ADDENDUM NO: 01

PROJECT: Ball State University North Residential Neighborhood Phase #2

PROJECT NO: 17001       DATE: February 13th, 2019       BY: Jeff Olson

This Addendum is issued in accordance with the provisions of “The General Conditions of the Contract for Construction,” Article 1, “Contract Documents” and becomes a part of the Contract Documents as provided therein. This Addendum includes:

GENERAL NOTIFICATIONS

A. The Bid Opening day has been changed from Thursday, March 7th, 2019 to the updated date of Tuesday, March 5th, 2019.

PART 1 – BIDDING AND CONTRACT DOCUMENTS:

1.01 DOCUMENT 00 01 15 – LIST OF DRAWING SHEETS

A. Remove and replace Document 00 01 15 “List of Drawing Sheets”.

PART 2 – SPECIFICATIONS:

2.01 SECTION 04 43 13 – ANCHORED MASONRY VENEER

A. Revise Paragraph 3.03.G. as follows:

   “G. Provide sealant joints of widths matching mortar joint width at all skyward facing joints.”

2.02 SECTION 05 50 00 – METAL FABRICATIONS

A. Insert Paragraph 2.09.C. as follows:

   “C. Aluminum Ladders:

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   \[a.\] Basis of Design: O’Keeffe’s Inc., 503 Access Ladder

   \[b.\] Precision Ladders, LLC.

   \[c.\] Thompson Fabricating, LLC.

   2. Source Limitations: Obtain aluminum ladders from single source from single manufacturer.

   3. Space siderails 18 inches (457 mm) apart unless otherwise indicated.

   4. Siderails: Continuous extruded-aluminum channels or tubes, not less than 2-1/2 inches (64 mm) deep, 3/4 inch (19 mm) wide, and 1/8 inch (3.2 mm) thick.

   5. Rungs: Extruded-aluminum tubes, not less than 3/4 inch (19 mm) deep and not less than 1/8 inch (3.2 mm) thick, with ribbed tread surfaces.

   6. Fit rungs in centerline of siderails; fasten by welding or with stainless steel fasteners or brackets and aluminum rivets.

   7. Provide platforms as indicated fabricated from extruded-aluminum plank grating, supported by extruded-aluminum framing. Limit openings in gratings to no more than 1/2 inch (12 mm) in least dimension.

   8. Support each ladder at top and bottom and not more than 60 inches (1500 mm) o.c. with welded or bolted aluminum brackets.”
2.03 SECTION 05 73 00 – DECORATIVE METAL RAILINGS

A. Revise Paragraph 2.06.A. as follows:
   "A. Wood Rails: Clear, straight-grained hardwood rails secured to recessed metal subrail.

B. Revise Item 2.06.A.4. as follows:
   "4. Profile: Round, 1-1/2 inch diameter."

2.04 SECTION 07 53 23 – POLYVINYL-CHLORIDE (PVC) ROOFING

A. Remove Section 07 54 19 “Polyvinyl-Chloride (PVC) Roofing” and replace with Section 07 53 23 “Polyvinyl-Chloride (PVC) Roofing”.

2.05 SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM

A. Insert Paragraph 2.07.B. as follows:
   "B. Hanging Gutters:
   9. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
   10. Fabricate in minimum 96-inch- (2400-mm-) long sections.
   11. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
   12. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
   13. Gutter Profile: As indicated.
   15. Gutters: Fabricate from the following materials:
       a. Aluminum: 0.050 inch (1.27 mm) thick."

B. Insert Paragraph 3.04.F. as follows:
   "F. Hanging Gutters:
   1. Join sections with riveted and soldered joints.
   2. Provide for thermal expansion.
   3. Attach gutters at eave or fascia to firmly anchor them in position.
   4. Provide end closures and seal watertight with sealant.
   5. Slope to downspouts.
   6. Fasten gutter spacers to front and back of gutter.
   7. Anchor and loosely lock back edge of gutter to continuous cleat.
   8. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) apart. Install expansion-joint caps.”

2.06 SECTION 09 30 00 – TILING

A. Insert item 1.02.A.8 as follows
   "8. Metal stair nosing."

B. Insert item 2.07.E as follows
   "E. Two-Component High Performance Polyurethane Adhesive: Polyurethane base and special hardener.
   1. Basis of Design: Mapei, Keralastic"
2. Remove all rust on iron surfaces by sandblasting
3. Application: Tile on steel stair risers

C. Insert Item 2.10.B.2.e. as follows:
   "e. Stair nosing: Schluter, Trep-E or EK"

2.07 SECTION 09 96 53 – ELASTOMERIC COATINGS

A. Insert item 3.06.A.2.a. as follows:
   "a. Sherwin Williams, Conflex XL Smooth High Build Acrylic Coating."

B. Replace Item 3.06.B.1 as follows:
   "1. Surface Preparation: Concrete unit masonry surfacer."

C. Insert Item 3.06.B.2.a. as follows:
   "a. Sherwin Williams, Conflex XL Smooth High Build Acrylic Coating."

2.08 SECTION 11 13 00 – LOADING DOCK EQUIPMENT

A. Remove and replace with new Section 11 13 00 "Loading Dock Equipment".

PART 3 – DRAWINGS:

3.01 C102 – SITE UTILITY PLAN
A. Added Natural gas line routing from building connection to fire pit.

3.02 C804 – GENERAL DETAILS
A. Revised detail 11: Water Quality structure size changed to F4-HC

3.03 LA502 – SITE DETAILS
A. Replace sheet in its entirety

3.04 S195 – FOUNDATION AND BASEMENT SLAB ON GRADE PLAN – UNITS A & B
A. At Elevator Shaft add (2) EP4 embed plates to support hoistway separator beam.

3.05 S196 – FOUNDATION AND BASEMENT SLAB ON GRADE PLAN – UNIT C
A. Update base plate and anchor rod call-out at grid CA-CX to BP3/AR3.

3.06 S197 – FOUNDATION PLAN – UNITS D & E
A. Update top of footing elevation TF at Stair C mat foundation and exterior stair wing wall to -5’-4’.

3.07 S201 – FIRST FLOOR SLAB ON GRADE AND FRAMING PLAN – UNITS A & B
A. Replace with attached updated sheet.

3.08 S203 – FIRST FLOOR SLAB ON GRADE PLAN AND FRAMING PLAN – UNITS D & E
A. Replace with attached updated sheet.

3.09 S205 – SECOND FLOOR FRAMING PLAN – UNITS A & B
A. For beam on north side of Stair G update top of steel elevation to 13'-10-1/2".
B. For beam on east side of Stair G update top of steel elevation to 13'-10-1/2".

3.10 S206 – SECOND FLOOR FRAMING PLAN – UNIT C
A. Replace with attached updated sheet.

3.11 S207 – SECOND FLOOR FRAMING PLAN – UNITS D & E
A. For beam on south side of Stair B update top of steel elevation to 13'-10-1/2".
B. For beam on west side of Stair B update top of steel elevation to 13'-10-1/2".

3.12 S210 – THIRD FLOOR FRAMING PLAN – UNITS A & B
A. For beam on north side of Stair G update size and top of steel elevation to HSS12x6x1/4 (24'-6-1/2").
B. For beam on east side of Stair G update size and top of steel elevation to HSS12x6x1/4 (24'-6-1/2").

3.13 S211 – ROOF FRAMING PLAN – UNIT C
A. Replace with attached updated sheet.

3.14 S212 – THIRD FLOOR FRAMING PLAN – UNITS D & E
A. For beam on south side of Stair B update size and top of steel elevation to HSS12x6x1/4 (24'-6-1/2").
B. For beam on west side of Stair B update size and top of steel elevation to HSS12x6x1/4 (24'-6-1/2").

