



INNOVATIVE STRUCTURAL SOLUTIONS

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INNSTRUCT SMART WALL/EVG-3D PANELS

CSI Division: 03 00 00 - CONCRETE
CSI Section: 03 37 00 – Specialty Placed Concrete

1.0 EVALUATION SCOPE

The INNSTRUCT Smart Wall/EVG-3D panels described in this report are used in the construction of exterior and interior, load-bearing and non-load-bearing, shear and non-shear walls, floors, and roofs in fire-resistance-rated and non-fire-resistance-rated construction. The structural and fire-resistance properties of the INNSTRUCT Smart Wall/EVG-3D panels were evaluated for compliance with the following codes:

- 2018 and 2015 International Building Code® (IBC)
- 2018 and 2015 International Residential Code® (IRC)
- 2019 California Building Code (CBC) –Attached Supplement
- 2019 California Residential Code (CRC) –Attached Supplement

2.0 LIMITATIONS

Use of the INNSTRUCT Smart Wall/EVG-3D panels described in this report is subject to the following limitations:

The INNSTRUCT Smart Wall/EVG-3D panels shall be installed in accordance with Section 3.2 of this report, the manufacturer’s installation instructions, and the IBC® or IRC®. Where conflicts occur, the more restrictive shall govern.

2.1 Construction documents, statements of special inspections, geotechnical reports, and other data shall be submitted to the building official for approval. The applicable provisions in this report and the IBC® or IRC®, including IBC® Sections 107 and 1603, shall be incorporated in the construction documents. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.2 Structural Design shall comply with Section 3.1 of this report.

2.3 Walls, floors, or roofs required to be of fire-resistance-rated construction shall comply with Section 3.2.4 of this report.

2.4 Penetrations, openings, and voids are not permitted in the INNSTRUCT Smart Wall/EVG-3D panels, except where specified by the registered design professional and approved by the building official. The opening design shall be in accordance with Section 3.1.7 of this report.

2.5 Weather protection complying with IBC® Chapter 14 or IRC® Chapter 7 for exterior walls and IBC® Chapter 15 or IRC® Chapter 9 for roofs shall be provided. Wall and roof coverings shall be installed in accordance with the IBC® or IRC® or as otherwise approved by the building official or authority having jurisdiction (AHJ).

2.6 In accordance with IBC® Section 2603.4.1.1, the foam plastic insulation shall be separated from the interior of a building by covering each face with not less than a 2-inch thickness of concrete or shotcrete.

2.7 For roof installations, data in accordance with IBC® Sections 1505 and 2603.6 establishing that the INNSTRUCT Smart Wall/EVG-3D panels and roof coverings are a Class A, B, or C roof assembly shall be submitted to the building official for approval. The data shall address the effects of hot asphalt and other materials on the panels. The minimum roofing classification shall be in accordance with IBC® Table 1505.1, or the IRC®.

2.8 Special inspection shall comply with Section 3.3 of this report.

2.9 INNSTRUCT Smart Wall/EVG-3D panels are manufactured in Morgan, Utah.

3.0 DESIGN AND INSTALLATION

3.1 Structural Design:

3.1.1 General: Smart Wall/EVG-3D panels may function as load-bearing or non-load-bearing walls, shear walls, non-shear walls, roofs, or floors subjected to in-plane and out-of-plane shear, flexure, axial compression, or a combination of these loads. Structural Design shall consider each loading combination and conform to applicable strength and serviceability provisions of IBC® Chapters 16 and 19, ASCE/SEI 7-16 or -10, ACI 318-14, and this report. Use under the IRC® requires an engineered design in accordance with Section R301.1.3. Loadings shall only be applied to the

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





concrete facings. Locations of the panels, panel span direction, and panel connections shall be specified on the approved construction documents. Figures 1 to 18 of this report illustrate the panels and installations. Details for the project-specific conditions shall be prepared by the registered design professional and are subject to the approval of the building official.

3.1.2 Design Assumptions:

3.1.2.1 Walls: Each wall panel shall be designed and detailed such that each concrete face is loaded and supported equally. Reinforced concrete end sections at slab bearing locations and the top and bottom of walls are required for this insulated panel to behave as a fully composite panel.

3.1.2.2 Floors and Roofs: Each floor or roof panel shall be designed and detailed such that the compression WWR is neglected, the flexural compression zone shall be within the concrete face, and the out-of-plane design shear strength (ϕV_n) be limited to the buckling strength and welded joint strength of the diagonal truss wires unless additional shear reinforcement is added.

3.1.3 Out-of-Plane Flexure:

3.1.3.1 Strength: The flexural strength of INNSTRUCT Smart Wall/EVG-3D panels used as walls, roofs, and floors resisting out-of-plane (transverse) loads shall be calculated in accordance with IBC® Chapter 19 and ACI 318 with the following additional requirements:

1. The use of welded-wire steel sheets as compression reinforcement shall be excluded.
2. The determination of c , the distance from the extreme compression fiber to the neutral axis, shall be such that c is less than or equal to, the thickness of the concrete face in compression, t_c ($c \leq t_c$).

3.1.3.2 Deflection: The stiffness of the INNSTRUCT Smart Wall/EVG-3D panels to resist deflections due to out-of-plane loads shall be determined in accordance with the IBC®, ACI 318-14 and principles of mechanics of materials with consideration of the contributions of the concrete faces, reinforcement, EPS core and connector wires. Panel deflection serviceability requirements shall be determined in accordance with ACI 318-14 Chapter 24. Reinforced concrete end sections at panel end bearing points and at the top of walls or at the roof diaphragm and anchorage of the wythes to the foundation at the base of walls are required for fully composite behavior.

3.1.4 Axial Compression: The axial compression strength of INNSTRUCT Smart Wall/EVG-3D panels used as walls shall be calculated in accordance with IBC® Chapter 19 and ACI 318-14.

3.1.5 Combined Axial Compression and Flexure: INNSTRUCT Smart Wall/EVG-3D panels may be subjected to loadings that create simultaneous axial compression and flexure. The strength of the INNSTRUCT Smart Wall/EVG-3D panels for combined axial compression and flexure shall be calculated in accordance with IBC® Chapter 19 and ACI 318-14 Sections 11.5.2 and 22.4 with structural analysis in accordance with ACI 318-14 Chapter 6.

