

ANN ARBOR HISTORIC DISTRICT COMMISSION

Staff Report

ADDRESS: 120 East Liberty Street, Application Number HDC25-0096

DISTRICT: Main Street Historic District

REPORT DATE: July 10, 2025

REPORT PREPARED BY: Jill Thacher, Historic Preservation Coordinator

REVIEW COMMITTEE DATE: July 7, 2025

OWNER

APPLICANT

Name: Questor Development, LLC
Ed Shaffran

Ann Arbor Art Center
Hannah Kirkpatrick

Address: 209 S Fourth Ave, 1C
Ann Arbor, MI 48104

117 W Liberty
Ann Arbor, MI 48104

Phone:

BACKGROUND: This three-story brick commercial vernacular building was built in 1906 and is commonly known as the Pretzel Bell Building. Its original occupant was Martin Haller Furniture. In 1934, the Pretzel Bell tavern and restaurant moved in and became an Ann Arbor institution for more than 50 years, until 1985. [The current Pretzel Bell restaurant on South Main Street borrowed the name but has no apparent relationship to the original tavern.] The magazine Automobile was located upstairs for its lifespan, from 1985 to 2020.

The building features fixed double-pane windows, stone lintels and window sills, and a decorative brick cornice with corbelling. Sometime between 1981 and 1992 it appears that the first floor of the north (front) elevation was modified, with the window openings at 120 and 122 E Liberty decreasing in size. It appears that the sills were raised and the openings below were infilled with brick. Three windows were added and a doorway was relocated in the first floor of the east (side) elevation during this time period (see attached photos).

In 2014, a new sign and awnings were approved by the HDC, and in 2013, the HDC issued a certificate of appropriateness (CofA) for new awnings, replacement windows, downlighting, and other work for the opening of Avalon restaurant. In 2012, the owner received a CofA to add three additional ground floor windows on the South Fourth Avenue elevation and modify the three windows on the east end of the East Liberty elevation.



LOCATION: The site is on the southwest corner of East Liberty Street and South Fourth Avenue.

APPLICATION: The applicant seeks HDC approval to install Azek panels with a glass and tile mosaic applied to them at the northeast corner of the building. The panels would be mounted to metal channels attached to the building through mortar joints.

APPLICABLE REGULATIONS:

From the Secretary of the Interior's Standards for Rehabilitation:

(2) The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.

(10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property will be unimpaired.

From the Secretary of the Interior's Guidelines for Rehabilitating Historic Buildings:

Building Site

Recommended: Designing new exterior additions to historic buildings or adjacent new construction which is compatible with the historic character of the site and which preserve the historic relationship between a building or buildings, landscape features, and open space.

Not Recommended: Introducing new construction onto the building site which is visually incompatible in terms of size, scale, design, materials, color and texture or which destroys historic relationships on the site.

Masonry

Recommended: Identifying, retaining, and preserving masonry features that are important in defining the overall historic character of the building such as walls, brackets, railings, cornices, window architraves, door pediments, steps, and columns; and details such as tooling and bonding patterns, coatings, and color.

Not Recommended: Removing or radically changing masonry features which are important in defining the overall historic character of the building so that, as a result, the character is diminished.

From the Ann Arbor Historic District Design Guidelines:

Signs

Appropriate: Attaching signage through masonry joints, not masonry units, or through materials that can be easily repaired, such as wood, when the signage is removed.

STAFF FINDINGS:

1. The application proposes to install a two-panel glass and tile mosaic to the southeast corner of the building. From the online application: *The mosaic will be adhered to Azek panels that are mounted to cold formed hat/furring channels. These hat channels are mounted to the building via the mortar and the work is additionally supported by a stainless steel shelf at the bottom. The mosaic will be inset with a metal frame. Please see drawings for details.*
2. The ground floor of this building has been changed fairly extensively, but staff believes the bricks on the corner under consideration are original.
3. The panels are heavy – the north panel is 162 lbs and the east panel is 258 lbs. Both an expert mason and a structural engineer have been consulted on the project. The mural will be easily removable and leave the integrity of the building unimpaired.
4. Staff's questions to the applicant are included, with responses, in the attachments. In addition to a full set of drawings, there is also a diagram showing the mortar joint penetrations required for each panel. Staff finds the attachments to be very complete and appreciates the attention to detail paid to the application.
5. The proposed mural is generally compatible in exterior design, massing, arrangement, texture, material and relationship to the site and the surrounding area and meets *The Secretary of the Interior's Standards for Rehabilitation*, particularly standards 2 and 9, and the *Guidelines for building site and masonry*, and the *Ann Arbor Historic District Design Guidelines* for signs.

POSSIBLE MOTION: (Note that the motion supports staff findings and is only a suggestion. The Review Committee, consisting of staff and at least two Commissioners, will meet with the applicant on site and then make a recommendation at the meeting.)

I move that the Commission issue a certificate of appropriateness for the application at 120 East Liberty Street, a contributing property in the Main Street Historic District, to install Azek panels with a glass and tile mosaic applied to them at the northeast corner of the building, through mortar joints, as proposed. The work is compatible in exterior design, arrangement, texture, material and relationship to the rest of the building and the surrounding area, and meets *The Secretary of the Interior's Standards for Rehabilitation* and *Guidelines for Rehabilitating Historic Buildings*, in particular standards 2 and 10, and the guidelines for building sites and masonry, and the *Ann Arbor Historic District Design Guidelines* for signs.

ATTACHMENTS: drawing set

120 East Liberty, April 2024 (courtesy Google Street View)



1992 Survey photo of 118-122 E Liberty



April 1985 (courtesy AADL Old News)



1981 Survey Photo



Pretzel Bell interior, undated (AADL)



ARTWORK PROPOSAL

Artist:
Elena Townsend-Efimova

Materials:
Glass and Ceramic Tiles + Stainless Steel, Azek, Furring Channel

Dimensions:
(East wall) 76" wide x 90" tall
(North wall) 47.5" wide x 90" tall

Description:

The artwork for review is a glass and ceramic tile mosaic and is to be added to the corner of 120 E. Liberty St. The mosaic wraps the corner of the building at E. Liberty St and 4th Ave.

The mosaic will be adhered to Azek panels that are mounted to cold formed hat/furring channels. These hat channels are mounted to the building via the mortar and the work is additionally supported by a stainless steel shelf at the bottom. The mosaic will be inset with a metal frame. Please see drawings for details.