3.15 S215 – FOURTH FLOOR FRAMING PLAN – UNITS A & B
A. For beam on north side of Stair G update size and top of steel elevation to HSS12x6x1/4 (35'-2-1/2").
B. For beam on east side of Stair G update size and top of steel elevation to HSS12x6x1/4 (35'-2-1/2").

3.16 S216 – FOURTH FLOOR FRAMING PLAN – UNITS D & E
A. For beam on south side of Stair B update size and top of steel elevation to HSS12x6x1/4 (35'-2-1/2").
B. For beam on west side of Stair B update size and top of steel elevation to HSS12x6x1/4 (35'-2-1/2").

3.17 S220 – FIFTH FLOOR FRAMING PLAN – UNITS A & B
A. For beam on north side of Stair G update size and top of steel elevation to HSS12x6x1/4 (45'-10-1/2").
B. For beam on east side of Stair G update size and top of steel elevation to HSS12x6x1/4 (45'-10-1/2").

3.18 S221 – FIFTH FLOOR FRAMING PLAN – UNITS D & E
A. For beam on south side of Stair B update size and top of steel elevation to HSS12x6x1/4 (45'-10-1/2").
B. For beam on west side of Stair B update size and top of steel elevation to HSS12x6x1/4 (45'-10-1/2").

3.19 S225 – PENTHOUSE FLOOR/ ROOF FRAMING PLAN – UNITS A & B
A. For beam on north side of Stair G update size and top of steel elevation to HSS14x6x1/4 (56'-10").
B. For beam on east side of Stair G update size and top of steel elevation to HSS14x6x1/4 (56'-10").
C. Section cut 9/S510 applies at perimeter of Stair G.
D. Slab beam B2 is shown in plan, but size and reinforcing is not given. Size = 2’-0” wide x 8” deep. Reinf = (5) #5 top and bottom.
3.20 S226 – PENTHOSUE FLOOR/ROOF FRAMING PLAN – UNITS D & E
   A. For beam on south side of Stair B update size and top of steel elevation to HSS14x6x1/4 (56’-10”).
   B. For beam on west side of Stair B update size and top of steel elevation to HSS14x6x1/4 (56’-10”).
   C. Section cut 9/S510 applies at perimeter of Stair B.
   D. Slab beam B2 is shown in plan, but size and reinforcing is not given. Size = 2’-0” wide x 8” deep.
       Reinf = (5) #5 top and bottom.

3.21 S240 – STAIR FRAMING PLANS
   A. Replace with attached updated sheet.

3.22 S301 – FOUNDATION SECTIONS AND DETAILS
   A. Replace with attached updated sheet.

3.23 S325 – SHEAR WALL DETAILS
   A. Replace with attached updated sheet.

3.24 S328 – SHEAR WALL ELEVATIONS
   A. Replace with attached updated sheet.

3.25 S501 – EMBED PLATES AND ANCHOR RODS
   A. In section 1 update 1-1/2” diameter anchor rod embedment to 1’-6”.
   B. In detail 14 update bearing plate thickness to 1-1/4”.

3.26 S512 – STRUCTURAL STEEL SECTIONS AND DETAILS
   A. Replace with attached updated sheet.

3.27 S540 – STAIR SECTIONS AND DETAILS
   A. Replace with attached updated sheet.

3.28 S571 – CLADDING BACKUP ELEVATIONS
   A. In elevation 2 add L4x4X3/8 loose angle lintel at mechanical vent between grids C3 and C4 on 2nd floor.
   B. In elevation 5 update section cut to 7/S573.

3.29 S590 – TYPICAL LIGHT GAGE FRAMING DETAILS
   A. In detail 3 update reactions to H1 = 4,500 LBS, H2 = 7,000 LBS, and H3 = 9,000 LBS.
   B. In detail 7 update reference for door and window plate to 1/S598.
   C. In detail 9 update reference for door and window plate to 1/S598.

3.30 S595 – LIGHT GAGE CLADDING BACKUP ELEVATIONS
   A. Replace with attached updated sheet.

3.31 S596 – LIGHT GAGE CLADDING BACKUP ELEVATIONS
   A. Replace with attached updated sheet.
3.32 S597 – LIGHT GAGE CLADDING BACKUP ELEVATIONS
   A. Replace with attached updated sheet.

3.33 S598 – TYPICAL LIGHT GAGE FRAMIGN DETAILS
   A. Replace with attached updated sheet.

3.34 A001 – INTERIOR WALL TYPES
   A. Replace with attached updated sheet.

3.35 A101 – LIFE SAFETY PLAN – GROUND FLOOR
   A. Added Code Summary information to sheet.

3.36 A280 – ENLARGED ROOF PLANS – UNITS A & B
   A. Replace with attached updated sheet.

3.37 A281 – ENLARGED ROOF PLAN – UNIT C
   A. Replace with attached updated sheet.

3.38 A282 – ENLARGED ROOF PLANS – UNITS D & E
   A. Replace with attached updated sheet.

3.39 A427 – WALL SECTION DETAILS
   A. Replace with attached updated sheet.

3.40 A428 – WALL SECTION DETAILS
   A. Replace with attached updated sheet.

3.41 A464A – VERTICAL CIRCULATION – STAIR D
   A. Replace with attached updated sheet.

3.42 A464B – VERTICAL CIRCULATION – STAIR D
   A. Replace with attached updated sheet.

3.43 A480 – LOADING DOCK PLANS, ELEVATIONS, AND DETAILS
   A. Revise drawings 1/A480 and 4/A480 to show bollard quantity and locations.

3.44 A481 – LOADING DOCK ELEVATIONS AND DETAILS
   A. Revise drawings 1/A481 to show bollard quantity and locations.

3.45 A482 – ENLARGED EXTERIOR STAIR PLANS & DETAILS
   A. Add sheet to set.

3.46 KEYNOTE LIST
   A. Revised keynote 05 73 00-A to say “TOP WELD MOUNTED STAINLESS STEEL ROUND POST RAILING
      SYSTEM W/ WOOD HANDRAIL & TOP RAIL
B. Added keynote “05 51 00-G SOLID STEEL PLATE STRINGER. SEE STRUCTURAL”
C. Added keynote “05 73 00-B FACE MOUNTED STAINLESS STEEL ROUND POST GUARDRAIL SYSTEM”
D. Added keynote “05 73 00-C GUARDRAIL MOUNTING BRACKET”

3.47 M200 – MECHANICAL LOWER LEVEL HVAC PLAN
A. Replace sheet in its entirety.

3.48 M202 – MECHANICAL GROUND FLOOR HVAC PLAN – UNIT C
A. Replace sheet in its entirety.

3.49 M206 – MECHANICAL SECOND FLOOR HVAC PLAN – UNIT C
A. Replace sheet in its entirety.

3.50 M602 – MECHANICAL SCHEDULES
A. Replace sheet in its entirety.

3.51 E001 – ELECTRICAL SITE PLAN
A. Replace sheet in its entirety.

3.52 E201 – ELECTRICAL GROUND FLOOR LIGHTING PLAN UNIT A&B
A. Replace sheet in its entirety.

3.53 E250 – ELECTRICAL LOWER LEVEL POWER PLAN
A. Replace sheet in its entirety.

3.54 E601 – ELECTRICAL SCHEDULES
A. Replace sheet in its entirety.

**General Mechanical:**

1. All condensate risers terminating outdoors shall have a downturned elbow and splash block. Drill from outside in to minimize block/brick breakage. Seal around pipe watertight.