3.1.6 In-plane Shear:

3.1.6.1 Strength: The shear strength of INNSTRUCT Smart Wall/EVG-3D panels used as walls resisting in-plane shear shall be calculated in accordance with IBC® Chapter 19 and ACI 318-14. Where the IBC®, ACI 318-14, and ASCE/SEI 7-16 or -10 require special reinforced concrete shear walls, design, and detailing shall conform to requirements for special structural walls in Chapter 18 of ACI 318-14, Section 1905 of the IBC®, and the following additional requirements:

1. The wall thickness, h , or wall area, A_{cv} , shall be based on the sum of the two faces.
2. Shear wall and wall pier Height-to-Length Ratio shall be less than or equal to 1.0 (≤ 1.0). Height-to-Length Ratio determinations shall comply with Figure 12.3-2 of ASCE/SEI 7-16 or -10.
3. For resistance to seismic motions, the equivalent lateral force procedure shall be based on the following coefficients and factors:
 - a. response modification coefficient, $R \leq 3.5$;
 - b. deflection amplification factor, $C_d \geq 3.5$;
 - c. overstrength factor, $\Omega_0 \geq 3.0$.

3.1.6.2 In-plane Deflection: For a structural wall constructed of the INNSTRUCT Smart Wall/EVG-3D panels subjected to in-plane shear load, both flexural and shear deformation shall be considered in calculating the displacement. In this case, the displacement at the top of the wall panel due to lateral in-plane force (V) is calculated in accordance with Eq. 3-1 or Eq. 3-2:

For a cantilever wall:

$$\Delta_t = \Delta_f + \Delta_v = (V_u h_w^3 / 3E_c I_e) + (1.2 V_u h_w / G A_{cv}) \quad (3-1)$$

For a wall supported at each end:

$$\Delta_t = \Delta_f + \Delta_v = (V_u h_w^3 / 12E_c I_e) + (1.2 V_u h_w / G A_{cv}) \quad (3-2)$$



Where:

- Δ_t = Total in-plane deflection at the top of a wall pier or segment with respect to the base, in.
- Δ_f = Flexural component of in-plane deflection, in.
- Δ_v = Shear component of in-plane deflection, in.
- V_u = factored shear force at wall section, kips
- h_w = height of the entire wall from base to top, or clear height of wall segment or wall pier considered, in.
- E_c = Modulus of elasticity of concrete, ksi
- A_{cw} = area of concrete faces of an individual panel or horizontal wall segment, resisting shear, in²
- I_e = Effective moment of inertia, in⁴
- G = Shear modulus or modulus of rigidity, ksi

$$G = 0.4E_c \quad (3-3)$$

The determination of Δ_t shall consider the effects of cracked sections and openings. Structural modeling shall comply with Chapter 6 of ACI 318-14. Cracked section analysis is required for earthquake loadings in accordance with Section 12.7.3 of ASCE/SEI 7-16 or -10.

The story shears shall be distributed to the shear walls and other elements of the lateral force-resisting system in proportion to the relative lateral stiffness or rigidity of the shear wall, other vertical elements, and the diaphragm, in accordance with IBC® Section 1604.4 and ASCE/SEI 7-16 or -10 Section 12.8.4.

3.1.7 Openings: INNSTRUCT SMART WALL/EVG-3D panels are permitted to have openings. Figures 13 through 16 of this report illustrate typical openings. A registered design professional shall design the perforated wall systems for openings. The horizontal wall segment above the openings shall be designed for flexure, shear, and deflection. Vertical wall segments adjacent to openings shall be designed to support additional loads from openings for axial compression, and out-of-plane forces. The design shall comply with IBC® Chapter 19 and ACI 318-14.

3.1.8 Collector Elements: Collector Elements shall be designed in accordance with ASCE/SEI 7-16 or -10 Section 12.10.2 incorporating Section 12.10.2.1 for seismic force effects including overstrength.

3.2 Installation:

3.2.1 Panels: The INNSTRUCT Smart Wall/EVG-3D panels shall be delivered, stored, and handled in such a manner that the insulation is not punctured, and the welded-wire fabric is not deformed. On-site, the INNSTRUCT Smart Wall/EVG-3D panels shall be erected/arranged adjacent to each other, in accordance with the approved construction documents. WWR and/or reinforcement is installed for the structural connection of the panels to each other and the supporting structure. The joints between the panel EPS cores shall be tightly closed and EPS core faces aligned to be flush to ensure uniform thickness of concrete or shotcrete over the whole

panel and to avoid thermal bridging. Small amounts of expansion spray foam may also be used to close any joint gaps.

Vertical or horizontal, internal and external corners formed between panels shall be reinforced with welded wire reinforcement (WWR) attached to the WWR sheets of the panels. Openings shall be reinforced by placing WWR strips at a 45° angle near corners. Additional WWR strips, bent into a U-Mesh, shall be placed around doors, windows, and parapet lintels. WWR strips bent into an inside or outside corner mesh configuration are used to connect panels at the interior and exterior wall or roof intersections. Figures 8 and 13 through 16 of this report provide representative details.

Panels shall be temporarily braced to ensure stability and alignment, and to resist environmental forces before the application of concrete or shotcrete. Floor or roof panels shall be shored in accordance with Figure 17 of this report prior to placement of shotcrete or concrete.

Rigid or flexible conduit and piping shall be placed by removing EPS such that the conduit/pipe is flush with the EPS. Metal-clad cable (MC cable) having a maximum diameter of ½ inch may be placed inside the WWR in single runs. Bundled runs shall be set flush with the face of the EPS. Electrical fixtures, plumbing, and other components shall be installed and secured in accordance with the approved construction documents and the building official or AHJ.

The interior and exterior finishes shall be applied as described on the approved plans and in accordance with the IBC®. Accent grooves or other linear penetrations into the structural face are not permitted. Evaluation of the finishes is beyond the scope of this report.

3.2.2 Concrete Placement: Concrete shall be placed on each side of the INNSTRUCT Smart Wall/EVG-3D panel to the thickness given on the approved construction documents, but no less than 2-inches on each side of the panels. Concrete shall be placed in accordance with IBC® Chapter 19, ACI 318-14, and the manufacturer’s instructions. Where placed in formwork for horizontal or vertical applications, concrete shall be placed from the top. Concrete shall be at least 2-inches thick on each side of the panels. Formwork shall comply with ACI 318-14 Section 26.11. Concrete may be applied manually by hand or by various pneumatic methods such as shotcrete (wet or dry) in accordance with Section 3.2.3 of this report, or pressurized plastering equipment.

3.2.3 Shotcrete Placement: Shotcrete shall be placed on each side of the INNSTRUCT Smart Wall/EVG-3D panel to the thickness given on the approved construction documents, but no less than 2-inches on each side of the panels. Shotcrete placement shall comply with IBC® Section 1908, ACI 506.2-13, ACI 506.5-16, the manufacturer’s instructions, and the sequence specified in Figure 18 of this report.



