ADDENDUM NUMBER ONE

To the Drawings and Project Manual Dated:

DEC 15, 2025

Entitled:

Indiana University
Launch Accelerator for Biosciences
1302 Indiana Ave.
Indianapolis, IN 46202

Prepared By:

BSA
175 S. Rangeline Rd., Suite 200
Carmel, IN 46032

_____

Addendum Dated: JAN 7, 2026

IU Project #: 20250072
BSALS Project #: 00360481

GENERAL

1. See presentation and attendee sign-in sheet from the pre-bid meeting held on January 6th, 2026.

CHANGES TO THE BID SCHEDULE

2. The bid due date for Bid Package 3 is being extended to Thursday, January 27th, 2026 at 2:00 PM EST.

CONTRACTOR QUESTIONS

1. None

CHANGES TO THE PROJECT MANUAL

1. Section 00 0110:

a. Removed Section 01 5639 for Temporary Tree and Plant Protection from project manual Table of Contents.

2. Added missing Section 01 8000 for Airborne Contaminants Control as listed in project manual Table of Contents.

3. Added missing section 01 8001 for Contractor Project Procedures as listed in project manual Table of Contents.

4. Added Section 03 5216 for Lightweight Insulating Concrete to project manual.

5. Section 07 5323:

a. Replace section in its entirety.

i. Added 1.02, B.

ii. Updated membrane thickness at 2.03, C, 2.

iii. Revised text at 3.10, C, 3.

6. Section 08 3323:

a. Replace section in its entirety.

i. Removed 1.02, C.

ii. Added 1.02, E.

iii. Added 1.04, F.

iv. Added 1.05, A.

v. Revised text at 1.05, B.

vi. Added 1.06, C.

vii. Revised text at 2.01 A from 1 through 7.

viii. Revised text at 2.02, 2 and 5.

ix. Removed 2.02, 7.
x. Added 2.02, 8 and 9.
xi. Revised text at 2.02, 10.
xii. Added 2.03, 1.
xiii. Added 2.03, 4, a.
xiv. Removed text at 2.03, B.
xv. Removed 2.03, C, 1.
xvi. Added 2.03, C, 2.
xvii. Removed 2.03, E, 1 and a.
xviii. Removed 2.03, 3 and 4.
xix. Added 2.03, 5.
xx. Added 2.03, F.
xxi. Added 2.04, B, 2, a.
xxii. Revised text at 2.04, B, 3.

7. Section 08 4413:

a. Replace section in its entirety.
i. Added 1.01, B.
ii. Revised text at 1.05, C.
iii. Added 1.05, C, 1 through 3.
iv. Added 1.05, D, 1 through 3.
v. Added 1.05, G, 1 and 2.
vi. Added 1.05, H, 1 and 2.
vii. Removed 1.10, B and replaced with C.
viii. Removed 1.10, D and replaced with E.
ix. Revised text at 2.01, A, 2.
x. Added 2.01, A, 2, a and b.
xi. Added text at 2.02, B, 1.
xii. Revised text at 2.02, E, 2.
xiii. Added 2.02, F.
xiv. Added subpart 2.03.
xv. Added 2.06, B, 1.
xvi. Added 3.06, B.

8. Section 08 8000:

a. Replace section in its entirety.
   i. Revised text at 2.04, D, 6.
   ii. Revised text at 2.04, E, 6.
   iii. Revised text at 2.04, F, 5.
   iv. Revised text at 2.04, G, 5.

9. Section 08 9100:

a. Replace section in its entirety.
   i. Removed 1.01, B.
   ii. Removed 1.02, A.
   iii. Added 1.04, G.
   iv. Added 2.03, C.
   v. Removed 2.05, B.
   vi. Revised text at 2.05, C.
   vii. Revised text at 2.07, C.
   viii. Added 2.07, D and E.
   ix. Removed 2.08.
   x. Added 3.02, C, F, and G.
   xi. Added 3.03 and 3.04.

CHANGES TO THE DRAWINGS

10. Drawing S120B – SECOND LEVEL FRAMING PLAN – AREA B

a. Add HSS10x6 columns near column lines 9 and 12, south of column line D.

11. Drawing S130B – THIRD LEVEL FRAMING PLAN – AREA B

a. Add HSS10x6 columns near column lines 9 and 12, south of column line D, and show section cuts referencing detail S512-06 showing additional information about this column and the associated bent plate which is welded to the column.

12. Drawing S512 – FRAMING DETAILS

a. Add details S512-06 and S512-07.

13. Drawing A107.5 - PLAZA LEVEL ROOF PLANS:

a. Replace sheet in its entirety.
   i. Detail 2: Add plan detail callout

14. Drawing A130 – REFLECTED CEILING PLAN – EXTERIOR SOFFITS:

a. Replace sheet in its entirety.
   i. Detail 1: Soffit vents.

15. **Drawing A203 – EXTERIOR ELEVATIONS:**
    a. Replace sheet in its entirety.
        i. Detail 3: Add louver height and size dimensions.
16. **Drawing A302 – BUILDING ASSEMBLY TYPES – HORIZONTAL:**
    a. Replace sheet in its entirety
        i. Soffit S1 modifications.
17. **Drawing A303 – BUILDING ASSEMBLY – ENLARGED TYPICAL DETAILS:**
    a. Replace sheet in its entirety.
        i. Detail 3: Modify limestone / brick corner.
18. **Drawing A332 – EXTERIOR SECTION DETAILS:**
    a. Replace sheet in its entirety.
        i. Details 4: Modify soffit dimension / location.
19. **Drawing A334 – EXTERIOR SECTION DETAILS:**
    a. Replace sheet in its entirety.
        i. Details 1 & 5: Modify soffit dimension / location.
20. **Drawing A335 – EXTERIOR SECTION DETAILS:**
    a. Replace sheet in its entirety.
        i. Detail 1: Coping adjustment.
        ii. Detail 3: Update with mist eliminator / louver.
        iii. Detail 5: Update soffit detailing.

END OF ADDENDUM NUMBER ONE

Attachments:
- Section 00 0110, 01 8000, 01 8001, 03 5216, 08 3323, 08 4413, 08 8000, 08 9100
- Drawing S120B, S130B, S512, A107.5, A130, A203, A302, A303, A332, A334, A335

SECTION 00 0110
TABLE OF CONTENTS

THIS TABLE OF CONTENTS IS CUMULATIVE. SPECIFICATION SECTIONS AND REVISIONS ISSUED SINCE PREVIOUS CUMULATIVE WORK PACKAGE ARE INDICATED WITH BOLD FONT.

SPECIFICATIONS FOR THIS PROJECT ARE BEING BID IN SEPARATE BID PACKAGES BUT BEING ISSUED AS A CUMULATIVE WORK PACKAGE. REQUIREMENTS IN SPECIFICATION SECTIONS MAY BE REVISED AS DESIGN, PRODUCT, AND COORDINATION DECISIONS ARE MADE, AND TO INCLUDE REQUIREMENTS FOR SUBSEQUENT CUMULATIVE WORK PACKAGE REVISIONS THAT WILL BE REISSUED.

SPECIFICATION SECTIONS MAY CONTAIN REQUIREMENTS THAT DO NOT APPLY TO THE SCOPE OF WORK IN THE BID PACKAGES BEING SEPARATED AND ISSUED BY THE CONTRACTOR TO VARIOUS TRADES AND SUBCONTRACTORS, AS WELL AS CROSS REFERENCES TO SPECIFICATION SECTIONS THAT HAVE NOT YET BEEN ISSUED FOR CONSTRUCTION.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING WITH THE ARCHITECT WHETHER A REVISION OF A SPECIFICATION SECTION HAS BEEN ISSUED AND IS CAUTIONED TO DO SO BEFORE PURCHASING PRODUCTS OR STARTING WORK DESCRIBED IN THE SECTION.

CONSTRUCTION CHANGES REQUIRED BECAUSE OF CONTRACTOR'S FAILURE TO USE CORRECT VERSION OF SPECIFICATIONS SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO OWNER.

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
00 0105	Certifications Page	12/15/2025	BP3 CD: Core and Shell Package		
00 0110	Table of Contents	12/15/2025	BP3 CD: Core and Shell Package		
00 3100	Available Project Information	12/15/2025	BP3 CD: Core and Shell Package		
00 4325	Substitution Request Form During Procurement	12/15/2025	BP3 CD: Core and Shell Package		

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
01 2000	Price and Payment Procedures	12/15/2025	BP3 CD: Core and Shell Package		

01 2300	Alternates	12/15/2025	BP4 100% DD: Build-Out Package		
01 2500	Substitution Procedures	12/15/2025	BP3 CD: Core and Shell Package		
01 3000	Administrative Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 3329.02	Sustainable Design Reporting - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 3566.05	Project Sustainability Goal Credit Summary - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 3566.12	Sustainability Certification Project Procedures - LEED v4	12/15/2025	BP3 CD: Core and Shell Package		
01 4000	Quality Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 4219	Reference Standards	12/15/2025	BP3 CD: Core and Shell Package		
~~**01 5639**~~	~~**Temporary Tree and Plant Protection**~~	~~**09/29/2025**~~	~~**BP1 CD: Site and Foundation Package**~~		
01 6000	Product Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 6116	Volatile Organic Compound (VOC) Content Restrictions	12/15/2025	BP3 CD: Core and Shell Package		
01 7000	Execution and Closeout Requirements	12/15/2025	BP3 CD: Core and Shell Package		
01 7419	Construction Waste Management and Disposal	12/15/2025	BP3 CD: Core and Shell Package		
01 7800	Closeout Submittals	12/15/2025	BP3 CD: Core and Shell Package		
01 7900	Demonstration and Training	12/15/2025	BP3 CD: Core and Shell Package		
01 8000	Airborne Contaminants Control	12/15/2025	BP3 CD: Core and Shell Package		
01 8001	Contractor Project Procedures	12/15/2025	BP3 CD: Core and Shell Package		
01 9100	Commissioning	12/15/2025	BP4 100% DD: Build-Out Package		
01 9151	Systems Manual	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 02 -- EXISTING CONDITIONS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
02 0100	Maintenance of Existing Conditions	09/29/2025	BP1 CD: Site and Foundation Package		
02 4113	Selective Site Demolition	11/17/2025	BP2 CD: Early Equipment Package		

DIVISION 03 -- CONCRETE

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
03 1000	Concrete Formwork	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 2000	Concrete Reinforcement	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 3000	Cast-in-Place Concrete	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 4500	Precast Architectural Concrete	12/15/2025	BP3 CD: Core and Shell Package	12/15/2025	
03 5216	**Lightweight Insulating Concrete**	**01/07/2026**	**BP3 CD: Addendum 01**		
03 6000	Epoxy Grout	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 6001	Grouting	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2
03 6200	Non Shrink Grouting	09/29/2025	BP1 CD: Site and Foundation Package	12/15/2025	2

DIVISION 04 -- MASONRY

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
04 2000	Unit Masonry	12/15/2025	BP3 CD: Core and Shell Package		
04 4313	Stone Masonry Veneer	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 05 -- METALS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
05 1200	Structural Steel Framing	12/15/2025	BP3 CD: Core and Shell Package		

05 3123	Steel Roof Decking	12/15/2025	BP3 CD: Core and Shell Package		
05 3600	Composite Metal Decking	12/15/2025	BP3 CD: Core and Shell Package		
05 4000	Cold-Formed Metal Framing	12/15/2025	BP3 CD: Core and Shell Package		
05 5000	Metal Fabrications	12/15/2025	BP3 CD: Core and Shell Package		
05 5100	Metal Stairs	12/15/2025	BP3 CD: Core and Shell Package		
05 5133	Metal Ladders	12/15/2025	BP3 CD: Core and Shell Package		
05 5213	Pipe and Tube Railings	12/15/2025	BP3 CD: Core and Shell Package		
05 7100	Decorative Metal Stairs	12/15/2025	BP3 CD: Core and Shell Package		
05 7300	Decorative Metal Railings	12/15/2025	BP4 100% DD: Build-Out Package		
05 7500	Decorative Formed Metal	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
06 1053	Miscellaneous Rough Carpentry	12/15/2025	BP3 CD: Core and Shell Package		
06 1600	Sheathing - USG	12/15/2025	BP3 CD: Core and Shell Package		
06 4100	Architectural Wood Casework	12/15/2025	BP4 100% DD: Build-Out Package		
06 6413	Translucent Resin Panel Fabrications	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
07 1113	Bituminous Dampproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 1300	Sheet Waterproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 1616	Crystalline Waterproofing	09/29/2025	BP1 CD: Site and Foundation Package		
07 2100	Thermal Insulation	12/15/2025	BP3 CD: Core and Shell Package		

07 2400	Exterior Insulation and Finish Systems	12/15/2025	BP3 CD: Core and Shell Package		
07 2700	Air Barriers	12/15/2025	BP3 CD: Core and Shell Package		
07 4113	Metal Roof Panels	12/15/2025	BP3 CD: Core and Shell Package		
07 4213.19	Insulated Metal Wall Panels	12/15/2025	BP3 CD: Core and Shell Package		
07 4213.23	Metal Composite Material Wall Panels	12/15/2025	BP3 CD: Core and Shell Package		
07 5323	**EPDM Thermoset Single-Ply Roofing - Carlisle**	**12/15/2025**	**BP3 CD: Core and Shell Package**	**01/07/2026**	**2**
07 5556	Fluid- Applied Protected Membrane Roofing	12/15/2025	BP3 CD: Core and Shell Package		
07 6200	Sheet Metal Flashing and Trim	12/15/2025	BP3 CD: Core and Shell Package		
07 7100	Roof Specialties	12/15/2025	BP3 CD: Core and Shell Package		
07 7200	Roof Accessories	12/15/2025	BP3 CD: Core and Shell Package		
07 7600	Roof Pavers	12/15/2025	BP3 CD: Core and Shell Package		
07 8100	Applied Fire Protection	12/15/2025	BP3 CD: Core and Shell Package		
07 8400	Firestopping	12/15/2025	BP3 CD: Core and Shell Package		
07 8700	Smoke Containment Barriers	12/15/2025	BP4 100% DD: Build-Out Package		
07 9200	Joint Sealants	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 08 -- OPENINGS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
08 1113	Hollow Metal Doors and Frames	12/15/2025	BP3 CD: Core and Shell Package		
08 1116	Aluminum Doors and Frames	12/15/2025	BP3 CD: Core and Shell Package		
08 3100	Access Doors and Panels	12/15/2025	BP4 100% DD: Build-Out Package		
08 3323	**Overhead Coiling Doors**	**12/15/2025**	**BP3 CD: Core and Shell Package**	**01/07/2026**	**2**
08 3400	Special Function Doors	12/15/2025	BP4 100% DD: Build-Out Package		

08 4313	Aluminum-Framed Storefronts	12/15/2025	BP4 100% DD: Build-Out Package		
08 4413	**Glazed Aluminum Curtain Walls**	**12/15/2025**	**BP3 CD: Core and Shell Package**	**01/07/2026**	**2**
08 4435	Protective Framed Glazing Assemblies	12/15/2025	BP4 100% DD: Build-Out Package		
08 7100	Door Hardware	12/15/2025	BP4 100% DD: Build-Out Package		
08 8000	**Glazing**	**12/15/2025**	**BP3 CD: Core and Shell Package**	**01/07/2026**	**2**
08 8720	Architectural Glazing Film	12/15/2025	BP4 100% DD: Build-Out Package		
08 8813	Fire-Rated Glazing	12/15/2025	BP4 100% DD: Build-Out Package		
08 9100	**Louvers**	**12/15/2025**	**BP3 CD: Core and Shell Package**	**01/07/2026**	**2**

DIVISION 09 -- FINISHES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
09 2116	Gypsum Board Assemblies	12/15/2025	BP3 CD: Core and Shell Package		
09 3013	Ceramic Tiling	12/15/2025	BP4 100% DD: Build-Out Package		
09 5000	Acoustical Panels	12/15/2025	BP4 100% DD: Build-Out Package		
09 5100	Linear Acoustical Panel Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 5123	Acoustical Tile Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 5423	Metal Ceilings	12/15/2025	BP4 100% DD: Build-Out Package		
09 6513	Resilient Base and Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
09 6516	Resilient Sheet Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6519	Resilient Tile Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6536	Static-Control Resilient Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6623	Resinous Matrix Terrazzo Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6723	Resinous Flooring	12/15/2025	BP4 100% DD: Build-Out Package		
09 6813	Tile Carpeting	12/15/2025	BP4 100% DD: Build-Out Package		

09 7200	Wall Coverings	12/15/2025	BP4 100% DD: Build-Out Package		
09 7713	Stretched-Fabric Wall Systems	12/15/2025	BP4 100% DD: Build-Out Package		
09 8433	Sound Absorbing Wall Units	12/15/2025	BP4 100% DD: Build-Out Package		
09 9113	Exterior Painting	12/15/2025	BP3 CD: Core and Shell Package		
09 9123	Interior Painting	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 10 -- SPECIALTIES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
10 1100	Visual Display Boards	12/15/2025	BP4 100% DD: Build-Out Package		
10 1419	Dimensional Letter Signage	12/15/2025	BP4 100% DD: Build-Out Package		
10 2113.13	Metal Toilet Compartments	12/15/2025	BP4 100% DD: Build-Out Package		
10 2213	Wire Mesh Partitions	12/15/2025	BP3 CD: Core and Shell Package		
10 2239	Folding Panel Partitions	12/15/2025	BP4 100% DD: Build-Out Package		
10 2600	Wall and Door Protection	12/15/2025	BP4 100% DD: Build-Out Package		
10 2800	Toilet, Bath, and Laundry Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
10 4300	Emergency Aid Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 4400	Fire Protection Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 5113	Metal Locker	12/15/2025	BP4 100% DD: Build-Out Package		
10 5129	Phenolic Lockers	12/15/2025	BP4 100% DD: Build-Out Package		
10 5500	Postal Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
10 5617	Wall Mounted Standards and Shelving	12/15/2025	BP4 100% DD: Build-Out Package		
10 7343	Transportation Stop Shelters	09/29/2025	BP1 CD: Site and Foundation Package		
10 7500	Flagpoles	09/29/2025	BP1 CD: Site and Foundation Package		

10 8213	Exterior Grilles and Screens	12/15/2025	BP3 CD: Core and Shell Package		
10 8223	Interior Grilles and Screens	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 11 -- EQUIPMENT

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
11 3013	Residential Appliances	12/15/2025	BP4 100% DD: Build-Out Package		
11 5300	Miscellaneous Laboratory Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
11 5313	Laboratory Fume Hoods	12/15/2025	BP4 100% DD: Build-Out Package		
11 5317	Laboratory Glassware Washers	12/15/2025	BP4 100% DD: Build-Out Package		
11 5319	Laboratory Sterilizers with Electric Steam Generators	12/15/2025	BP4 100% DD: Build-Out Package		
11 8129	Facility Fall Protection	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 12 -- FURNISHINGS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
12 2413	Roller Window Shades	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553	General Requirements for Laboratory Casework and Fume Hoods	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553.03	Adaptable Laboratory Casework Systems	12/15/2025	BP4 100% DD: Build-Out Package		
12 3553.13	Metal Laboratory Casework	12/15/2025	BP4 100% DD: Build-Out Package		
12 3661	Simulated Stone Countertops	12/15/2025	BP4 100% DD: Build-Out Package		
12 9300	Site Furnishings	09/29/2025	BP1 CD: Site and Foundation Package	10/15/2025	2

DIVISION 13 -- SPECIAL CONSTRUCTION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision

13 2100	Controlled Environmental Rooms	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 14 -- CONVEYING EQUIPMENT

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
14 2123	Machine Room-Less Electric Traction Passenger Elevators	12/15/2025	BP3 CD: Core and Shell Package		

DIVISION 21 -- FIRE SUPPRESSION

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
21 0800	Commissioning of Fire Suppression Systems	12/15/2025	BP4 100% DD: Build-Out Package		
21 1300	Fire Sprinkler and Standpipe Systems	12/15/2025	BP4 100% DD: Build-Out Package		
21 3000	Fire Pumps, Pump Controllers, and Other Appurtenances	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 22 -- PLUMBING

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
22 0800	Commissioning of Plumbing Systems	12/15/2025	BP4 100% DD: Build-Out Package		
22 1316	Sanitary Waste and Vent Piping	09/29/2025	BP1 CD: Site and Foundation Package		
22 1413	Facility Storm Drainage Piping	09/29/2025	BP1 CD: Site and Foundation Package		

DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
23 0500	Common Work Results for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 0513	Common Motor Requirements for HVAC Equipment	11/17/2025	BP2 CD: Early Equipment Package		
23 0517	Sleeves and Sleeve Seals for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		

23 0519	Meters and Gauges for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 0523	General-Duty Valves for HVAC Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 0529	Hangers and Supports for HVAC Piping and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
23 0548	Vibration and Noise Control for HVAC, Piping, and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
23 0553	Identification for HVAC Piping and Equipment	12/15/2025	BP4 100% DD: Build-Out Package		
23 0593	Testing, Adjusting, and Balancing for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 0595	Certification of Fume Hoods and Filter Testing	12/15/2025	BP4 100% DD: Build-Out Package		
23 0713	Duct Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0716	HVAC Equipment Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0719	HVAC Piping Insulation	12/15/2025	BP4 100% DD: Build-Out Package		
23 0800	Commissioning of HVAC Systems	12/15/2025	BP4 100% DD: Build-Out Package		
23 0906	Control Installation Contract	12/15/2025	BP4 100% DD: Build-Out Package		
23 2113	Hydronic Piping	12/15/2025	BP4 100% DD: Build-Out Package		
23 2114	Hydronic Specialties	12/15/2025	BP4 100% DD: Build-Out Package		
23 2123	Hydronic Pumps	12/15/2025	BP4 100% DD: Build-Out Package		
23 2500	HVAC Water Treatment	12/15/2025	BP4 100% DD: Build-Out Package		
23 2501	Glycol Water Treatment	12/15/2025	BP4 100% DD: Build-Out Package		
23 3100	HVAC Ducts and Casings	12/15/2025	BP4 100% DD: Build-Out Package		
23 3300	Air Duct Accessories	12/15/2025	BP4 100% DD: Build-Out Package		
23 3319	Duct Silencers	12/15/2025	BP4 100% DD: Build-Out Package		
23 3420	Induced Dilution Exhaust Fans	12/15/2025	BP4 100% DD: Build-Out Package		

23 3439	High-Volume, Low-Speed Propeller Fans	12/15/2025	BP4 100% DD: Build-Out Package		
23 3600	Air Terminal Units	12/15/2025	BP4 100% DD: Build-Out Package		
23 3700	Air Outlets and Inlets	12/15/2025	BP4 100% DD: Build-Out Package		
23 5100	Breechings, Chimneys, and Stacks	12/15/2025	BP3 CD: Core and Shell Package		
23 5216	Condensing Boilers	12/15/2025	BP4 100% DD: Build-Out Package		
23 5700	Heat Exchangers for HVAC	12/15/2025	BP4 100% DD: Build-Out Package		
23 6416	Centrifugal Water Chillers	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
23 6514	Induced-Draft Cooling Towers	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
23 7200	Air-to-Air Energy Recovery Equipment	11/17/2025	BP2 CD: Early Equipment Package		
23 7213	Custom Air Handling Units	11/17/2025	BP2 CD: Early Equipment Package		
23 8200	Miscellaneous Heating and Cooling Units	12/15/2025	BP4 100% DD: Build-Out Package		
23 8214	Chilled Beams	12/15/2025	BP4 100% DD: Build-Out Package		
23 8216	Air Coils	12/15/2025	BP4 100% DD: Build-Out Package		
23 8241	Water-to-Water Heat Pumps	12/15/2025	BP4 100% DD: Build-Out Package		
23 8413.29	Self-Contained Humidifiers	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 25 -- INTEGRATED AUTOMATION (NOT USED)

DIVISION 26 -- ELECTRICAL

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
26 0513	Medium-Voltage Cables	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 0519	Low-Voltage Electrical Power Conductors and Cables	12/15/2025	BP4 100% DD: Build-Out Package		
26 0526	Grounding and Bonding for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		

26 0529	Hangers and Supports for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.13	Conduit for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.16	Boxes for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0533.23	Surface Raceways for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0536	Cable Trays for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0543	Electrical Underground Ducts, Ductbanks, and Manholes	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 0548	Vibration and Seismic Controls for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0553	Identification for Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0573	Power System Studies	12/15/2025	BP4 100% DD: Build-Out Package		
26 0800	Commissioning of Electrical Systems	12/15/2025	BP4 100% DD: Build-Out Package		
26 0923	Lighting Control Devices	12/15/2025	BP4 100% DD: Build-Out Package		
26 1116	Secondary Unit Substations	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 2200	Low-Voltage Transformers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2413	Switchboards	12/15/2025	BP4 100% DD: Build-Out Package		
26 2416	Panelboards	12/15/2025	BP4 100% DD: Build-Out Package		
26 2726	Wiring Devices	12/15/2025	BP4 100% DD: Build-Out Package		
26 2813	Fuses	12/15/2025	BP4 100% DD: Build-Out Package		
26 2816.13	Enclosed Circuit Breakers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2816.16	Enclosed Switches	12/15/2025	BP4 100% DD: Build-Out Package		
26 2913	Enclosed Controllers	12/15/2025	BP4 100% DD: Build-Out Package		
26 2923	Variable-Frequency Motor Controllers	12/15/2025	BP4 100% DD: Build-Out Package		
26 3213	Engine Generators	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2

