- C. Polyisocyanurate Board Insulation: ASTM C 1289, rigid board with fiber reinforced facers on both sides.

- a. Compressive Strength: 20 psi (138 kPa).
 - b. Density: 2 lb per cubic foot (24 kg/cu m) minimum.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.5 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Basis-of-Design Product: Provide accessories per Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required.
- C. Full-Spread Applied Insulation **and Cover Board** Adhesive: Insulation manufacturer's recommended spray or extruded-applied, two-component polyurethane, low-rise expanding foam adhesive formulated to attach roof insulation **and cover board** to substrate or to another insulation layer.
- D. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant and silicone treated gypsum panel with embedded fiberglass facer on both sides and pre-primed on one side, 1/2 inch (13 mm) thick.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Georgia-Pacific Corporation; Dens Deck.
- E. Cover Board alternate as accepted by roofing system manufacturer as compatible with warranty: ASTM C 1278/C 1278M, cellulosic-fiber reinforced, water-resistant gypsum substrate, 1/2 inch (13 mm) thick.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. USG Corporation; Securock.

2.6 ROOF ACCESSORIES

- A. General: Furnish roof accessories recommended by manufacturer for intended use and compatibility with membrane roofing.
- B. Basis-of-Design Product: Provide accessories per Carlisle Syntec Incorporated or equal. Approval by Architect and HACP required.
 - 1. Drain Strainer.
 - 2. Sumped Metal Clamping Ring and Fastener.
 - 3. Pre-Punched Metal Flange.
 - 4. Strainer Securement Brackets.

5. Mechanical Back Flow Cone.

2.7 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick, and acceptable to membrane roofing system manufacturer.

2.8 ROOF CURB EXTENSIONS

- A. Existing Exhaust Fan Curb Extensions: Contractor to verify each existing curb installed at each existing exhaust fan. Roof curb extension to be compatible in size and material with existing roof curb. Final curb extension to be capable of supporting superimposed live and dead loads, including equipment loads.

2.9 ROOF VENT PIPE EXTENSIONS

- A. Roof Vent Pipe Extensions (VTR): Contractor to verify each PVC vent on the roof. Extension to be compatible in size and material with existing vents.
- B. Product Manufacturer: OMG, Inc., 153 Bowles Road, Agawam, Massachusetts 01001. 800-633-3800. Fax 413-821-0417. www.olyfast.com. info@olyfast.com
- C. Product: OMG Tubos or approved equal. Has to be acceptable to Allegheny County Health Department
1. Roof Vent Pipe Extension: Solid-wall PVC fitting consisting of pipe and splice sleeve inserts, configured for insertion and sealing to existing plumbing vent piping, sized to fit inside diameter of plumbing vent piping, enabling extension of piping to field-determined height.
- Material: Solid-wall PVC, white.
 - Splice Sleeve Insert Size to be determined.
 - Overall length to be determined.
 - Sealant: Single-Component, Nonsag, Urethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Use NT, and acceptable to roofing membrane manufacturer and Allegheny County Health Department.

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 curbs are set and braced and that roof drain bodies are securely clamped in place.
 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
- 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.
- B. 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. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- E. Do not commence work until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment.
- F. A vapor retarder / temporary roof may be applied to protect the inside of the structure prior to the roof system installation.

3.3 VAPOR-RETARDER INSTALLATION

- A. Laminate Sheet: Install laminate-sheet vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches (50 mm) and 6 inches (150 mm), respectively. Bond vapor retarder to substrate as follows:
 1. Apply adhesive at rate recommended by vapor-retarder manufacturer. Seal laps with adhesive.
 2. ~~Apply ribbons of hot roofing asphalt at spacing, temperature, and rate recommended by vapor-retarder manufacturer. Seal laps with hot roofing asphalt.~~
 3. Provide intermittent supports where retarder edges cross decking voids.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.4 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two 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.
 - 1. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. 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.
- ~~G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:~~
 - ~~1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m) and allow primer to dry.~~
 - ~~2. Set each layer of insulation in a solid mopping of hot roofing asphalt, applied within plus or minus 25 deg F (14 deg C) of equiviscous temperature.~~
 - ~~3. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.~~
 - ~~4. Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.~~
- H. Do not install wet, damaged or warped insulation boards.
- I. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or irregular surface. Avoid breaking or crushing of the insulation at the corners.