3.2.4 Fire-resistance-rated Construction: INNSTRUCT Smart Wall/EVG-3D panels, have fire resistance ratings shown in Table 1 of this report.

3.3 Special Inspection: Special inspection shall comply with 2018 and 2015 IBC® Sections 1704, 1705.3, and 1908, as applicable. The duties of the special inspector include verification of compliance with the approved construction documents, and this report, including, but not limited to, welded-wire reinforcement size, cover, and spacing; and identification of INNSTRUCT Smart Wall/EVG-3D panels in accordance with Section 7.0 of this report. In addition, for shotcrete application, the duties of the special inspector include verification of sampling and preparation of test specimens and conformance with acceptance criteria in 2018 and 2015 IBC® Section 1908.10.3.

4.0 PRODUCT DESCRIPTION

4.1 General: The INNSTRUCT Smart Wall/ EVG-3D panel consists of a three-dimensional grid of two sheets of galvanized steel welded-wire reinforcement (WWR), joined with diagonal connectors of galvanized steel wire welded to the WWR; and a core of expanded polystyrene (EPS) foam plastic insulation, between the two WWR sheets, which is penetrated by the connectors. The welded diagonal connectors provide rigidity and shear transfer for composite behavior. After the panels are erected into position as wall, floor, or roof elements, shotcrete and/or concrete is applied on both panel faces. Additional reinforcement may be required for the loading condition and where openings such as doors and windows occur. The result is a composite sandwich panel with two layers of concrete reinforced by the WWR and with any additional reinforcing steel. Figure 1 of this report describes possible panel types. Figures 2 through 18 of this report illustrate certain construction considerations. Details for the specific project shall be provided on approved plans and specifications

4.2 Materials:

4.2.1 Expanded Polystyrene (EPS) Foam Plastic: EPS foam plastic insulation complying with UL-18546-01 and ASTM C578 as Type I, with a 1 pcf nominal density, forms the core. The EPS is manufactured by producers recognized in the approved quality documents. The EPS has a flame-spread index of 25 or less and a smoke-developed index of 450 or less to comply with ASTM E84 at a maximum 5-inch thickness in conformance with IBC® Section 2603.3.

4.2.2 Wire Reinforcement: The welded wire reinforcement (WWR) and diagonal truss wires comply with ASTM A1064 as plain wire with a Class 1 galvanized coating in accordance with ASTM A641. The wire sizes for WWR are No. 11 gauge (0.1205-inch) and for truss wires are No. 9 gauge (0.1483-inch). The minimum specified yield and tensile strengths are as follows: for the WWR ($f_y = 60,000$ psi and $F_u = 70,000$ psi) and for the diagonal truss wire ($f_y = 65,000$ psi and $F_u =$

75,000 psi). WWR sheets are positioned one inch from the EPS Core, as shown in Figure 1 of this report.

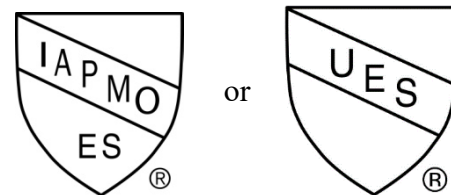
4.2.3 Reinforcing Bars: Deformed steel reinforcing bars, shall comply with Section 20.2.1.3 of ACI 318-14. The minimum specified yield strength, f_y , is 60,000 psi.

4.2.4 Concrete: Normal weight Concrete is required and shall comply with Chapter 19 of ACI 318-14. The following additional requirements shall apply: 1) maximum aggregate size shall comply with Section 26.4.2 of ACI 318-14: 2) maximum fresh concrete slump is 4-inches; and 3) minimum specified compressive strength, f'_c , is 3,500 psi at 28 days.

4.2.5 Shotcrete: Shotcrete shall be of normal weight concrete and comply with IBC® Section 1908. The following additional requirements shall apply: 1) maximum aggregate size is 3/8-inch; 2) aggregate gradation shall be Gradation No. 1 in Table 1.1.1 of ACI 506R-16; 3) minimum compressive strength, f'_c , is 3,500 psi at 28 days.

5.0 IDENTIFICATION

For field identification, all packages of the delivered INNSTRUCT Smart Wall/EVG-3D panels covered by this report shall bear the name and trademark of the manufacturer (Innovative Structural Solutions, LLC), and the evaluation report number (ER-593). The face or edge of the insulation on each INNSTRUCT Smart Wall/EVG-3D panel shall be identified in accordance with IAPMO standards. Either IAPMO UES Mark of Conformity also may be used as shown below:



IAPMO UES ER-593

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems (AC15) dated February 2010, editorially revised February 2019.

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12) dated June 2015, editorially revised October 2017.

6.3 Quality Control Manual and documentation of compliance.

6.4 Test reports are from laboratories in compliance with ISO/IEC 17025.



7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Innovative Structural Solution INNSTRUCT Smart Wall/EVG-3D Panels to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at the location noted in Section 2.10 of this report under a quality control program with third-party inspections under the supervision of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org

TABLE 1 – FIRE-RESISTANCE RATING OF INNSTRUCT SMART WALL/EVG-3D WALLS¹

CONCRETE FACING THICKNESS (EQUAL ON BOTH SIDES)	FIRE-RESISTANCE RATING (IBC [®] Equation 7-4) ²	
	Inches	
2	Carbonate Aggregate	Siliceous Aggregate
2.25	2 hours	1.75 hours
2.5	2.4 hours	2 hours
2.5	2.8 hours	2.4 hours
3	3.5 hours	3 hours

¹ The fire-resistance ratings are applicable only to concrete walls and slabs consisting of INNSTRUCT Smart Wall/EVG-3D panels recognized under this evaluation report and job site applied to concrete or shotcrete facings.

² Fire resistance ratings for alternate material types and thickness may be determined in accordance with IBC[®] Section 722.2.1.2 for multi-wythe walls.