SITE PHOTOS

Corner



SITE PHOTOS

Left: East wall detail
Right: North wall detail



STRUCTURAL NOTES		STAINLESS STEEL		8. Mechanical anchors shall be installed perpendicular to the face of the surface being drilled. The maximum tolerance for deviation from perpendicular shall be 6 degrees. All mechanical anchors installed outside of the specified tolerance shall be considered unacceptable.			
GENERAL		1. Type 304 or 316 stainless steel angles, bars, and plates having a minimum yield strength of 42 ksi. Exposed surfaces shall have brushed mill finish.		9. Holes in hat channels shall be no more than 1/16 inch larger than the mechanical anchor diameter.		robert darvas associates consulting structural engineers 440 south main street ann arbor, mi 48104	
1. These notes are to be read in conjunction with the drawings. In the event of conflict between the information on, the drawings, and these notes, the more stringent requirements shall govern.		2. Splices shall be allowed only at locations specifically indicated on the structural drawings unless approved otherwise by the Structural Engineer of Record.		FIELD DRILLED ADHESIVE ANCHORS IF USED		RDA Job No. 25035	
2. The contractor shall ensure that all construction methods will not cause damage to the existing building, adjacent buildings, utilities, or other properties.		3. Steel that may accumulate water shall have drain holes. All drain penetrations through main members shall not exceed 3/8-inch in diameter and shall be ground smooth. These drains must be kept clean and open.		1. The basis of design for field drilled adhesive anchors and rebar in masonry shall be Hilti HIT-HY 270 as manufactured by Hilti, or equivalent product. For multi-wythe brick masonry, provide appropriately sized screen tube per installation instructions. For substitution purposes, signed and sealed calculations shall be provided for review, indicating the substituted anchor meets the capacity requirements of the detailed anchor.			
3. The contractor is responsible for coordination of the mosaic structure with the existing building structure. The fasteners must be drilled into the mortar joints only and not into the bricks.		4. All welding shall be done by certified, licensed welders and shall be in conformance with the structural welding code stainless steel of the American Welding Society ANSI/AWS D1.6, latest edition.		2. Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to edge of concrete or masonry. Install anchors in accordance with spacing and edge clearances indicated on the drawings.			
4. The contractor shall verify all dimensions and existing conditions before beginning work. The contractor shall take field measurements and be responsible for same.		5. No penetrations are permitted through structural steel members unless indicated on structural drawings or approved by Structural Engineer of Record.		3. Use only code-approved anchors with valid evaluation report for use in the base material shown on the Construction Documents. Submit evaluation report to Structural Engineer of Record and Special Inspection Agent for approval. Do not install anchors until submittal is returned "reviewed without comment."		PROJECT	
5. Apply details, sections, and notes on the drawings where conditions are similar to those indicated by detail, detail title, or note.		6. Approval of the Structural Engineer of Record shall be mandatory for the use of cutting torch in the field.		4. Only one length anchor shall be present on the job site for a given anchor diameter, unless otherwise specified on the drawings.		New Mosaic	
6. Do not scale drawings. Only use dimensions indicated on the drawings.		7. All grout behind flanges of the furring channels shall be non-shrink "pre-mix" type and shall have a minimum compressive strength of 5,000 psi. Use non-staining grout at exposed locations. .		5. All field installed adhesive anchors shall conform to AC-308. Installer of field installed adhesive anchors shall be trained by anchor manufacturer to ensure proper installation requirements such as hole cleaning, horizontal and overhead applications, embedment depths greater than 10 inches, and water filled holes.		120 East Liberty	
7. Structural Engineer of Records's acceptance must be secured for all structural substitutions.		8. All stainless steel exposed to view in the finished work including connections shall be classified as "Architecturally Exposed Structural Steel" (AESS) and shall meet the additional requirement given in AISC "Steel Construction Manual", latest edition - Section 10 of AISC 303 "Code of Standard Practice for Steel Buildings and Bridges". .		6. Adhesive anchors of the diameter and embedment shown on the drawings shall be installed in strict accordance with manufacturer's recommendations under the continuous supervision of an independent testing agency. Where the provisions of the above referenced documents are in conflict, the most restrictive requirement shall govern. At locations where anchorage is not specified, consult structural engineer of record.		Ann Arbor, MI	
REFERENCED CODES AND STANDARDS		ALUMINUM		7. Provide non-shrink grout in all voids between steel hat channel flanges and base material. Foreign material shall not be placed in the holes that receive adhesive anchors. All abandoned holes drilled in masonry shall be completely filled with structural grade epoxy.		ISSUE TYPE DATE	
1. Perform all construction in conformance with the latest editions of the building and design codes referenced within these documents. The contract documents refer to the following codes and standards, latest editions as referenced in the current Building Code in the State of the Project, unless noted otherwise:		1. Aluminum shall conform to ASTM 6063 T-5 having a minimum ultimate tensile strength of 27,000 psi. a minimum tensile yield strength of 21,000 psi. , and a minimum modulus of elasticity of 10,000,000 psi .		8. The contractor shall create a template at each adhesive anchor connection location prior to fabricating holes in hat channel flanges. Templates shall be made by first locating existing mortar joints, and then drilling anchor holes such that no damage will be done to the existing bricks. Anchor locations in the field may be relocated a maximum of 1 1/2 inches from the dimensions shown on the drawings to fall within the mortar joints, however do not exceed minimum anchor spacings or edge distances per manufacturer's requirements.		PERMIT 06-16-2025	
• 2021 Michigan Building Code		2. Aluminum fabrication and construction shall conform to the requirements of the Aluminum Construction Manual and the Aluminum Design Manual latest editions by The Aluminum Association Washington D.C.		9. Adhesiveanchors shall be installed perpendicular to the face of the surface being drilled. The maximum tolerance for deviation from perpendicular shall be 6 degrees. All adhesive anchors installed outside of the specified tolerance shall be considered unacceptable. Use of diamond core bit with roughening tool for anchor holes requires approval from structural engineer of record prior to drilling.			
• ASCE 7, Minimum Design Loads for Buildings and Other Structures		3. Welding shall conform to the requirements of AWS D1.2 Structural Welding Code Aluminum.		9. Holes in connection hat channel flanges shall be no more than 1/16 inch larger than the adhesive anchor diameter.			
• TMS 402/602, Building Code Requirements and Specification for Masonry Structures		COLD FORMED METAL FRAMING		WOOD FRAMING			
• AISI S100, North American Specifications for the Design of Cold-Formed Steel Members		1. Fabrication and assembly of Cold Formed Metal Framing (CFMF) shall be in accordance with AISI Standards and the International Building Code, latest editions.		1. All wood framing shall conform to the "Timber Construction Manual" by the American Institute of Timber Construction and the "National Design Specification for Wood Construction" by the American Forest & Paper Association – American Wood Council.			
DESIGN CRITERIA		2. All hat channel members shall be 18 gage minimum galvanized channels, unless otherwise noted.		2. Wood soffit framing shall conform to:			
1. Wind Loads		3. Framing rolled from steel 18-gage and lighter shall conform to ASTM A1011, latest edition, commercial grade, with a minimum yield stress of 33 KSI.		• Douglas Fir-Larch (DF) – No.2 or better			
• Basic Wind Speed (V)		4. Screw fasteners for steel connections shall be as noted on the drawings. The Azek panels shall be attached to the steel hat channels with #10 x 1 2" DeWalt roof clip fasteners with the pancake heads recessed into the Azek panels so they are flush with the surface of the Azek.		• Bending (Fb)			
• Exposure Category		5. Erect hat channels so they are plumb and provide a bedding of non-shrink non staining grout behind the channel flanges to level the irregularities in the brick surface.		• Shear (Fv)			
115 mph		SAW CUTTING EXISTING MASONRY		• Tension parallel to the grain (Ft)			
B		1. Saw cutting of new slots in existing masonry walls shall be done only in the mortar joints and without overcutting beyond the boundaries of the intended opening.		• Compr. Parallel to the grain (Fc)			
SUBMITTALS		2. Basis of design for field drilled mechanical anchors in existing brick masonry mortar joints shall be DeWalt 316 Stainless Steel Wedge Bolt 2" diameter by 3 inch long. Install holes in mortar joints using DeWalt SDS 2" x 6" wedge bit. Prior to inserting screws into holes in mortar joints – inject structural epoxy into the holes. Use Hilti HY 270 epoxy as basis of design. For substitution purposes, signed and sealed calculations shall be provided for review, indicating the substituted anchor meets the capacity requirements of the detailed anchor.		• Compr. Perpen. to the grain (Fc)			
1. The Engineer may return, without comment, submittals which the Contractor has not stamped or which do not meet the project requirements.		3. Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to the edge of the brick masonry. Install anchors in accordance with spacing and edge clearances indicated on the drawings.		• Modulus of Elasticity (E)=			
2. The construction, manufacture, and/or fabrication of any items prior to the Engineer review will be entirely at the risk of the Contractor.		4. Only one length anchor shall be present on the job site for a given anchor diameter, unless otherwise specified on the drawings.		Or			
3. Engineer's review is for general conformance and compliance with the design concept and contract documents. Any action noted does not waive any requirement of contract documents, coordination of trades, and satisfactory performance of their work which are the Contractor's complete responsibility.		5. All field installed mechanical anchors shall conform to AC-193. Installer of field installed mechanical anchors shall be trained by anchor manufacturer to ensure proper installation requirements such as drilling methods, hole cleaning, and installation torque Provide Hilti HY 270 construction epoxy in the pre-drilled holes prior to screwing in the fasteners.		• Southern Pine (SP) – No.2 or better			
4. Items that require submittal for structural review are:		6. Provide non-shrink grout in all voids between steel hat channel flanges and the brick masonry. Foreign material shall not be placed in the holes that receive mechanical anchors. All abandoned holes drilled in masonry shall be completely filled with structural grade epoxy.		• Bending (Fb)			
• Cold formed hat channels		7. The contractor shall create a template at each mechanical anchor connection location prior to fabricating holes in hat channel flanges. Templates shall be made by first locating existing mortar joints and then drilling anchor holes such that no damage is done to the existing bricks. Anchor locations in the field may be relocated a maximum of 1 1/2 inches from the dimensions shown on the drawings to avoid drilling into the bricks, however, do not exceed minimum anchor spacings or edge distances manufacturer's requirements.		• Shear (Fv)			
• Fasteners for attaching hat channels to the existing masonry		-END-		• Tension parallel to the grain (Ft)			
• Fasteners for attaching the Azek panels to the cold formed hat channels				• Compr. Parallel to the grain (Fc)			
• Adhesives used for setting screws into mortar joints and for attaching mosaic tiles to the Azek panels.				• Compr. Perpen. to the grain (Fc)			
• Adhesive used for glueing splice in Azek panels (Azek Cellular PVC Cement)				• Modulus of Elasticity (E)=			
• Levelling grout used between hat channel flanges and the existing masonry				All wood in contact with masonry shall be pressure preservative treated.			
EXISTING MASONRY – PATCHING, FILLING-IN, REBUILDING, TUCK POINTING				3. Plywood sheathing shall be identified with the appropriate grade trademark of the APA – The Engineered Wood Association, and shall meet the requirements of the latest edition of "U.S. Product Standards, PS 1 for Construction and Industrial Plywood". Plywood thickness is shown on the drawings.		SHEET TITLE	
1. All masonry construction shall conform to:				4. Glue for wood construction shall comply with specification AFG-01 of the APA – The Engineered Wood Association.		STRUCTURAL NOTES	
• Building Code Requirements and Specification for Masonry Structures, TMS 402/602.				5. The number and size of fasteners connecting wood members shall not be less than the requirements set forth in the building code fastening schedule.		SHEET NO.	
• Technical Notes on Brick Construction, Technical Notes 1-48, BIA.				6. All wood construction connectors shall be manufactured by Simpson Strong-Tie or approved equal.		S0.1	
• Guide Specification for Brick Masonry, Technical Notes 11A-E, BIA.							
• Hot and Cold Weather Masonry Construction by the Masonry Industry Council.▪							
2. Salvaged masonry units shall be used with caution, especially if the units to be reused are common building bricks. The masonry contractor shall read "Technical Note 15 – Salvaged Brick" published by The Brick Industry Association, (BIA). Care shall be taken to not re-use any soft under burned units from interior wythe brick. The mason contractor shall coordinate all activities and methods through the Architect.							
3. New masonry construction shall be solidly toothed into existing masonry.							
4. Mortar for toothing in, repairing, and tuck pointing shall conform to ASTM C270. Mortar to be Type N with the highest permissible lime content.							
5. Tuck pointing shall be performed in accordance with instructions found in "Technical Note 46 – Maintenance of Brick Masonry" published by The Brick Industry Association. All tuck-pointing mortar shall be pre-hydrated, per Technical. Note 46. "All dry ingredients should be thoroughly mixed. Only enough clean water should be added to the dry mix to produce a damp consistency which will retain its shape when formed into a ball. The mortar should be mixed to this dampened condition for 1 to 12 hr. before adding water for placement.... Water should be added to the pre-hydrated mortar to bring it to a workable consistency; (somewhat drier than conventional mortar)."							



robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

RDA Job No. 25035



PROJECT

New Mosaic
120 East Liberty
Ann Arbor, MI

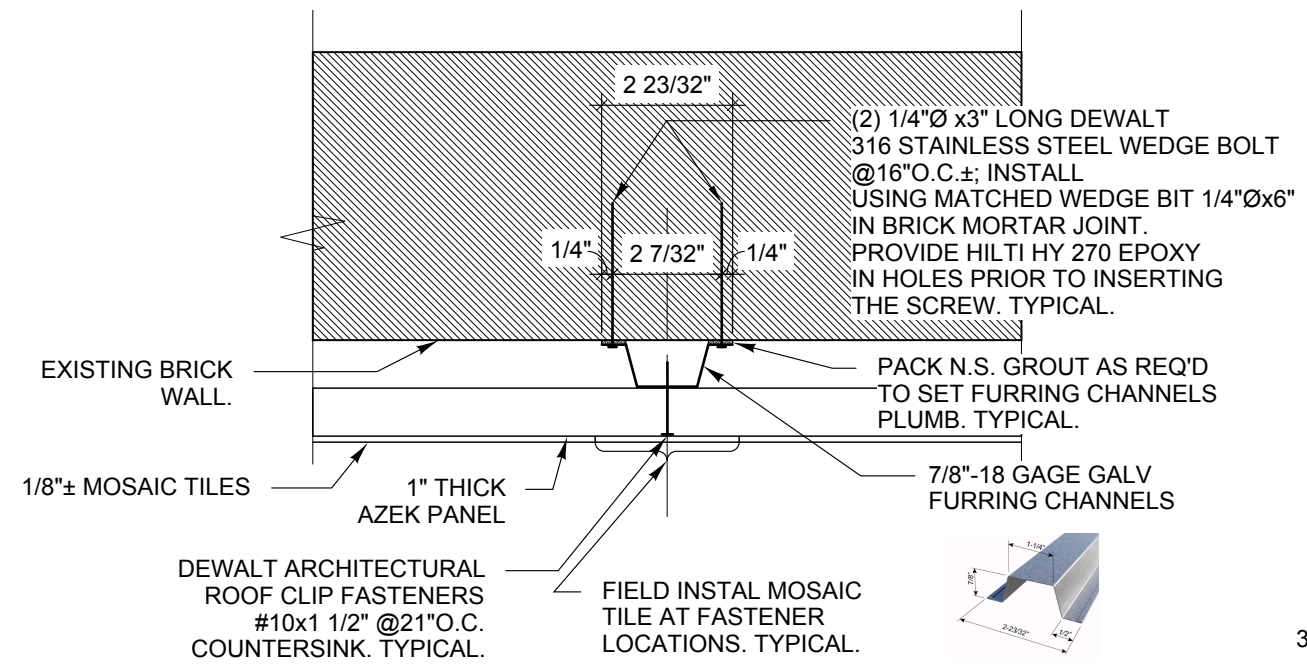
ISSUE TYPE	DATE
PERMIT	06-16-2025

SHEET TITLE

PARTIAL PLAN
AND
ELEVATIONS

SHEET NO.