2. All supply air grilles or diffusers served by the DOAS-1 or DOAS-2 shall have constant air regulators. The following note shall apply: ADJUSTABLE CONSTANT AIR REGULATOR. ATTACH JOINT DOWNSTREAM OF AIR REGULATOR WITH A CLAMPING QUICK DISCONNECT LIKE NORDFAC QF. ADD A THREE FOOT LENGTH OF FLEX DUCT, STRETCH TIGHT.

3. Supply duct from DOAS-1 or DOAS-2 shall receive a manual balancing damper as shown in M201, 2: MECHANICAL GROUND FLOOR HVAC PLAN – UNIT A, shown near the restroom group. Two dampers are shown, one for the branch running north and one for the branch running south. This configuration is typical of 19 locations in Units A,B,D, and E.

4. If the heat exchanger alternate is accepted (Alternate #11), contractor shall provide automatic flow control valves for balancing to all valance units. The automatic flow control valves will replace the manual balancing valves for these units.

5. See drawings reissued with bubbled changes. Changes in those sheets are not necessarily described here.
Drawings:

FP201, FP202, FP203, FP205, FP207, FP211, FP213, FP215, FP216, FP221, FP222.

Revise: GENERAL SHEET NOTE B. To read as follows;

B. The contractor shall provide an Alternate Bid #7 to furnish and install Tyco “Raven” concealed security sprinkler heads in the dorm rooms and hallways in lieu of the base bid concealed sprinkler heads.

M010, SNOW MELT ALTERNATE
The tags labeled C1 through C5 are underground PEX circuits and refer to the snow melt system schedule included in the schedule sheets.

M200, M203
For the stairwells in Units B and D delete the fan coils, ductwork, and diffusers for all floors. Furnish and install fan coils FCU-13 on floors 1, 3, and 5 as shown in sketch. Locate fan coils and route piping as shown in sketches below (Unit B is shown, looking south west). Furnish and install P trap, height per MFGR recommendations. Route piping similarly for Unit D with the exception that condensate will drain to the outside. Note that FCU-13 has been re-selected as a horizontal cabinet model (see updated schedule sheet issued as part of this addendum).
M201, M203, M205, M207, M211, M213, M215, M216, M221, M222
There is an 8" exhaust duct coming from the electrical / telecom areas and travelling toward the lounge/custodians area. The duct must be flattened to fit under the beam. Flatten duct to 10”x6”. This is typical of 10 locations.

M203, M205, M207, M211, M213, M215, M216, M221, M222, M253, M255, M257, M261, M263, M265, M266, M271, M272:
Contractor shall duct supply outlet from fan coils as shown in the sketch below. Contractor shall route condensate stack vertically in wall, ¾” copper (insulated per specification). For unit D condensate stack – route condensate outside into landscaping bed. Unit B condensate stack shall be routed above the second floor ceiling and drop down to the condensate line in the lower level that serves Unit D stairwell.
**M275, MECHANICAL PENTHOUSE PIPING PLAN:**
Pipe branch sizing to each individual coil shall match the sizing shown on the west penthouse.

**M302, 5, Bathroom Mechanical Section:**
The corridor return/transfer grill is shown with a smoke damper in the riser. Contractor shall note that this configuration is typical of all dorm corridor return/transfer grilles (typical of 19 locations in Units A, B, D, and E).

**M311, 1,2,&3 CUSTODIAL AND TRASH:**
The 8" diameter duct stub over the floor sink shall be connected to an inline booster fan with a volume damper. Fan shall be eqv. to Field Controls Air Booster model AB-6. TAB shall balance to 170 CFM. Coordinate exact install height with owner in field. See electrical drawings for circuit info. This fan is typical of 10 locations.

**M401, 1 HEATING HOT WATER SCHEMATIC:**
Base bid shall include the connection to the domestic water preheat heat exchanger. Use same detail and coil connection as the alternate – **M402, 1 HEATING HOT WATER SCHEMATIC – ALT.** Use 2 1/2" supply and return piping.

**M601, Fan Schedule:**
Add note at the end of EF-3: #5 (Factory Backdraft Damper)

**MP001, MECHANICAL SITE PLAN:**
Heating hot water and chilled water pipes shall be supported at intervals defined by the mechanical code. Supports shall be 2 x 1 5/8" unistrut supported by 5/8" threaded rod from the tunnel ceiling. Provide pipe shields as required by spec. Do not clamp pipe down to allow for thermal movement. Rack pipes as close as possible to west and north walls to ensure walkable access into tunnel.
Attachments
Drawings

Full Specification Sections
  00 01 15 LIST OF DRAWING SHEETS
  07 53 23 POLYVINYL-CHLORIDE (PVC) ROOFING ADHERED
  11 13 00 LOADING DOCK EQUIPMENT

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LANDSCAPE

LA100 SITE KEYNOTE PLAN
LA101 SITE LAYOUT PLAN
LA102 SITE LANDSCAPE PLAN
LA500 SITE DETAILS
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LA502 SITE DETAILS
LA503 SITE DETAILS

ARCHITECTURAL

A001 INTERIOR WALL TYPES
A100 LIFE SAFETY PLAN - LOWER LEVEL
A101 LIFE SAFETY PLAN - GROUND FLOOR
A102 LIFE SAFETY PLAN - SECOND FLOOR
A103 LIFE SAFETY PLAN - THIRD FLOOR
A104 LIFE SAFETY PLAN - FOURTH FLOOR
A105 LIFE SAFETY PLAN - FIFTH FLOOR
A106 LIFE SAFETY PLAN - PENTHOUSE
A107 OVERALL ROOF PLAN
A200 LOWER LEVEL FLOOR PLAN
A201 ENLARGED GROUND FLOOR PLANS - UNITS A & B
A202 ENLARGED GROUND FLOOR PLAN - UNIT C
A203 ENLARGED GROUND FLOOR PLANS - UNITS D & E
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A211 ENLARGED THIRD FLOOR PLANS - UNITS D & E
A215 ENLARGED FOURTH FLOOR PLANS - UNITS A & B
A216 ENLARGED FOURTH FLOOR PLANS - UNITS D & E
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A221 ENLARGED FIFTH FLOOR PLANS - UNITS D & E
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SECTION 07 53 23 - POLYVINYL-CHLORIDE (PVC) ROOFING

ADDENDUM NO. 1

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Adhered PVC membrane roofing system.
2. Vapor retarder, self-adhering.
3. Roof insulation.
4. Cover board.
5. Flexible walkways.

1.03 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA’s “The NRCA Roofing and Waterproofing Manual” for definition of terms related to roofing work in this Section.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. LEED Submittals:

1. Product Test Reports: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirements.
2. Product Data: For adhesives and sealants, indicating VOC content.
3. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.
4. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
5. Environmental Product Declaration: For each product.
6. Health Product Declaration: For each product.
7. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.

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.
3. Roof plan showing orientation of steel 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.

D. Samples for Verification: For the following products:
1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
2. Roof insulation.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer.
B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer’s product and that is eligible to receive manufacturer’s warranty.
C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in “Performance Requirements” Article.
   1. Submit evidence of compliance with performance requirements.
D. 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.
E. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.
F. Field quality-control reports.
G. Warranties: Sample of special warranties.

1.06 CLOSEOUT SUBMITTALS

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

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and listed in FM Approvals’ RoofNav for roofing system identical to that used for this Project.
B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer’s product and that is eligible to receive manufacturer’s special warranty.
C. Source Limitations: Obtain components including roof insulation and 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. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, 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.

1.08 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.