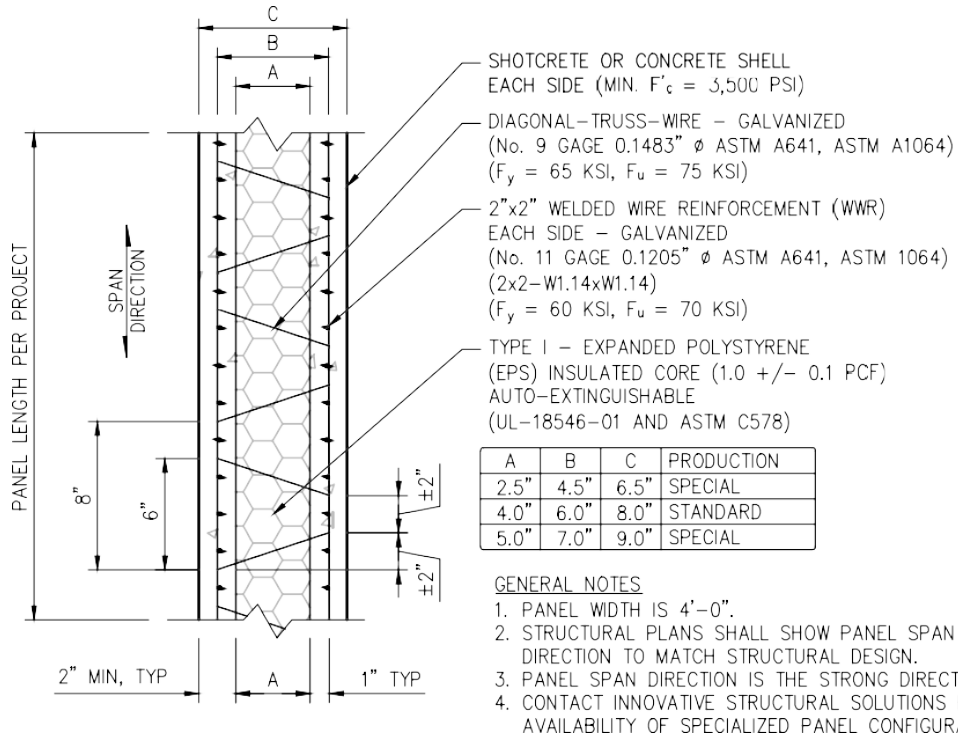


FIGURE 1 - INNSTRUCT PANEL TYPES - SECTION VIEW

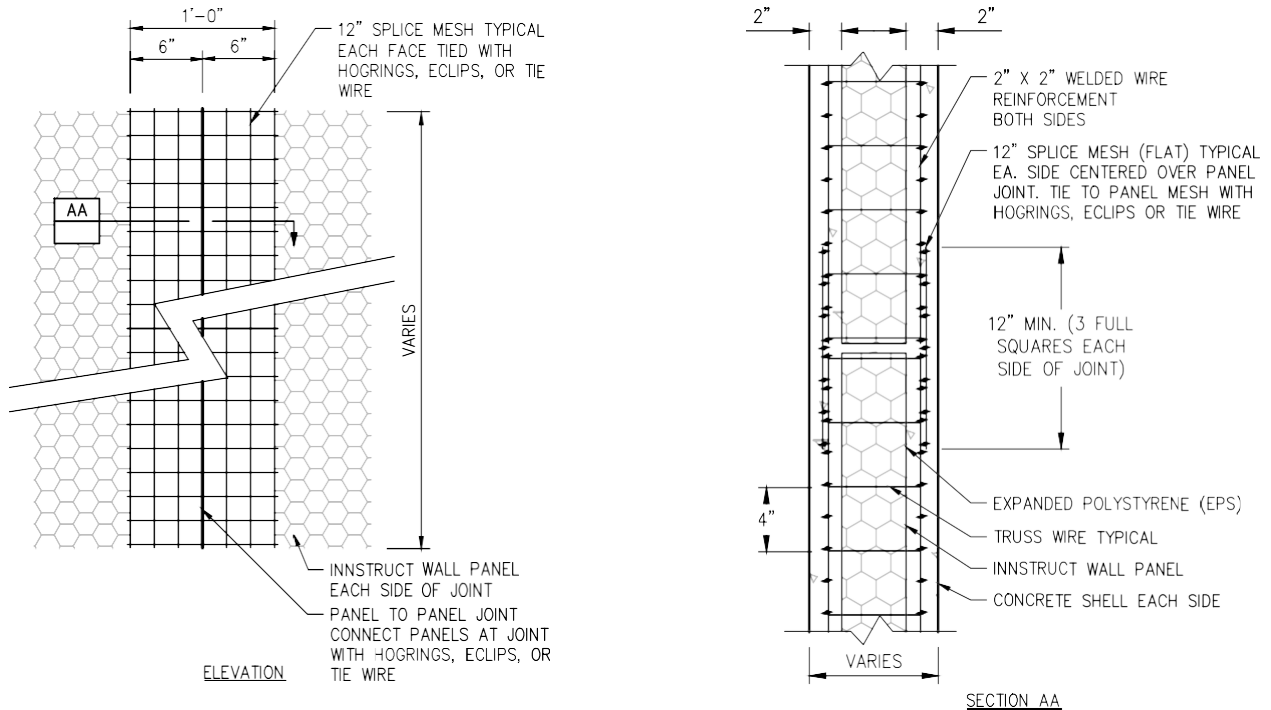


FIGURE 2 - INNSTRUCT PANEL SPLICE - ELEVATION AND SECTION VIEWS

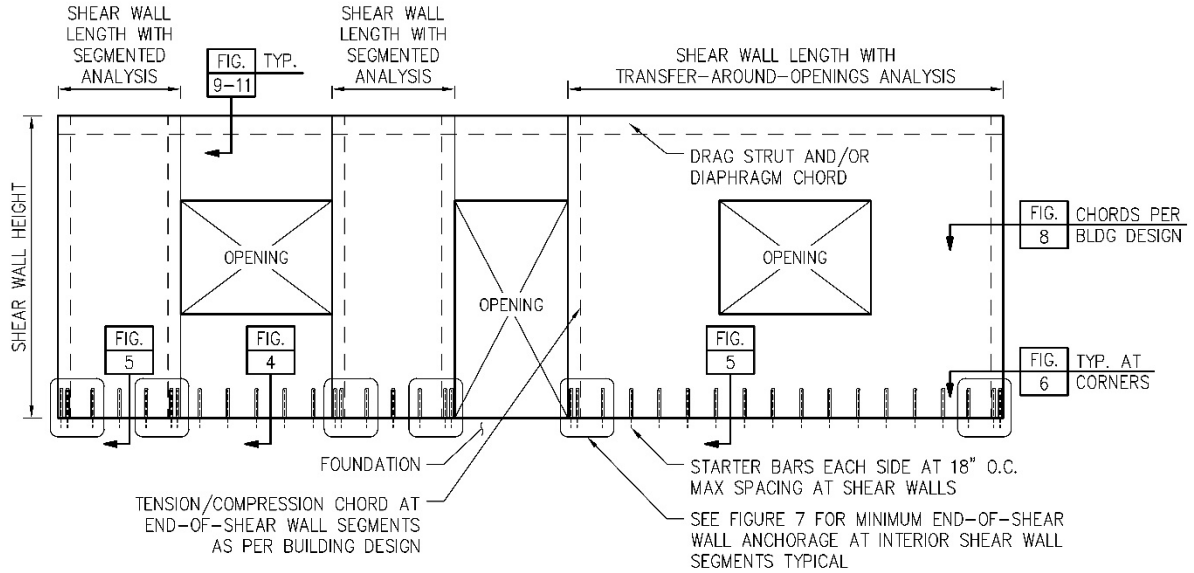


FIGURE 3 - SHEAR WALL - ELEVATION VIEW

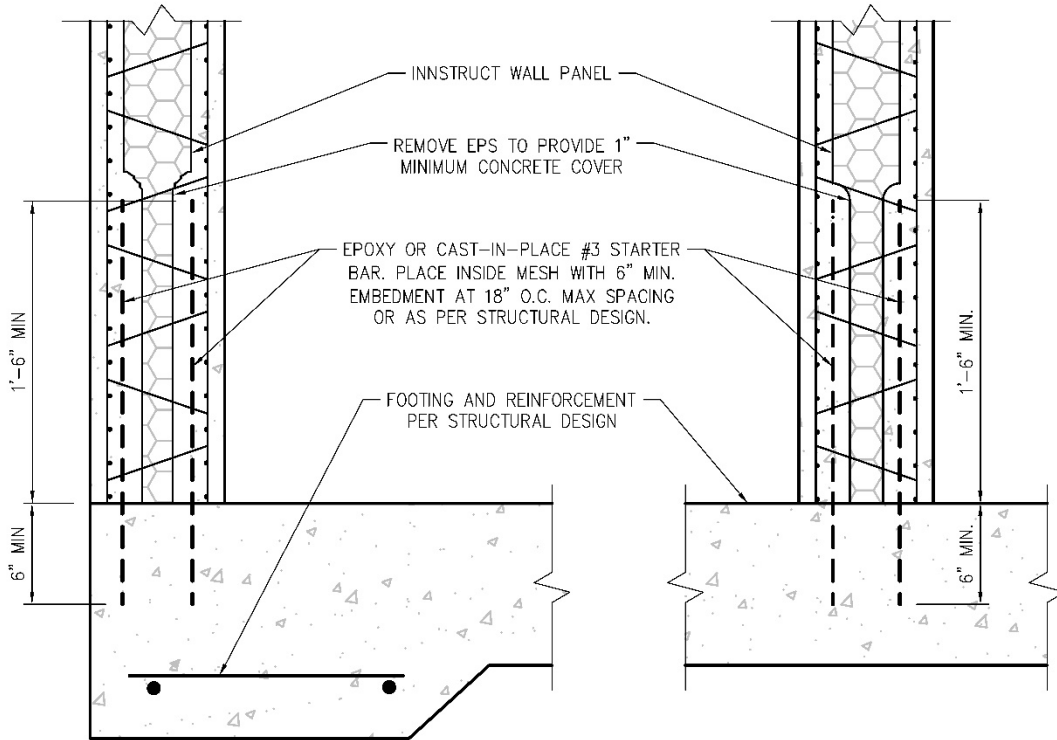


FIGURE 4 - NON-DESIGNATED SHEAR WALL SECTION VIEW

FIGURE 5 - DESIGNATED SHEAR WALL SECTION VIEW

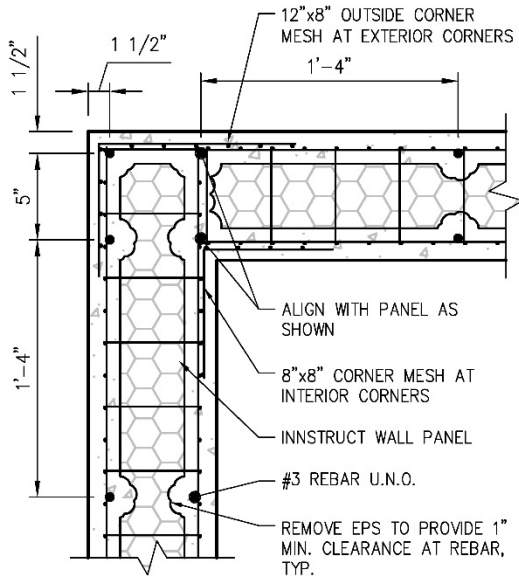


FIGURE 6 - END-OF-SHEAR WALL ANCHORAGE AT CORNER - PLAN VIEW