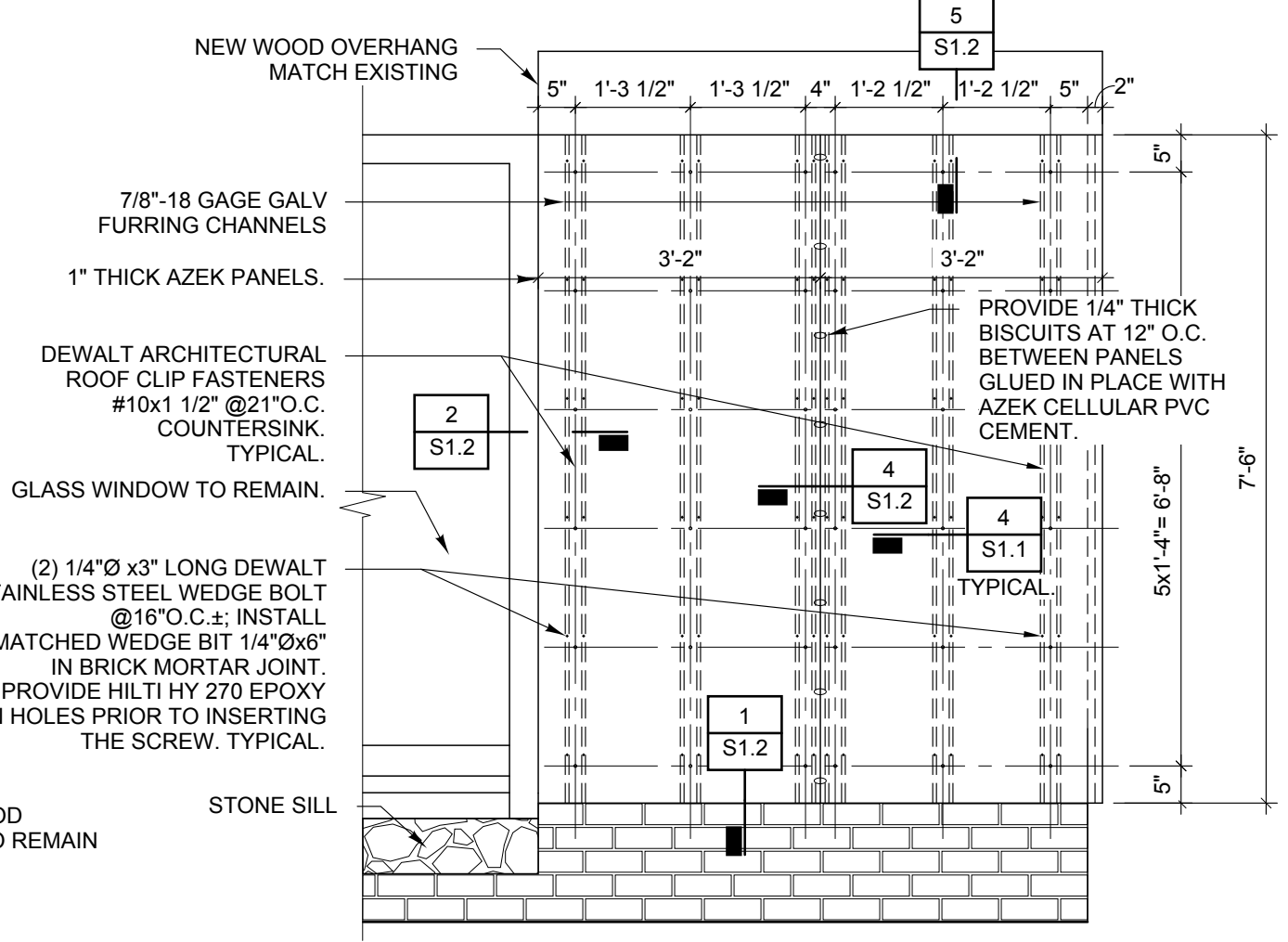
S1.1



Plan Detail

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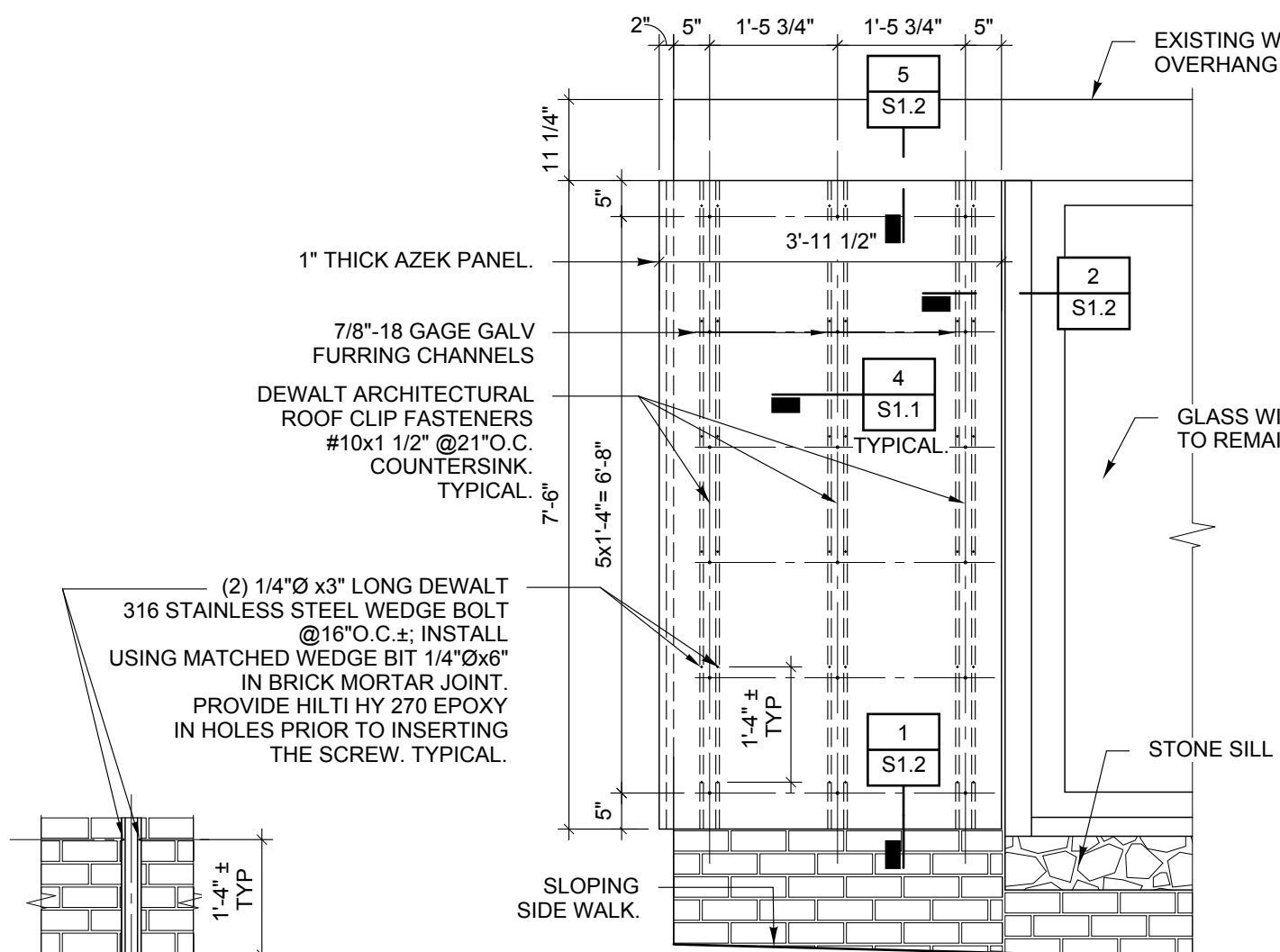
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S1.1