26 3600	Transfer Switches	11/17/2025	BP2 CD: Early Equipment Package	12/09/2025	2
26 3633	Connection Cabinets for Portable Generators and Load Banks	12/15/2025	BP4 100% DD: Build-Out Package		
26 4100	Facility Lightning Protection	12/15/2025	BP4 100% DD: Build-Out Package		
26 4300	Surge Protective Devices	12/15/2025	BP4 100% DD: Build-Out Package		
26 5100	Interior Lighting	12/15/2025	BP4 100% DD: Build-Out Package		
26 5600	Exterior Lighting	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 27 -- COMMUNICATIONS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
27 0100	Operation and Maintenance	12/15/2025	BP4 100% DD: Build-Out Package		
27 0200	References	12/15/2025	BP4 100% DD: Build-Out Package		
27 0300	Definitions	12/15/2025	BP4 100% DD: Build-Out Package		
27 0410	Quality Assurance	12/15/2025	BP4 100% DD: Build-Out Package		
27 0420	Submittals	12/15/2025	BP4 100% DD: Build-Out Package		
27 0430	Delivery, Storage and Handling	12/15/2025	BP4 100% DD: Build-Out Package		
27 0440	Sequencing and Scheduling	12/15/2025	BP4 100% DD: Build-Out Package		
27 0450	General Installation	12/15/2025	BP4 100% DD: Build-Out Package		
27 0460	Testing and Documentation	12/15/2025	BP4 100% DD: Build-Out Package		
27 0470	Record Drawings	12/15/2025	BP4 100% DD: Build-Out Package		
27 0480	Warranty	12/15/2025	BP4 100% DD: Build-Out Package		
27 0500	Common Work Results	12/15/2025	BP4 100% DD: Build-Out Package		
27 0526	Grounding and Bonding	12/15/2025	BP4 100% DD: Build-Out Package		
27 0528	Pathways	12/15/2025	BP4 100% DD: Build-Out Package		

27 0529	Hangers and Supports	12/15/2025	BP4 100% DD: Build-Out Package		
27 0533	Conduits and Backboxes	12/15/2025	BP4 100% DD: Build-Out Package		
27 0536	Cable Trays	12/15/2025	BP4 100% DD: Build-Out Package		
27 0539	Surface Raceways	12/15/2025	BP4 100% DD: Build-Out Package		
27 0543	Underground Duct Systems and Raceways	12/15/2025	BP4 100% DD: Build-Out Package		
27 0600	Schedules for Communications	12/15/2025	BP4 100% DD: Build-Out Package		
27 1100	Equipment Room Fittings	12/15/2025	BP4 100% DD: Build-Out Package		
27 1113	Entrance Protection	12/15/2025	BP4 100% DD: Build-Out Package		
27 1116	Cabinets, Racks, Frames and Enclosures	12/15/2025	BP4 100% DD: Build-Out Package		
27 1119	Termination Blocks and Patch Panels	12/15/2025	BP4 100% DD: Build-Out Package		
27 1123	Cable Management and Ladder Rack	12/15/2025	BP4 100% DD: Build-Out Package		
27 1136	Equipment Rack Layouts	12/15/2025	BP4 100% DD: Build-Out Package		
27 1146	Equipment Room Layout	12/15/2025	BP4 100% DD: Build-Out Package		
27 1200	Transmission Media	12/15/2025	BP4 100% DD: Build-Out Package		
27 1313	Copper Backbone Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1323	Optical Fiber Backbone Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1333	Backbone Coax	12/15/2025	BP4 100% DD: Build-Out Package		
27 1500	Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1513	Horizontal Copper Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1516	Voice Communications Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1519	Data Communications Copper Horizontal Cabling	12/15/2025	BP4 100% DD: Build-Out Package		

27 1533	Horizontal Coaxial Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
27 1543	Faceplates and Connectors	12/15/2025	BP4 100% DD: Build-Out Package		
27 4000	Audio-Video Communications	12/15/2025	BP4 100% DD: Build-Out Package		
27 9999	Appendix: Design Guide	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
28 0413	Common Submittal Requirements for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0513	Conductors and Cables for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0526	Grounding and Bonding for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0528	Pathways for Electronic Safety and Security	12/15/2025	BP4 100% DD: Build-Out Package		
28 0544	Sleeves and Sleeve Seals for Electronic Safety and Security Pathways and Cabling	12/15/2025	BP4 100% DD: Build-Out Package		
28 1300	Access Control	12/15/2025	BP4 100% DD: Build-Out Package		
28 2300	Video Surveillance	12/15/2025	BP4 100% DD: Build-Out Package		
28 3111	Digital, Addressable Fire-Alarm System	12/15/2025	BP4 100% DD: Build-Out Package		

DIVISION 31 -- EARTHWORK

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
31 1100	Site Clearing	09/29/2025	BP1 CD: Site and Foundation Package		
31 2000	Earthwork	11/17/2025	BP2 CD: Early Equipment Package		
31 2323	Flowable Fill	09/29/2025	BP1 CD: Site and Foundation Package		

31 2330	CU Structural Soil	09/29/2025	BP1 CD: Site and Foundation Package		
31 2500	Erosion Control	09/29/2025	BP1 CD: Site and Foundation Package		
31 3116	Termite Control	09/29/2025	BP1 CD: Site and Foundation Package		
31 6000	Rammed Aggregate Pier	09/29/2025	BP1 CD: Site and Foundation Package		

DIVISION 32 -- EXTERIOR IMPROVEMENTS

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
32 1216	Asphalt Paving	09/29/2025	BP1 CD: Site and Foundation Package		
32 1300	Site Concrete	09/29/2025	BP1 CD: Site and Foundation Package		
32 1723	Pavement Marking	09/29/2025	BP1 CD: Site and Foundation Package		
32 8000	Irrigation System (Design-Build)	09/29/2025	BP1 CD: Site and Foundation Package		
32 9200	Seeding	09/29/2025	BP1 CD: Site and Foundation Package		
32 9223	Sodding	11/26/2025	ASI 003		
32 9300	Planting	09/29/2025	BP1 CD: Site and Foundation Package		
32 9443	Tree Grate	09/29/2025	BP1 CD: Site and Foundation Package		
32 9450	Pavement Support System	09/29/2025	BP1 CD: Site and Foundation Package		

DIVISION 33 -- UTILITIES

Section Number	Section Name	Section Issue Date	Section Issue Description	Current Revision Date	Current Revision
33 0500	Common Work Results for Utilities	11/17/2025	BP2 CD: Early Equipment Package		
33 1000	Site Water Distribution	09/29/2025	BP1 CD: Site and Foundation Package		
33 3000	Sanitary Sewers	11/17/2025	BP2 CD: Early Equipment Package		
33 4000	Storm Drainage	09/29/2025	BP1 CD: Site and Foundation Package		
33 4600	Subdrainage	09/29/2025	BP1 CD: Site and Foundation Package		

END OF SECTION 00 0110

SECTION 01 8000
AIRBORNE CONTAMINANTS CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. IUI airborne contaminants control policy and procedures.

1.2 POLICY

A. Contractor shall limit dissemination of airborne contaminants produced by construction-related activities in order to provide protection of personnel, operations and equipment from possible undesirable effects of exposure to such contaminants.

1. The use of hazardous or irritating materials must be properly controlled where it may affect individuals. Measures shall be taken to ensure that dusts, mists, fumes, gases and vapors of these materials are eliminated, isolated, or captured.
2. If access into the ceiling in occupied areas is required, approved procedures must be followed.

1.3 DEFINITIONS

A. Contaminant-producing activities include, but are not limited to:

1. Demolition and removal of walls, floors, carpeting, ceilings and other building finish material.

2. Demolition of plumbing, mechanical and electrical systems and equipment.

3. Finish operations such as sanding, painting, and application of special surface coatings.

4. All routine construction activities that can generate dust or fumes.

5. Site operations.

B. Containment Areas: As determined by IUI Environmental Health and Safety and as shown on drawings. Includes area of construction, adjacent staging and storage areas, and passage areas for contractors, suppliers and waste.

C. Protection areas: As determined by IUPUI Environmental Health and Safety and as shown on drawings as Protection Areas. Includes areas adjacent to Containment Area, either occupied or used for passage, as well as areas connected to construction area by mechanical system air intake, exhaust and ductwork.

D. "Minor" ceiling access is defined as visual observation or minor adjustments or other activity that does not disturb dust. Acoustical panels shall be replaced or access panel shall be closed immediately when the construction worker leaves the work site.

E. "Major" ceiling access describes any other access not defined as "minor".

F. "Thorough" cleaning of surfaces which become exposed to dust shall be accomplished by use of either a HEPA-filtered vacuum cleaner or a wet mop.

F. Negative Air Machine: Portable mechanical units to provide negative air pressure in the containment area as specified in this section.

1.4 PROTECTION

A. Exercise caution when handling fluids, particularly heating water, in an interstitial space. When working with fluids provide a water-tight barrier beneath the work area to catch and retain all spillage before it reaches the ceiling below.

B. Notify the Owner's Representative at least three(3) working days prior to commencement of work in ceilings or interstitial spaces above occupied areas in order to allow for the relocation or protection of occupants.

1.5 SUBMITTALS

A. Schedules: Submit work areas and procedure schedules for containment of airborne contaminants.

B. Work Plan: Drawings and details of construction of necessary temporary

barriers, and description of procedures to be used to achieve and maintain control of construction-related airborne contaminants.

C. Work plan must be approved by IUPUI Environmental Health and Safety prior to commencement of work.

D. Provide IUI Environmental Health and Safety copies of Material Safety Data Sheets for all products being used.

1.6 GENERAL CEILING ACCESS DIRECTIVES

A. Contractor shall notify IUI Environmental Health and Safety of work requiring access to the ceiling outside the containment area a minimum of three(3) working days prior to commencement of work.

B. Spray top of ceiling panels to be removed, and surrounding affected panels with fine detergent/water mist to settle dust prior to removal.

C. Owner's representative shall be contacted for all ceiling access problems.

1.7 QUALITY CONTROL

A. Pre-Construction Meeting: Before commencement of construction the contractor shall attend an orientation session held by IUPUI Environmental Health and Safety for instructions on required precautions.

B. Notification: Three(3) working days notification to owner's representative of construction activity causing potential airborne contaminants in a Protection Area.

1.8 TESTING

A. IUI Environmental Health and Safety may conduct periodic air sampling of Protection Areas during construction to monitor the effectiveness of containment procedures.

B. Air Pressure: Contractor shall verify the maintenance of negative air pressure in the Containment Area relative to the Protection Area on a continuous basis utilizing differential pressure monitors.

1.9 PERFORMANCE REQUIREMENTS

A. Contractor's Responsibilities shall include but not be limited to:

1. Compliance with IUI requirements and use of installation procedures and methods which satisfy applicable code requirements and referenced controls and procedures.

2. Formulation of specific means and methods of achieving and maintaining control of airborne contaminants during construction.

3. Proposal of work plan and procedures for control of airborne contaminants as noted in the contract documents.

4. Submission of proposed work plan to IUI Enviromnental Health and Safety for review prior to the performance of construction activities.

5. The contractor shall provide all required labor and material to install and maintain the approved plan.

PART 2 PRODUCTS

2.1 MATERIALS

A. Abatement Technologies HEPA-AIRE Portable Air Scrubbers or equal.

1. Units shall include pre-filters, final filters, HEPA filters and filter static pressure gauges.

2. HEPA filter shall be 99.9% efficient at 0.3 micron particle size.

B. Carpet or Mats: Provide carpet or mats at enclosure entrances vacuumed or changed as often as necessary to prevent accumulation of dust. At contractor's option, provide adhesive-faced contamination control mats with disposable sheets in lieu of vacuumed mats. All vacuuming outside areas not under negative pressure shall be performed with a certified HEPA-filtered vacuum.

C. Polyethylene shall be fire retardant type listed by Fire Underwriter's Laboratories affixed with fire retardant tape.

D. Air Pressure Monitors shall be differential switch/gauge equal to Dwyer Model 3000-0 with a range of Oto .25 inches of water gauge and high-low adjustable set point

PART 3 EXECUTION

3.1 FUNCTIONAL REQUIREMENTS

A. Dust control: The contractor shall take appropriate steps throughout the course of the project to prevent airborne dust due to his/her work. Water shall be applied whenever practical to settle and hold dust, particularly during demolition and removal of materials. Care shall be exercised to prevent the accumulation of standing water or the saturation of any materials. No chemical palliative shall be utilized without the written consent of Indiana University.
   a. Isolation of construction areas in occupied buildings: Accomplished by using plastic sheeting materials or dry wall.
   b. Ventilation of construction areas to create negative pressure: The use of fans and negative pressure machines can contain airborne materials to the construction zone. Exhaust of airborne materials to the outside of the building must be done carefully so that it doesn't affect individuals in the same building or in adjacent buildings. The contained area shall be kept under negative pressure relative to the surrounding areas. A minimum of-.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the work area as evidenced by manometer measurements provided by the contractor on a continuous basis.
   c. Air Quality Assurance: Employ local exhaust when dust, hazardous vapors, fumes, or gases are generated. If local exhaust is not feasible, portable air cleaning devices (such as the use of HEPA-filtration) may be used. Minimize dust generation by using wet methods for cutting or sanding.
   d. Scheduling the use of hazardous and irritating materials: Work planning must include the scheduling of material use that creates hazardous or irritating conditions to times when buildings are less occupied (evening, nights, holidays, and weekends). This includes the spraying of external building materials, such as sealants.
   e. Notification for use of solvent-based materials: Notification must be made prior to the use of solvent-based paints, (including electrostatic painting) cleaning materials, and other solvent-based products. A permit for the use of solvent-based materials must be approved by the Department of Environmental Health and Safety prior to the use of these materials.

f. Use safer, low-emitting materials: Many paints and other building materials are available with safer or non-solvent formulations.

B. Exterior Work: Direct exhaust from equipment away from building air intakes.
   a. Use or application of chemical/odorous materials shall be located at least 25 feet away from all outside air intakes (if feasible).
   b. When work including chemical/odorous materials must be done at or near air intakes, outside air intake should be minimized or the task should be performed when the building is not occupied (such as evenings or weekends).
   c. Locate dumpsters for debris away from operating HVAC outdoor air intakes and exterior doors to occupied areas where possible
   d. For long-term projects that use chemicals or produce combustion exhaust near air intakes, install charcoal filters in the air handling units serving the occupied space of the building.

C. Provide a thorough cleaning of any surfaces that become exposed to dust.

D. Removal of water-saturated construction materials: promptly remove and dispose of material saturated with water as a result of construction activity or leakage within the project area. Failure to comply will result in the contractor being held liable by Indiana University for any required mold abatement.

3.2 ENFORCEMENT

A. In the event that the contractor fails, in the owner's opinion, to comply with this specification, the owner shall have the right to stop work on the project and correct any and all deficiencies at the expense of the contractor.

END OF SECTION

SECTION 01 8001
CONTRACTOR PROJECT PROCEDURES

Contractors have become a significant population at many IUI sites, even working side by side with IUI employees. Contractors may be exposed to hazardous conditions in IUI locations and may also expose IUI employees and the community to hazards. IUI desires to see that all aspects of its operations are performed in a safe and healthy work environment. Consistency between and across sites is vital to an effective health and safety program. With these considerations in mind, the safety of contractors will be a focus of each site.

The contractor's safety record will be a criterion used to judge performance and determine whether or not a contractor qualifies for future contracts at IUI.

This checklist contains only a summary of safety guidelines that are believed **most applicable** to this construction project. General OSHA safety requirements are not referenced in this document. The contractor is expected to know of the applicable OSHA safety standards and comply with them. For a more extensive list of safety guidelines, please visit the IUI Department of Environmental Health and Safety website at http://www.ehs.iupui.edu/ehs/pub_safehandbk.asp. A copy of the IUI Contractor Policies and Procedures Manual may be obtained by calling EHS at 274-2005.

Air Quality Issues

The use of hazardous or irritating materials must be properly controlled where it may affect individuals. Measures shall be taken to ensure that dusts, mists, fumes, gases and vapors of these materials are eliminated, isolated, or captured. Primary methods of control include the following:

- **Isolation of construction areas in occupied buildings.** This is commonly accomplished using plastic sheeting materials or dry wall.

- **Ventilation of construction areas to create negative pressure.** The use of fans and negative pressure machines can contain airborne materials to the construction zone. Exhaust of airborne materials to the outside of the building must be done carefully so that it doesn't affect individuals in the same building or in adjacent buildings. A negative pressure of -.02 column inches of water pressure differential is considered acceptable.

- **Scheduling the use of hazardous and irritating materials.** Work planning must include the scheduling of material use that creates hazardous or irritating conditions to times when buildings are less occupied (evening, nights, holidays, and weekends). This includes the spraying of external building materials, such as sealants.

- **Notification for use of solvent-based materials.** Notification must be made prior to the use of solvent-based paints, (including electrostatic painting) cleaning materials, and other solvent-based products. A permit for the use of solvent-based materials must be approved by the Department of Environmental Health and Safety prior to the use of these materials.

- **Use safer, low-emitting materials.** Many paints and other building materials are available with safer or non-solvent formulations.

Air Quality Control during Renovation Projects in Occupied Buildings at IUI

General Air Quality Specifications

- Develop a site-specific plan to control demolition and reconstruction materials in renovation areas as guided by the 'Air Quality Considerations' below.
- Identify the specific air quality measures needed for the renovation project, including appropriate performance metrics as needed.
- Require each prime contractor to designate an air quality representative to manage air quality issues.
- Specify conditions that would require an emergency response, such as asbestos release or a major water loss.

Air Quality Considerations

- Schedule renovation work during periods of low building occupancy if possible.
- Isolate work areas from occupied areas using critical barriers, air pressure control and high-efficiency particulate air (HEPA) filtration.
- Minimize the number of building penetrations necessary for entry into the renovation area. Choose the penetration sites carefully to minimize the potential for occupant exposure.
- Modify HVAC operations according to specifications of consulting and IUI staff engineers prior to and during renovation activities to ensure isolation of renovation areas from occupied spaces.
- Maintain an adequate unoccupied buffer zone around renovation areas according to design specifications. This may require temporarily relocating building occupants in the immediate vicinity of renovation areas.
- Increase housekeeping activities in adjacent occupied areas during renovation activities that create dust.

Work Practice Measures for Air Quality Assurance

- Employ local exhaust when dust, hazardous vapors, fumes, or gases are generated. If local exhaust is not feasible, portable air cleaning devices (such as the use of HEPA-filtration) may be used
- Minimize dust generation by using wet methods for cutting or sanding
- Locate dumpsters for debris away from operating HVAC outdoor air intakes and exterior doors to occupied areas where possible

Specific Control Measures for HVAC Protection

- Ventilation shall be provided in order to maintain a negative pressure in all areas of occupied buildings where there is potential for dust contaminant generation from a construction project. The contained area shall be kept under negative pressure relative to the surrounding areas by the use of HEPA filtered negative air machine(s). A minimum of -.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the work area as evidenced by manometer measurements provided by the contractor on a continuous basis.
- Construction documents shall specify modifications required to existing mechanical systems or temporary equipment to be installed to properly ventilate the affected building areas.
- Construction documents shall include temporary ductwork layouts (as necessary) as well as sizing and specifications of fans.
- Contractors shall not make design decisions for temporary ventilation of occupied areas of buildings.
- Isolate portions of the HVAC system that may become contaminated from renovation activities as specified by consulting and IUI staff engineers.

- Seal return air grilles in renovation areas.
- Upgrade filtration efficiency in the HVAC systems that continue to be used during renovation (if possible) as directed by specifications.

Specific Housekeeping Measures for Air Quality Assurance

- Identify the route(s) for removing construction debris from the building.
- Identify traffic routes for renovation workers within the building, using pathways away from occupied spaces if possible.
- Identify specific locations within buildings that contractors may use, including restrooms (if appropriate).
- Eliminate demolition/renovation debris by bagging on site and/or the use of covered wheelbarrows or cart to transport debris to containers outside of the building.
- Contractors shall clean areas inside of construction exits to minimize dirt and debris from entering occupied spaces in the building.
- Contractors shall clean occupied areas adjacent to renovation site (such as hallways) if construction debris or soil has caused an area to be notably dirtier than other similarly occupied areas.
- Place walk-off mats at all entrances and exits from the renovation area. These mats must be regularly cleaned or replaced to minimize migration of dust from the project site.

Specific Control Measures for Painting Occupied Areas

- Schedule work during evening hours or periods of low building occupancy.
- Use low odor/ low VOC products.
- Provide EHS copies of Material Safety Data Sheets for all products being used.
- Provide ventilation in the area. If necessary, maintain a negative pressure in all areas being painted.

Roof Leaks, Pipe Breaks and other Water Losses caused by Renovation Contractors

- Contractors are responsible for all water losses inside buildings that happen as a result of their renovation activity.
- Contractors shall inform Campus Facilities Services of all water losses that occur due to construction activities.
- Campus Facilities Services will manage the water remediation process and be reimbursed by contractor for all expenses involved with the remediation.
- Only University-approved contractors will be employed for water remediation.
- Water must be removed and damaged building materials must be replaced.

Outdoor Work with Hazardous or Odorous Materials near Air Intakes

- Locate portable toilets away from air intakes.
- Use or application of chemical/odorous materials shall be located at least 25 feet away from all outside air intakes (if feasible).
- When work including chemical/odorous materials must be done at or near air intakes, outside air intake should be minimized or the task should be performed when the building is not occupied (such as evenings or weekends).
- For long-term projects that use chemicals or produce combustion exhaust near air intakes, install charcoal filters in the air handling units serving the occupied space of the building.

Measures for Maintaining Good Air Quality

- Discuss air quality issues at regularly-scheduled construction meetings. The contractor indoor air quality representative needs to be included in these meetings.

- Monitor renovation activities carefully to ensure that all work conforms to the stated air quality control measures.
- Monitor pressurization at renovation areas, using a pressure monitoring device, to ensure that proper isolation and ventilation is in effect.
- Monitor for visible or odorous airborne contaminants in adjacent occupied areas.
- Promptly respond to occupant complaints in order to resolve issues that involve renovation areas.

Measures for Enforcement of Air Quality Assurance

- Contractors are responsible for meeting all specifications involving maintaining acceptable air quality for building occupants.
- Contractors shall coordinate with University Architects Office and Environmental Health and Safety for any variations to the specifications or circumstances outside of their control involving air quality in occupied buildings.
- If an acceptable air quality condition is not maintained by contractors, appropriate University officials may halt construction operations until suitable measures have been taken to restore good air quality for building occupants.

References

- *IAQ Guidelines for Occupied Buildings Under Construction*, Sheet Metal and Air Conditioning Contractors' National Association, Inc., First Edition, 1995.
- *Good Practice Guidelines for Maintaining Acceptable Indoor Environmental Quality During Construction and Renovation Projects,* National Institute for Occupational Safety and Health, 1997.
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environments,* New York City Department of Health, 1993.
- *Mold Remediation in Schools and Commercial Buildings,* United States Environmental Protection Agency, 2001.

IUI

VOLATILE MATERIAL USE PERMIT

Company _____ Today's Date _____

Company Address _____

Company Representative _____

Telephone _____ Fax _____

Campus Location For Use _____

Material to be used (Attach MSDS) _____

Application Method (spray, brush, etc.) _____

Vapor Control Measures _____

Requested Date(s) For Use_____ Requested Time(s) _____

******Forward completed form to: Environmental Health and Safety * ****
Questions? Call 274-2005

Environmental Health & Safety Approval

Approved By _____ Date _____

Restrictions/Requirements_____
_____
_____

SECTION 03 5216
LIGHTWEIGHT INSULATING CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating concrete fill over structural roof decking.

B. Perimeter joint filler.

1.02 RELATED REQUIREMENTS

A. Section 07 5556 - Fluid-Applied Protected Membrane Roofing: Installation of waterproofing membrane system over lightweight insulating concrete.

1.03 REFERENCE STANDARDS

A. ASTM C138/C138M - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

B. ASTM C150/C150M - Standard Specification for Portland Cement.

C. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

D. ASTM C332 - Standard Specification for Lightweight Aggregates for Insulating Concrete.

E. ASTM C495/C495M - Standard Test Method for Compressive Strength of Lightweight Insulating Concrete.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate layout of slopes, drain locations, and interruptions.

C. Product Data: Provide physical characteristics, thermal values, product limitations.

D. Certificates: Certify that products of this section meet or exceed specified requirements and that densities, indicated thicknesses, and thermal values have been achieved.

E. Manufacturer's Installation Instructions: Indicate mix instructions.

F. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer .

1.07 FIELD CONDITIONS

A. Do not place insulating concrete mix at ambient temperatures lower than 40 degrees F without heating mix water to 90 to 110 degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Lightweight Insulating Concrete:

1. Elastizell Corp. of America: www.elastizell.com/#sle.
2. Siplast; Insulcel: www.siplast.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Comply with applicable codes for combustibility requirements.

2.03 MATERIALS

A. Cement: ASTM C150/C150M, Portland Type I - Normal, gray color.

B. Lightweight Aggregate: ASTM C332; Group I, perlite.

C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 CONCRETE MIX

A. Test for compressive strength in accordance with ASTM C495/C495M, for wet density in accordance with ASTM C138/C138M, and for dry density after oven drying.

B. Provide concrete mix with the following minimum properties:
   1. Cast Density: 42 to 48 pounds per cubic foot.
   2. Compressive Strength: 250 pounds per square inch

2.05 ACCESSORIES

A. Reinforcement:
   1. Hexagonal woven wire mesh; galvanized, sizes as indicated on drawings.

B. Perimeter Joint Filler: Glass fiber strips, compressible to 50 percent original thickness under load of 25 psi with full recovery.

C. Insulation: ASTM C578, Type I molded polystyrene with venting holes to 3 percent of board area.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify joints in roof members are grouted or taped to prevent seepage of wet insulating concrete.

B. Verify roof deck is free of standing water, dirt, debris, ice, or other detrimental materials.

C. Verify roof slopes and elevations are as shown on the drawings and ready to receive insulating concrete.

D. Notify Architect immediately of conditions that would prevent correct and timely installation.

E. Do not proceed with work until detrimental conditions have been corrected.

3.02 PREPARATION

A. Install 1 inch thick expansion joint filler at:
   1. Perimeter of roof decking.
   2. Around penetrations through deck.
   3. Every 100 ft of deck surface dimension.

3.03 INSTALLATION

A. Slurry deck surface; place insulation; use mix to fill holes and breaks.

B. Place insulating concrete and screed surface to achieve minimum 2 inch thickness.

C. Slope concrete for roof surface drainage as indicated.

3.04 CURING

A. Cure in accordance with lightweight aggregate manufacturer's instructions.

B. Protect insulating concrete from excess evaporation of surface moisture.

C. During low humidity conditions, sprinkle water over concrete surface to aid hydration and curing.

3.05 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 4000 - Quality Requirements, will perform field inspection and testing for dry density.
   1. Testing Agency: Take three test samples from each 100 cubic yards of insulating concrete placed.