1.09 PROJECT CONDITIONS

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

1.10 WARRANTY

A. 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. Total systems warranty includes membrane roofing, vapor retarder, base flashings, roof insulation, fasteners, vapor retarder, cover boards, substrate board, roofing accessories, and other components of membrane roofing system.

2. Warranty Period: 30 years from date of Substantial Completion.

B. Project Warranty: Submit roofing Installer's warranty signed by Installer, covering the Work of this Section, including all components of roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:

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

PART 2 - PRODUCTS

2.01 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.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.

2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272/D4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

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. Wind Uplift Resistance: Design roofing system to resist the design wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897:

D. 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 uplift pressure calculated according to ASCE/SEI 7.

E. FM Approvals RoofNav Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a membrane roofing system, and that are listed in FM Approvals' "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.

1. Fire/Windstorm Classification: Class 1A-90.

2. Hail Resistance: SH.

F. Solar Reflectance Index (SRI): Three-year-aged SRI not less than 64 or initial SRI not less than 82 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

G. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.
H. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

I. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.02 PVC MEMBRANE ROOFING


1. Basis of Design: Subject to compliance with requirements, provide Sarnafil G410 Energysmart thermoplastic membrane with fiberglass mat or polyester reinforcement or comparable products by one of the following:

   a. Carlisle Syntec Systems, Sure-Flex
   b. Soprema, Inc., Sentinel P-150
   c. Sarnafil Inc. (basis of design)

2. Thickness: 60 mils, nominal, minimum thickness.

3. Thickness above scrim: 0.027 inch (27mil) average, minimum (monolithic top layer not including any lacquer coating thickness)

4. Reinforcement: Glass Fiber or polyester fabric


6. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than indicated.

7. Physical Properties:

   a. Breaking Strength: 80 lbf/in (356 N); ASTM D 751, grab method.
   b. Elongation at Break: 220 percent; ASTM D 751.
   c. Tearing Strength: 55 lbf (245 N) minimum; ASTM D 751, Procedure B.
   d. Brittleness Point: Minus 22 deg F (30 deg C).
   e. Ozone Resistance: No cracks after sample, wrapped around a 3-inch-(75-mm-) diameter mandrel, is exposed for 166 hours to a temperature of 104 deg F (40 deg C) and an ozone level of 100 pphm (100 mPa); ASTM D 1149.
   f. Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at 240 deg F (116 deg C); ASTM D 573.
   g. Water Absorption: Less than 2 percent mass change after 166 hours' immersion at 158 deg F (70 deg C); ASTM D 471.
   h. Linear Dimension Change: Plus or minus .02 percent; ASTM D 1204.

8. Exposed Face Color: White, with the following characteristics:

   a. Initial solar reflectance of 0.85 according to ASTM C1549
   b. 3-year solar reflectance of 0.74 according to ASTM C1549
   c. Initial thermal emittance of 0.86 according to ASTM C1371, Slide Method
   d. 3-year thermal emittance of 0.84 according to ASTM C1371, Slide Method.
   e. Reflectance to meet ENERGY STAR, LEED, and Green Globes standards.
2.03 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. Other Adhesives: 250 g/L.
   g. PVC Welding Compounds: 510 g/L.
   h. Adhesive Primer for Plastic: 650 g/L.
   i. Single-Ply Roof Membrane Sealants: 450 g/L.
   j. Nonmembrane Roof Sealants: 300 g/L.
   k. Sealant Primers for Nonporous Substrates: 250 g/L.
   l. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.

C. Bonding Adhesive: Manufacturer's standard, water based.

D. Slip Sheet: Manufacturer's standard, of thickness required for application.

E. Vented Base Sheet: ASTM D4897/D4897M, Type II; nonperforated, asphalt-impregnated fiberglass reinforced, with mineral granular patterned surfacing on bottom surface.

F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

G. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

H. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, pre-punched.

I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

K. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.
2.04 VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive; maximum permeance rating of 0.01 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor retarder manufacturer.

1. Substrate: Concrete deck.

2.05 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by PVC membrane roofing manufacturer, selected from manufacturer’s standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

B. Contractor’s Options:

1. Roof insulation may be polyisocyanurate or extruded polystyrene.
   a. Either method requires a cover board.

C. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, 1.6-lb/cu. ft. (26-kg/cu. m), 25 psi minimum density, square edged.

1. Acceptable Manufacturers:
   a. DiversiFoam Products.
   b. Dow Chemical Company.
   c. Owens Corning.

2. If using extruded polystyrene board insulation, provide substrate board on metal deck.

D. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 2, glass-fiber mat facer on both major surfaces. No other facer is acceptable.

1. Aged R-value shall be as designated at mean temperatures indicated and as follows: R 5.6 at 75 deg F for 1 inch thick insulation board.

2. Surface Burning Characteristics: Maximum flame spread of 75.


4. Dimensional Stability: Less than 2.0 percent change in length, width and thickness per ASTM D 2126-94 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.

5. Acceptable Manufacturers:
   a. Carlisle SynTec Incorporated.
   b. GAF Materials Corp.
   d. Sika Corporation, Sarantherm
   e. Hunter Continuous Insulation.
E. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.

F. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.06 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Full-Spread Applied Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

2.07 COVER BOARD

A. General: Provide one of the following cover boards.

B. Cover Board: ASTM C1289 Type II, Class 4, Grade 2, 1/2-inch (13 mm) thick polyisocyanurate, having a minimum compressive strength of 120 psi (827 kPa).


C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch (13 mm) thick.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. CertainTeed Corporation; GlasRoc Sheathing Type X.
   b. Georgia-Pacific Corporation; Dens Deck DuraGuard.
   c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
   d. Temple-Inland, Inc; GreenGlass Exterior Sheathing.
   e. USG Corporation; Securock Glass Mat Roof Board.

2.08 WALKWAYS

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

1. Size: Approximately 36 by 60 inches (914 by 1524 mm).
PART 3 - EXECUTION

3.01 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.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section “Steel Decking.”
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.

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

3.02 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 roofings.

3.03 INSTALLATION OF VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end laps of each sheet a minimum of 3-1/2 and 6 inches (90 and 150 mm), respectively.

1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
2. Seal laps by rolling.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.04 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. Mechanically Fastened and Adhered Insulation: Install each layer of insulation and secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

   1. Fasten first layer of insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
   2. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
   3. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
   4. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

H. 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 fasten to roof deck.

   1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
   2. At internal roof drains, conform to slope of drain sump.

      a. Trim cover board so that water flow is unrestricted.

   3. Cut and fit cover board tight to nailers, projections, and penetrations.
   4. Adhere cover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:

      a. Set cover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
b. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

5. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

I. Install slip sheet over cover board and immediately beneath membrane roofing.

### 3.05 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.

1. Install sheet according to ASTM D 5036.

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. 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.

E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

H. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

### 3.06 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 seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.07 INSTALLATION OF WALKWAYS

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:
   a. Perimeter of each rooftop unit.
   b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
   c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
   d. Top and bottom of each roof access ladder.
   e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
   f. Locations indicated on Drawings.
   g. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch (76-mm) clearance between adjoining pads.

3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.08 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.

B. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with portable water.

1. Flood to an average depth of 2-1/2 inches (65 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of base flashing.

2. Flood each area for 48 hours.

3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

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

E. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
3.09 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION
SECTION 11 13 00 - LOADING DOCK EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Dock bumpers.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for loading dock equipment. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For loading dock equipment. Include plans, elevations, sections, details, and attachments to other work.

1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

2. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Welding certificates.