East Elevation

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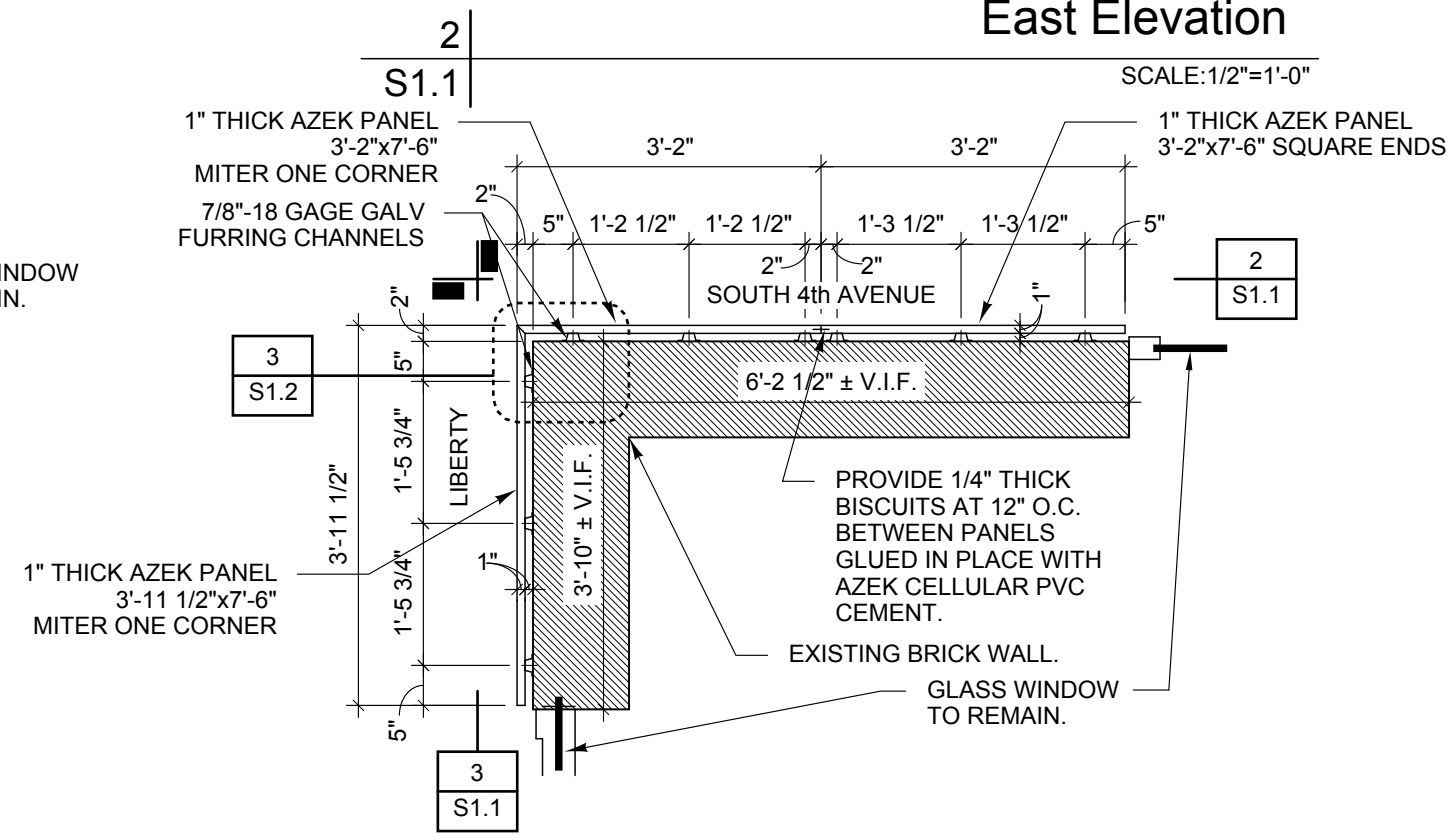
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S1.1



North Elevation

SCALE: 1/2"=1'-0"

3
S1.1

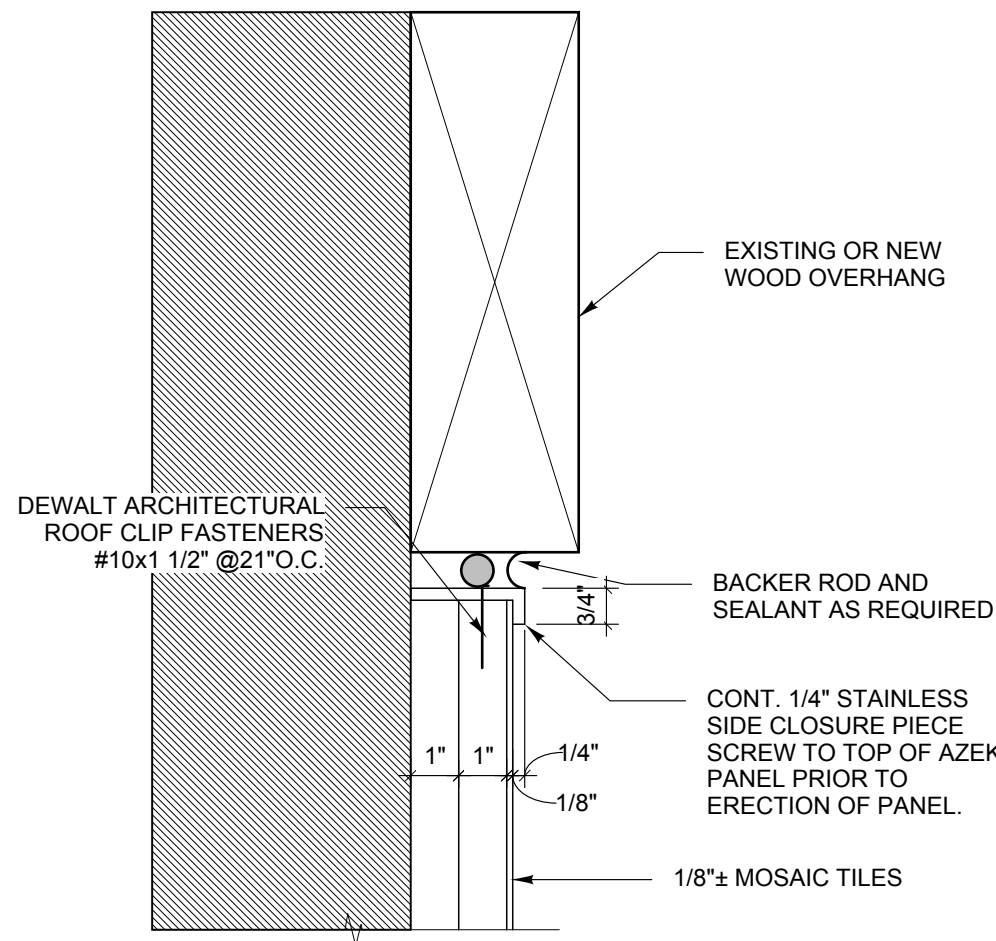


Partial Plan

SCALE: 1/2"=1'-0"