END OF SECTION 03 5216

SECTION 07 5323
EPDM THERMOSET SINGLE-PLY ROOFING - CARLISLE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered roof system with ethylene propylene diene monomer (EPDM) roofing membrane and decorative ballast.

B. Insulation, flat and tapered.

C. Vapor retarder.

D. Deck sheathing.

E. Roofing cant strips, stack boots, and walkway pads.

1.02 RELATED REQUIREMENTS

A. Section 05 3123 - Steel Roof Decking.

B. Section 07 5556 - Fluid-Applied Protected Membrane Roofing: Rubberized asphalt fluid-applied membrane roofing, including base flashings and roof insulation, at exterior roof terrace.

C. Section 07 7100 - Roof Specialties: Counterflashing, reglets, and flow-through, interlocking gravel edge trim.

1.03 REFERENCE STANDARDS

A. FM 4470 - Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.

B. FM DS 1-49 - Perimeter Flashing; 2021, with Editorial Revision (2025).

C. FM DS 1-34 - Hail Damage; 2018, with Editorial Revision (2023).

D. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2024.

E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

F. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

G. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

H. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

I. ASTM D4263 - Standard Practice for Indicating Moisture in Concrete by the Plastic Sheet Method.

J. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

L. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

M. FM (AG) - FM Approval Guide.

N. FM DS 1-28 - Wind Design.

O. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components.

P. SPRI RP-4 - Wind Design Standard for Ballasted Single-Ply Roofing Systems.

Q. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's written information listed below.
   1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, fasteners, and decorative ballast.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, paver layout, and decorative ballast locations with perimeter trim conditions.

D. Samples for Selection:
   1. Precast pavers 3 by 3 inches in size illustrating manufacturer's full range.

E. Samples for Verification:
   1. Submit two samples 6 by 6 inches in size illustrating roofing materials, including base sheet, roofing membrane sheet, flashing backer sheet, membrane cap sheet, and flashing sheet, of color specified.
   2. Aggregate surfacing material in gradation and color indicated. One-half pound sealed bag.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.

H. Sustainable Design Submittals:
   1. Test report showing solar reflectance index of membrane
   2. Certification documenting recycled content.
   3. Documentation of distance to manufacturing facilities.
   4. Documentation of adhesive and sealant contents.

I. Specimen Warranty: For approval.

J. Warranty:
   1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.

K. Manufacturer's Qualification Statement.

L. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of documented experience.

B. Installer Qualifications: Company specializing in performing work of this section:

1. With minimum ten years documented experience.
2. Approved by membrane manufacturer.
3. Extend manufacturer's labor and materials guarantee.
4. Extend manufacturer's No Dollar Limit guarantee.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide mock-up for evaluation of surface preparation, installation methods, and workmanship.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.

C. Protect products in weather protected environment, clear of ground and moisture.

D. Protect foam insulation from direct exposure to sunlight.

E. Keep Safety Data Sheets (SDS) at the project site at all times during transportation, storage, and installation of materials.

F. Comply with requirements from Owner to prevent overloading or disturbance of the structure when loading materials onto the roof.

1.09 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather. Refer to manufacturer's written instructions.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.

F. Do not allow grease, oil, fats, or other contaminants to come into direct contact with membrane.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Full System Warranty: Provide manufacturer's standard system warranty or customed form, without monetary limitation (No Dollar Limit), agreeing to repair or replace roofing that leaks, fails, or is damaged due to wind or other natural causes or workmanship within specified warranty period.
   1. Warranty Term: 30 years.
   2. For repair and replacement include costs of both material and labor in warranty.

3. Includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, substrate boards, adhesives, roofing accessories, and all other components of membrane roofing system to comply with warranty requirements.

C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the 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, and walkway products, for the following warranty period:
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carlisle SynTec Systems: www.carlisle-syntec.com/#sle.

B. Substitutions: See Section 01 6000 - Product Requirements.
   1. Other Acceptable Manufacturers:
      a. Holcim Elevate: www.elevatecommercialbp.com/#sle.
      b. Johns Manville: www.jm.com/#sle.

2.02 ROOFING APPLICATIONS

A. EPDM Membrane Roofing: One ply membrane, fully adhered with decorative ballast, over vapor retarder and insulation.

B. Roofing Assembly Performance Requirements and Design Criteria:
   1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
      a. Calculate SRI in accordance with ASTM E1980.
      b. Field applied coating may not be used to achieve specified SRI.
   2. Roof Covering External Fire Resistance Classification: Class A when tested per UL 790or ASTM E108.
   3. Wind Uplift:
      a. Designed to withstand wind uplift forces calculated with ASCE 7.
      b. Design Wind Speed: As indicated on drawings.
   4. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28 or FMG 4470.
      a. Design fastener quantity and pattern to prevent uplift in corners, perimeters and field of roof, in accordance with FMG 1-28 and 1-29.
      b. Design perimeter flashing and accessory attachment in compliance with FMG 1-49.
   5. Hail Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34, Severe Hail (SH) hazard area.
   6. Insulation Thermal Resistance (R-Value): Provide R-20, minimum, over entire roof deck. R-33 (aged), average minimum, over entire roof deck with crickets and tapered insulation in compliance with ASTM C1289-13e1.
   7. Drainage: No standing water within 48 hours after precipitation.

C. Ballast: See drawings for ballast layout.
   1. Field: Use No.2 decorative aggregate ballast of 1,300 lb/100 sq ft over remaining area of roof as indicated on drawings.
      a. Large Format Meramec Stone.
      b. Crushed Blue-Grey Slate Stone.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Single Source Responsibility: Provide and install products from single source.

B. Base Sheet: Self-adhering, rubberized asphalt membrane laminated to spun-bonded polyester fabric; 40 mil, 0.040 inch thick, minimum.
   1. Product: Carlisle 725TR.

C. Membrane:
   1. Material: Ethylene propylene diene monomer (EPDM); ASTM D4637/D4637M, Type I (non-reinforced).
   2. Thickness: 90 mil, 0.090 inch, minimum.
   3. Sheet Width: Factory fabricated into largest sheets possible.
   4. Color: White on Black.
   5. Products:
      a. Carlisle SynTec Systems; Sure-White.

D. Seaming Materials: As recommended by membrane manufacturer.

E. Vapor Retarder: Material approved by roof manufacturer complying with requirements of fire rating classification; compatible with roofing and insulation materials.
   1. Fire-retardant adhesive.
   2. Vapor Permeability: 0.1 perm inchor less, measured in accordance with ASTM E96/E96M.

F. Flexible Flashing Material: Same material as membrane.

G. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

2.04 DECK SHEATHING AND COVER BOARDS

A. Deck Sheathing and Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, 5/8 inch thick.
   1. Deck Sheathing Size: 48 by 96 inches.
   2. Cover Board Size: 48 by 48 inches.
   3. Product:
      a. GP Dens-Deck Prime, distributed by Carlisle SynTec Systems.

2.05 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: ASTM C1289, Type II, Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of the core foam; Grade 3.
   1. Compressive Strength: 25 psi.
   2. Board Size: 48 by 48 inches.
   3. Product:
      a. Carlisle InsulBase.

2.06 BALLAST MATERIALS

A. Rounded, Water-Worn Gravel:
   1. No. 2 Aggregate: 2-1/2-inch nominal diameter, sound, hard, washed, water-worn gravel; ASTM D448, with size classification of 2.
      a. Build up to a depth of 3 inches.

B. Crushed Stone: Install only over Sure-Seal HP Protection Mat.
   1. No. 2 Aggregate: 2-1/2-inch nominal diameter; ASTM D448, with size classification of 2.
      a. Build up to a depth of 3 inches.

C. Pavers: Precast concrete units, 7,500 psi air entrained mix.

1. Size: 24 by 24 by 3 inches, maximum.
2. Weight: 22 lb per sq ft
3. Finish: Smooth (steel trowel).
4. Color: As selected.
5. Install only over Sure-Seal HP Protection Mat.
6. Acceptable Manufacturers:
   a. Hanover Architectural Products: www.hanoverpavers.com/#sle.
   b. Rapid Building Systems: www.rapidbuilding.com/#sle.
   c. Roofblok, Ltd.: www.https://www.roofblok.com/#sle.
   d. Sunny Brook Pressed Concrete Co.: www.https://sunnybrookpressedconcrete.com/#sle.
   e. Wausau Tile, Inc. Terra-Paving Div.: www.wausautile.com/#sle.
   f. Westile Roofing Products.

2.07 ACCESSORIES

A. Prefabricated Flashing Accessories:
   1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
   2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
   3. Sealant Pockets: Same material as membrane, with manufacturer's standard accessories, in manufacturer's standard configuration.
   4. Sure-White Pressure-Sensitive Reinforced Universal Securement Strip (RUSS): 6 inches wide, 45 mil, 0.045 inch thick, reinforced EPDM membrane with 3 inches wide, 30 mil, 0.030 inch thick cured synthetic rubber with pressure-sensitive adhesive laminated to one edge.

B. Insulation Adhesive: Two-part, low-rise urethane foam adhesive or water-based adhesives compatible with roof systems and approved by roofing manufacturer.

C. Insulation Fasteners: Appropriate for purpose intended and approved by Factory Mutual FM (AG) and roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate , with metal or plastic plates.
   2. Insulation Fastening Plate: 3-inch nominal diameter metal or plastic plate, for use with the appropriate fastener to attach insulation.

D. Membrane Adhesive: As recommended by membrane manufacturer.

E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

F. Sealants: As recommended by membrane manufacturer.

G. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.

H. Primer: Manufacturer's recommended product.

I. Edgings and Terminations: Manufacturer's standard edge and termination accessories.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION, GENERAL

A. Clean substrate thoroughly prior to roof application.

B. Apply manufacturer's recommended vapor retarder or temporary roof before roof installation.

3.03 CONCRETE DECK PREPARATION

A. Fill surface honeycomb and variations with latex filler.

B. Confirm dry deck by moisture meter with 12 percent moisture maximum when tested per ASTM D4263.

3.04 METAL DECK PREPARATION

A. Install deck sheathing on metal deck:
   1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
   2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
   3. Tape joints.

B. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual FM DS 1-28 recommendations and roofing manufacturer's instructions.

3.05 INSTALLATION - GENERAL

A. Perform work in accordance with manufacturer's instructions.

B. Do not apply roofing membrane during unsuitable weather.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

G. When substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.

3.06 VAPOR RETARDER INSTALLATION

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
   1. Extend vapor retarder under cant strips and blocking to deck edge.
   2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

3.07 INSULATION APPLICATION

A. Attachment of Insulation on Metal Decks:

1. Mechanically fasten first layer of insulation to metal deck in accordance with roofing manufacturer's instructions and Factory Mutual FM DS 1-29 requirements.
2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturer's instructions.

B. Attachment of Insulation on Concrete Decks: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturer's instructions.

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

D. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

E. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

F. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

G. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

H. At roof drains, use factory-tapered boards to slope down to roof drains over 24 inches.
1. Provide sumps at all roof drains, minimum size of 48 by 48 inches.
2. Install ballast guard over roof drains.

I. Do not apply more insulation than can be completely waterproofed in the same day.

3.08 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

B. Shingle joints on sloped substrate in direction of drainage.

C. Fully Adhered Application: Apply adhesive at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof.

E. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.

F. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

G. Coordinate installation of roof drains and sumps and related flashings, locate field splices away from low areas and roof drains, and lap upslope sheet over downslope sheet.

H. Lay concrete pavers loose over manufacturer approved protection sheet and according to manufacturer's instructions.

I. Daily Seal: Install daily seal per manufacturer's instructions at the end of each workday. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

3.09 BALLAST INSTALLATION

A. Install ballast in accordance with manufacturer's instructions.

B. Aggregate Ballast:
1. Install protective mat over membrane.

2. Install ballast-anchored flow-thru metal edge trim at locations as indicated on drawings.
3. Apply ballast per SPRI RP-4 guidelines.
4. Evenly distribute aggregate ballast.

3.10 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general requirements for field quality control and inspection.

B. Require site attendance of roofing and insulation material manufacturers daily during installation of this work.

C. Electronic Leak Detection (ELD) Testing: Test waterproofed areas for leaks using ELD method that locates discontinuities in fluid-applied waterproofing in accordance with ASTM D7877 or ASTM D8231.
   1. Testing agency to submit Daily Field Report (DFR) in accordance with ASTM D8231 indicating daily details of work performed.
   2. Testing agency to submit training certification to ensure technician performing ELD testing is currently certified in accordance with relevant training program.
   3. ~~Continuous~~ Point-of-use operation testing system monitoring for real-time anomalies and incorporated into roof system; comprised of physical sensors and conductive media.
   4. Components:
      a. Moisture Detection Sensors: 2-inch stainless steel sensor pucks, attached together with 1/16-inch 316 stainless steel cable. Install sensors 120 inches apart in grid pattern for effective sensor range.
      b. Conduction Media: Install conductive fabric to moisture-detection sensors, and connect to monitoring grid; conform to manufacturer's written instructions and approved shop drawings.
      c. Products: Sentinel Roof Technologies; Leak Sentry: www.sentinelrooftechnologies.com/#sle.
      d. Substitutions: See Section 01 6000-Product Requirements.

3.11 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove wrappings, empty containers, paper, and other debris from the roof daily. Dispose of debris in compliance with local, State, and Federal regulations.

C. Remove bituminous markings from finished surfaces.

D. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

E. Repair or replace defaced or damaged finishes caused by work of this section.

3.12 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

3.13 ROOFING INSTALLER'S SAMPLE WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
   1. Owner: Indiana University.
   2. Building Name: LAUNCH ACCELERATOR FOR BIOSCIENCES

3. Project/Building Address: 1302 Indiana Ave., Indianapolis, IN 46202.
4. Area of Work: Roofing Systems.
5. Date of Substantial Completion of the Project (not the date of final roofing Work): MONTH xx, 202x
6. Warranty Period: 2 Years.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner 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 Roofing Installer will, at Roofing Installer's 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 100 mph;
      c. fire;
      d. failure of roofing system substrate (i.e. the support structure on which the roofing system has been installed), 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 Owner.
   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 Owner 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 faults or defects of the support structure on which the roofing system has been installed.
   4. During Warranty Period, if Owner 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 Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner 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. Owner 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 deter Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.
1. Authorized Signature: _____.
2. Name: _____.
3. Title: _____.

END OF SECTION 07 5323

SECTION 08 3323
OVERHEAD COILING DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior coiling doors.

B. Electric operators and control stations.

C. Wiring from electric circuit disconnect to operators and control stations.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: For miscellaneous steel supports and door-opening framing.

B. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

C. ~~Section 08 7100 - Door Hardware: Cylinder cores and keys.~~

D. Section 09 9123 - Interior Painting: Field paint finish.

E. Section 26 0533.13 - Conduit for Electrical Systems: Conduit from electric circuit to operator and from operator to control station.

F. Section 26 0583 - Wiring Connections: Power to disconnect.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ITS (DIR) - Directory of Listed Products.

E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

G. NEMA MG 00001 - Motors and Generators.

H. UL (DIR) - Online Certifications Directory.

I. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide general construction, electrical equipment, and component connections and details.

C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

D. Samples: Two slats, 2 by 4 inches in size illustrating shape, color and finish texture.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

H. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified and indicated.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for roller shaft counterbalance assembly. Complete forms in Owner's name and register with manufacturer.
   1. Warranty Period: Two years from date of Substantial Completion.

C. Powder Coat Finish: Premium RAL colors applied to curtain, guides, support angles, door hood, bottom bar, headplates and other components as specified.
   1. Manufacturer’s limited Premium Finish warranty for 4 years applicable to all visible components.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Overhead Coiling Metal Doors:
   1. Amarr; 4100 Series Rolling Slat Door: www.amarr.com/commercial/#sle.
   2. C.H.I. Overhead Doors; Model 6202: www.chiohd.com/#sle.
   3. Clopay; Model CEDS20: www.clopaydoor.com/#sle.
   4. Cornell Iron Works, Inc; Model ESD20: www.cornelliron.com/#sle.
   5. Overhead Door Corporation; Model 625 Stormtite Insulated Rolling Service Door: www.overheaddoor.com/#sle.
   6. Raynor Garage Doors; DuraCoil, Model IF: www.raynor.com/#sle.
   7. Wayne-Dalton, a Division of Overhead Door Corporation; Model 800C Rolling Service Door: www.wayne-dalton.com/#sle.

2.02 COILING DOORS

A. Exterior Coiling Doors: Steel slat curtain.
   1. Capable of withstanding positive and negative wind loads of 20 psf without undue deflection or damage to components.
   2. Sandwich Slats: Manufacturer's standard, with core of foamed-in-place polyurethane insulation; minimum R-value of 7.7.
   3. Nominal Slat Size: 2 inches wide by required length.
   4. Finish: Factory painted, color as selected.
   5. Guide, Angles: Primed steel.
   6. Hood Enclosure: Manufacturer's standard; primed steel.
   7. ~~Manual hand chain lift operation.~~

8. Electric operation.
9. Mounting: Face mounted.
10. Locking Devices: Chain lock keeper on inside.

2.03 MATERIALS

A. Metal Curtain Construction: Interlocking slats.
   1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
   2. Curtain Bottom for Slat Curtains: Fitted with angles to provide reinforcement and positive contact in closed position.
   3. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.
   4. Steel Slats: Minimum thickness, 20 gauge, 0.032 inch; ASTM A653/A653M galvanized steel sheet.
      a. Galvanizing: Minimum G90 coating.

B. Guide Construction: Continuous, of profile to retain door in place ~~with snap-on trim~~, mounting brackets of same metal.

C. Guides - Angle: ASTM A36/A36M metal angles, size as indicated.
   1. ~~Hot-dip galvanized in compliance with ASTM A123/A123M.~~
   2. Prime painted.

D. Hood Enclosure and Trim: Internally reinforced to maintain rigidity and shape.
   1. Minimum thickness; 24 gauge, 0.025 inch.
   2. Prime painted.

E. Lock Hardware:
   1. ~~Latchset Lock Cylinders: Standard mortise cylinder.~~
      a. ~~Keying: Differently.~~
   2. For motor operated units, additional lock or latching mechanisms are not required.
   3. ~~Latching Mechanism: Inside mounted, adjustable keeper, spring activated latch bar feature to keep in locked or retracted position.~~
   4. ~~Latch Handle: Manufacturer's standard.~~
   5. Slide Bolt: Provide on single-jamb side, extending into slot in guides, with padlock on one side.
   6. Manual Chain Lift: Provide padlockable chain keeper on guide.

F. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.04 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
   1. Provide interlock switches on motor operated units.

B. Electric Operators:
   1. Mounting: Side mounted.
   2. Motor Enclosure:
      a. Exterior Coiling Doors: NEMA MG 00001, Type 4; open drip proof.
   3. Motor Rating: 1/2 HP; continuous duty.
   4. Motor Voltage: 120 volts, single phase, 60 Hz.
   5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.

6. Controller Enclosure: NEMA EN 10250, Type 4.
7. Opening Speed: 12 inches per second.
8. Brake: Manufacturer's standard type, activated by motor controller.
9. Manual override in case of power failure.
10. See Section 26 0583 for electrical connections.

C. Control Station: Provide standard three button, 'Open-Close-Stop' momentary-contact control device for each operator complying with UL 325.
   1. 24 volt circuit.
   2. Surface mounted, at interior door jamb.
   3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.

D. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that adjacent construction is suitable for door installation.

B. Verify that electrical services have been installed and are accessible.

C. Verify that door opening is plumb, header is level, and dimensions are correct.

D. Notify Architect of any unacceptable conditions or varying dimensions.

E. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Section 26 0583.

F. Complete wiring from disconnect to unit components.

G. Install enclosure and perimeter trim.

3.03 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.04 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

3.05 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 3323

SECTION 08 4413
GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed curtain wall, with vision glazing and infill panels.

B. Delegated design engineering (DDE) by a licensed professional engineer for all glazed aluminum curtain wall and curtain wall door systems.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Weld plates embedded in concrete for attachment of anchors.

B. Section 05 1200 - Structural Steel Framing: Steel attachment members.

C. Section 05 5000 - Metal Fabrications: Steel attachment devices.

D. Section 07 8400 - Firestopping: Firestop at system junction with structure.

E. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

F. Section 08 8000 - Glazing.

G. Section 09 2116 - Gypsum Board Assemblies: Metal stud and gypsum board wall at interior of curtain wall.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.

B. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.

C. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

D. AAMA 501.4 - Recommended Static Test Method for Evaluating Window Wall, Curtain Wall and Storefront Systems Subjected to Seismic and Wind-Induced Inter-Story Drift.

E. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems.

F. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

G. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

H. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

I. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

J. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

K. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

L. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

N. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

O. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.

P. ASTM C793 - Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants.

Q. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

R. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

S. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.

T. ASTM C1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.

U. ASTM C1184 - Standard Specification for Structural Silicone Sealants.

V. ASTM C1249 - Standard Guide for Secondary Seal for Sealed Insulating Glass Units for Structural Sealant Glazing Applications.

W. ASTM C1401 - Standard Guide for Structural Sealant Glazing.

X. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

Y. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

Z. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

AA. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, internal drainage details, glazing, and infill.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, joinery including concealed welds, anchorage, expansion provisions, glazing, flashing and drainage, and field welding required.

1. Include design engineer's (DDE) stamp or seal on shop drawings for attachments and anchors.
2. Shop drawings and all product data shall also be analyzed by the DDE, in concert with his engineering.

3. Manufacturer's generic details only will be rejected.

D. Shop Drawings: Provide details of proposed structural sealant glazing (SSG) and weather sealant joints indicating dimensions, materials, bite, thicknesses, profile, and support framing.
   1. Include design engineer's (DDE) stamp or seal on shop drawings for attachments and anchors.
   2. Shop drawings and all product data shall also be analyzed by the DDE, in concert with his engineering.
   3. Manufacturer's generic details only will be rejected.

E. Samples: Submit two samples 12 by 12 inches in size illustrating finished aluminum surface, glazing, infill panels, and glazing materials.

F. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

G. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.
   1. Include design engineer's (DDE) stamp or seal on engineering calculations.
   2. All product data shall also be analyzed by the DDE, in concert with his engineering.

H. Structural Sealant Glazing (SSG): Submit product data and calculations showing compliance with performance requirements.
   1. Include design engineer's (DDE) stamp or seal on engineering calculations.
   2. All product data shall also be analyzed by the DDE, in concert with his engineering.

I. Test Reports: Submit results of full-size mock-up testing. Reports of tests previously performed on the same design are acceptable.

J. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

K. Designer's Qualification Statement.

L. Installer's Qualification Statement.

M. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design curtain wall and its structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the State in which the Project is located.

B. Full-Size Mock-Up Testing: Have a specimen representative of project conditions tested by an independent testing agency for compliance with specified thermal, structural, air infiltration, water penetration, sound attenuation, and sealant adhesion criteria.

C. Verify that each component is appropriate for use in structural sealant glazing (SSG) application in regards to at least the following properties: size, shape, dimensions, material, durability, storage conditions, and color.

D. Installer Qualifications: Company specializing in performing work of type specified and with at least ten years of documented experience and approved by manufacturer.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Construct mock-up as part of composite wall assembly mock-up as indicated on drawings. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.

C. Locate where directed.

D. Mock-up may not remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.09 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. ~~Manufacturer Warranty: Provide 5-year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units. Complete forms in Owner's name and register with installer.~~

C. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of glazed aluminum curtain wall that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including, but not limited to, excessive deflection.
      b. Deterioration of metals.
      c. Noise or vibration created by wind and thermal and structural movements.
      d. Water penetration through fixed glazing and framing areas.
      e. Failure of operating components.
   2. Warranty Period: Five (5) years from date of Substantial Completion.

D. ~~Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.~~

E. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within this specified warranty period.
   1. Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Warranty Period: 20 years from date of Substantial Completion.

F. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glazed Aluminum Curtain Walls Manufacturers:

1. EFCO: www.efco.com/#sle.
2. Kawneer North America; (Basis of Design): www.kawneer.com/#sle.
   a. Field Fabricated Stick System: 1600UT System 2.
   b. Shop/Factory Unitized system: 2500UT SGT Unitwall.
3. Tubelite, Inc: www.tubeliteinc.com/#sle.
4. YKK AP America, Inc: www.ykkap.com/commercial/#sle.
5. C.R. Laurence Co.; U.S. Aluminum: www.crlaurence.com/#sle..

2.02 CURTAIN WALL

A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Outside glazed, with pressure plate and mullion cover, where indicated on drawings.
   2. Structural sealant glazing (SSG) adhesive on two (2)-sides, with temporary glazing stops, and pressure plate and mullion cover on 2-sides, where indicated on drawings.
   3. Fabrication Method: Field fabricated stick system and shop/factory unitized system, locations as indicated on drawings.
   4. Glazing Method: Field glazed system and shop/factory glazed system, locations as indicated on drawings.
   5. Vertical Mullion Dimensions: As indicated in drawings.
   6. Finish: Superior performing organic coatings.
      a. Factory finish surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   7. Provide flush joints and corners, weathersealed, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   8. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   9. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   10. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.
   1. Design Wind Loads: Comply with the requirements of ASCE 7and requirements of Chapter 16 of the International Building Code (IBC) 2012 edition, as amended by the State of Indiana.
      a. Member Deflection: For spans less than 13 feet 6 inches, limit member deflection to flexure limit of glass in any direction, and maximum of 1/175 of span or 3/4 inch, whichever is less and with full recovery of glazing materials.
      b. Member Deflection: For spans over 13 feet 6 inches and less than 40 feet, limit member deflection to flexure limit of glass in any direction, and maximum of 1/240 of span plus 1/4 inch, with full recovery of glazing materials.
   2. Seismic Loads: Design and size components to withstand seismic loads and sway displacement in accordance with requirements of ASCE 7.