C. Warranty: Sample of special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For loading dock equipment to include in operation and maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

1. Maintenance Proximity: Not more than two hours’ normal travel time from Installer’s place of business to Project site.
B. Source Limitations: Obtain loading dock equipment from single source from single manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store and handle dock seals in a manner to avoid significant or permanent damage to fabric or frame.

1. Comply with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with loading dock equipment, including recessed pit dimensions slopes of driveways and heights of loading docks, by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM 36/A 36M.

B. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

C. Pressure-Treated Wood: DOC PS 20 dimension lumber, select structural grade, kiln dried, and pressure treated with waterborne preservatives to comply with AWPA C2.

2.02 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. 4Front Engineered Solutions, Inc. (Kelley, Serco)
2. Advance Lifts, Inc.
3. Autoquip Corporation.
5. Chalfant Dock Equipment.

2.03 DOCK BUMPERS

A. Steel-Face, Laminated-Tread Bumpers: Fabricated from multiple, uniformly thick plies cut from fabric-reinforced rubber tires and with 3/8-inch (9.5-mm) steel face plate of same
size as rubber surface. Laminate plies under pressure on not less than two 3/4-inch- (19-mm-) diameter, steel supporting rods that are welded at one end to 1/4-inch- (6-mm-) thick, structural-steel end angle and secured with a nut and angle at the other end. Fabricate angles with predrilled anchor holes and sized to provide not less than 1 inch (25 mm) of tread plies extending beyond the face of closure angles. Weld face plate to two steel support brackets, which shall extend back to and engage 3/4-inch- (19-mm-) diameter support rods in elongated holes, allowing steel face to float on impact.

1. Thickness: 6 inches (152 mm).
2. Vertical Style: 8 inches (203 mm) wide by 20 inches (508 mm) high, unless indicated otherwise.

B. Anchorage Devices: Hot-dip galvanized-steel anchor bolts, nuts, washers, bolts, sleeves, cast-in-place plates, and other anchorage devices as required to fasten bumpers securely in place and to suit installation type indicated.

2.04 STEEL FINISHES

A. Galvanizing: Hot-dip galvanize components as indicated to comply with the following:

1. ASTM A 123/A 123M for iron and steel loading dock equipment.
2. ASTM A 153/A 153M or ASTM F 2329 for iron and steel hardware for loading dock equipment.

B. Galvanized-Steel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat in manufacturer's standard color.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of loading dock equipment.

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

3.02 PREPARATION

A. Coordinate size and location of loading dock equipment indicated to be attached to or recessed into concrete or masonry, and furnish anchoring devices with templates, diagrams, and instructions for their installation.

3.03 INSTALLATION

A. General: Install loading dock equipment and accessories as required for a complete installation.

B. Dock Bumpers: Attach dock bumpers to face of loading dock in a manner that complies with requirements indicated for spacing, arrangement, and position relative to top of platform and anchorage.
1. **Welded Attachment:** Plug-weld anchor holes in contact with steel inserts and fillet weld at other locations.

2. **Bolted Attachment:** Attach dock bumpers to preset anchor bolts embedded in concrete or to cast-in-place inserts or threaded studs welded to embedded-steel plates or angles. If preset anchor bolts, cast-in-place inserts, or threaded studs welded to embedded-steel plates or angles are not provided, attach dock bumpers by drilling and anchoring with expansion anchors and bolts.

3. **Screw Attachment:** Attach dock bumpers to wood construction with lag bolts as indicated.

### 3.04 ADJUSTING

A. After completing installation of exposed, factory-finished loading dock equipment, inspect exposed finishes and repair damaged finishes.

END OF SECTION
These drawings indicate the general scope of the project in terms of architectural design concept, the dimensions of the building, the major architectural elements and the type of structural, mechanical and electrical systems. The drawings do not necessarily indicate or describe all work required for full performance and completion of the requirements of the Contract. On the basis of the general scope indicated or described, the trade contractors shall furnish all items required for the proper execution and completion of the work.
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On the basis of the general scope indicated or described, the trade contractors shall furnish all items required for the proper execution and completion of the work.
1. SHEARWALL ELEVATION
2. SHEARWALL ELEVATION
3. SHEARWALL ELEVATION
4. SHEARWALL ELEVATION
5. SHEARWALL ELEVATION
6. SHEARWALL ELEVATION
7. SHEARWALL ELEVATION
8. SHEARWALL ELEVATION

**NOTATIONS:**

1. Typical area framing is not shown. Typical framing not shown is assumed to be in accordance with published standards. Area for shear wall location is shown, see foundation plan for specific location.
2. See foundation plan for shear wall connections.
3. See framing plans for shear wall connections.

**ISSUE DATE**

02/04/2019

**DRAWN BY**

DJE

**CHECKED BY**

SJS

**SCOPE DRAWINGS:**

S328

**DRAWING TITLE:**

NEIGHBORHOOD PHASE #2

1701 WEST MCKINLEY AVENUE, MUNCIE IN 47306

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JOINTS, TYP.
LIMESTONE
LG BLOCKING AT SEE 1/S598
SILL AND JAMBS, TYP.
LEVEL 2 AND UP.
STEEL TUBES AT STAIR.
600 S162-54 INFILL, TYP
SEE 2/S598
STOREFRONT, TYP.
LG PLATE AT TOP OF TO TUBE PER 8/S598
600 S250-97 INFILL
LIGHT GAGE CLADDING BACKUP - UNIT A WEST ELEVATION
SEE MAIN FRAMING PLAN FOR STUD SIZE
CLADDING ELEVATION - UNIT A NORTH ELEVATION
SEE S590 FOR HEADERS
600 S162-54 STUDS,
- 0"
ALSO APPLIES TO UNIT E SOUTH ELEVATION
SECOND FLOOR
FOURTH FLOOR
THIRD FLOOR
FIRST FLOOR
FIFTH FLOOR
STAIR LEVEL 1.
600 S250-54 INFILL AT ROOF
BETWEEN STRUCTURAL CONNECTION TO INFILL
TYP AT PARAPET.
600 S162-54 STUDS,
- 0"
ALSO APPLIES TO UNIT E WEST ELEVATION
SECOND FLOOR
FOURTH FLOOR
THIRD FLOOR
FIRST FLOOR
FIFTH FLOOR
STAIR LEVEL 1.
600 S250-54 INFILL AT ROOF
BETWEEN STRUCTURAL CONNECTION TO INFILL
TYP AT PARAPET.
600 S162-54 STUDS,
- 0"
ALSO APPLIES TO UNIT E EAST ELEVATION
SECOND FLOOR
FOURTH FLOOR
THIRD FLOOR
FIRST FLOOR
FIFTH FLOOR
STAIR LEVEL 1.
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BETWEEN STRUCTURAL CONNECTION TO INFILL
TYP AT PARAPET.
600 S162-54 STUDS,
- 0"
ALSO APPLIES TO UNIT E SOUTH ELEVATION
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THIRD FLOOR
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FIFTH FLOOR
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BETWEEN STRUCTURAL CONNECTION TO INFILL
TYP AT PARAPET.
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ALSO APPLIES TO UNIT E WEST ELEVATION
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ALSO APPLIES TO UNIT E WEST ELEVATION
SECOND FLOOR
FOURTH FLOOR
THIRD FLOOR
FIRST FLOOR
FIFTH FLOOR
STAIR LEVEL 1.
SILL AND JAMBS, TYP. LG PLATE AT WINDOW HEAD, SEE 1/S598.

UNIT C STUDS ARE NON-LOADBEARING. SEE 1/S598 AND 2/S598.

LIGHT GAGE CLADDING BACKUP - SOUTH ELEVATION AT UNIT C.