1
S1.1

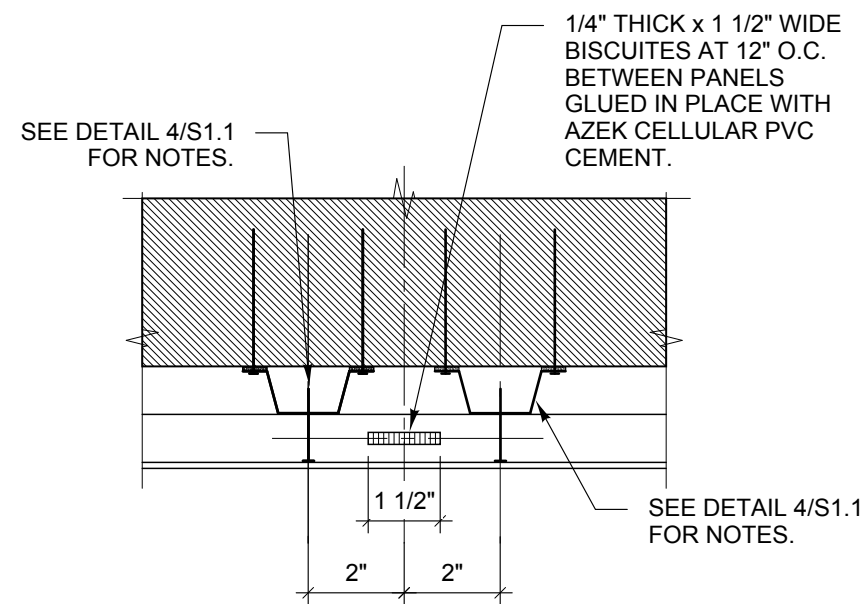




Detail at Top of Mosaic

5
S1.2

SCALE: 3"=1'-0"

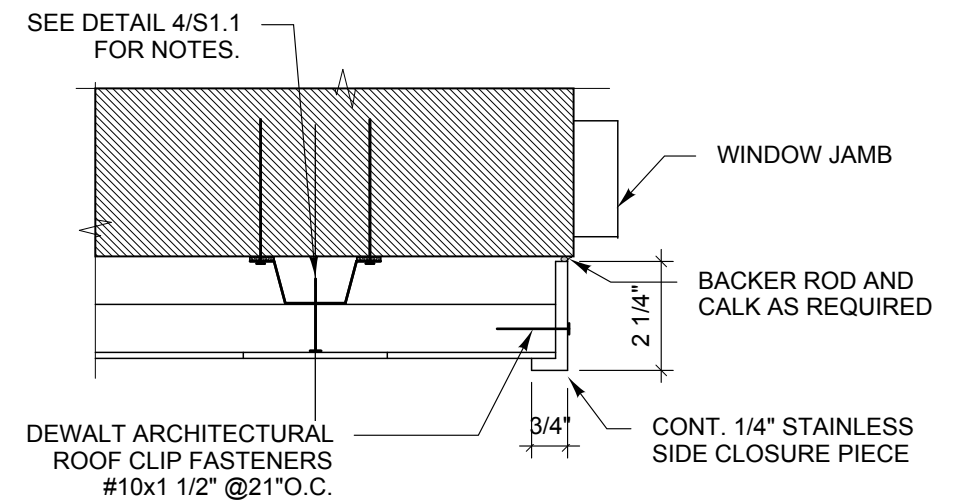


Azek Splice Detail

4
S1.2

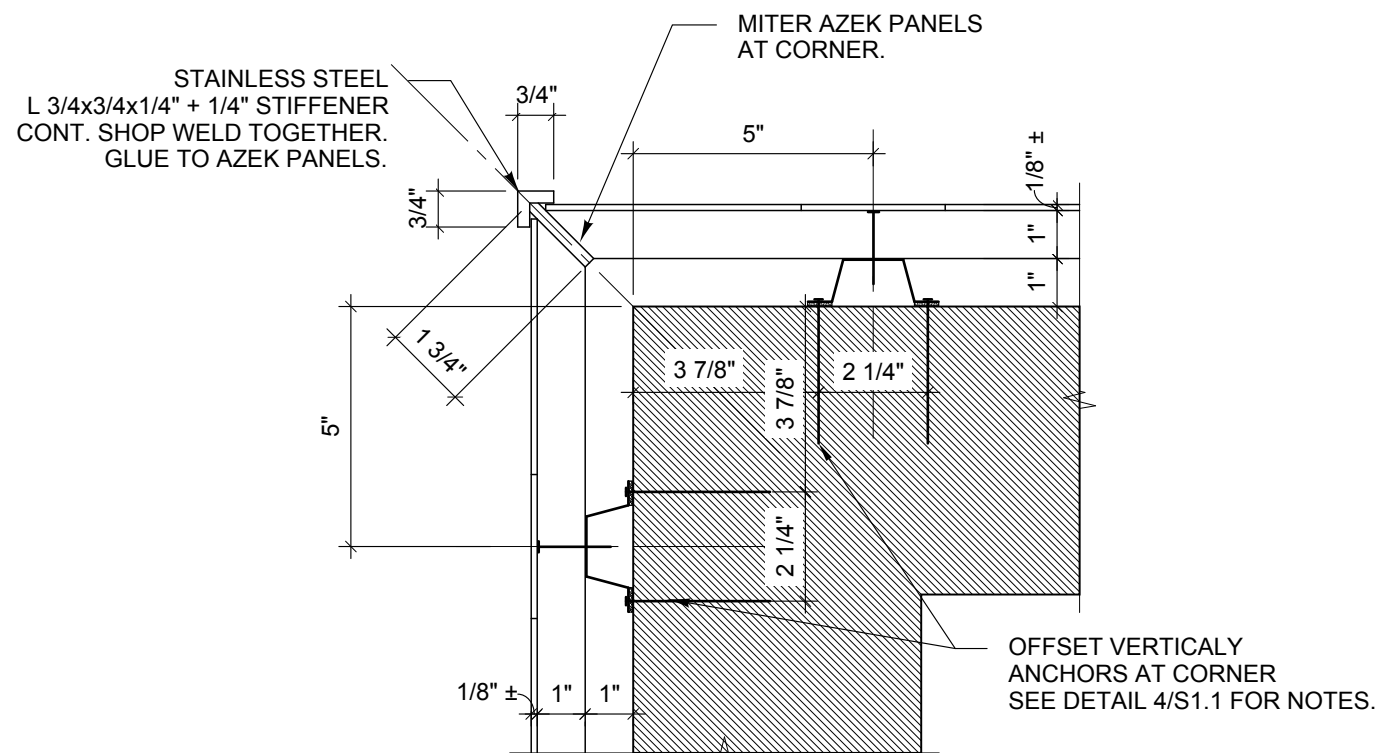
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2
S1.2