3. Interstory Differential Lateral Movement: Meeting pass/fail criteria of AAMA 501.4 for Use Group I, Standard Occupancy, when tested at design displacement of 0.010 times greater adjacent story height, maximum, and 1.5 times design displacement, through three complete cycles.
4. Movement: Accommodate the following movement without damage to components or deterioration of seals:
   a. Expansion and contraction caused by 180 degrees F surface temperature.
   b. Expansion and contraction caused by cycling temperature range of 170 degrees F over a 12 hour period.
   c. Movement of curtain wall relative to perimeter framing.
   d. Deflection of structural support framing, under permanent and dynamic loads.
   e. Shortening of structural concrete columns.
   f. Creep of structural concrete members.
5. Structural Sealant Glazing (SSG) System: For individual glass lites, design framing members to not exceed a deflection normal to the wall of L/175 between supports with 3/4 inch maximum, and a deflection parallel to the wall of L/360 with 1/8 inch maximum, whichever is less.

C. Water Penetration Resistance on Manufactured Assembly: No water on indoor face when tested as follows:
   1. Test Pressure Differential: 12 psf.
   2. Test Method: AAMA 501.1.

D. Air Leakage: 0.06 cfm/sq ft maximum leakage of wall area when tested in accordance with ASTM E283/E283M at 6.24 psf pressure difference across assembly.

E. Thermal Performance Requirements:
   1. Condensation Resistance Factor of Framing: 65, minimum, measured in accordance with AAMA 1503.
   2. Overall U-value Including Glazing: 0.24 Btu/(hr sq ft deg F), maximum.

F. Structural designs shall be prepared by a qualified Professional Engineer registered in the State of Indiana.

2.03 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed, wide stile, entrance doors for manual-swing and automated-swing operation.
   1. Door Construction:
      a. Manufacturer’s internally rigid and reinforced, mechanically joined and welded.
         1) Engineered to resist same wind-loading requirements as curtainwall specified herein before.
         2) Additional Loads: Incorporate push/pull, open/close cycling, and abuse impact operation loads per DDE.
      b. Door Overall Thickness: 2-1/4-inch, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members.
      c. Thermal Construction: Manufacturer’s thermally-engineered thermal break construction of exterior aluminum members from members exposed to the interior.
      d. All doors are to be factory-prepared for all door hardware, specified elsewhere in the Project Manual.
         1) Coordinate with door schedule for door hardware requirements.
   2. Door Design: Wide stile; 5-inch nominal width; 10-inch high bottom rail, 5-inch top rail.

3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
   a. Provide non-removable glazing stops on outside of door.
   b. Accommodate 3/4-inch insulating glass at all exterior entrance and interior vestibule doors.

2.04 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Cross-Section: As indicated on drawings.
   3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: See Section 08 8000.

C. Insulated Spandrel Panels: Insulated, aluminum sheet back, with edges formed to mechanically fasten to curtain wall framing and sealed set behind insulated spandrel glazing.
   1. Core: Unfaced semi-rigid mineral wool board insulation core with R-value of 4 per inch.
   2. Back Sheet at Exposed Locations: 0.040 inch thick.
   3. Backpan Metal: 0.040 inch thick.
   4. Interior Finish: Factory enameled, color as selected.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123Mfor connections and inserts in concrete and masonry.

D. Structural Steel Sections: ASTM A36/A36M; shop primed for connections to structural steel that are exposed to view.

E. Structural Supporting Anchors: See Section 05 1200.

F. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

G. Structural Supporting Anchors Attached to Reinforced Concrete Members: Design for welded attachment to weld plates embedded in concrete.

H. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.

I. Exposed Flashings: Aluminum sheet, 20-gauge, 0.032-inch minimum thickness; finish to match framing members.

J. Concealed Flashings: Sheet aluminum, 26-gauge, 0.017-inch minimum thickness.

K. Firestopping: See Section 07 8400.

L. Structural Sealant Glazing (SSG) Adhesive: Neutral curing, silicone sealant formulated for SSG applications in compliance with ASTM C1184 and structural glazing industry guidelines, ASTM C1401.
   1. SSG adhesive in compliance with ASTM C920; Type S - Single-component, Grade NS, Class 50, Use NT, G, and A.
   2. Ultimate Tensile Strength: Minimum of 50 psi as determined by test method ASTM C1135 under the following conditions.
      a. Exposure to air temperatures of 190 degrees F and minus 20 degrees F.
      b. Water immersion for seven (7) days, minimum.

c. Exposure to weathering for 5,000 hours, minimum.

3. Sealant Design Tensile Strength: 20 psi, maximum.
4. Hardness: 20 to 60 with Type A-2 durometer in compliance with test method ASTM C661.
5. Color: As selected by Architect from manufacturer's custom range.
6. SSG sealant tested for compatibility with glazing accessories in compliance with ASTM C1087, tested for accelerated weathering in compliance with ASTM C793, and in compliance with insulating glass secondary sealant design standards of ASTM C1249.

M. Weatherseal Sealant: Silicone, with adhesion in compliance with ASTM C794; compatible with glazing accessories.

N. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.

O. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

P. Glazing Accessories: See Section 08 8000.

Q. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

R. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 FINISHES

A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.

B. Color: To be selected by Architect from manufacturer's custom range.
   1. Exterior-side and interior-side of curtain wall mullions from glazing and insulated spandrel panel locations to be different colors, as selected by Architect.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other related work.

B. Verify that curtain wall openings and adjoining water-resistive and air barrier seal materials are ready to receive work of this section.

C. Verify that anchorage devices have been properly installed and located.

3.02 INSTALLATION

A. Install curtain wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill and head flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Coordinate installation of firestopping at each floor slab edge.

H. Fill voids in shim spaces at perimeter of assembly to maintain continuity of thermal barrier with non-expanding insulating foam similar to Hilti CF812.

I. Pressure Plate Framing: Install glazing and infill panels using exterior wet/dry glazing method; see Section 08 8000.

J. Structural Sealant Glazing (SSG) Adhesive: Install structural sealant glazing adhesive and weatherseal sealant in accordance with manufacturer's instructions.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet noncumulative or 0.5 inches per 100 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch and minimum of 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services of curtain wall manufacturer's field representative to observe for proper installation of system and submit report.

B. See Section 01 4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

C. Water-Spray Test: Provide water spray quality test of installed curtain wall components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
   1. Perform a minimum of three tests in each designated area as directed by Architect.
   2. Conduct tests in each area prior to 10 percent, 35 percent, and 70 percent completion of this work.

D. Provide field testing of installed curtain wall system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
   1. Perform a minimum of three tests in each designated area as directed by Architect.
   2. Conduct tests in each area prior to 10 percent, 35 percent, and 70 percent completion of this work.
   3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 6.24 psf.
      a. Do not use the AAMA definition of water penetration. Water penetration is to be defined as any water penetration past the interior face of glazing, including any accumulation of water on the interior face of glass or frame.
   4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
      a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.

E. Repair or replace curtain wall components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove protective material from pre-finished aluminum surfaces.

C. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, take care to remove dirt from corners, and wipe surfaces clean.

D. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Wherever aluminum is in contact with steel, concrete, or other material potentially creative of electrolytic action, provide permanent isolation of the aluminum by backpainting with first quality bituminous paint or by such other isolation as is approved in advance.

END OF SECTION 08 4413

SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.
B. Glazing units.
C. Glass coatings.
D. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 07 2700 - Air Barriers.
B. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.
C. Section 08 1113 - Hollow Metal Doors and Frames: Glazed lites in doors.
D. Section 08 3400 - Special Function Doors: Glazing provided by door manufacturer.
E. Section 08 4313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.
F. Section 08 4413 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.
G. Section 08 8813 - Fire-Rated Glazing.
H. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
F. ASTM C1036 - Standard Specification for Flat Glass.
G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
H. ASTM C1193 - Standard Guide for Use of Joint Sealants.
I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.
K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
L. GANA (GM) - GANA Glazing Manual.
M. GANA (SM) - GANA Sealant Manual.
N. NFRC 100 - Procedure for Determining Fenestration Product U-factors.
O. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

P. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Samples: Submit 6 inch long bead of glazing sealant, color as selected.

F. Certificate: Certify that products of this section meet or exceed specified requirements.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.
   1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
      a. Insulating Glass Certification Council (IGCC).

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience and approved by manufacturer.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide on-site glazing mock-up with the specified glazing components within composite mock-up as indicated on drawings.

C. Locate where directed.

D. Mock-ups may not remain as part of the Work.

1.08 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fabricators:
   1. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
   2. Viracon, Inc: www.viracon.com/#sle.
   3. Flat Glass Distributors, Inc.: www.flatglassdistributors.com/#sle.
   4. Guardian Glass, LLC: www.guardianglass.com/#sle.
   5. Oldcastle Building Envelope: www.obe.com/#sle.

B. Float Glass Manufacturers:
   1. Guardian Glass, LLC: www.guardianglass.com/#sle.
   2. Pilkington North America Inc: www.pilkington.com/na/#sle.
   3. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
   4. AGC Glass Company North America, Inc.: www.agc.com/#sle.

C. Spandrel Glass Manufacturers:
   1. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Design Pressure: Calculated in accordance with ASCE 7.
   2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
   1. In conjunction with weather barrier related materials described in other sections, as follows:
      a. Air Barriers: See Section 07 2700.
   2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
   3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.

2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
5. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
6. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
1. Glass: Any of the manufacturers specified for float glass.

B. Fabricator: Certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

C. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Warm-Edge Spacers: Low-conductivity thermoplastic with desiccant warm-edge technology design.
a. Spacer Width: As required for specified insulating glass unit.
b. Spacer Height: Manufacturer's standard.
4. Spacer Color: Black.
5. Edge Seal:
a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
b. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.

D. Type EGL-1 - Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Basis of Design: Viracon VRE1-59.
3. Space between lites filled with argon.
4. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
b. Coating: Low-E (passive type), on #2 surface.
5. Warm-edge spacer.
6. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
b. Provide fully tempered interior lite where required by applicable federal, state, and local codes and regulations or as indicated on drawings.

1) In exposed area of an individual pane greater than 9 square feet.
2) Where the bottom edge of the pane is less that 18” above the floor.
3) Where the top edge of the pane is more than 36” above the floor.
4) Where there is a walking surface with 36” horizontally of the glazing.

7. Total Thickness: 1 inch.
8. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.22, maximum.
9. Visible Light Transmittance (VLT): 53 percent, minimum.
10. Shading Coefficient: 0.38, nominal.
11. Solar Heat Gain Coefficient (SHGC): 0.33, maximum.
12. Visible Light Reflectance, Outside: 30 percent, nominal.
13. Glazing Method: Wet/dry glazing method, preformed tape and sealant.

E. Type EGL-2 - Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Basis of Design: Viracon VNE35-63.
3. Space between lites filled with argon.
4. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
a. Tint: Pure Mid Iron.
b. Coating: Low-E (passive type), on #2 surface.
5. Warm-edge spacer.
6. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Pure Mid Iron.
b. Provide fully tempered interior lite where required by applicable federal, state, and local codes and regulations or as indicated on drawings.
1) In exposed area of an individual pane greater than 9 square feet.
2) Where the bottom edge of the pane is less that 18” above the floor.
3) Where the top edge of the pane is more than 36” above the floor.
4) Where there is a walking surface with 36” horizontally of the glazing.
7. Total Thickness: 1 inch.
8. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.21, maximum.
9. Visible Light Transmittance (VLT): 65 percent, minimum.
10. Shading Coefficient: 0.33, nominal.
11. Solar Heat Gain Coefficient (SHGC): 0.29, maximum.
12. Visible Light Reflectance, Outside: 10 percent, nominal.
13. Glazing Method: Wet/dry glazing method, preformed tape and sealant.

F. Type EGL-1S - Insulating Glass Units: Spandrel glazing.
1. Applications: Exterior spandrel glazing unless otherwise indicated.
2. Space between lites filled with argon.
3. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
b. Coating: Same as on vision units, on #2 surface.
4. Warm-edge spacer.
5. Inboard Lite: Annealed float glass, 1/4 inch thick.
a. Tint: Clear.
b. Opacifier: Elastomeric coating, on #4 surface.
1) Opacifier Color: As selected by Architect from manufacturer's full range.
c. Provide fully tempered interior lite where required by applicable federal, state, and local codes and regulations or as indicated on drawings.
1) In exposed area of an individual pane greater than 9 square feet.

2) Where the bottom edge of the pane is less that 18” above the floor.
3) Where the top edge of the pane is more than 36” above the floor. Where there is a walking surface with 36” horizontally of the glazing.
4) Where there is a walking surface with 36” horizontally of the glazing.

6. Total Thickness: 1 inch.
7. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.22, maximum.
8. Visible Light Reflectance, Outside: 30 percent, nominal.
9. Glazing Method: Wet/dry glazing method, preformed tape and sealant.

G. Type EGL-2S - Insulating Glass Units: Spandrel glazing.
1. Applications: Exterior spandrel glazing unless otherwise indicated.
2. Space between lites filled with argon.
3. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
a. Tint: Pure Mid Iron.
b. Coating: Same as on vision units, on #2 surface.
4. Warm-edge spacer.
5. Inboard Lite: Annealed float glass, 1/4 inch thick.
a. Tint: Pure Mid Iron.
b. Opacifier: Elastomeric coating, on #4 surface.
1) Opacifier Color: As selected by Architect from manufacturer's full range.
c. Provide fully tempered interior lite where required by applicable federal, state, and local codes and regulations or as indicated on drawings.
1) In exposed area of an individual pane greater than 9 square feet.
2) Where the bottom edge of the pane is less that 18” above the floor.
3) Where the top edge of the pane is more than 36” above the floor.
4) Where there is a walking surface with 36” horizontally of the glazing.
6. Total Thickness: 1 inch.
7. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.21, maximum.
8. Visible Light Reflectance, Outside: 10 percent, nominal.
9. Glazing Method: Wet/dry glazing method, preformed tape and sealant.

2.05 GLAZING UNITS

A. Type GL-1 - Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.
5. Glazing Method: Dry glazing method, gasket glazing, and butt joint glazing method, sealant only. Locations as indicated on drawings.

B. Type GL-2 - Monolithic Safety Glazing: Non-fire-rated.
1. Applications:
a. Glazed lites in doors, except fire doors.
b. Sliding glass doors.
c. Glazed sidelights to doors, except in fire-rated walls and partitions.
d. Other locations required by applicable federal, state, and local codes and regulations.
1) In exposed area of an individual pane greater than 9 square feet.
2) Where the bottom edge of the pane is less that 18” above the floor.
3) Where the top edge of the pane is more than 36” above the floor.
4) Where there is a walking surface with 36” horizontally of the glazing.

e. Other locations indicated on drawings.
2. Glass Type: Fully tempered safety glass as specified.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.
5. Glazing Method: Dry glazing method, gasket glazing, and butt joint glazing method, sealant only. Locations as indicated on drawings.

2.06 GLASS COATINGS

A. Opacifying Coating: One component, water-based silicone elastomeric opaque color coating for roll coat and spray applications.
1. Application: Exterior spandrel location as indicated on drawings.
a. Glass and Coating Orientation at Spandrels: On surface facing interior.
2. Fabrication of Glass Unit with Coating: Solely by Approved Factory Fabricators trained and certified annually by coating manufacturer.
3. Color: Selected from manufacturer's full range.

2.07 GLAZING COMPOUNDS

A. Type GC-2 - Butyl Sealant: Single component; ASTM C920 Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

B. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.08 ACCESSORIES

A. Setting Blocks: Silicone, with 60 to 70 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Silicone, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Continuous by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
1. Width: As required for application.
2. Thickness: As required for application.
3. Spacer Rod Diameter: As required for application.

D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Verify that sealing between joints of glass framing members has been completed effectively.

E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry immediately before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - WET/DRY GLAZING METHOD (PREFORMED TAPE AND SEALANT)

A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.

B. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.

C. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

D. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

E. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.

F. Install removable stops, with spacer strips inserted between glazing and applied stops 1/4 inch below sight lines.
   1. Place glazing tape on glazing pane of unit with tape flush with sight line.

G. Fill gap between glazing and stop with polyisobutylene type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.

H. Apply cap bead of silicone type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.06 INSTALLATION - BUTT JOINT GLAZING METHOD (SEALANT ONLY)

A. Application - Exterior Glazed: Set glazing infills from exterior side of building.

B. Temporarily brace glass in position for duration of glazing process; mask edges of glass at adjoining glass edges and between glass edges and framing members.

C. Temporarily secure a small diameter nonadhering foamed rod on back side of joint.

D. Apply sealant to open side of joint in continuous operation; thoroughly fill joint without displacing foam rod, and then tool sealant surface smooth to concave profile.

E. Permit sealant to cure then remove foam backer rod, and then apply sealant to opposite side, tool smooth to concave profile.

F. Remove masking tape.

3.07 INSTALLATION - STRUCTURAL SILICONE GLAZING

A. See Section 08 4413 for wall framing assembly requirements.

B. Application - Factory (Shop) Glazed and Field Glazed, locations as indicated on drawings: Follow basic guidelines of structural silicone glazing for glazing application.
   1. Two-Sided Structural: Glass structurally adhered to vertical mullions with horizontal sides captured in glazing pockets.
   2. Two-Sided Structural Strip Window: Glass with two sides structurally adhered to vertical mullions and horizontal sides and vertical ends captured in glazing pockets.
   3. Vertical Structural Strip Window: Glass with two sides structurally adhered to horizontal mullions and vertical sides and horizontal ends captured in glazing pockets.

C. Provide design review of the glazing system and project details, adhesion testing, proper surface preparation, training and a quality service program.

D. Provide only structural silicone sealant, tested and manufactured for structural glazing.

3.08 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.09 CLEANING

A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

C. Remove nonpermanent labels immediately after glazing installation is complete.

D. Clean glass and adjacent surfaces after sealants are fully cured.

E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.10 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION 08 8000

SECTION 08 9100
LOUVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Louvers, frames, and accessories.

B. ~~Decorative interior grilles~~

1.02 RELATED REQUIREMENTS

A. ~~Division 05 Metal Frabrications~~

B. Section 07 6200 - Sheet Metal Flashing and Trim.

C. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

D. Section 23 3100 - HVAC Ducts and Casings: Ductwork attachment to louvers, and blank-off panels.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating.

C. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.

C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, and tolerances; head, jamb and sill details; blade configuration, screens, blank-off areas required, and frames.

D. Samples: Submit two samples 2 by 2 inches in size illustrating finish and color of exterior and interior surfaces.

E. Test Reports: Independent agency reports showing compliance with specified performance criteria.

F. Sustainable Design (LEED) Submittals Requirements: See Section 01 3329.02 “Sustainable Design Reporting – LEED v4” for submittal requirements.

G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Provide five year manufacturer's warranty against distortion, metal degradation, and connection failures of louver components.
   1. Finish: Include twenty year coverage against degradation of exterior finish.

PART 2 PRODUCTS

2.01 SUSTAINABLE DESIGN (LEED) MATERIAL REQUIREMENTS

A. Materials shall comply with the requirements of section 01 3329.02 “Sustainable Design Reporting – LEED v4”.

2.02 MANUFACTURERS

A. Louvers:
   1. Airolite Company, LLC: www.airolite.com/#sle.
   2. American Warming and Ventilating: www.awv.com/#sle.
   3. Construction Specialties, Inc: www.c-sgroup.com/#sle.
   4. Greenheck: www.greenheck.com/#sle.
   5. Industrial Louvers, Inc: www.industriallouvers.com/#sle.
   6. Ruskin Company: www.ruskin.com/#sle.

2.03 LOUVERS

A. General Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
   1. Wind Load Resistance: Design to resist positive and negative wind load as required by code without damage or permanent deformation.
   2. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
   3. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

B. Exterior Louvers, Type L1: Aluminum outer frames, louver end frames only, non-thermally broken, air ventilator with overlapping louvers.
   1. Free Area: 50 percent, minimum. See HVAC section.
   2. Wind-Driven Rain Penetration Class: A
   3. Pressure Drop: 0.130 inches of water gauge maximum per square foot of free area at velocity of 600 fpm, when tested in accordance with AMCA 500-L, test unit size 48 inch by 48 inch.
   4. Blades: Drainable.
   5. Frame: 5 inch deep, 2 inch wide, extruded aluminum.
   6. Aluminum Thickness: Frame 12 gauge, 0.0808 inch minimum; blades 12 gauge, 0.0808 inch minimum.
   7. Aluminum Finish: Superior performing organic coatings; finish welded units after fabrication.
   8. Frame Mounted: To structural opening using through frame or strap fixings.
   9. Frame Size: As indicated on drawings.

C. Stationary Louvers, Type L2: Vertical blade, extruded aluminum construction, with intermediate mullions matching frame.
   1. Free Area: 43, minimum.
   2. Pressure Drop: 0.18 inches of water gauge maximum per square foot of free area at velocity of 989 fpm, when tested in accordance with AMCA 500-L, test unit size 48 inch by 48 inch.
   3. Wind-Driven Rain Penetration Class: A

4. Blades: V-shaped, sight-proof.
5. Frame: 5 inches deep, channel profile; corner joints mitered and , with continuous recessed caulking channel each side.
6. Aluminum Thickness: Frame 12 gauge, 0.0808 inch minimum; blades 12 gauge, 0.0808 inch minimum.
7. Aluminum Finish: Mill finish; finish welded units after fabrication.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Formed Aluminum: Formed sheet, ASTM B209/B209M.

2.05 FINISHES

A. Superior Performing Organic Coatings System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.

B. ~~Warranty: 20 years.~~

C. Color: As selected by Architect from manufacturer's custom range.

2.06 FABRICATION, GENERAL

A. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining materials' tolerances, and perimeter sealant joints.
   1. Frame Type: Channel type, unless otherwise indicated.

B. Join frame members to one another and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer, concealed from view; unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

C. Assemble louvers in factory to minimize field splicing and assembly.
   1. Disassemble units only as necessary for shipping and handling limitations.
   2. Clearly mark units for reassembly and coordinated installation.

D. Provide vertical mullions of type and at spacings indicated, but not more than recommended by manufacturer, or 120 inches o.c., whichever is less.
   1. At horizontal joints between louver units, provide horizontal mullions, unless continuous vertical assemblies are indicated.

E. Continuous Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field-bolted assembly with close-fitting joints in jambs and mullions, reinforced with splice plates and without interrupting blade-spacing pattern.

F. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

G. Provide sill extensions and loose sills made of same material as louvers where indicated or required for drainage to exterior and to prevent water penetrating to interior.

H. Include supports, anchorages, and accessories required for complete assembly.

2.07 ACCESSORIES

A. Blank-Off Panels: Aluminum face and back sheets, polyisocyanurate foam core, 1-1/2 inch thick, painted black on exterior side; provide where duct connected to louver is smaller than louver frame, sealing off louver area outside duct.

B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frameunless otherwise indicated on drawings.

C. Bird Screen: Interwoven wire mesh of aluminum, 14 gauge, 0.0641 inch diameter wire, 1/2 inch open weave, diagonal design.

D. Insect Screen: To match intake louver sizes, aluminum mesh.

E. Fasteners and Anchors: Stainless steel.

F. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.

G. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

H. Provide sill extensions and loose sills made of same material as louvers where indicated or required for drainage to exterior and to prevent water penetrating to interior.

2.08 ~~DECORATIVE INTERIOR GRILLES~~

A. ~~Manufacturers:~~
   1. ~~AGS Shade~~
   2. ~~Architectural Grille~~
   3. ~~Kees~~
   4. ~~Subsistitutions allowed~~

B. ~~Architect to select from manufacturers full range of patterns and types on the following grilles:~~
   1. ~~Bar Grilles~~
   2. ~~Perforated Sheet Metal Grilles~~
   3. ~~Eggcrate grilles and frames~~
   4. ~~Waterjet cut grilles~~
   5. ~~Roun perforated grilles~~

C. ~~Materials~~
   1. ~~Architect to select from manufacturers full range of materials including:~~
      a. ~~Aluminum~~
      b. ~~Brass~~
      c. ~~Bronze~~
      d. ~~Stainless Steel~~

D. ~~Size: as indicated on drawings.~~

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.

B. Verify that field measurements are as indicated.

3.02 INSTALLATION

A. Install louver assembly in accordance with manufacturer's instructions.

B. Install louvers level and plumb.

C. Set sill members and sill flashing in continuous bead of sealant.

D. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

E. Secure louver frames in openings with concealed fasteners.

F. Coordinate with installation of mechanical ductwork.

G. Coat aluminum surfaces that abut concrete, masonry or dissimilar metals with a heavy coat of bituminous paint, prior to installation.

3.03 CLEANING

A. Strip protective finish coverings.

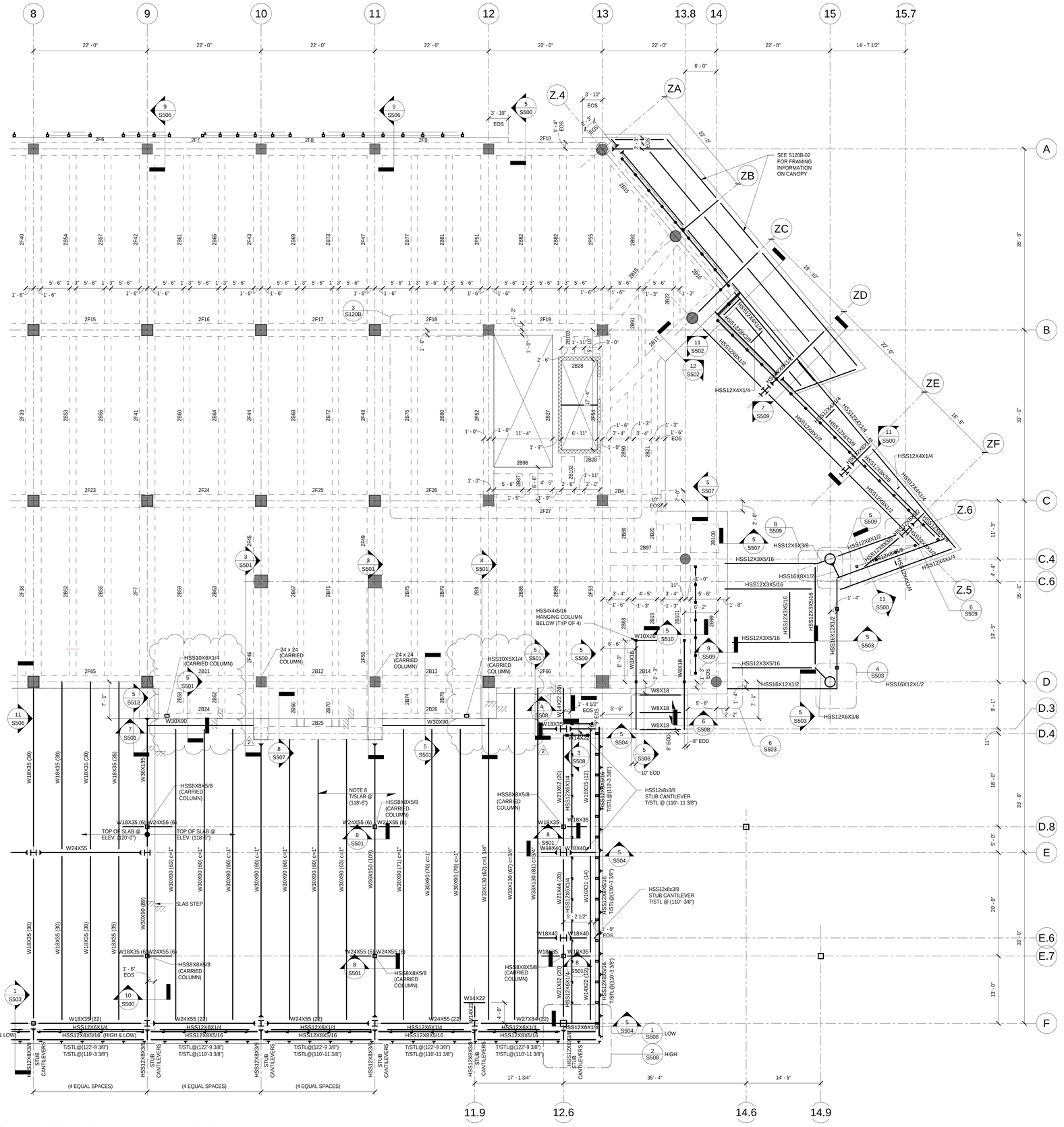
B. Clean surfaces and components.