WALLS ARE LOADBEARING, UNO: SEE 1/S598 AND 2/S598.

LG PLATE AT WINDOW HEAD, TYP AT FASCIA.

600 S162-54 AT 16" KNEE WALL AT LEAD PLATE AND SEE 5/S598.

LIGHT GAGE CLADDING BACKUP - EAST ELEVATION AT UNIT C.

FOURTH FLOOR SECOND FLOOR FIRST FLOOR 14' 24' 35' 56' 10"

LIGHT GAGE CLADDING BACKUP - WEST ELEVATION AT UNIT C.

LIGHT GAGE CLADDING BACKUP - NORTH ELEVATION AT UNIT C.

SECOND FLOOR 0" 8" 24' 14'

GENERAL NOTES:

LIQUID GAGE CLADDING BACKUP FRAMING NOT SHOWN

THE INTENT OF THESE DRAWINGS IS TO SHOW DIMENSIONS AND ELEVATIONS.

SEE S598 FOR LIGHT GAGE CLADDING BACKUP DETAILS.

LIGHT GAGE CLADDING BACKUP - KEY PLAN

SECO 1/S596 ELSEWHERE IN THE DRAWING SET.

LIGHT GAGE CLADDING BACKUP - UNIT A NORTH ELEV AT STAIR C.

LIGHT GAGE CLADDING BACKUP - UNIT A ELEV AT STAR G.

LIGHT GAGE CLADDING BACKUP - UNIT A NORTH ELEV AT LOUNGE.

LIGHT GAGE CLADDING BACKUP - UNIT A ELEV AT STAIR C.
WALL TYPES NOTES

1. SEE SPECIFICATIONS FOR GYPSUM WALL BOARD TYPE FOR EACH APPLICATION.

2. ALL WALLS EXTEND TO DECK UNLESS NOTED OR SHOWN OTHERWISE IN SECTION. IF A WALL TYPE SYMBOL IS FOLLOWED BY A "#" SYMBOL, THEN THE WALL SHOULD EXTEND TO 8" ABOVE ADJACENT CEILING.

3. FOR METAL STUD CONSTRUCTION AT CONVENTIONAL FRAMING, EXTEND METAL STUDS TO BOTTOM OF METAL DECK AND GYPSUM WALL BOARD TO 1" BELOW METAL DECK.

4. ALL METAL STUD WALLS SHALL HAVE FULL THICKNESS SOUND ATTENUATION BLANKETS EXTENDING FULL HEIGHT OF WALL. IF A WALL TYPE SYMBOL IS FOLLOWED BY A "*" SYMBOL, THEN THE SOUND ATTENUATION BLANKETS MAY BE OMITTED.

5. WALL TYPES SHOWN ARE TO BE COMPLETED AS SHOWN UNLESS OTHERWISE SPECIFIED. WALL TYPES SHOWN ARE TO BE COMPLETED AS SHOWN UNLESS OTHERWISE SPECIFIED. WALL TYPES ARE TO BE COMPLETED AS SHOWN UNLESS OTHERWISE SPECIFIED.

6. PROVIDE GLASS-MAT WATER RESISTANT BACKER BOARD IN LIEU OF GYPSUM WALL BOARD WHERE WALL TILE IS SPECIFIED. SEE A800 SERIES FINISH PLANS FOR LOCATIONS WHERE WALL TILE IS SPECIFIED.

7. AT LOAD BEARING STRUCTURAL STUD LOCATIONS, USE DIVISION 05 STUD TYPE. AT NON-LOAD BEARING LOCATIONS, USE DIVISION 09 STUD TYPE. REFER TO WALL TYPES FOR STUD SIZE. REFER TO STRUCTURAL DRAWINGS FOR LOAD BEARING WALL LOCATIONS.

8. AT LOAD BEARING STRUCTURAL STUD LOCATIONS, USE DIVISION 05 STUD TYPE. AT NON-LOAD BEARING LOCATIONS, USE DIVISION 09 STUD TYPE. REFER TO WALL TYPES FOR STUD SIZE. REFER TO STRUCTURAL DRAWINGS FOR LOAD BEARING WALL LOCATIONS.

9. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

10. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

11. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

12. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

13. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

14. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

15. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

16. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

17. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

18. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.

19. PROVIDE MOLD & MILDEW RESISTANT GYPSUM WALL BOARD ABOVE TOP OF WALL TILE HEIGHT.
STATE OF INDIANA VARIANCE NUMBER 17-12-55 APPROVED 11/07/2018

1. The code requires two-hour floor. Building will be fully sprinkler with NFPA 13 system as required. 2. The code requires fire rated corridors to be continuous from the point of entry to an exit. The code requires fire doors to have smoke and draft control assemblies. The request is to allow the corridor doors to not have the required smoke and draft control assemblies. 3. The code requires the open stairs are not required for exiting. Each wing will have two (2) enclosed exit stairs. 4. The code requires fire doors to have smoke and draft control assemblies. The request is to allow the dorm room doors to not be provided with closer's. Similar variances have been granted.
THE TRADE, AND SHALL CONFORM WITH THE LATEST EDITION OF ALL FEDERAL, STATE, AND LOCAL CODES, REQUIRING CONSTRUCTION OF NEW BUILDINGS. ANYTHING REQUIRED TO CONSTRUCT THE WORK. CONTRACTOR MAY EXTEND SERVICES FROM EXISTING LOCATIONS TO WHERE THEY ARE REQUIRED. REMOVE ROOF DEBRIS FROM THE BUILDING AND ROOF DAILY.

6. STORE VOLATILE OR FLAMMABLE LIQUIDS IN UL LISTED FIRE CABINETS.

7. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SECURITY OF ALL WEATHER TO PROTECT INTERIOR OF BUILDING FROM ELEMENTS OF WEATHER AT ALL TIMES.

8. SPLASH BLOCK LOCATED AT DOWNSPOUT 9. ROOF WALKWAY PAD SEE SPECIFICATIONS.

10. ALUMINUM HIGH PARAPET ROOF ACCESS LADDER WITH MOUNTED EQUIPMENT.

11. NOTCH ALL INSULATION AS REQUIRED TO ACCOMMODATE SURFACE MOUNTED EQUIPMENT.

12. ROOF INSULATION SADDLES AND CRICKETS ARE DIAGRAMMATIC. ROOF SYSTEM OR STRUCTURAL SLOPE. THE RATIO OF A CRICKET'S WIDTH TO LENGTH IS 3:1. PROVIDE SADDLES/CRICKETS AROUND ALL NEW ROOF TOP EQUIPMENT. SEE PLANS FOR LOCATIONS.

13. PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE TO ANOTHER OR TO THE SURFACE OF THE DECK.

14. PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE TO ANOTHER OR TO THE SURFACE OF THE DECK.

15. PERIMETER EDGE METAL TO COMPLY WITH ANSI/SPRI ES-1 FM GLOBAL 1-49.

16. MECHANICAL, ELECTRICAL AND PLUMBING INFORMATION SHOWN ON THIS PLAN IS GENERAL IN NATURE. REFER TO P, M AND E DRAWINGS FOR FURTHER INFORMATION AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF PENETRATIONS.
ROOF HATCH CURB

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE BEST QUALITY STANDARDS OF STATE, AND LOCAL CODES AND STANDARDS. THE SAME ARE MADE A PART OF THESE CONTRACT DOCUMENTS, AS IF REPEATED HEREIN.