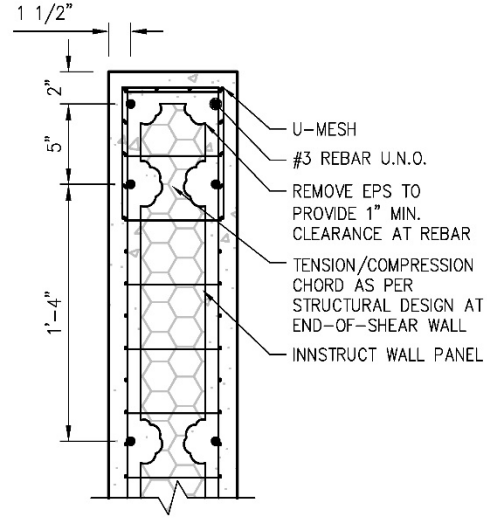


FIGURE 7 - END-OF-SHEAR WALL ANCHORAGE AT OPENING - PLAN VIEW

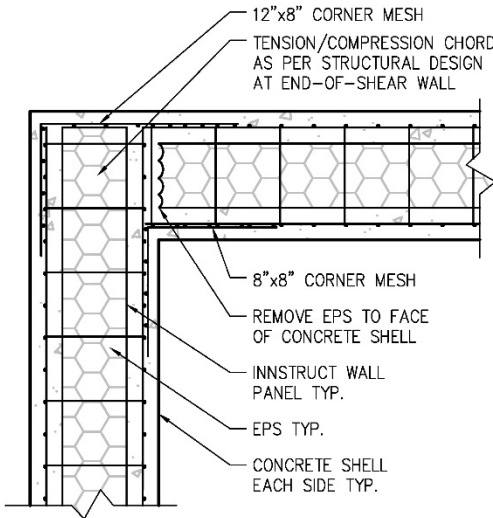


FIGURE 8 - WALL CORNER - PLAN VIEW

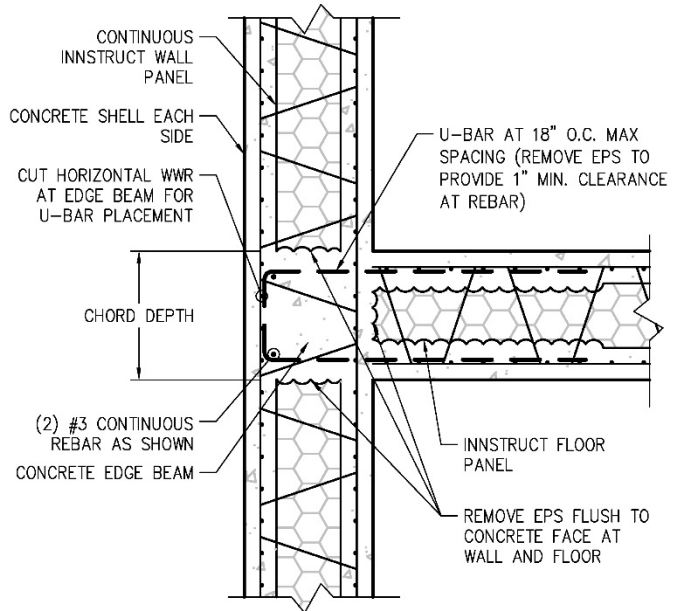
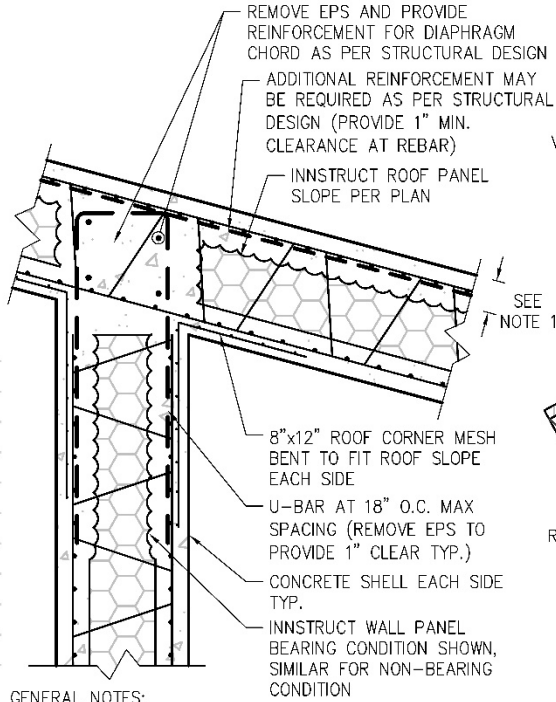


FIGURE 9 - CHORD AT MULTI-LEVEL CONSTRUCTION FLOOR-TO-BEARING WALL - SECTION VIEW



GENERAL NOTES:
 1. 2" MIN. THICKNESS OF TOP SHELL. A THICKER TOP SHELL OR WATERPROOFING ADDITIVES MAY BE REQUIRED AS PER ROOFING SYSTEM AND STRUCTURAL DESIGN.