3.04 SCHEDULES

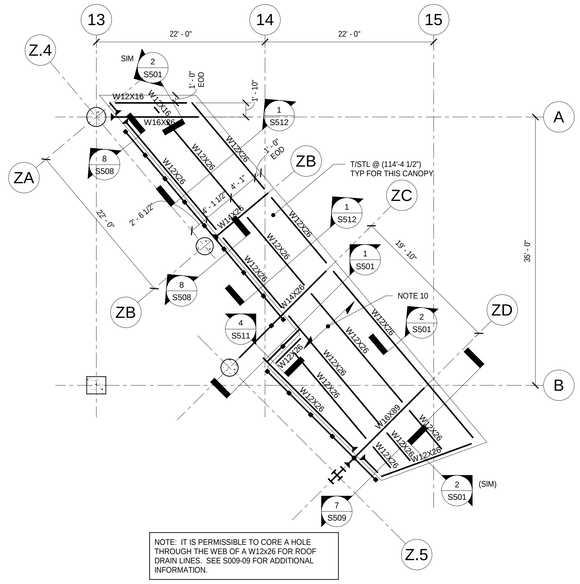
A. Penthouse (Type L2) - North Wall: Intake louvers, removable bird screen, mill finish.

B. Loading/Mechanical Yard (Type L1) - West Wall: Exhaust and intake louvers, removable insect and bird screens, prefinished to match adjacent face brick.

END OF SECTION 08 9100

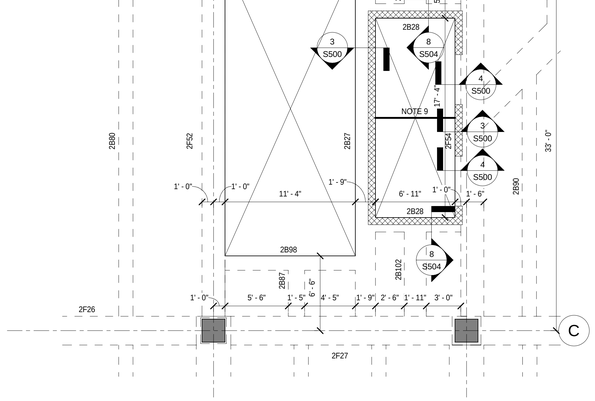


1 S120B SECOND FLOOR FRAMING PLAN - AREA B
1/8" = 1'-0"



NOTE: IT IS PERMISSIBLE TO CORE A HOLE THROUGH THE WEB OF A W12x26 FOR ROOF DRAIN LINES. SEE S009-09 FOR ADDITIONAL INFORMATION.

2 S120B CANOPY FRAMING PLAN - AREA B
1/8" = 1'-0"



3 S120B SECOND FLOOR - AREA B PARTIAL FRAMING PLAN
3/16" = 1'-0"

PLAN NOTES:

1. REFER TO SHEETS S001 - S013 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. THE G.C. SHALL COORDINATE THE SIZE AND LOCATION OF ALL SLAB PENETRATIONS WITH THE VARIOUS TRADES PRIOR TO POURING CONCRETE.
3. THE TOP OF SLAB ELEVATION SHALL BE AT ELEVATION (120'-0").
4. UNLESS NOTED OTHERWISE, THE CONCRETE FLOOR SLAB CONSTRUCTION SHALL BE 29" DEEP INCLUDING 5" SLAB AND BEAMS. THE WIDTH OF THE BEAMS AT BOTTOM SHALL BE AS NOTED IN THE PLAN. TOP OF SLAB SHALL BE AT ELEVATION (120'-0"). FOR SLAB REINFORCING, REFER TO SHEET S012. AT ALL LOCATIONS WHERE SLAB OVERHANGS BEYOND FACE OF THE BEAM, THE SLAB THICKNESS SHALL BE 8". IN 8" SLAB CONTINUE REINFORCING FROM ADJACENT 5" SLAB AND PROVIDE WITH HOOK AT EDGE AND #4@12" O.C. CONTINUOUS CROSS BARS.
5. ALL PIPE PENETRATIONS THROUGH THE SLAB SHALL BE SLEEVED. SEE MECH./ELECT./PLUMBING DRAWINGS FOR REQUIREMENTS. DO NOT CUT REINFORCING BARS. MAINTAIN MINIMUM 6" CLEAR SPACE BETWEEN SLEEVES.
6. VERIFY SIZE AND LOCATION OF ELEVATOR SHAFT WITH ELEVATOR SUPPLIER PRIOR TO ANY FABRICATION AND CONSTRUCTION.
7. SLEEVES UPTO 8" DIAMETER ARE PERMITTED AT INTERIOR COLUMNS ON COLUMN CENTERLINES. LOCATIONS ARE SHOWN FOR REFERENCE. THE G.C. SHALL COORDINATE ALL SLEEVE SIZES AND LOCATIONS WITH THE VARIOUS TRADES. SEE S/S202.
8. THE SLAB ON DECK SHALL BE A 4 1/2" NORMAL WEIGHT SLAB OVER 2" 20 GAGE GALVANIZED COMPOSITE METAL DECK REINFORCED WITH 6x6 W2.9xW2.9 WWF. THE TOP OF SLAB SHALL BE AT ELEVATION (120'-0") UNLESS NOTED OTHERWISE.
9. WHERE INDICATED IN PLAN, PROVIDE AN HSS 12x6x3/8" DIVIDER BEAM. THERE SHALL BE TWO DIVIDER BEAMS PER FLOOR. PLACE ONE NEAR THE FLOORLINE AND ONE MIDWAY BETWEEN FLOORS. COORDINATE EXACT LOCATIONS WITH THE ELEVATOR MANUFACTURER. SEE DETAILS FOR HOW TO ATTACH DIVIDER BEAMS TO THE STRUCTURE AND TO THE CMU WALLS.
10. ROOF DECK SHALL BE 1 1/2" GALVANIZED 20 GAGE WIDE RIBBED METAL ROOF DECK.

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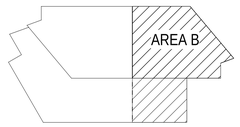
LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE



KEYPLAN
PROJECT NORTH
REFER TO CIVIL DRAWINGS FOR TRUE NORTH

ISSUED/REVISION SCHEDULE

MARK	DATE	DESCRIPTION
2	01/07/2026	BP3-ADDENDUM 01
1	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

CLAYTON E. SPRINGER
REGISTERED
NO. 10302023
STATE OF INDIANA
PROFESSIONAL ENGINEER

SECOND LEVEL FRAMING PLAN - AREA B

DATE REF: SHEET INDEX
BSA PROJECT NO. 00360481

S120B

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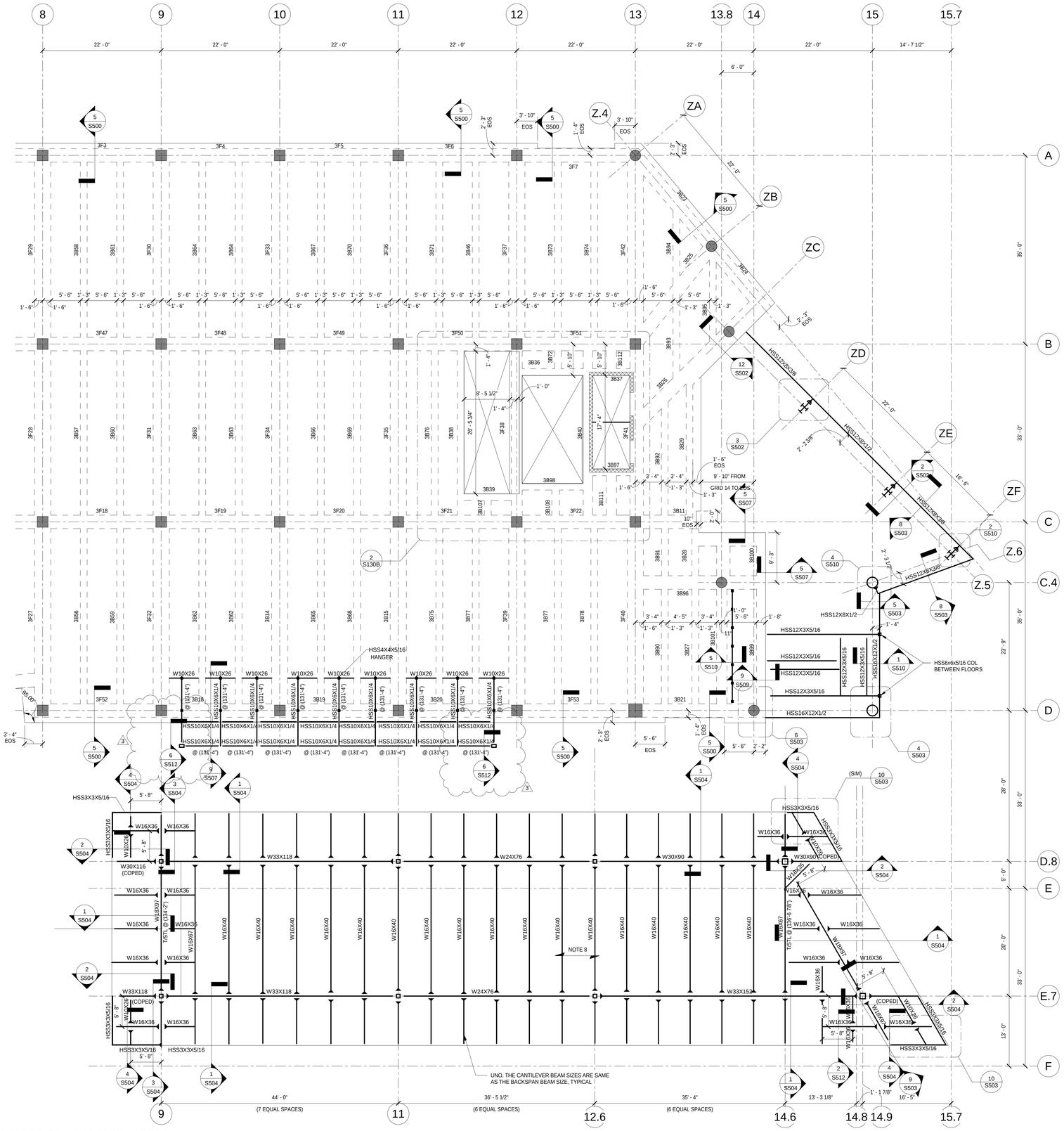
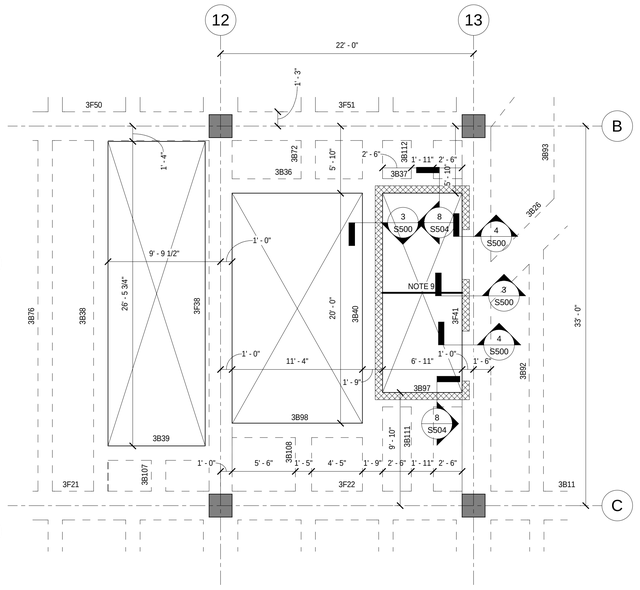


1 S130B THIRD FLOOR FRAMING PLAN - AREA B
1/8" = 1'-0"



2 S130B THIRD FLOOR - AREA B PARTIAL FRAMING PLAN
3/16" = 1'-0"

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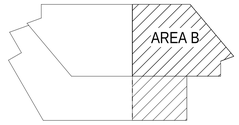

KEYPLAN
PROJECT NORTH
REFER TO CIVIL DRAWINGS FOR TRUE NORTH

ISSUED/REVISION SCHEDULE		
MARK	DATE	DESCRIPTION
3	01/07/2026	BP3-ADDENDUM 01
2	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE
1	10/31/2025	ASI #1

PLAN NOTES:

1. REFER TO SHEETS S001 - S013 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. THE G.C. SHALL COORDINATE THE SIZE AND LOCATION OF ALL SLAB PENETRATIONS WITH THE VARIOUS TRADES PRIOR TO POURING CONCRETE.
3. THE TOP OF SLAB ELEVATION SHALL BE AT ELEVATION (136'-0").
4. UNLESS NOTED OTHERWISE, THE CONCRETE FLOOR SLAB CONSTRUCTION SHALL BE 29" DEEP INCLUDING 5" SLAB AND BEAMS. THE WIDTH OF THE BEAMS AT BOTTOM SHALL BE AS NOTED IN THE PLAN. TOP OF SLAB SHALL BE AT ELEVATION (136'-0"). FOR SLAB REINFORCING, REFER TO SHEET S012. AT ALL LOCATIONS WHERE SLAB OVERHANGS BEYOND FACE OF THE BEAM, THE SLAB THICKNESS SHALL BE 8". IN 8" SLAB CONTINUE REINFORCING FROM ADJACENT 5" SLAB AND PROVIDE WITH HOOK AT EDGE AND #4@12" O.C. CONTINUOUS CROSS BARS.
5. ALL PIPE PENETRATIONS THROUGH THE SLAB SHALL BE SLEEVED. SEE MECH./ELECT./PLUMBING DRAWINGS FOR REQUIREMENTS. DO NOT CUT REINFORCING BARS. MAINTAIN MINIMUM 6" CLEAR SPACE BETWEEN SLEEVES.
6. VERIFY SIZE AND LOCATION OF ELEVATOR SHAFT WITH ELEVATOR SUPPLIER PRIOR TO ANY FABRICATION AND CONSTRUCTION.
7. SLEEVES UPTO 8" DIAMETER ARE PERMITTED AT INTERIOR COLUMNS ON COLUMN CENTERLINES. LOCATIONS ARE SHOWN FOR REFERENCE. THE G.C. SHALL COORDINATE ALL SLEEVE SIZES AND LOCATIONS WITH THE VARIOUS TRADES. SEE 5/S202.
8. THE ROOF DECK SHALL BE 3" 20 GAGE WIDE RIBBED GALVANIZED METAL ROOF DECK.
9. WHERE INDICATED IN PLAN, PROVIDE AN HSS 12x6x3/8" DIVIDER BEAM. THERE SHALL BE TWO DIVIDER BEAMS PER FLOOR. PLACE ONE NEAR THE FLOORLINE AND ONE MIDWAY BETWEEN FLOORS. COORDINATE EXACT LOCATIONS WITH THE ELEVATOR MANUFACTURER. SEE DETAILS FOR HOW TO ATTACH DIVIDER BEAMS TO THE STRUCTURE AND TO THE CMU WALLS.

CLAYTON E. SPENCER
REGISTERED
NO. 10302023
STATE OF INDIANA
PROFESSIONAL ENGINEER

THIRD LEVEL FRAMING PLAN - AREA B

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

S130B

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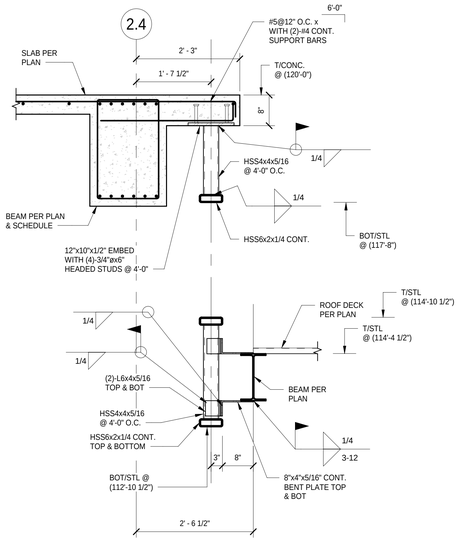
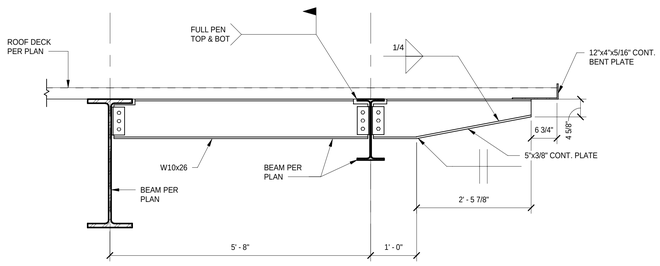


1 SECTION
S512 3/4" = 1'-0"



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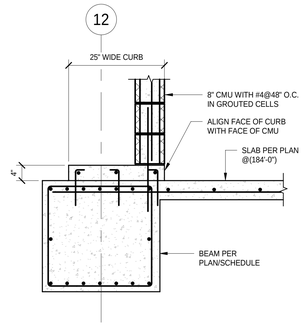

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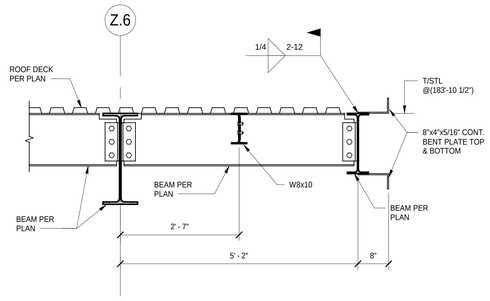

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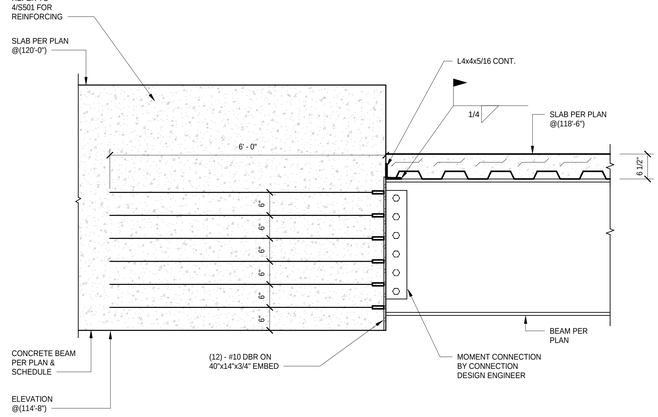

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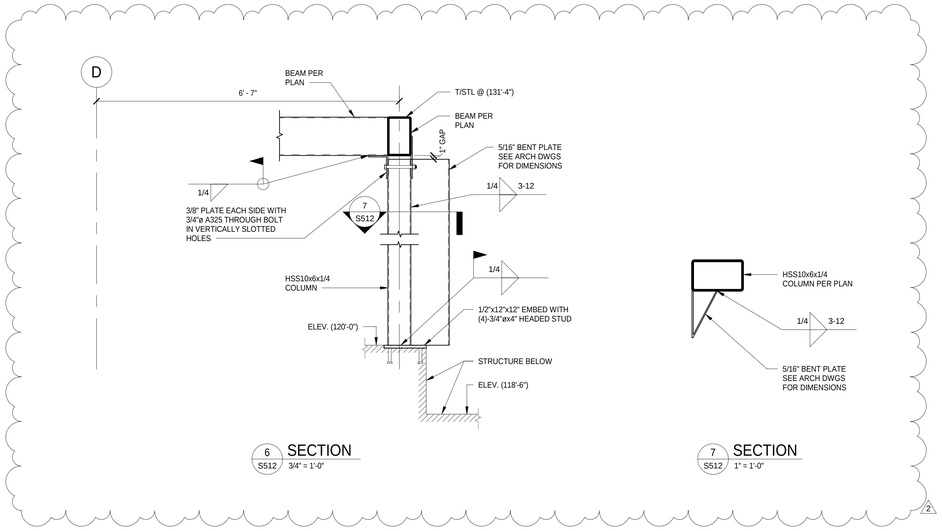

6 SECTION
S512 3/4" = 1'-0"

7 SECTION
S512 1" = 1'-0"

2

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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE

REFER TO CIVIL DRAWINGS FOR TRUE NORTH

ISSUED/REVISION SCHEDULE

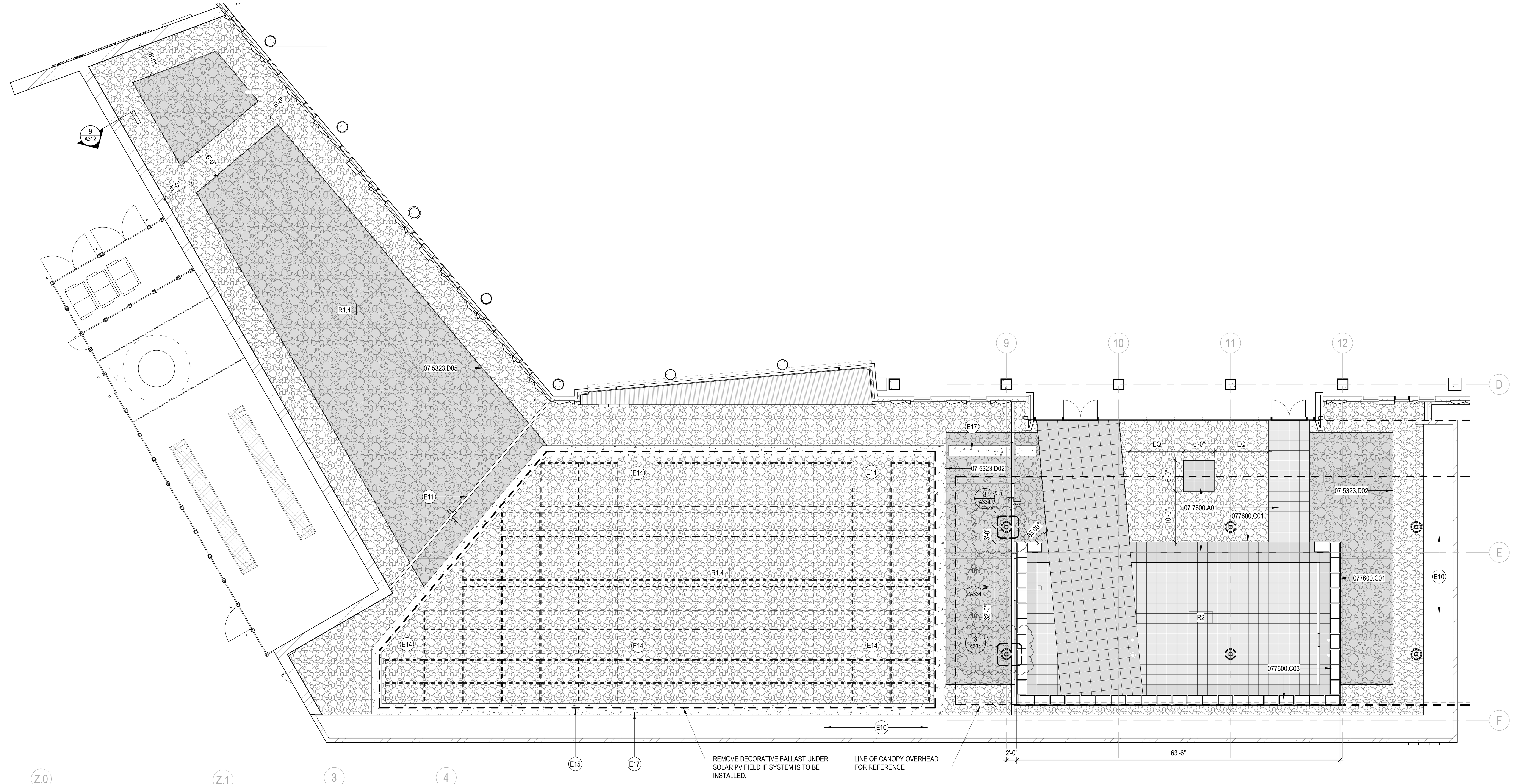
MARK	DATE	DESCRIPTION
2	01/07/2026	BP3-ADDENDUM 01
1	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