Detail at Side of Mosaic

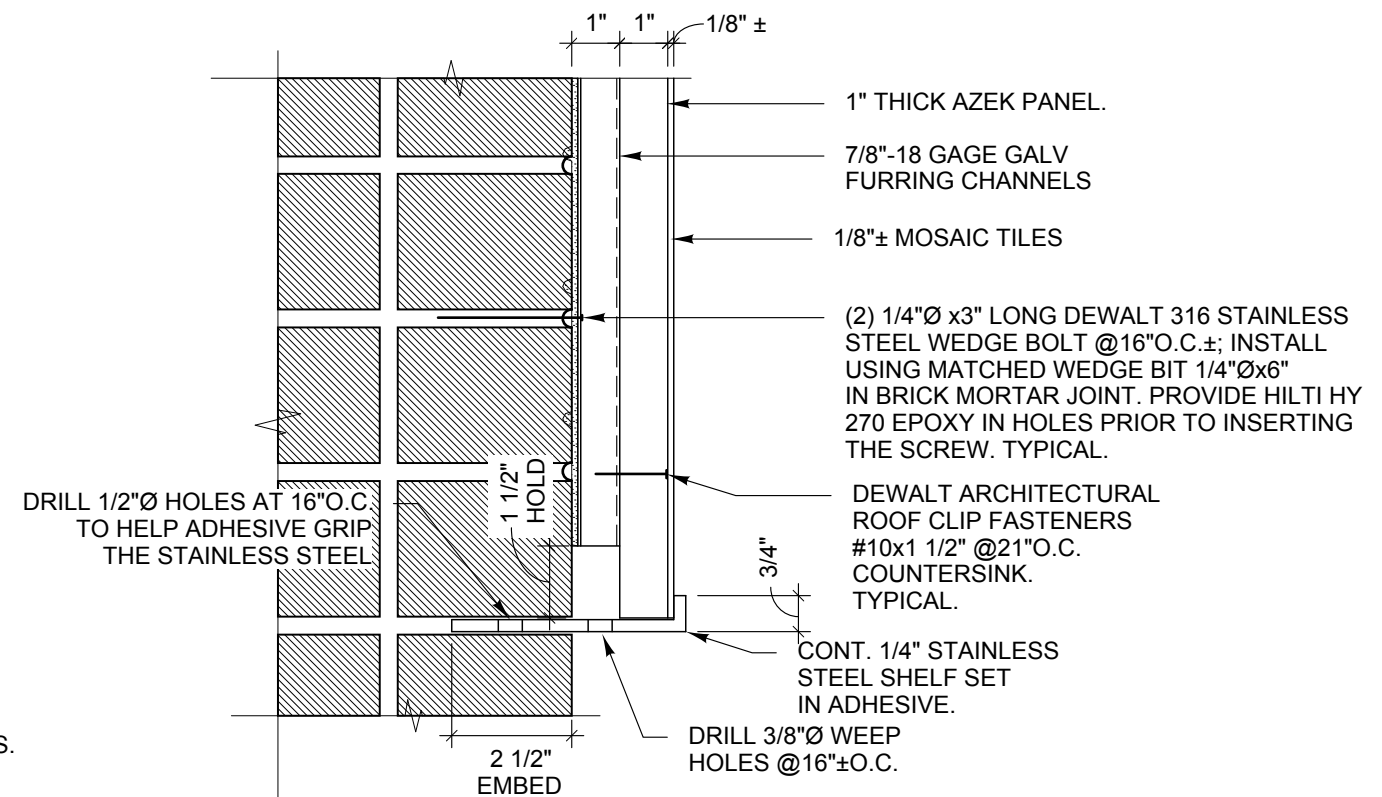
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Corner Detail

3
S1.2

SCALE: 3"=1'-0"



Detail at Base of Mosaic

1
S1.2

SCALE: 3"=1'-0"



robert darvas associates
consulting structural engineers
440 south main street
ann arbor, mi 48104

RDA Job No. 25035



PROJECT

New Mosaic
120 East Liberty
Ann Arbor, MI

ISSUE TYPE	DATE
PERMIT	06-16-2025

SHEET TITLE

DETAILS

SHEET NO.

S1.2

7/8" Furring / Hat Channel (087F125-43)

43mil (18ga)

Geometric Properties

Depth: 0.875 in Design Thickness: 0.0451 in Yield stress, F_y : 33ksi
Width: 1.250 in Min. steel thickness: 0.0428 in Ultimate, F_u : 45ksi

Gross Section Properties of Full Section, Strong Axis	
Effective Section Properties, Strong Axis	
Cross sectional area (A)	0.168 in ²
Member weight per foot of length	0.572 lb/ft
Moment of inertia (Ix)	0.020 in ⁴
Radius of gyration (Rx)	0.345 in
Gross moment of inertia (Iy)	0.079 in ⁴
Gross radius of gyration (Ry)	0.684 in
Moment of inertia for deflection (Ix)	0.020 in ⁴
Section modulus (Sx)	0.043 in ³
Allowable bending moment (Ma)	71 ft-lb
Allowable shear force (Va)	599 lb

Product Data & Ordering Information:

Coating: CP60 (CP90 Available) **GET CP90 IF AVAILABLE**
Stock length: 10'-0" and 12'-0" long pieces
Packaging: 10 pieces per bundle - 440 pieces per pallet
Packaging weight: 60 lbs/bundle

Furring / Hat Channel Allowable Ceiling Spans (Deflection: L/360)

Dead Load	4 psf			6 psf			13 psf		
	12"	16"	24"	12"	16"	24"	12"	16"	24"
Hat Spacing o.c.									
Single Span	6'-0"	5'-6"	4'-9"	5'-3"	4'-9"	4'-2"	4'-1"	3'-8"	3'-3"
Multiple Span	7'-5"	6'-9"	5'-11"	6'-6"	5'-11"	5'-2"	5'-0"	4'-7"	4'-0"

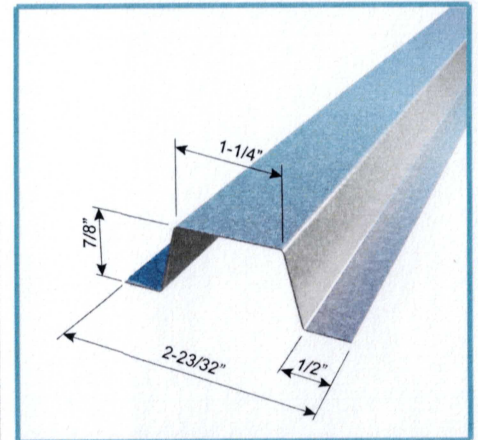
For more span tables and table notes see: www.clarkdietrich.com/products/furring-channel-hat-channel

Code Approvals & Performance Standards

- AISI S240-20** North American Standard for Cold-Formed Steel Structural Framing
 - (Compliant to ASTM C955, but IBC replaced with AISI S200 in IBC 2015, AISI S240 in IBC 2018)
 - Section A3 Material - Chemical & mechanical requirements (Referencing ASTM A1003/A1003M)
 - Section A4 Corrosion Protection (Referencing ASTM A653/A653M)
 - Section C Installation - (Referencing ASTM C1007)
- SDS For ASTM A1003 Steel Framing Products** For Interior Framing, Exterior Framing and Clips/Accessories

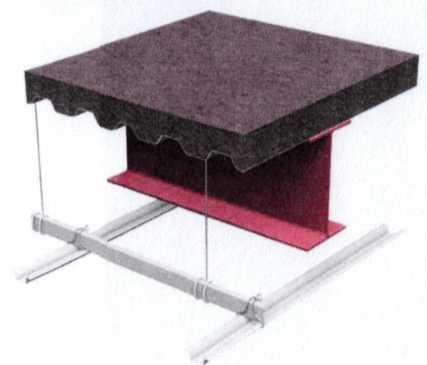
Sustainability Credits For more details and LEED letters contact Technical Services at 888-437-3244 or visit clarkdietrich.com/LEED.