FIGURE 10 - CHORD AT BEARING ROOF PANEL - SECTION VIEW

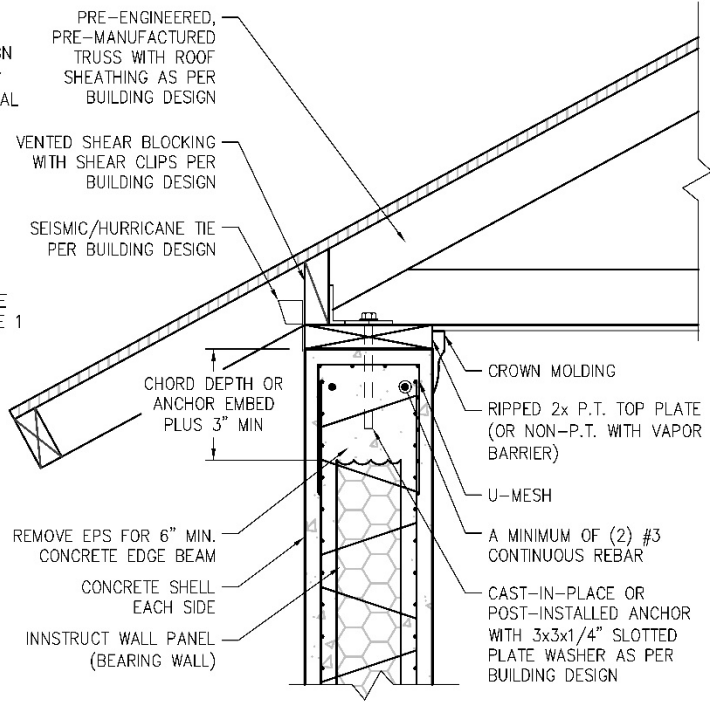


FIGURE 11 - CHORD AT BEARING TRUSS ROOF SYSTEM - SECTION VIEW

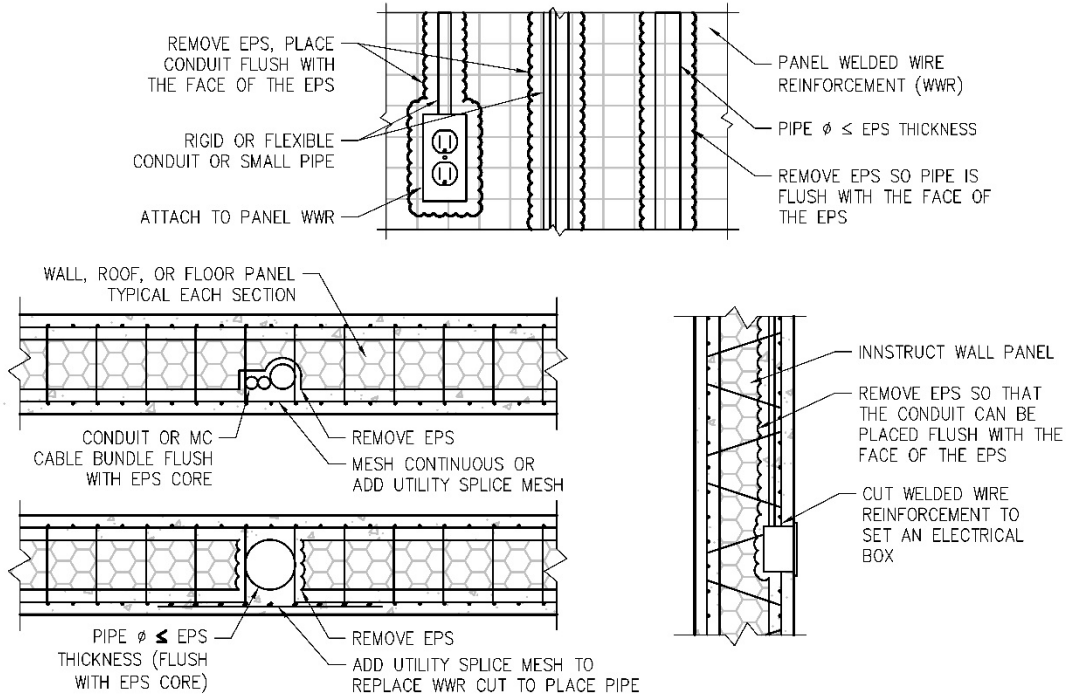
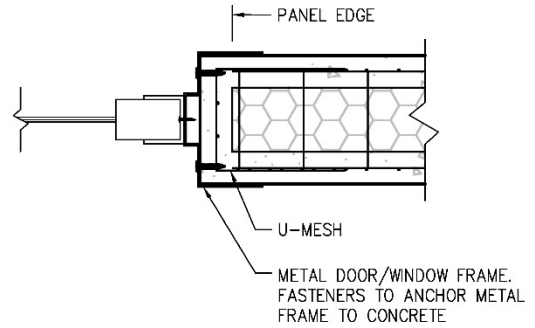
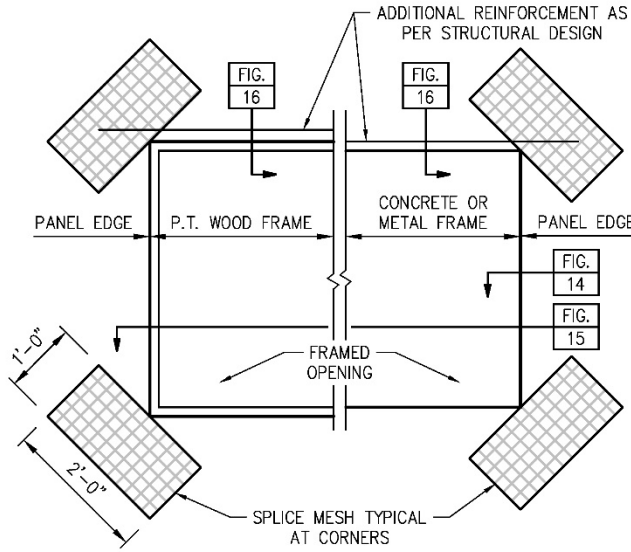
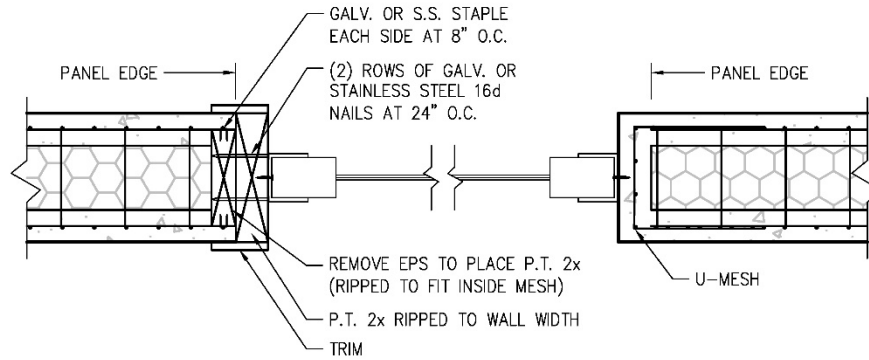


FIGURE 12 - UTILITY PLACEMENT - ELEVATION, PLAN, & SECTION VIEWS



ADDITIONAL REINFORCEMENT MAY BE REQUIRED AS PER STRUCTURAL DESIGN (SEE FIGURE 16 FOR PLACEMENT)

FIGURE 13 - FRAMED OPENINGS - ELEVATION VIEW FIGURE 14 - METAL FRAME - SECTION VIEW



ADDITIONAL REINFORCEMENT MAY BE REQUIRED AT JAMBS AS PER STRUCTURAL DESIGN (SEE FIGURE 16 FOR PLACEMENT)