CLAYTON E. SPRINGER REGISTERED No. 10302023 STATE OF INDIANA PROFESSIONAL ENGINEER

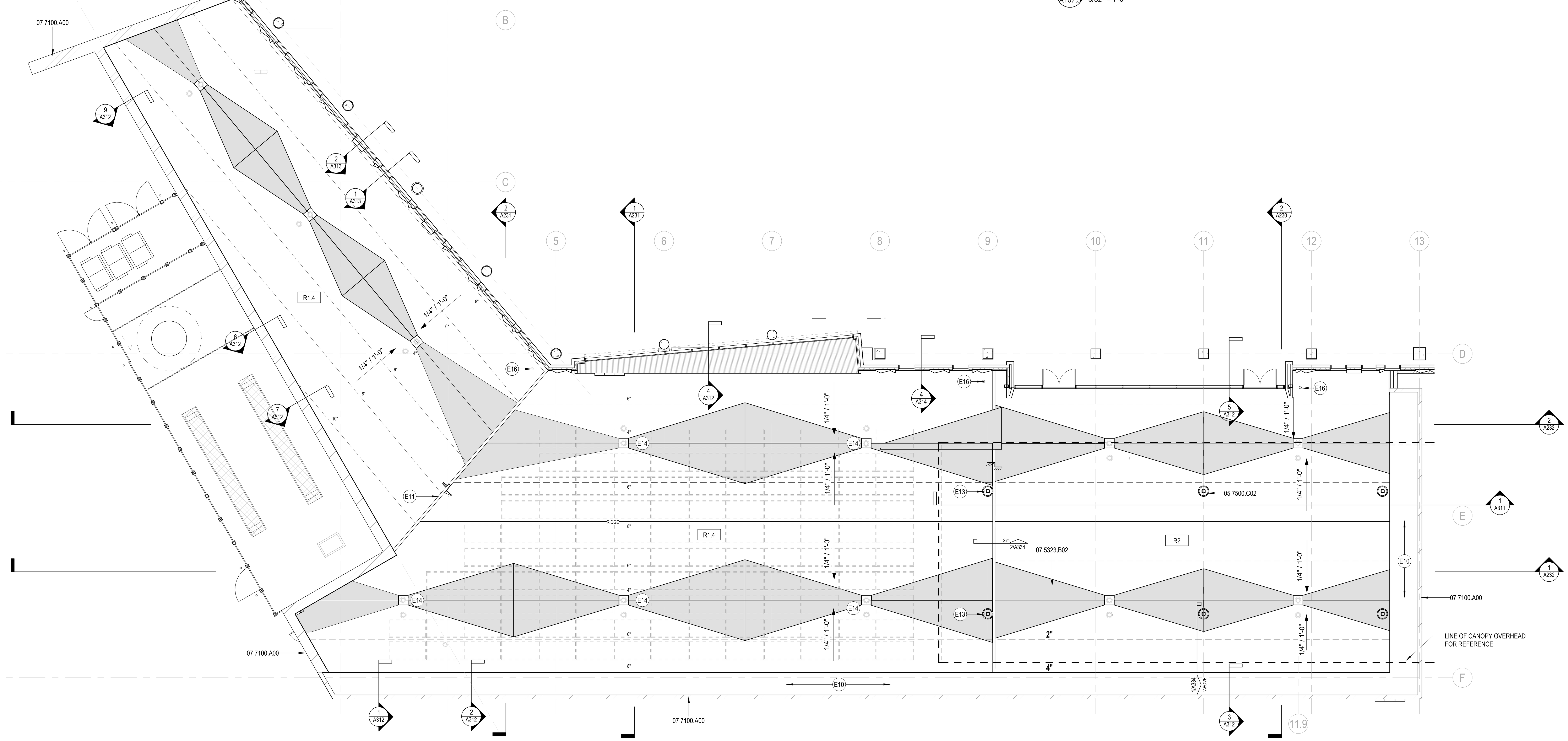
FRAMING DETAILS

DATE REF: SHEET INDEX
BSA PROJECT NO. 00360481

S512



2 COMPOSITE ROOF PLAN_PLAZA LEVEL - PLAZA / BALLAST
A107.5 3/32" = 1'-0"



1 COMPOSITE ROOF PLAN_PLAZA LEVEL - MEMBRANE
A107.5 3/32" = 1'-0"

ROOF PLAN LEGEND

ROOF NOTES

1. TAPERED INSULATON SHALL SLOPE AT 1/4" PER FOOT TO DRAINS.
2. CRICKETS SHALL SLOPE AT 1/2" PER FOOT.
3. ALL ROOF MEMBRANE TERMINATIONS, TRANSITIONS, FLASHINGS, ETC. SHALL CONFORM WITH MANUFACTURER'S RECOMMENDATIONS AND WARRANTY REQUIREMENTS.
4. ALL PENETRATIONS SHALL CONFORM WITH MANUFACTURER'S RECOMMENDATIONS AND WARRANTY REQUIREMENTS.
5. REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
6. FURNISH LEAK DETECTION (VECTOR MAPPING) SYSTEM AT ALL ROOFING OVER ENCLOSED SPACES, UNLESS NOTED OTHERWISE.
7. REFER TO A107 FOR OVERAL COMPOSITE ROOF. REFER TO A107.5 FOR SECOND LEVEL / PLAZA ROOF.
8. IF SOLAR PANELS ARE INSTALLED, BALLAST ARE NOT REQUIRED UNDER PANELS.

SYMBOLS

ROOF DRAIN
OVERFLOW DRAIN
TAPERED OR SLOPED INSULATION
CRICKET
SOLAR PANELS

DECORATIVE AGGREGATE BALLAST **COLOR 1** - CHIPPED SLATE
DECORATIVE AGGREGATE BALLAST **COLOR 2** - LARGE FORMAT MERAMEC
PORCELAIN ROOF PAVER **COLOR 1** - LIMESTONE
PORCELAIN ROOF PAVER **COLOR 2** - BLUESTONE
MEMBRANE WALKWAY PAD
CONCRETE WALKWAY PAD
PLANTER BOX

_KEYNOTE SCHEDULE

NUMBER	TEXT
05 7500.C02	FACTORY FABRICATED MCM COLUMN COVER
07 5323.B02	PREFORMED CRICKET
07 5323.D02	PREFINISHED AGGREGATE BALLAST EDGE BARRIER/RETAINER.
07 5323.D05	AGGREGATE BALLAST EDGING/RETAINER AT PERIMETER OF BALLAST COLOR TRANSITION
07 7100.A00	COPING TO MATCH MCM FINISH.
07 7600.A01	3/4" PORCELAIN ROOF PAVERS ON TRAY SUPPORT
077600.C01	TWO PIECE PRE-FINISHED 22 GA. EDGE METAL AT PERIMETER OF PEDESTAL ASSEMBLY.
077600.C03	24" X 36" FIBERGLASS PLANTER BOX

SHEET NOTE SCHEDULE

NUMBER	TEXT
E10	DEEP PARAPET (CONCEAL PROJECTING STRUCTURAL COLUMNS.
E11	ROOFING TRANSITION BETWEEN CHANGES IN INSULATION PLANE.
E13	DOWNSPOUT FROM CANOPY ABOVE TO RUN TIGHT TO COLUMN CONCEALED IN METAL COLUMN ENCLOSURE AND DISCHARGE TO DAYLIGHT AT THE ROOF PLANE.
E14	OMIT SOLAR PANEL ASSEMBLY (IF INCLUDED IN PROJECT) AT ROOF DRAINS, TYPICAL.
E15	FIXED, SINGLE POSITION PV PANEL ARRAY. BALLAST SUPPORTED (NO PENETRATIONS FOR STRUCTURAL SUPPORT MEMBERS). SYSTEM SHOWN FOR LOCATION REFERENCE.
E16	PROBE CONNECTION TO VECTOR LEAK DETECTION MAT IN ROOF ASSEMBLY. FINAL LOCATION TO BE DETERMINED BY MANUFACTURER
E17	2' X 2' CONCRETE ROOF WALKWAY PADS

BSA

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INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

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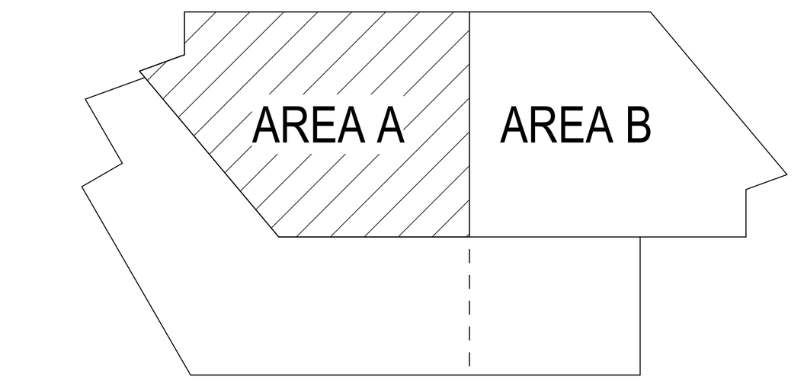
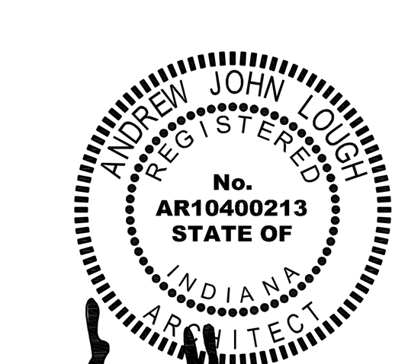


KEYPLAN
PROJECT NORTH
REFER TO CIVIL DRAWINGS FOR TRUE NORTH
TRUE NORTH

ISSUED / REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
8	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE



PLAZA LEVEL ROOF PLANS

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

A107.5

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_KEYNOTE SCHEDULE	
NUMBER	TEXT

REFLECTED CEILING PLAN LEGEND

REFLECTED CEILING PLAN NOTES

A. LOCATE ALL DEVICES, EQUIPMENT, AND/OR JUNCTION BOXES REQUIRING ACCESS IN ACCESSIBLE CEILING LOCATIONS. AVOID LOCATING ITEMS REQUIRING ACCESS IN INACCESSIBLE CEILINGS OR SHARE ACCESS POINTS. COORDINATE ACCESS PANELS WHERE REQUIRED WITH ARCHITECT PRIOR TO INSTALLATION.

B. MECHANICAL, ELECTRICAL AND PLUMBING ITEMS, INCLUDING LIGHT FIXTURES, INDICATED ON REFLECTED CEILING PLANS ARE FOR REFERENCE ONLY.

CEILING TAG

ACT1 +10'-0" — CEILING TYPE, REFERENCE CEILING SCHEDULE; HEIGHT ABOVE ASSOCIATE LEVEL

OTHER CEILING SYMBOLS

+9'-0" — SPOT ELEVATION SYMBOL & HEIGHT ABOVE ASSOCIATE LEVEL

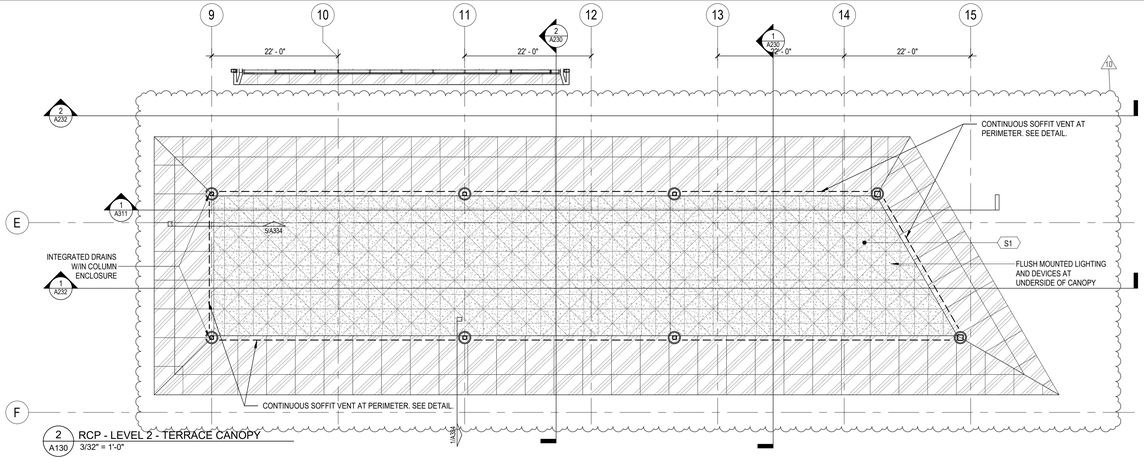
EXPOSED STRUCTURE (P1) — EXPOSED STRUCTURE FINISH

CJ — CONTROL JOINT

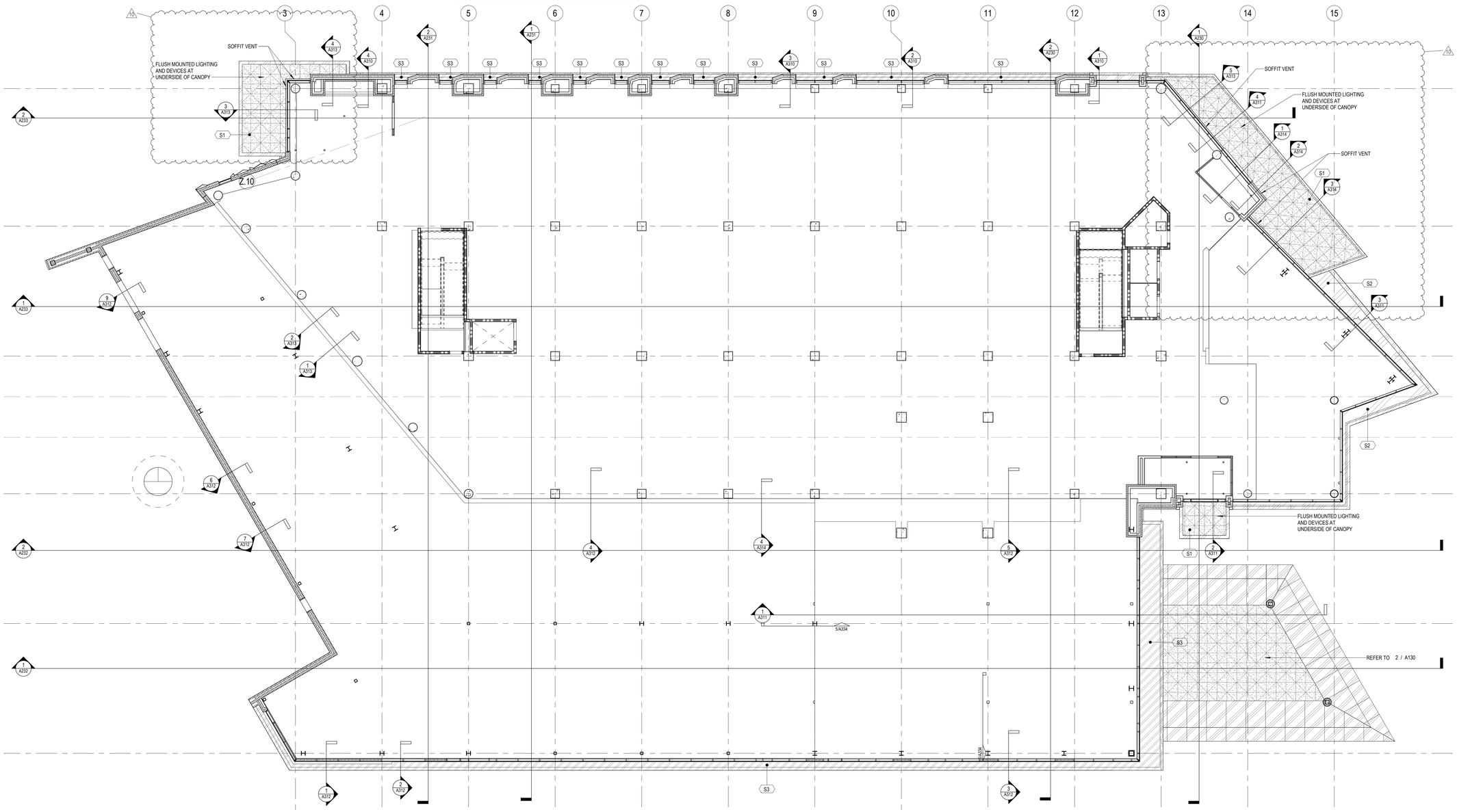
S1 — DIRECT APPLIED FINISHED SYSTEM (DAFS) WITH LIMESTONE LOOK

S2 — EXTERIOR METAL COMPOSITE PANEL COPPER TONE MICA FINISH - CUSTOM PANELS.

S3 — STEEL PLATE; GALVANIZED AND PAINTED



2 A130 RCP - LEVEL 2 - TERRACE CANOPY
3/32" = 1'-0"



1 A130 RCP - EXTERIOR SOFFITS
3/32" = 1'-0"

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
Carmel, IN 46032
ph 317.819.7878 fx 317.819.7288

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500 GRISWOLD
SUITE 1700
DETROIT, MI 48226
313.983.3600
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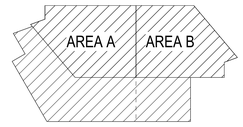
INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE



KEYPLAN
PROJECT NORTH
REFER TO CIVIL DRAWINGS FOR TRUE NORTH
TRUE NORTH

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
8	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

ANDREW JOHN JOHNS REGISTERED No. AR10400213 STATE OF INDIANA ARCHITECT

REFLECTED CEILING PLAN - EXTERIOR SOFFITS

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

A130

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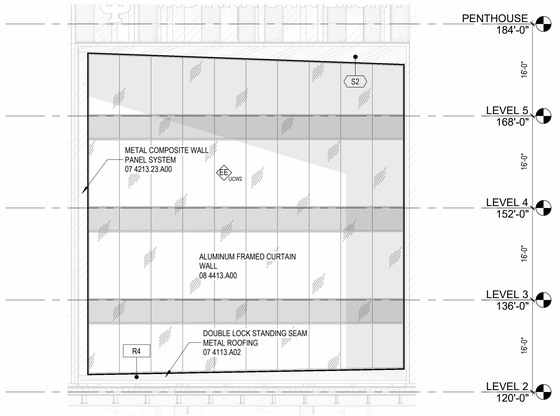
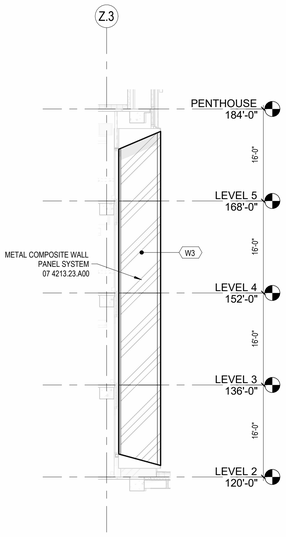
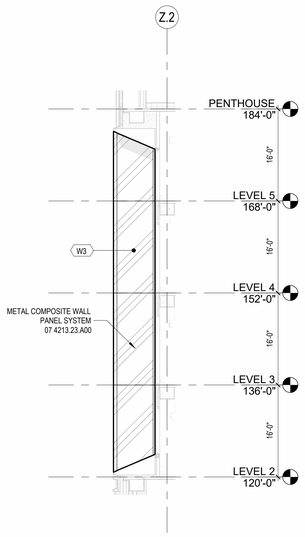


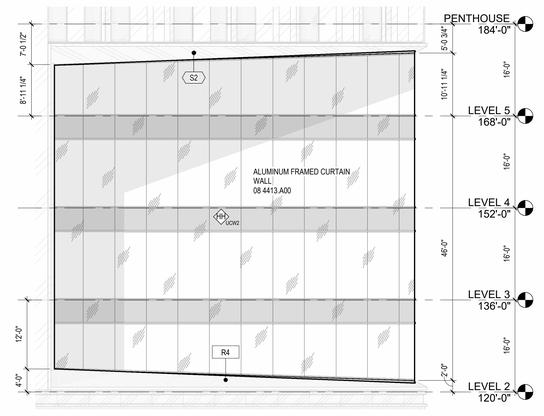
9 A203 ELEVATION - S. SECONDARY
3/32" = 1'-0"



8 A203 ELAVATION - S. SECONDARY HIDDEN
3/32" = 1'-0"



7 A203 ELEVATION - N. SECONDARY HIDDEN
3/32" = 1'-0"



6 A203 ELEVATION - N. SECONDARY
3/32" = 1'-0"

EXTERIOR ELEVATION LEGEND

- W1 — BUILDING ASSEMBLY TAG, SEE BUILDING ASSEMBLY TYPES A300'S
- A / CW# — GLAZING ELEVATION TAG, REFERENCE GLAZING ELEVATIONS A220'S
- CURTAIN WALL ASSEMBLY TYPE
- A — WINDOW TAG, SEE WINDOW SCHEDULE
- BR1 — MATERIAL TAG, SEE EXTERIOR FINISH SCHEDULE

HATCH	ASS'Y	DESCRIPTION
	W1	EXTERIOR VERTICALLY STACKED BRICK MASONRY VENEER (NORMAN SOLDIER BOND; 2 1/4" X 1' - 0") WITH CUSTOM MORTAR COLOR
	W2	EXTERIOR MASONRY LIMESTONE VENEER TYP. 3 5/8" THICK - (SIZES TBD) WITH CUSTOM MORTAR COLOR
	W3	EXTERIOR METAL COMPOSITE PANEL. REFER TO 1/A350
	W4	EXTERIOR PRECAST CONCRETE CURB W4.1- DARK; W4.2- MATCH LIMESTONE; W4.3 MATCH BRICK
	W5	EXTERIOR METAL INSULATED PANEL - MECHANICAL PENTHOUSE
	W6	EXTERIOR INSULATED WALL (INTERIOR FACING) - PARAPET
	S1	"V" JOINTS, TYP. EXTERIOR INSULATOIN AND FINISH SYSTEM (EIFS).
	S2	EXTERIOR METAL COMPOSITE PANEL
	S3	STEEL PLATE; GALVANIZED AND PAINTED
GL-1 / GL-2	XCW1	EXTERIOR CURTAIN WALL SYSTEM - STICK BUILT - HORIZONTALLY CAPTURED
GL-1 / GL-2	XCW2	EXTERIOR CURTAIN WALL SYSTEM - STICK BUILT - VERTICALLY CAPTURED
GL-1 / GL-2	UCW1	EXTERIOR CURTAIN WALL SYSTEM - UNITIZED - FULLY CAPTURED (GL-1F; DARK OPAQUE FILM APPLIED TO SURFACE 4)
GL-1 / GL-2	UCW2	EXTERIOR CURTAIN WALL SYSTEM - UNITIZED - HORIZONTALLY

_KEYNOTE SCHEDULE

NUMBER	TEXT
03 4500.A00	PRECAST ARCHITECTURAL CONCRETE UNIT
04 2000.B14	BRICK (STACKED BOND - VERTICAL)
07 4113.A02	DOUBLE LOCK STANDING SEAM METAL ROOFING
07 4213.23.A00	METAL COMPOSITE WALL PANEL SYSTEM
07 7100.A00	COPING TO MATCH MCM FINISH.
08 1113.C01	LOUVER
08 3323.A01	EXTERIOR COILING DOOR, INSULATED
08 4313.B01	SWING DOOR - REFER TO DOOR SCHEDULE
08 4413.A00	ALUMINUM FRAMED CURTAIN WALL

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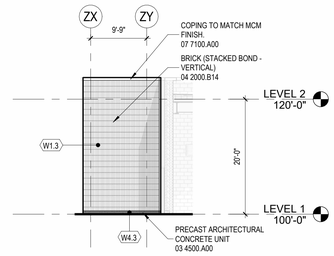
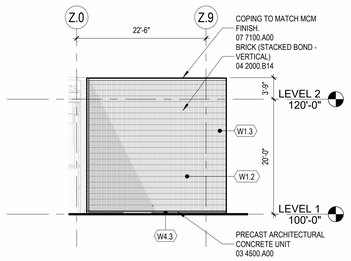
CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

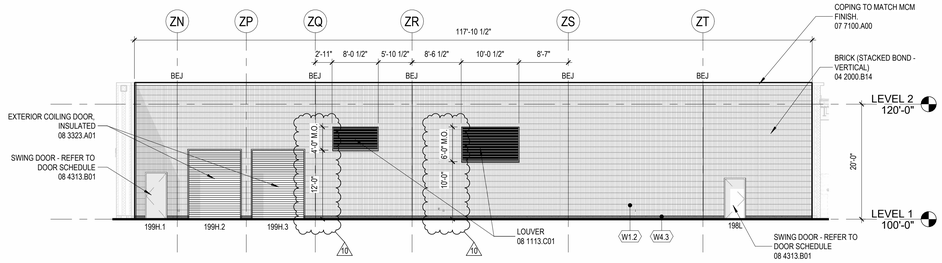
BP3-CD: CORE AND SHELL PACKAGE



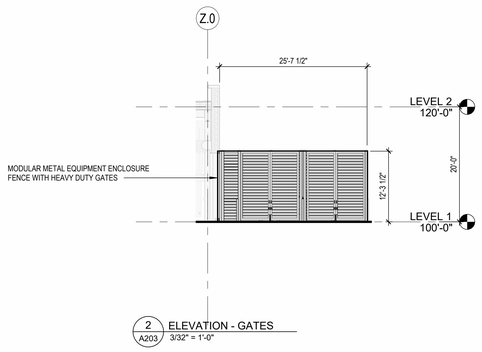
5 A203 ELEVATION - SCREEN/WING WALL
3/32" = 1'-0"



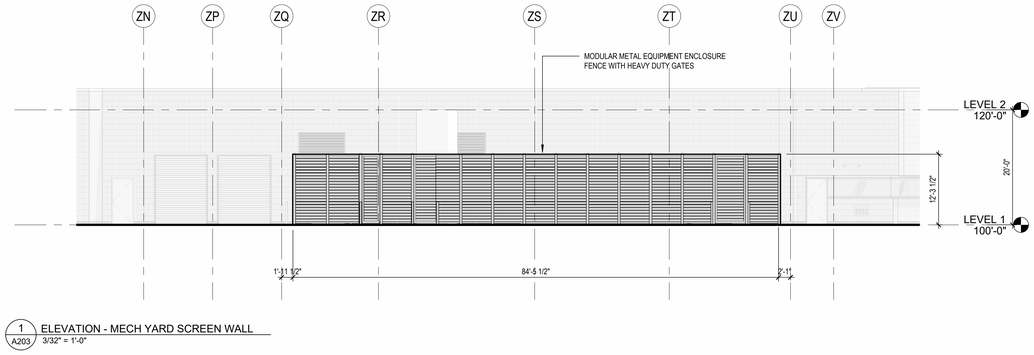
4 A203 ELEVATION - MECH YARD
3/32" = 1'-0"