- J. Securely attach insulation to the roof deck for Adhered Roofing Systems using the proper adhesive bead pattern as determined by system manufacturer. Attachment must have been successfully tested to meet or exceed the calculated uplift pressure required by the International Building Code (ASCE-7) or ANSI/SPRI WD-1.
- K. Do not install any more insulation than will be completely waterproofed each day.
- L. Enhance the perimeter and corner areas in accordance with the International Building Code (ASCE-7) or ANSI/SPRI WD-1.
- M. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together and **adhere to insulation**.
 - 1. **Adhere** cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.5 FULLY ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax approximately ½ hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.
- B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.
- E. When loading materials onto the roof, membrane roofing manufacturer's technical personnel must comply with the requirements of HACP to prevent overloading and possible disturbance to the building structure.
- F. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
- G. Fold back the unbounded half of the membrane sheet and repeat the bonding procedure.
- H. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

- I. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.
- J. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- K. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.
- L. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- M. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

3.6 BASE 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 bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.7 ROOF ACCESSORIES INSTALLATION

- A. Roof Accessories: Install products in locations indicated and adhere to substrates according to membrane roofing system manufacturer's written instructions.

3.8 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 ROOF CURB EXTENSION INSTALLATION

- A. Roof Curb Extension: Install roof curb extensions in locations of all existing exhaust fan locations as indicated on the roof plan. Secure extensions as required to support required equipment and to provide a secure and solid curb for equipment. Finished extension dimension to be determined at each curb. Extend each existing roof exhaust fan curb as required, so that the minimum height is 8" from the top of the curb to the top of the finished EPDM roofing material.

3.10 ROOF VENT PIPE EXTENSION INSTALLATION

- A. Examine each plumbing vent piping location to determine required plumbing vent pipe extensions based upon minimum finished height requirement of 12" clear from the top of the vent to the top of the EPDM roofing. Indicate plumbing vent pipe extensions on shop drawings.
- B. Preparation: Clean plumbing vent piping to ensure that joint surfaces are clean, dry, and free from contamination including dirt, oils, grease, tar, wax, rust, and other substances that may inhibit adhesive or sealant performance.
- C. Installation:
 - 1. Insert end of plumbing vent pipe extension into existing plumbing vent piping.
 - 2. Verify circumference of existing plumbing vent piping and plumbing vent pipe extension is appropriate to achieve secure, rigid installation.
 - 3. Mark plumbing vent pipe extension at required height above finished roof surface level, and cut to required length.
 - 4. Apply adhesive or sealant to plumbing vent piping as appropriate to existing pipe material and plumbing vent pipe extension, and mate plumbing vent pipe extension to existing piping. Apply adequate adhesive or sealant to achieve secure, rigid installation.
 - 5. Flashing: Boot flashing
- D. Protection: Repair or replace defective work, including loose plumbing vent extensions, or unsecured flashings or flashings that are not weather-tight

3.11 MISCELLANEOUS ROOF TOP PENETRATIONS

- A. General Contractor is responsible to furnish and install, as required per GC's new roof design, all extensions of other miscellaneous penetrations to comply with all applicable code requirements.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing agency to perform inspections.

- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.13 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 HACP.
- 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.

3.14 ROOFING INSTALLER'S WARRANTY

- A. WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
 - 1. Owner: Housing Authority of the City of Pittsburgh.
 - 2. Address: 100 Ross Street, 2nd Floor, Pittsburgh, PA 15219.
 - 3. Building Name/Type: Caliguiri Plaza.
 - 4. Address: 803 East Warrington Avenue, Pittsburgh, PA 15219.
 - 5. Area of Work: Entire existing roof surface.
 - 6. Acceptance Date: <Insert date>.
 - 7. Warranty Period: <Insert time>.
 - 8. Expiration Date: <Insert date>.
- B. AND WHEREAS Roofing Installer has contracted (either directly with HACP or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
- C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
 - a. Lightning;
 - b. Peak gust wind speed exceeding 72 mph (m/sec);
 - c. Fire;
 - d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
 - e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
 - f. Vapor condensation on bottom of roofing; and
 - g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by HACP.
2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by HACP or by another responsible party so designated.
3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
4. During Warranty Period, if HACP allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If HACP engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified HACP in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. HACP shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off HACP from other remedies and resources lawfully available to HACP in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for

CALIGUIRI PLAZA
WINDOW AND FAÇADE REPLACEMENT PA-1-41
HOUSING AUTHORITY OF THE CITY OF PITTSBURGH
R3A PROJECT NO. 14021

EPDM ROOFING
075323
HACP ADDENDUM NO. 5
JULY 28, 2015

performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with HACP or a subcontract with HACP's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this <Insert day> day of <Insert month>, <Insert year>.

1. Authorized Signature: <Insert signature>.
2. Name: <Insert name>.
3. Title: <Insert title>.

END OF SECTION 075323

ATTACHMENT C

All potential bidders must register as a vendor in the Business Opportunities Section of HACP's website. The website address is below

<http://www.hacp.org/business-opportunities/vendor>

Please contact Corinne Lisefski at 412-456-5000 x8546 or Corinne.Lisefski@hacp.org if you have questions or problems registering as a vendor on the website.