2. PROVIDE A COMPLETE AND COORDINATED SYSTEM.

3. CONTRACTOR SHALL REMOVE CONSTRUCTION DEBRIS FROM THE BUILDING AND STORE VOLATILE OR FLAMMABLE LIQUIDS IN UL LISTED FIRE CABINETS.

4. CONTRACTOR SHALL FURNISH NECESSARY TEMPORARY PROTECTION FROM THE ATTENTION OF THE ARCHITECT.

5. CONTRACTOR SHALL REMOVE CONSTRUCTION DEBRIS FROM THE BUILDING AND STORE VOLATILE OR FLAMMABLE LIQUIDS IN UL LISTED FIRE CABINETS.

6. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SECURITY OF ALL STORED MATERIALS AND EQUIPMENT INSIDE OR OUTSIDE THE BUILDING.

7. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SECURITY OF ALL STORED MATERIALS AND EQUIPMENT INSIDE OR OUTSIDE THE BUILDING.

8. CONTRACTOR SHALL FURNISH NECESSARY TEMPORARY PROTECTION FROM STORED MATERIALS AND EQUIPMENT INSIDE OR OUTSIDE THE BUILDING.

9. PROVIDE SELF ADHERING VAPOR RETARDER BETWEEN CONCRETE ROOF DECK AND POLYISO INSULATION BOARD.

10. PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION.

11. EXTEND ALL PLUMBING VENTS TO PROVIDE A MIN. OF 12" OF HEIGHT FROM TOP OF INSULATION. ALL FITTINGS TO BE AIR AND WATER TIGHT. SEE PLUMBING INSULATION MANUFACTURER SHALL DESIGN AND SIZE THESE PER THE ROOF MEMBRANE MANUFACTURERS RECOMMENDATIONS. CRICKETS AND SADDLES SHOULD HAVE A MINIMUM OF TWO TIMES THE SLOPE OF THE PRIMARY TAPERED.

12. NOTCH ALL INSULATION AS REQUIRED TO ACCOMMODATE SURFACE MOUNTED T/ STEEL T/ BLOCKING.

13. PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE T/ BLOCKING.

14. PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE T/ BLOCKING.

15. PERIMETER EDGE METAL TO COMPLY WITH ANSI/SPRI ES-1 FM GLOBAL 1-49.

16. PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION.
GENERAL ROOF NOTES

1. CONTRACT DOCUMENTS CONSIST OF BOTH THE PROJECT MANUAL AND PLANS FOR LOCATIONS.

2. THE TRADE, AND SHALL CONFORM WITH THE LATEST EDITION OF ALL FEDERAL, STATE, AND LOCAL CODES AND STANDARDS. THE SAME ARE MADE A PART OF REQUIRED TO CONSTRUCT THE WORK. CONTRACTOR MAY EXTEND SERVICES FROM EXISTING LOCATIONS TO WHERE THEY ARE REQUIRED. REMOVE ANY DETERIORATED BLOCKING NEEDING REPLACEMENT. CONTRACTOR TO PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION REQUIRED TO TRANSITION FROM ONE SLOPED STRUCTURE TO THE SURFACE OF THE DECK.

3. CONTRACTOR RESPONSIBLE FOR TRAFFIC PROTECTION DURING COMPLETION OF WORK AND TO ENSURE THAT THEY ARE FREE OF DEBRIS AND INFORMATION AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO ACCORDING TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED INSTRUCTIONS AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS.

4. CONTRACTOR SHALL PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE SLOPED STRUCTURE TO THE SURFACE OF THE DECK. SELF-ADHEREING VAPOR RETARDER APPLIED BETWEEN CONCRETE DECK AND INSULATION. MINIMUM 3" INSULATION THICKNESS AT DRAIN UNIT D. STANDARD ROOF DRAIN AND OVERFLOR DRAIN. FLASH PER ROOFING MANUFACTURERS SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS.

5. CONTRACTOR SHALL REMOVE CONSTRUCTION DEBRIS FROM THE BUILDING AND STORE VOLATILE OR FLAMMABLE LIQUIDS IN UL LISTED FIRE CABINETS.

6. PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED INSTRUCTIONS AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS.

7. 2" EXPANSION JOINT COVER, BALCO BRBS-2-CSE OR APPROVED EQUIVALENT.

8. SPLASH BLOCK LOCATED AT DOWNSPOUT 9 ROOF WALKWAY PAD SEE SPECIFICATIONS.

9. PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION WHERE REQUIRED TO TRANSITION FROM ONE SLOPED STRUCTURE TO THE SURFACE OF THE DECK. SELF-ADHEREING VAPOR RETARDER APPLIED BETWEEN CONCRETE DECK AND INSULATION. MINIMUM 3" INSULATION THICKNESS AT DRAIN UNIT D. STANDARD ROOF DRAIN AND OVERFLOR DRAIN. FLASH PER ROOFING MANUFACTURERS SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED INSTRUCTIONS AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS.

10. PROVIDE TREATED WOOD BLOCKING EQUAL IN THICKNESS TO INSULATION WHERE REQUIRED TO TRANSITION FROM ONE SLOPED STRUCTURE TO THE SURFACE OF THE DECK. SELF-ADHEREING VAPOR RETARDER APPLIED BETWEEN CONCRETE DECK AND INSULATION. MINIMUM 3" INSULATION THICKNESS AT DRAIN UNIT D. STANDARD ROOF DRAIN AND OVERFLOR DRAIN. FLASH PER ROOFING MANUFACTURERS SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED INSTRUCTIONS AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS.

11. ROOF INSULATION SADDLES AND CRICKETS ARE DIAGRAMMATIC. ROOF INSULATION MANUFACTURER SHALL DESIGN AND SIZE THESE PER THE ROOF MEMBRANE MANUFACTURERS RECOMMENDATIONS. CRICKETS AND SADDLES SHOULD HAVE A MINIMUM OF TWO TIMES THE SLOPE OF THE PRIMARY TAPERED SYSTEM OR STRUCTURAL SLOPE. THE RATIO OF A CRICKET’S WIDTH TO LENGTH SHALL BE PROTECTED BY TEMPORARY WALK PADS.

12. BRICK, BLOCK, STONE OR OTHER MATERIALS AS SPECIFIED IN THE PRICE LIST ARE TO BE USED. EXCEPT FOR THE SPECIAL USE OF BRAZED COPPER PIPE AND TUBES FOR WATER HEATING SUPPLIES, REFER TO ENGINEERING SHEETS FOR THE LOCATION OF THE WATER HEATING SYSTEMS. REFER TO THE PLUMBING AND MECHANICAL SLIP DRAWINGS FOR THE LOCATION AND SIZE OF THE USE OF BRAZED COPPER PIPE AND TUBES FOR WATER HEATING SUPPLIES.

13. PROVIDE A 1/4" PER 1'-0" MIN. DOWNSPOUT Curb OR APPROVED EQUIVALENT.

14. PROVIDE TAPERED INSULATION WHERE REQUIRED TO TRANSITION FROM ONE SLOPED STRUCTURE TO THE SURFACE OF THE DECK. SELF-ADHEREING VAPOR RETARDER APPLIED BETWEEN CONCRETE DECK AND INSULATION. MINIMUM 3" INSULATION THICKNESS AT DRAIN UNIT D. STANDARD ROOF DRAIN AND OVERFLOR DRAIN. FLASH PER ROOFING MANUFACTURERS SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED SPECIFICATIONS AND MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED DETAIL DRAWINGS. ALL ASSEMBLY COMPLICATIONS SHOULD BE BROUGHT TO MANUFACTURER’S WRITTEN SPECIFICATIONS AND APPROVED INSTRUCTIONS AND COORDINATE ALL REQUIRED ROOF OPENINGS OR ROOF DETAIL DRAWINGS.