3 A203 ELEVATION - LOADING / MECH YARD
3/32" = 1'-0"



2 A203 ELEVATION - GATES
3/32" = 1'-0"



1 A203 ELEVATION - MECH YARD SCREEN WALL
3/32" = 1'-0"

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
9	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE
1	08/15/2025	CITY SUBMITTAL

ANDREW JOHN CULLEN
REGISTERED
No. AR10400213
STATE OF INDIANA
ARCHITECT

EXTERIOR ELEVATIONS

DATE — REF: SHEET INDEX
BSA PROJECT NO. — 00360481

A203

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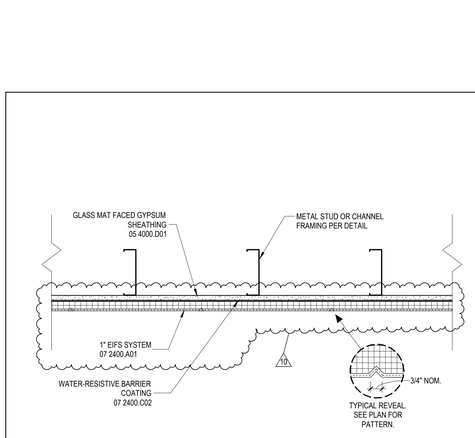
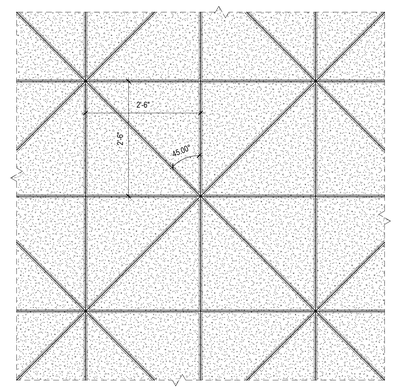


SECTION

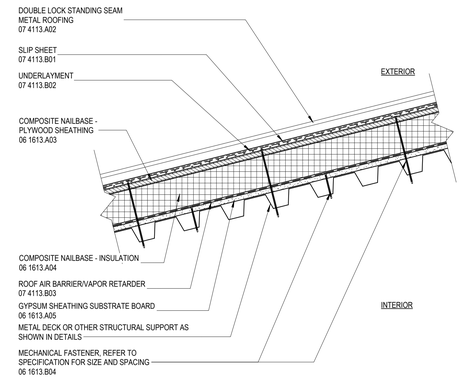


PLAN

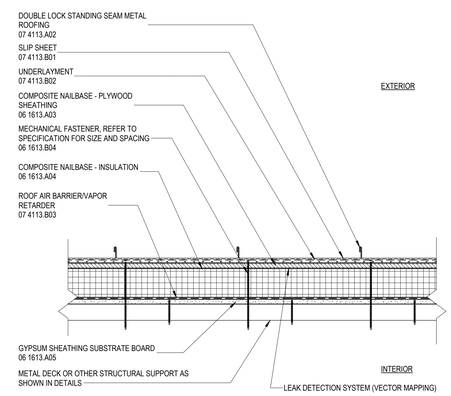
S1 **E.I.F.S SOFFIT**

Continuous R-20

MARK	DESCRIPTION OF MINOR VARIATION



LONGITUDINAL (WITH SLOPE) SECTION



CROSS SECTION (PERPENDICULAR TO SLOPE)

R4 **METAL ROOFING**

Continuous R-20

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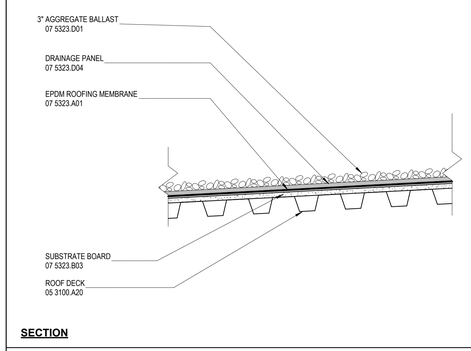
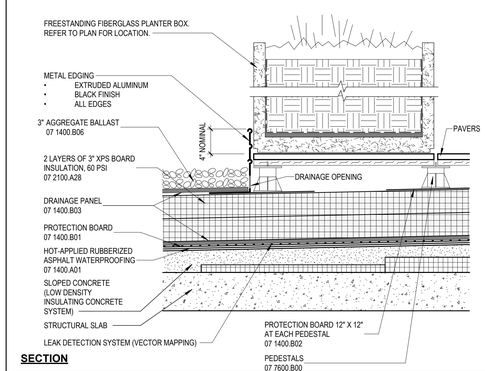


SECTION

R3 **SINGLE PLY EDPM ON SHEATHING ON SLOPED METAL DECK**

MARK	DESCRIPTION OF MINOR VARIATION

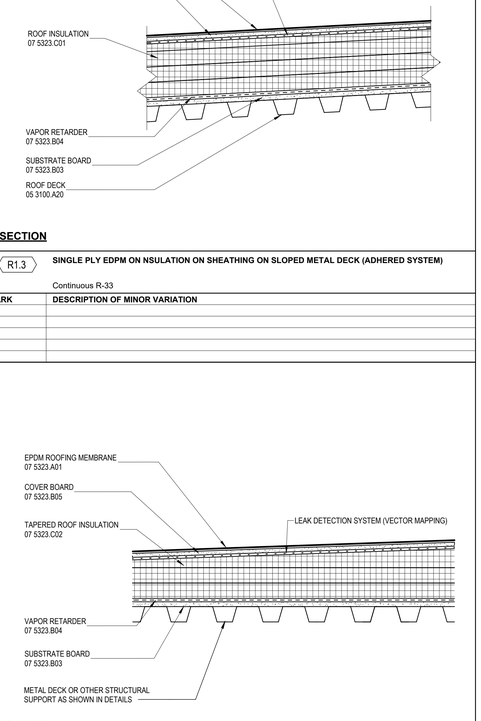


SECTION

R2 **PAVERS, INSULATION, RUBBERIZED ASPHALT ROOFING**

Continuous R-20

MARK	DESCRIPTION OF MINOR VARIATION

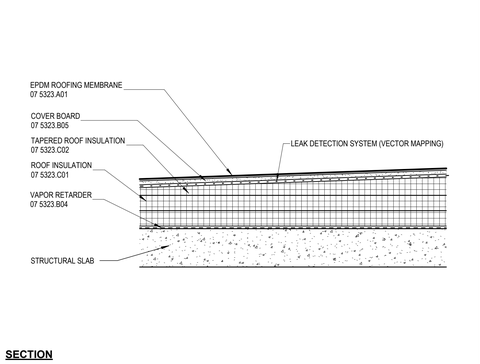


SECTION

R1.2 **SINGLE PLY EDPM ON TAPERED INSULATION ON SHEATHING ON METAL DECK (ADHERED SYSTEM)**

Continuous R-20 ci & R-33 Average Insulation

MARK	DESCRIPTION OF MINOR VARIATION

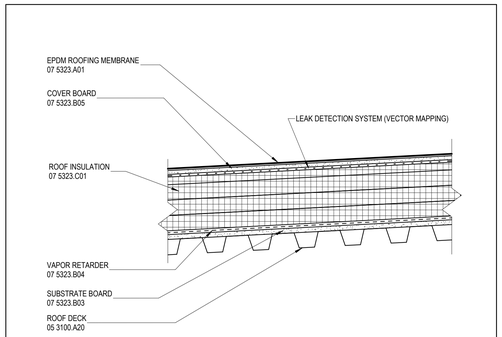


SECTION

R1.1 **SINGLE PLY EDPM ON TAPERED INSULATION ON SHEATHING ON CONCRETE (ADHERED SYSTEM)**

Continuous R-20 ci & R-33 Average Insulation

MARK	DESCRIPTION OF MINOR VARIATION
R1.4	ADD 3/4" DRAINAGE BOARD AND DECORATIVE AGGREGATE BALLAST



SECTION

R1.3 **SINGLE PLY EDPM ON NSULATION ON SHEATHING ON SLOPED METAL DECK (ADHERED SYSTEM)**

Continuous R-33

MARK	DESCRIPTION OF MINOR VARIATION

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
Carmel, IN 46032
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500 GRISWOLD
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313.983.3600
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INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
9	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

BUILDING ASSEMBLY TYPES - HORIZONTAL

DATE **REF: SHEET INDEX**

BSA PROJECT NO. **00360481**

A302

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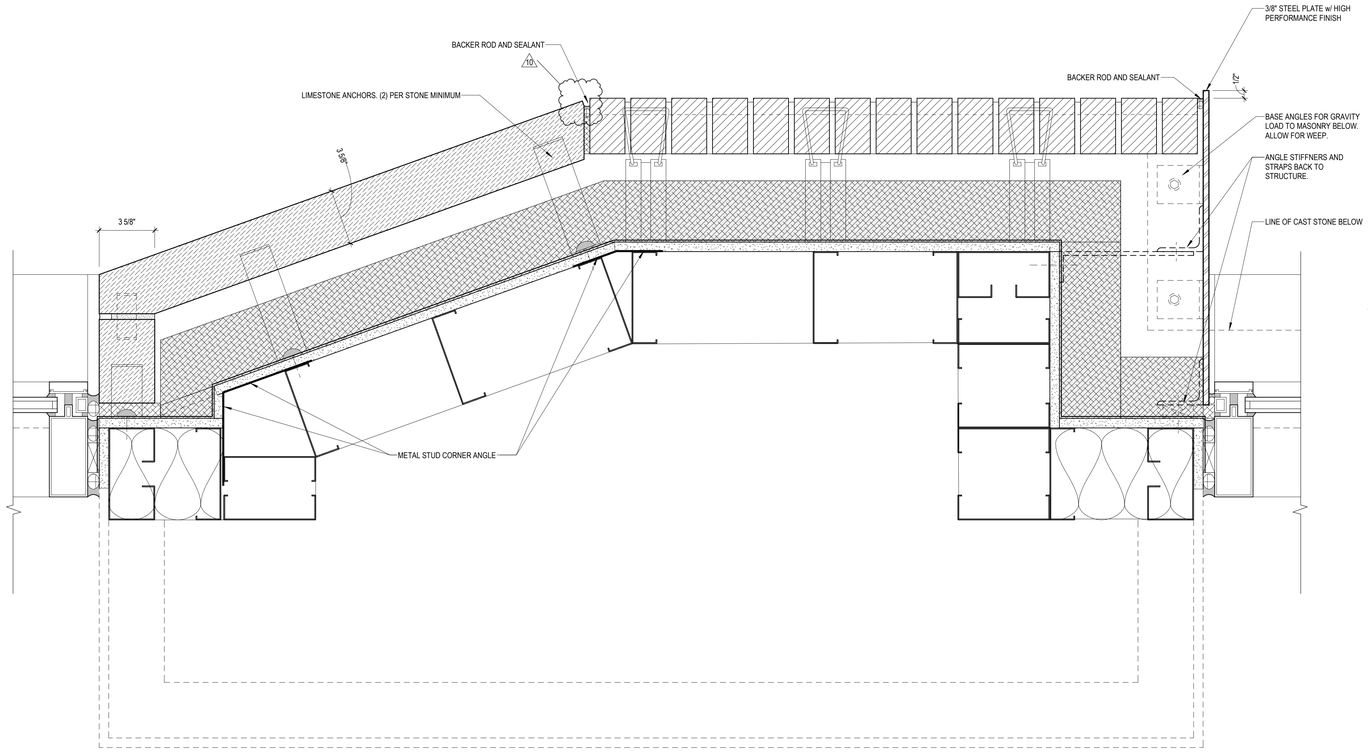
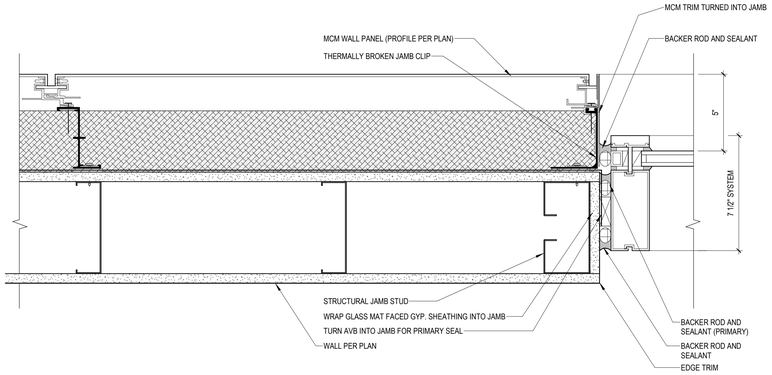
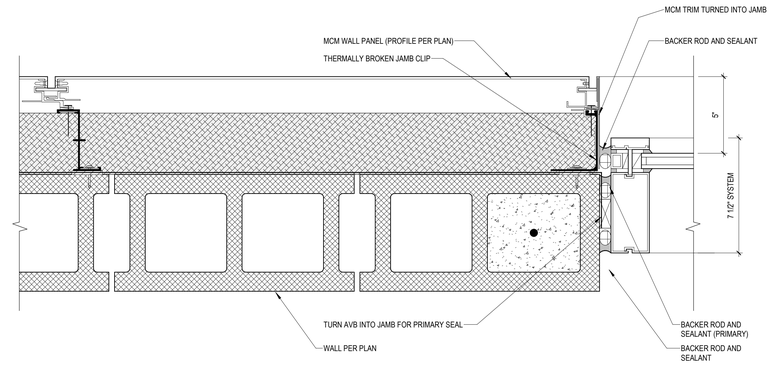
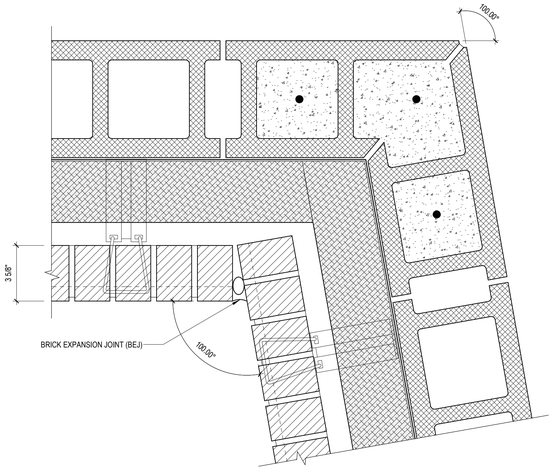


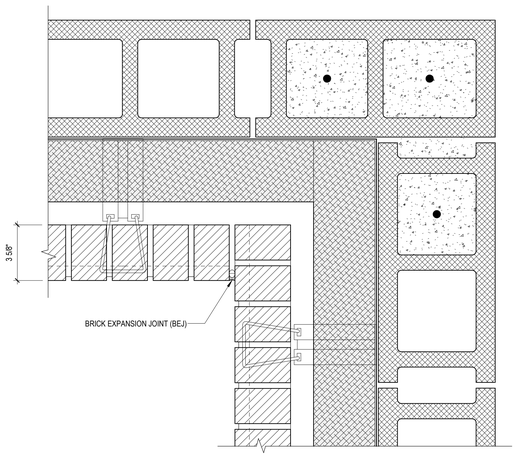
3 A303 TYPICAL BRICK STONE PLATE JAMB
3" = 1'-0"

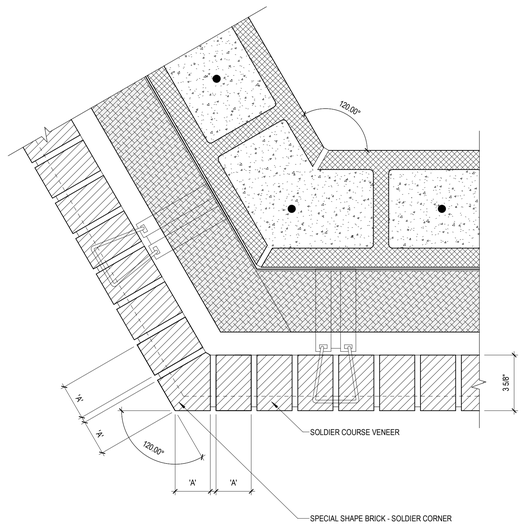


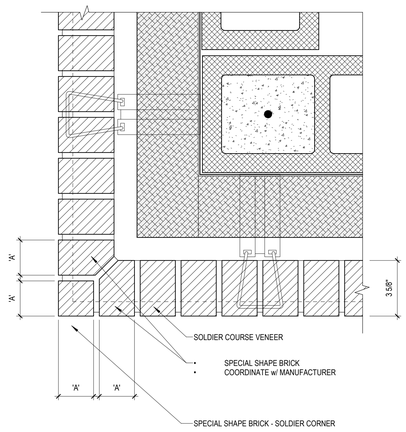


2 A303 TYPICAL MCM JAMB
3" = 1'-0"









NOTE:

REFER TO PLANS AND DETAILS FOR BACK-UP SYSTEM AND WALL ASSEMBLY - VARIES PER LOCATION.
REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL GROUTING AND REINFORCING REQUIREMENTS.

100° INSIDE CORNER

90° INSIDE CORNER

120° OUTSIDE CORNER

90° OUTSIDE CORNER

1 A303 TYPICAL BRICK SOLDIER COURSE CORNERS
3" = 1'-0"

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
8	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

BUILDING ASSEMBLY - ENLARGED TYPICAL DETAILS

DATE REF: SHEET INDEX

BSA PROJECT NO. 00360481

A303

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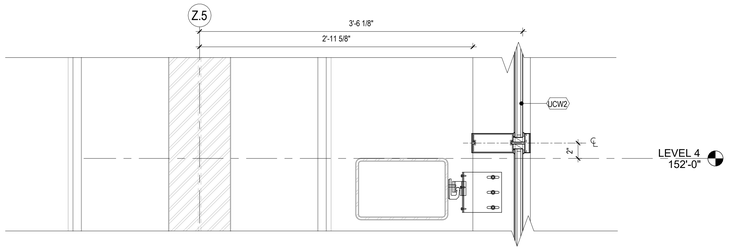
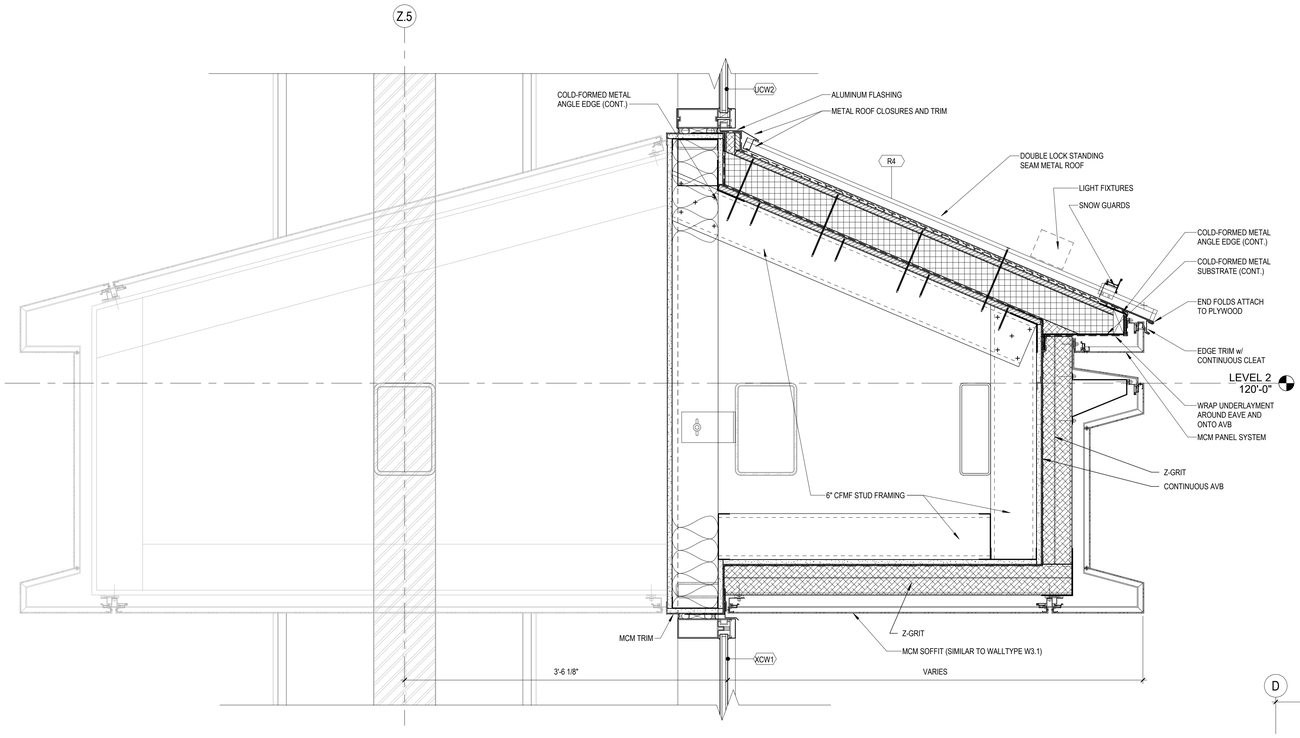
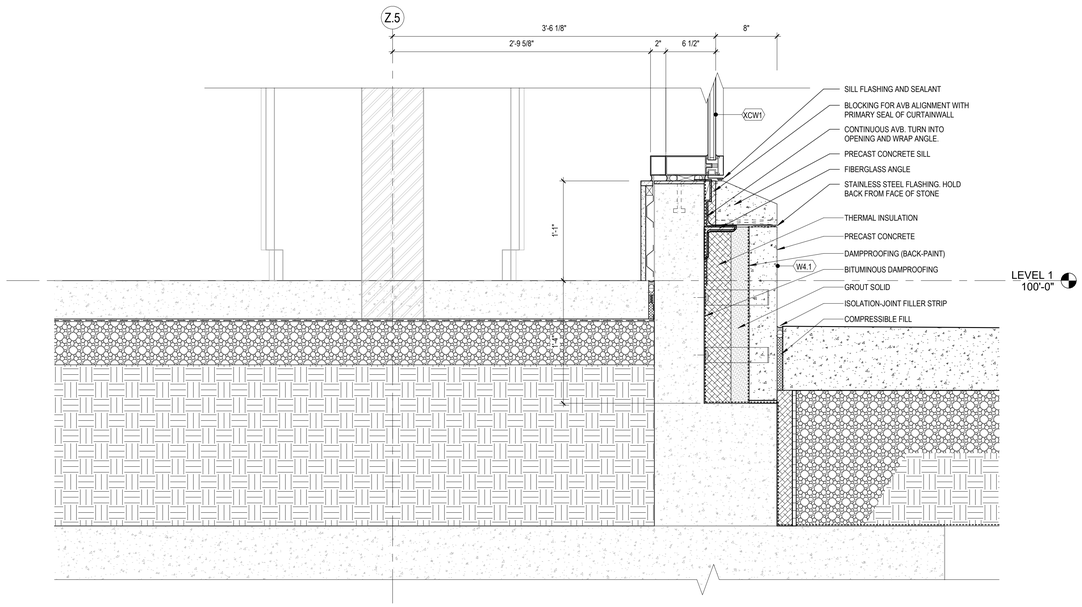


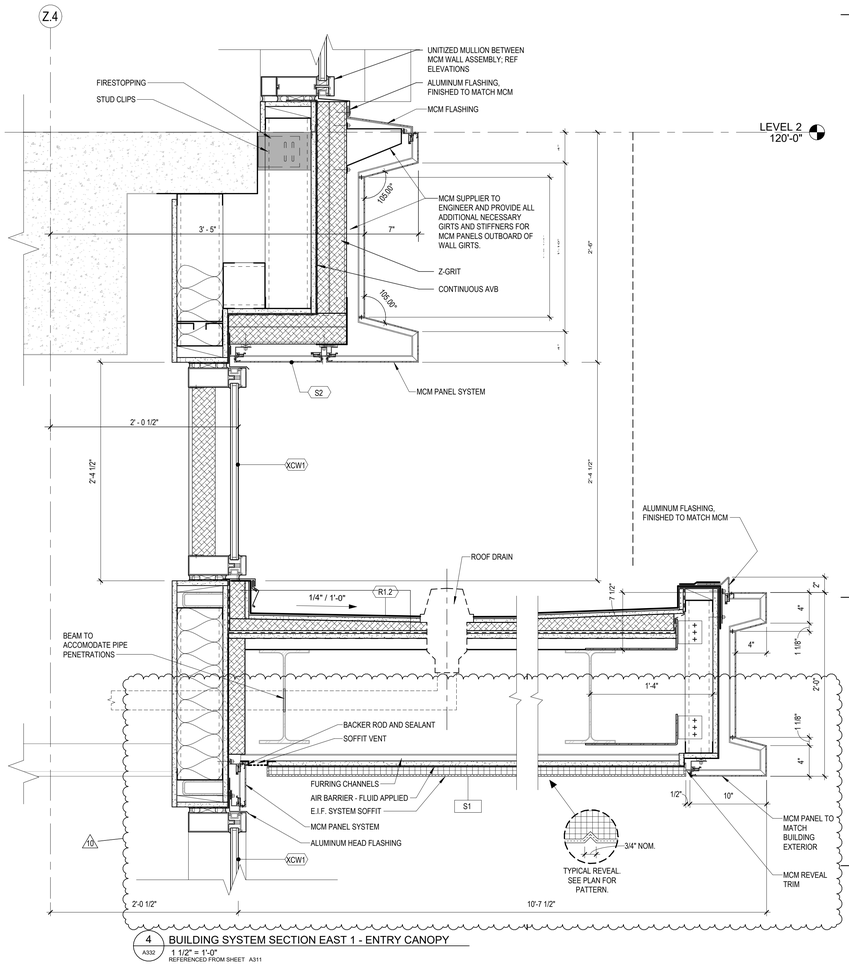
2 A332 BUILDING SYSTEM SECTION EAST 2 - HORIZONTAL BEAM CONNECTION
1 1/2" = 1'-0"
REFERENCED FROM SHEET A311