FIGURE 15 - WOOD AND CONCRETE FRAMES - SECTION VIEW

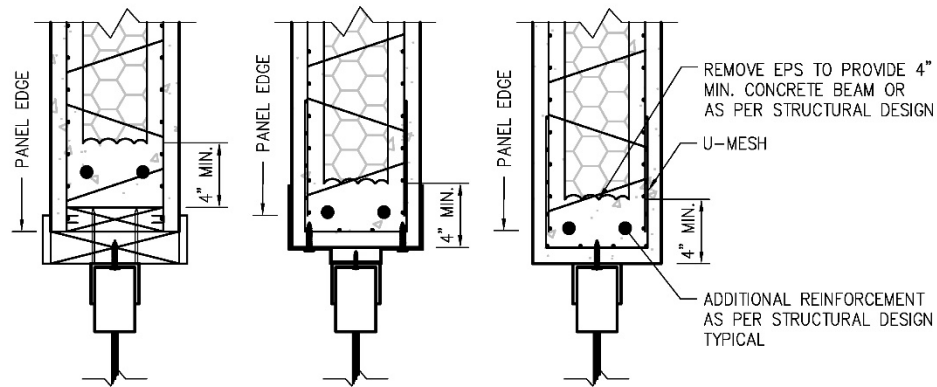
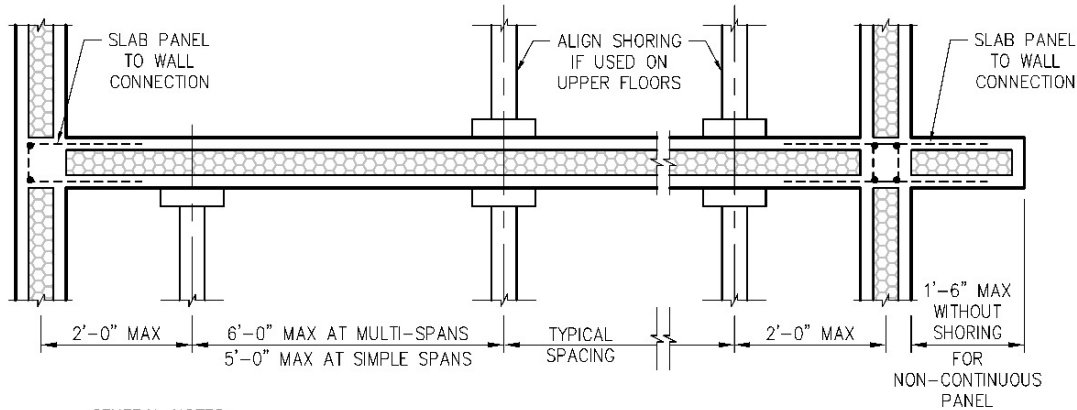


FIGURE 16 - HEADER WITH ALL FRAMES TYPES - SECTION VIEW



GENERAL NOTES:

1. THIS DETAIL SPECIFIES THE RECOMMENDED MINIMUM SHORING REQUIREMENTS. THE CONTRACTOR IS REQUIRED TO PROVIDE ALL SHORING AND BRACING AS NEEDED TO PROVIDE THE FINISHED PRODUCT WITHOUT SAGGING BETWEEN SUPPORTS. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE PANEL SHORING, BRACING, AND PLACEMENT TO MEET THE APPLICABLE ACI CONSTRUCTION TOLERANCES.
2. SHORING AND FORMWORK SHALL COMPLY WITH ACI 318-14 SECTION 26.11.