15. ROOF PLAN NOTES

16. PERIMETER EDGE METAL TO COMPLY WITH ANSI/SPRI ES-1 FM GLOBAL 1-49.
### SNOW MELT SCHEDULES SHOWN ON M601

1. **DOAS 1**
   - MERV 6: 0.74
   - MERV 14: 0.79
   - Static Pressure Loss: 473
   - Pressure Drop: 0
   - Max Airflow: 130
   - Noted: 5

2. **DOAS 2**
   - MERV 6: 0.76
   - MERV 14: 0.81
   - Static Pressure Loss: 403
   - Pressure Drop: 0
   - Max Airflow: 130
   - Noted: 5

### HF 1 HARMSCO HMB-6-FL BAG THERMAL MARK

- **2.** MAX DP IS FOR CLEAN FILTERS COMBINED WITH HOUSING PRESSURE LOSS.

### ID # 4

- Where indicated, sound and max face velocity limitations shall be evaluated at the "MIN. OA" condition.
- The fans, supply and exhaust systems are designed to provide a minimum of 1.0" static pressure at the supply and exhaust inlets.
- The intent is to oversize the AHU box and reduce pressure drop.

### HYDRONIC FILTER SCHEDULE

<table>
<thead>
<tr>
<th>ID #</th>
<th>MFR.</th>
<th>MODEL</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>SERVICE</th>
</tr>
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<tbody>
<tr>
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### AIR HANDLING UNIT SCHEDULE

<table>
<thead>
<tr>
<th>MFR.</th>
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### AIR HANDLING UNIT SCHEDULE SOUND DATA

<table>
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<tr>
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### AIR HANDLING UNIT FILTER, COIL, ELECTRICAL DATA SCHEDULE

<table>
<thead>
<tr>
<th>MFR.</th>
<th>MODEL</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>SERVICE</th>
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### HYDROPSIC FILTER SCHEDULE

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<th>SERVICE</th>
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</thead>
<tbody>
<tr>
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### FAN COIL UNIT SCHEDULE

<table>
<thead>
<tr>
<th>MFR.</th>
<th>MODEL</th>
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<th>LOCATION</th>
<th>SERVICE</th>
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</thead>
<tbody>
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### AIR TERMINAL UNIT SCHEDULE

<table>
<thead>
<tr>
<th>MFR.</th>
<th>MODEL</th>
<th>TYPE</th>
<th>LOCATION</th>
<th>SERVICE</th>
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</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

### HEAT EXCHANGER SCHEDULE

- **Outside Air/return air**
  - Heat Exchanger Schedule: Double Wall for Outside Air/return air
- **Inside Air**
  - Heat Exchanger Schedule: Single Wall for Inside Air
LUMINAIRE SCHEDULE GENERAL NOTES:

1. Refer to architectural documents for exact mounting locations of luminaires and ceiling types.
2. Contractor is responsible for all miscellaneous hardware, clips, angles, frames, etc. as required to mount the luminaires in or on the building surfaces.
3. When installing luminaires, the contractor shall use the luminaire manufacturer's mounting hardware and follow all requirements of the manufacturer.
4. All recessed downlights shall have self-flanged reflectors and shall be installed so that the bottom of the throat is even with the ceiling.

PLAN MARK Description Manufacturer Lamp Lumens CCT Wattage Voltage

<table>
<thead>
<tr>
<th>Plan Mark</th>
<th>Description</th>
<th>Manufacturer</th>
<th>Lamp</th>
<th>Lumens</th>
<th>CCT</th>
<th>Wattage</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>L5E</td>
<td>2'x2' recessed LED, 3.75&quot; high die-formed cold rolled steel housing, flush door, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>2BLTBA</td>
<td>4400</td>
<td>3500K</td>
<td>42</td>
<td>120V</td>
</tr>
<tr>
<td>L15</td>
<td>4' LED surface mounted stair fixture with integral occupancy sensor, 50% level during unoccupied mode.</td>
<td>Metalux</td>
<td>22CZ-LD5-44-S-UNV-L935-CD-1-U</td>
<td>LED 4451</td>
<td>3500K</td>
<td>38</td>
<td>120V</td>
</tr>
<tr>
<td>L16</td>
<td>Nominal 6&quot; dia x 7&quot; h small decorative dimmable LED pendant with spun aluminum cap, beam angle 90, CRI 82, silver finish.</td>
<td>Lumenwerx</td>
<td>VIA2</td>
<td>LED 2309</td>
<td>3500K</td>
<td>29</td>
<td>120V</td>
</tr>
<tr>
<td>L20</td>
<td>8'-0&quot; long, 4&quot; diameter, luminous tube light fixture, white finish, vertically mounted, chain/mounted, UL/cul listed for wet locations.</td>
<td>Metalux</td>
<td>24CZ-LD5-50-S-UNV-L935-CD-1-U</td>
<td>LED 5000</td>
<td>3500K</td>
<td>23</td>
<td>120V</td>
</tr>
<tr>
<td>X1</td>
<td>Edge lit LED exit sign with red letters. AC only. Wall or ceiling mount, number of faces and directional arrows as shown on plans.</td>
<td>Certolux</td>
<td>VRSE</td>
<td>LED 1200</td>
<td>3500K</td>
<td>1200</td>
<td>120V</td>
</tr>
<tr>
<td>L0</td>
<td>Decorative pendant light fixture - TBD. Provided by art department. Contractor to provide lengths as indicated on drawings.</td>
<td>Precolite</td>
<td>LBS</td>
<td>LED 2000</td>
<td>3000K</td>
<td>2000</td>
<td>120V</td>
</tr>
<tr>
<td>L4</td>
<td>2'x2' recessed LED, 3.75&quot; high die-formed cold rolled steel housing, flush steel door, chain/mounted, UL/cul listed for wet locations.</td>
<td>Metalux</td>
<td>22CZ-LD5-44-S-UNV-L935-CD-1-U</td>
<td>LED 4000</td>
<td>3500K</td>
<td>40</td>
<td>120V</td>
</tr>
<tr>
<td>L2</td>
<td>4&quot; dia. LED, surface mount disc, white lens, aluminum trim ring and frame, dimmable, UL listed.</td>
<td>Metalux</td>
<td>22CZ-LD5-39-S-UNV-L935-CD-1-U</td>
<td>LED 4400</td>
<td>3500K</td>
<td>39</td>
<td>120V</td>
</tr>
<tr>
<td>L9</td>
<td>2&quot; wide LED recessed linear light fixture, frosted acrylic lens, aluminum extrusion, 0-10V dimming.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>23</td>
<td>120V</td>
</tr>
<tr>
<td>L7</td>
<td>2' long wall mounted LED vanity light fixture, nickel finish, white acrylic lens, UL listed.</td>
<td>Metalux</td>
<td>22CZ-LD5-50-S-UNV-L935-CD-1-U</td>
<td>LED 4400</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L3</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L8</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L11</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L14</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L13</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L12</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L10</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L17</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L15</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L18</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L16</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L19</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L20</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L21</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L22</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L23</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>ZL1D</td>
<td>LED 5000</td>
<td>3000K</td>
<td>50</td>
<td>120V</td>
</tr>
<tr>
<td>L24</td>
<td>18&quot; round, LED, ceiling mount, access from below, impact resistant acrylic lens, white powder coat finish, 0-10V dimming, wet location listed, IC rated.</td>
<td>Lithonia</td>
<td>WST</td>
<td>LED 5000</td>
<td>3500K</td>
<td>50</td>
<td>120V</td>
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