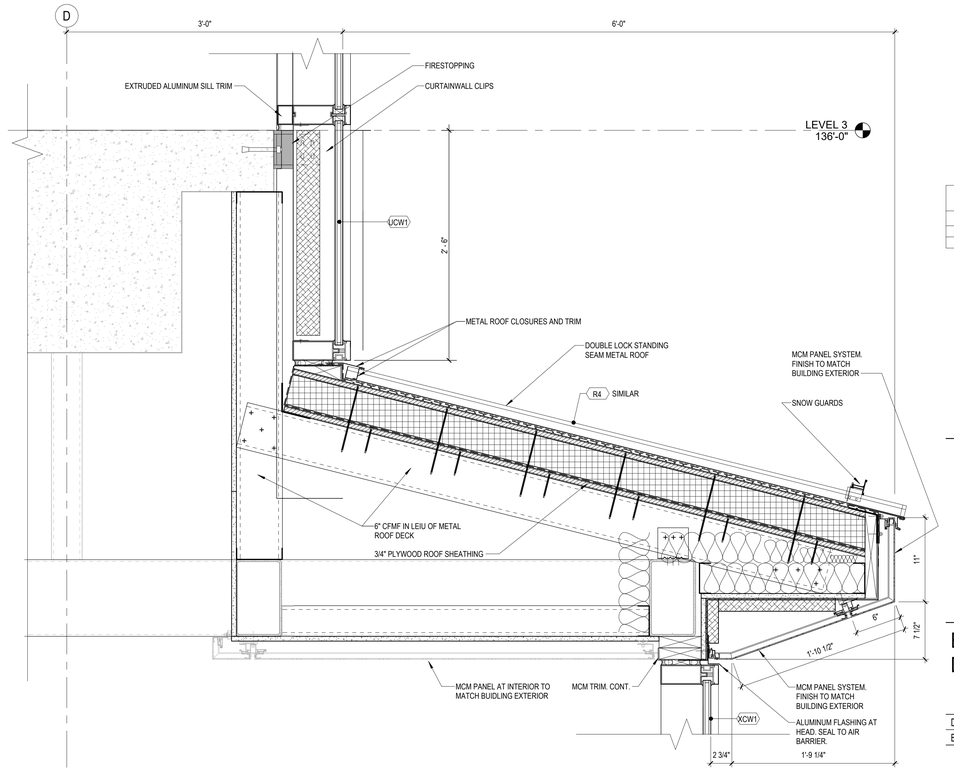
1 A332 BUILDING SYSTEM SECTION EAST 2 - SLOPED ROOF AT EAST CW CUT
1 1/2" = 1'-0"
REFERENCED FROM SHEET A311



7 A332 BUILDING SYSTEM SECTION EAST 2 - TYP BASE DETAIL AT EAST C.W.
1 1/2" = 1'-0"
REFERENCED FROM SHEET A311



4 A332 BUILDING SYSTEM SECTION EAST 1 - ENTRY CANOPY
1 1/2" = 1'-0"
REFERENCED FROM SHEET A311



3 A332 BUILDING SYSTEM SECTION SOUTH 5 - PODIUM PLAZA ACCESS PORTAL HEAD
1 1/2" = 1'-0"
REFERENCED FROM SHEET A312

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
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CLIENT PROJECT NO. - 20250072

CUMULATIVE DOCUMENTS

BP3-CD: CORE AND SHELL PACKAGE

ISSUED / REVISIONS SCHEDULE

MARK	DATE	DESCRIPTION
10	01/07/2025	BP3-CD: ADDENDUM 01
8	12/15/2025	BP3-CD: CORE AND SHELL PACKAGE

ANDREW JOHN KNOX REGISTERED ARCHITECT No. AR10400213 STATE OF INDIANA

EXTERIOR SECTION DETAILS

DATE	REF: SHEET INDEX
BSA PROJECT NO.	00360481

A332

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Autodesk Docs://00360481 - IU Launch Accelerator for Biosciences/ARCH-20250972-AXLAB-CS_R24.rvt

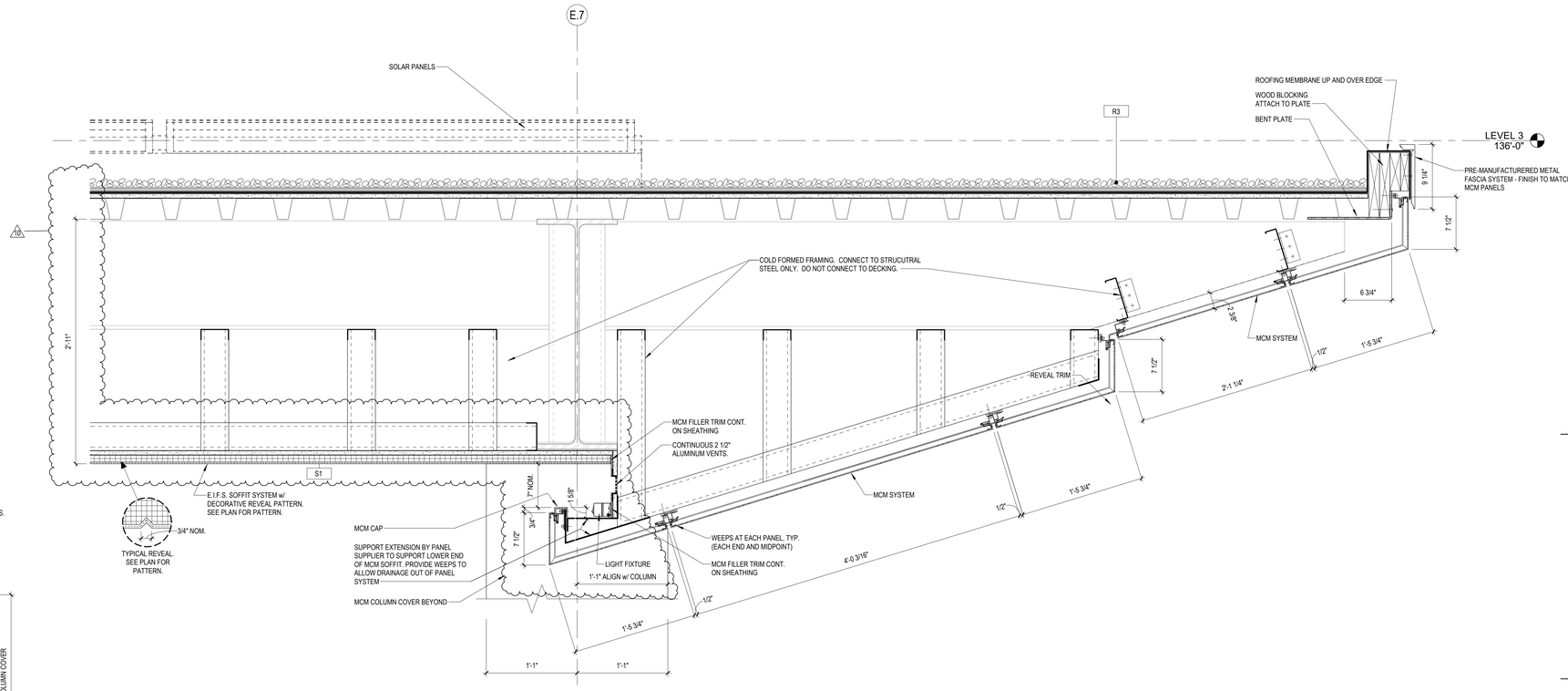
DETAILS LEGEND

LEGEND APPLIES TO ALL A300 SERIES

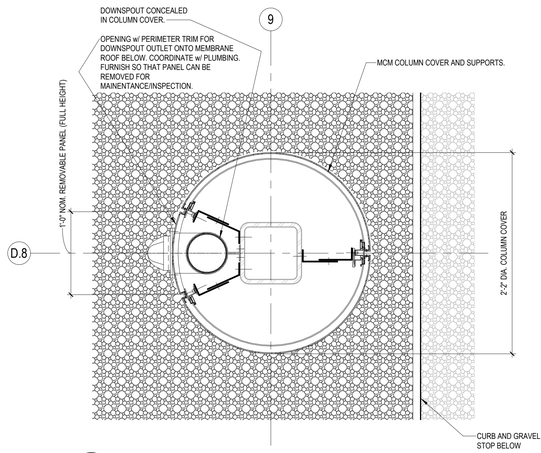
- BRICK
- C.M.U.
- RIGID INSUL.
- STEEL
- RECONSTRUCTED STONE
- SOLID GROUT
- CONCRETE
- SPRAY-APPLIED CLOSED CELL INSULATION WITH SPRAY-APPLIED FIRE RATED BARRIER ON EXPOSED SURFACES
- FIRESTOPPING ASSEMBLY
- BATT INSULATION
- METAL STUD
- RUNNER TRACK
- WEEP OR HEAD VENT
- EXPANSION ANCHOR
- VENEER ANCHOR
- VENEER ANCHOR
- VENEER ANCHOR
- VENEER ANCHOR
- TERM. BAR & SEALANT
- REINFORCING BAR IN GROUTED CORES
- WOOD BLOCKING
- BACKER ROD & SEALANT

DETAILS GENERAL NOTES

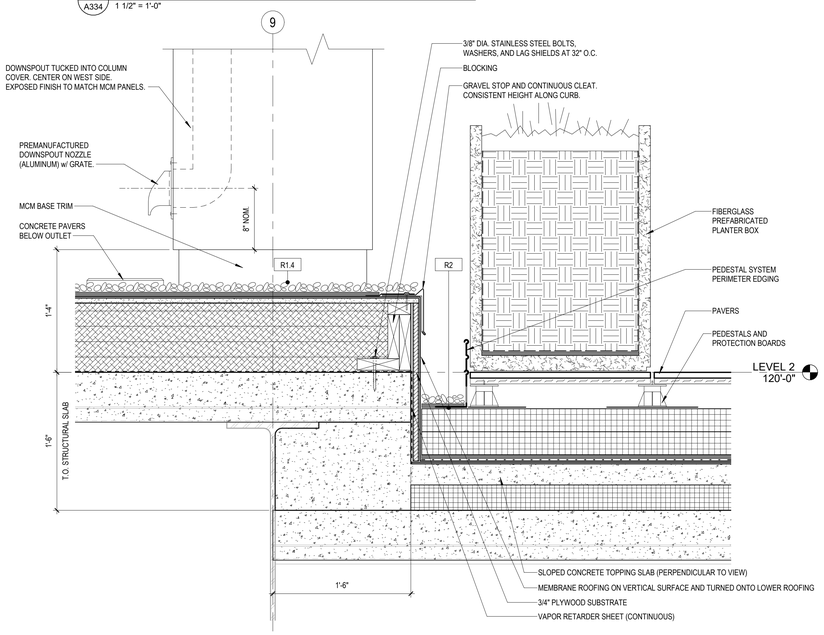
A. REFER TO A300 - A303 FOR TYPICAL EXTERIOR DETAILS.
B. DIMENSIONS ARE TAKEN TO TOP OF BRICK OR STONE. 3/8" JOINT TYPICAL AT VENEER AND MASONRY JOINTS.
C. ALL C.M.U. WALLS TO HAVE HORIZONTAL REINFORCING AT 16" O.C.
D. REFER TO ENLARGED FIN TUBE DRAWINGS FOR EXACT CONFIGURATION.
E. NOTES REPEAT WHERE DRAWN TYPICAL.
F. REFER TO STRUCTURAL FOR ADDITIONAL C.M.U. REINFORCING.
G. COORDINATE EXACT SCOPE OF BID PACKAGES WITH CONSTRUCITON MANAGER. SOME ITEMS SHOWN ARE REFERENCE ONLY.
H. INSTALL FIRE PROOFING PER CODE SUMMARY -TYP. AT STEEL FRAMING. FIREPROOFING MAY NOT BE SHOWN GRAPHICALLY.
J. REFER TO CEILING PLANS FOR EXACT SHADES, BULKHEADS, CEILINGS.
K. FURNISH END CLOSURE CAPS FOR ALL MULLION CAPS, PANEL ENDS WHERE EXPOSED.
L. FURNISH DAMPROOFING ON BACK SIDE OF RECONSTRUCTED STONE ALL LOCATIONS, TYPICAL.
M. FURNISH METAL (PAINTED) BETWEEN SHADE BOX AND CURTAINWALL, TYP.
N. REFER TO ELEVATIONS FOR GLASS TYPES AND 2-WAY OR 4-WAY SYSTEM.



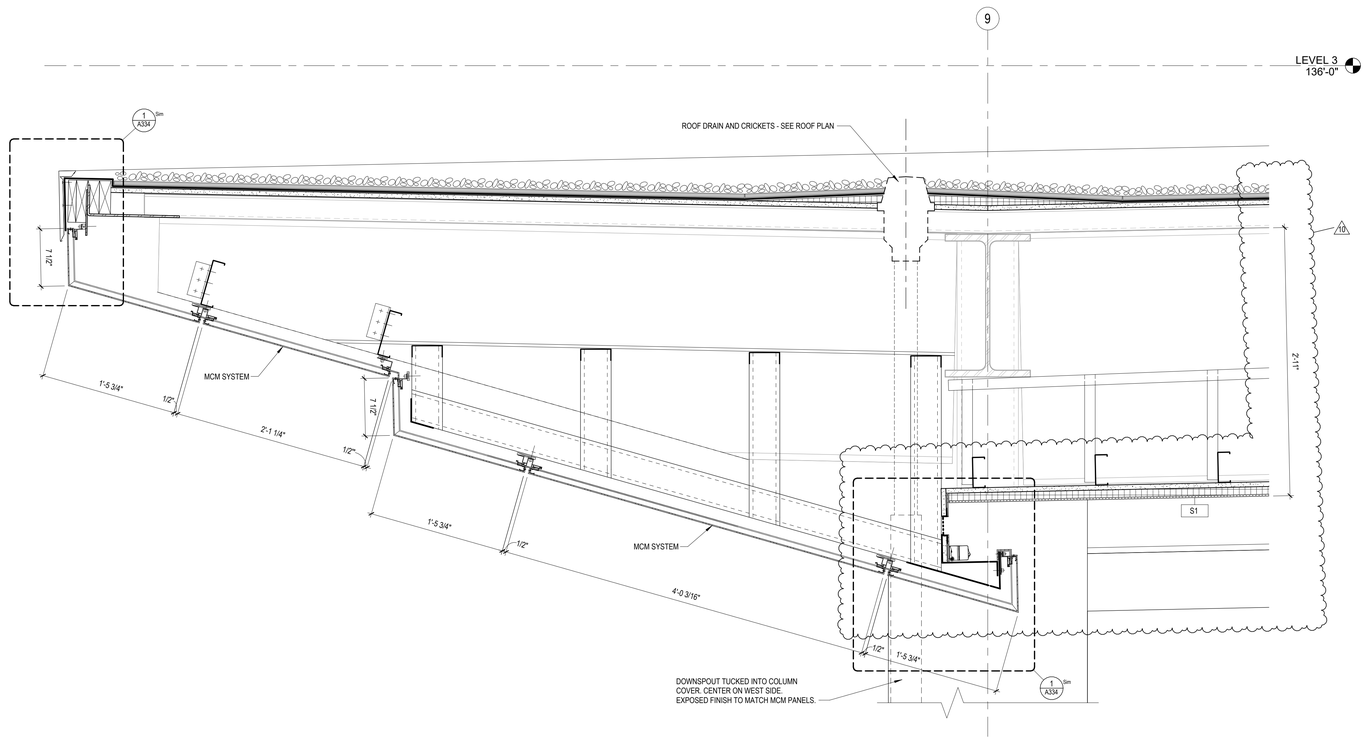
1 A334 SECTION - CANOPY PERIMETER, WEST END
1 1/2" = 1'-0"
REFERENCED FROM SHEET A103



3 A334 PLAN DETAIL
1 1/2" = 1'-0"



2 A334 WALL SECTION DETAIL AT TRANSITION
1 1/2" = 1'-0"



5 A334 BUILDING SYSTEM SECTION SOUTH 2
1 1/2" = 1'-0"
REFERENCED FROM SHEET A103

BSA LifeStructures
175 S. Rangeline Rd, Suite 200
Carmel, IN 46032
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LAUNCH ACCELERATOR FOR BIOSCIENCES

INDIANAPOLIS, INDIANA

CLIENT PROJECT NO. - 20250072

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ANDREW JOHN HOUSER REGISTERED No. AR10400213 STATE OF INDIANA LICENSED ARCHITECT

EXTERIOR SECTION DETAILS

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BSA PROJECT NO. 00360481

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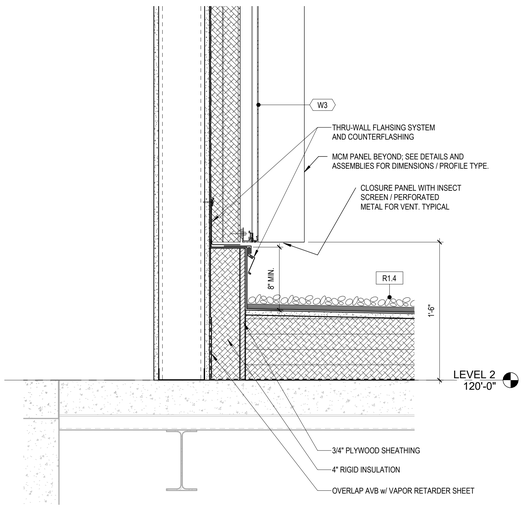
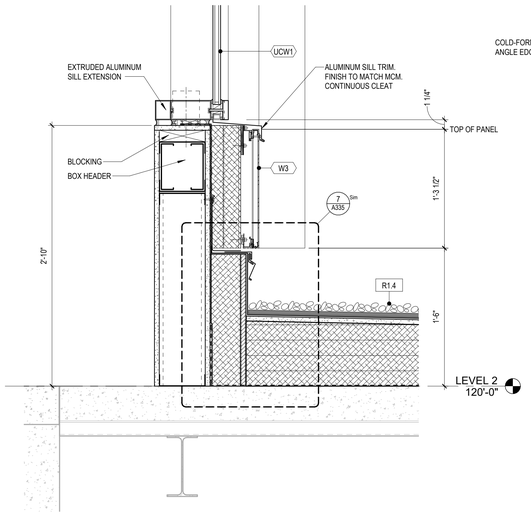
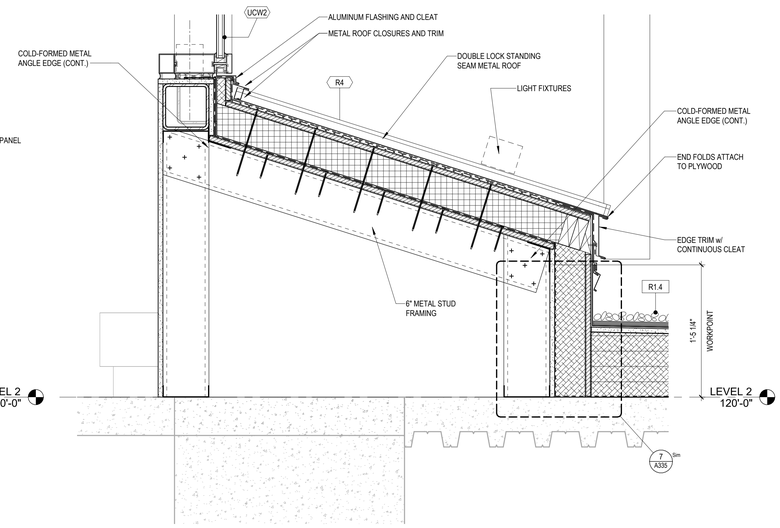


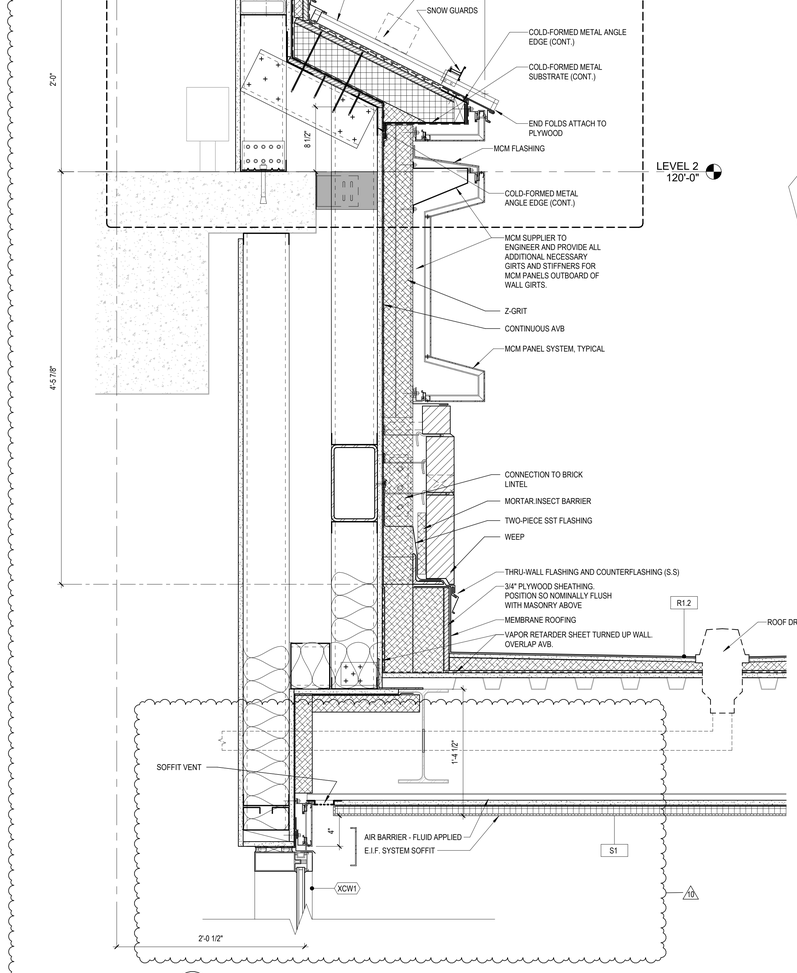
7 A335 DETAIL
1 1/2" = 1'-0"



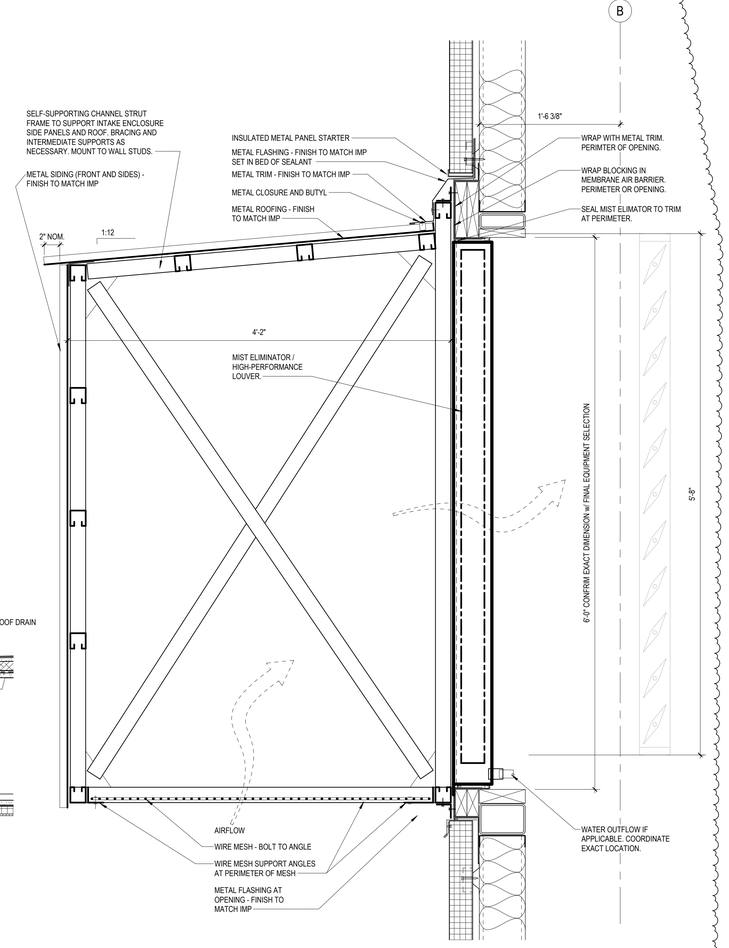
6 A335 DETAIL
1 1/2" = 1'-0"



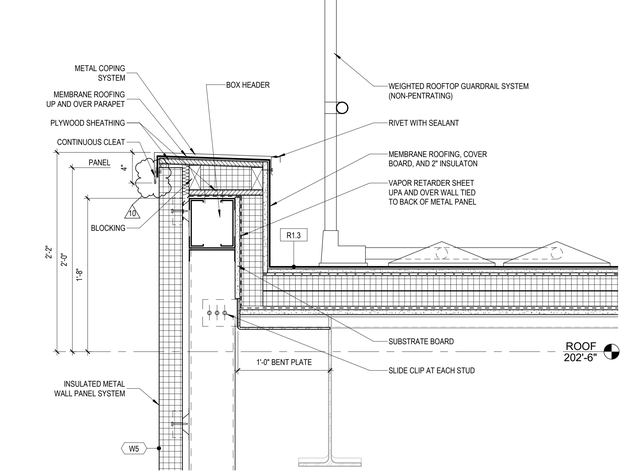
4 A335 DETAIL
1 1/2" = 1'-0"



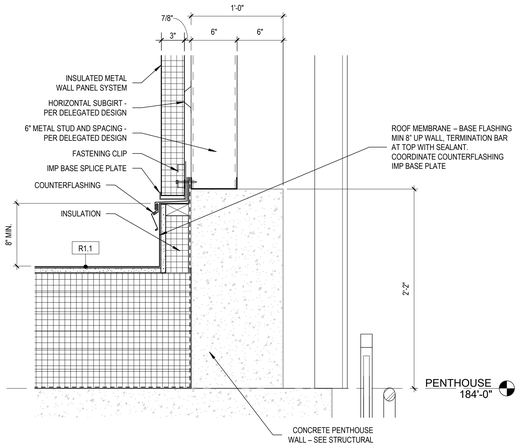
5 A335 WALL SECTION DETAIL
1 1/2" = 1'-0"



3 A335 WALL SECTION DETAIL
1 1/2" = 1'-0"



2 A335 INSULATED METAL PANEL DETAIL AT PARAPET
1 1/2" = 1'-0"



1 A335 BASE DETAIL AT PENTHOUSE WALL
1 1/2" = 1'-0"

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