FIGURE 17 - INNSTRUCT PANEL SHORING REQUIREMENTS

INNSTRUCT PANEL SYSTEM – RECOMMENDED ITEMS OF "ROUGH-IN" OBSERVATION

"ROUGH-IN" OBSERVATION ITEMS TO BE REVIEWED BEFORE SHOTCRETE IS APPLIED SEE "INTRODUCTION TO THE INNSTRUCT SMART PANEL/EVG-3D CONSTRUCTION SYSTEM" FOR ADDITIONAL REQUIREMENTS				
OBSERVATION ITEMS	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC 2015 REFERENCE
1. SPLICE MESH TO JOIN PANEL JOINTS (SEAMS, CORNERS, ETC.) & OVER UTILITIES CUTTING PANEL MESH.	---	X	MANUFACTURER RECOMMENDED	NONE
2. FRAMED OPENING SPLICE MESH (1'-0" x 2'-0" WWR) PLACE DIAGONALLY AT ALL CORNERS OF FRAMED OPENINGS.	---	X	MANUFACTURER RECOMMENDED	NONE
3. STARTER BARS EXTENDING FROM THE FOUNDATION SYSTEM OR FROM FLOOR/WALL FOR MULTI-STORY SYSTEMS WHERE DETAILED. STARTER BARS LAPPED WITH SHEAR WALL CHORD REINFORCEMENT WHERE APPLICABLE.	---	X	MANUFACTURER RECOMMENDED	NONE
4. ADDITIONAL REINFORCING AT HEADERS, JAMBS, BEAMS, COLUMNS, WALLS, SLABS, ROOF PANELS, & CONNECTIONS. ADDITIONAL REINFORCING BARS ARE TYPICALLY BEHIND PANEL WWR AND A 1" MIN. CLEAR PROVIDED TO EPS.	---	X	MANUFACTURER RECOMMENDED	NONE
5. VERIFY EPS HAS BEEN REMOVED TO PROVIDE A MINIMUM OF 1" CLEARANCE AROUND ADDITIONAL REINFORCING BARS AND STARTER BARS.	---	X	MANUFACTURER RECOMMENDED	NONE
6. VERIFY EPS HAS BEEN REMOVED FOR CONDUIT AND/OR OTHER UTILITIES. UTILITIES SHALL BE PLACED INSIDE THE 4" EPS THICKNESS, PROVIDING THE 1" CLEAR TO THE PANEL WWR.	---	X	MANUFACTURER RECOMMENDED	NONE
7. VERIFY GUIDE WIRE LOCATION PROVIDES 1" COVER TO THE PANEL WWR. OTHER METHODS MAY ALSO BE USED TO ESTABLISH CONCRETE COVER.	---	X	MANUFACTURER RECOMMENDED	NONE
8. ADDITIONAL OBSERVATION ITEMS MAY BE REQUIRED IN REGARDS TO THE SEISMIC SYSTEM ACCORDING TO THE 2015 IBC.	---	X	---	1704.6.1 ITEM 5

WHEN WORKING WITH THE INNSTRUCT PANEL SYSTEM, BOTH WET AND DRY SHOTCRETE PUMPS MAY BE USED.

AS A RULE, THE FOLLOWING ORDER OF THE CONCRETE/SHOTCRETE APPLICATION IS RECOMMENDED:

1. 1ST LAYER (OR FULL THICKNESS) OF SHOTCRETE ON THE WALLS (INSIDE AND OUT)
2. 1ST LAYER (OR FULL THICKNESS) OF SHOTCRETE ON THE BOTTOM SIDE OF SLABS (OR ROOFS).
3. SHOTCRETE OR CONCRETE ON THE TOPSIDE OF SLABS (OR ROOFS).
4. COMPLETION OF THE SHOTCRETE ON WALLS AND ON THE SLABS (OR ROOFS).

NOTE: 1ST LAYER IS FROM EPS TO OUTSIDE OF MESH WWR. LEAVE ROUGH AND HYDRATE BEFORE APPLYING FINAL LAYER.

FIGURE 18 - RECOMMENDED "ROUGH-IN" OBSERVATION & SHOTCRETE SEQUENCING



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INNSTRUCT SMART WALL/EVG-3D PANELS

CSI Sections:

- 03 00 00 - CONCRETE
- 03 37 00 – Specialty Placed Concrete

1.0 EVALUATION SCOPE

The INNSTRUCT Smart Wall/EVG-3D panels evaluated in IAPMO UES ER-593 comply with the intent of the provisions of the following codes and regulations:

- 2019 California Building Code (CBC)
- 2019 California Residential Code (CRC)

2.0 LIMITATIONS

The INNSTRUCT Smart Wall/EVG-3D panels, described in this report, comply with the codes listed in Section 1.0 of this supplement, subject to the following limitations:

- 2.1 Provisions set forth in ER-593 for the 2018 IBC and 2018 IRC shall apply, except as specifically noted in this supplement.
- 2.2 The limitations in Section 2.0 of ER-593 shall apply.
- 2.3 For applications regulated by DSA or HCAi (formerly OSHPD), construction documents shall comply with CBC Section 1603A.
- 2.4 Inspections shall comply with CBC Chapter 17A as applicable.

2.5 For applications regulated by DSA, applicable provisions in CBC Section 1909 shall be observed.

2.6 For applications regulated by HCAi (formerly OSHPD), applicable provisions in CBC Sections 1910 and 1911 shall be observed.

2.7 For applications regulated by DSA or HCAi (formerly OSHPD), material requirements and testing in Sections 1903A and 1910A shall be observed.

2.8 For applications regulated by DSA or HCAi (formerly OSHPD), design amendments in Section 1905A shall apply.

2.9 For applications regulated by DSA or HCAi (formerly OSHPD), shotcrete shall comply with Section 1908A.

2.10 This supplement expires concurrently with ER-0593.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org