- LEED v4.1 MR Credit:** Environmental Product Declarations: EPD (1 point) - Sourcing of Raw Materials (up to 2 points) - Material Ingredients (1 point) - Construction and Demolition Waste Management (up to 2 points)
- LEED v4 MR Credit:** Building Product Disclosure and Optimization: EPD (1 point) - Sourcing of Raw Materials (1 point) - Material Ingredients (1 point) - Construction and Demolition Waste Management (up to 2 points) - Innovation Credit (up to 2 points).



Used in framing applications:

- Furring for walls & ceilings
- Furring out masonry walls
- Framing for drop ceilings assemblies



GENERAL INFORMATION

316 STAINLESS STEEL WEDGE-BOLT™

Screw Anchor

PRODUCT DESCRIPTION

The 316 Stainless Steel Wedge-Bolt anchor is a one piece, heavy duty screw anchor with a finished hex head. It is simple to install, easy to identify, a fully removable.

The 316 Stainless Steel Wedge-Bolt has many unique features and benefits that make it well suited for many applications, both indoors and out. The steel threads along the anchor body self tap into the hole during installation and provide positive keyed engagement. The benefit to the designer is higher load capacities, while the benefit to the user is ease of installation. The 316 Stainless Steel Wedge-Bolt can be installed with either a powered impact wrench or conventional hand socket.

316 Stainless Steel Wedge-Bolt screw anchors are designed to be used with a matched tolerance Wedge-Bit for optimum performance. The Wedge-Bolt works in fixture clearance holes that are 1/16" over nominal, which is typical of standard fixture holes used in steel fabrication.

316 Stainless Steel Wedge-Bolt screw anchors are not recommended for immersion in or long term exposure to chloride/chlorine environments.

GENERAL APPLICATIONS AND USES

- Interior and Exterior Applications
- Support Ledgers and Windows
- Railing and Fencing
- Storage Facilities
- Repairs & Retrofits
- Maintenance

FEATURES AND BENEFITS

- + High corrosion resistance of Type 316 stainless steel
- + Consistent performance in high and low strength concrete
- + Anchor can be installed through standard size fixture holes in steel
- + Diameter, length and identifying marking stamped on head of each anchor
- + Can be installed with an impact wrench or conventional hand socket
- + Fast installation and immediate loading minimizes downtime
- + Finished hex head provides attractive appearance and minimizes tripping hazard
- + Can be installed closer to the edge than traditional expansion anchors
- + Ratchet teeth on underside of hex washer head contact against the fixture
- + Removable

APPROVALS AND LISTINGS

- Tested in accordance with ASTM E488

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors and 05 05 19 - Post-Installed Concrete Anchors. Screw anchors shall be 316 Stainless Steel Wedge-Bolt as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

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316 STAINLESS STEEL WEDGE-BOLT

HEAD STYLES

- Hex washer head

ANCHOR MATERIALS

- Type 316 Stainless Steel

ANCHOR SIZE RANGE (TYP.)

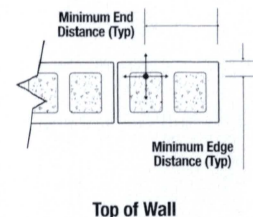
- 1/4" to 1/2" diameters

SUITABLE BASE MATERIALS

- Normal-weight Concrete
- Lightweight Concrete
- Grouted Concrete Masonry (CMU)
- Brick Masonry

Ultimate and Allowable Load Capacities for 316 Stainless Steel Wedge-Bolt Installed in Grout Filled Concrete Masonry Wall Tops^{1,2,3,4,5,6}

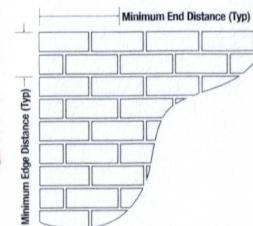

Nominal Anchor Diameter d in.	Minimum Nominal Embed. Depth h _{nom} in. (mm)	Minimum Edge Distance in. (mm)	Minimum End Distance in. (mm)	Minimum Spacing Distance in. (mm)	Ultimate Load		Allowable Load	
					Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4	2-1/2 (64)	1-1/2 (38)	3 (76)	4 (102)	1,025 (4.6)	625 (2.8)	205 (0.9)	125 (0.6)
3/8	3 (76)	1-1/2 (38)	4 (102)	6 (152)	1,675 (7.5)	1,075 (4.8)	335 (1.5)	215 (1.0)
1/2	4-1/2 (114)	1-3/4 (44)	6 (152)	8 (203)	2,475 (11.0)	1,075 (4.8)	495 (2.2)	215 (1.0)



1. All values are for anchors installed in fully grouted concrete masonry wall construction with materials meeting minimum compressive strength, f'm, of 1,500 psi (10.3 MPa). Concrete masonry units must be light-, medium, or normal-weight conforming to ASTM C90. Allowable loads are based on a safety factor of 5.0.
2. Anchors may be installed in any location in the top of the masonry wall except within 1-1/4-inch from the of the mortar joint (head joint), provided the minimum edge and end distances are maintained.
3. A maximum of two anchors may be installed in a single masonry cell in accordance with the spacing and edge or end distance requirements. Embedment is measured from the outside surface of the concrete masonry unit to the embedded end of the anchor.
4. Spacing distance is measured from the centerline to centerline between two anchors.
5. The edge and end distance is measured from the anchor centerline to the closest unrestrained edge and end of the CMU block, respectively.
6. Allowable shear loads may be applied in any direction.

Ultimate and Allowable Load Capacities for 316 Stainless Steel Wedge-Bolt Installed into Multiple Wythe Solid Clay Brick Masonry^{1,2,3}


Nominal Anchor Diameter d in.	Minimum Nominal Embed. Depth h _{nom} in. (mm)	Minimum Edge Distance in. (mm)	Minimum End Distance in. (mm)	Minimum Spacing Distance in. (mm)	Ultimate Load		Allowable Load	
					Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4	2-1/2 (64)	3-1/2 (89)	2-1/2 (64)	4 (102)	1,170 (5.2)	1,380 (6.1)	235 (1.0)	275 (1.2)
3/8	2-3/4 (70)	6 (152)	6 (152)	6 (152)	1,435 (6.4)	2,875 (12.8)	285 (1.3)	575 (2.6)
1/2	3-1/4 (83)	9-1/2 (241)	9-1/2 (241)	8 (203)	1,840 (8.2)	7,655 (34.1)	370 (1.6)	1,530 (6.8)



1. Tabulated load values are for anchors installed in multiple wythe, minimum Grade SW, solid clay brick masonry walls conforming to ASTM C 62. Mortar must be minimum Type N. Masonry compressive strength must be as the specified minimum at the time of installation (f'm ≥ 1,500 psi).
2. Ultimate load capacities must be reduced by a minimum safety factor of 5.0 or greater to determine allowable working load.
3. Allowable load capacities listed are calculated using an applied safety factor of 5.0. Consideration of safety factors of 10 or higher may be used depending on the application, such as life safety.

GENERAL INFORMATION

ARCHITECTURAL ROOF CLIP FASTENERS

Self-Drilling Screws

PRODUCT DESCRIPTION

Architectural Roof Clip Fasteners offer a low-profile head design for wood and steel applications.

GENERAL APPLICATIONS AND USES

The efficiency of self-drilling fasteners and the aesthetics of an unobtrusive head are ideal for attaching metal roof clips to metal and wood.

FEATURES AND BENEFITS

- + Eliminates separate drilling and tapping operations
- + Pancake head improves aesthetics, prevents panel dimpling
- + Fasteners coated with Stalgard® typically show no red rust or other base metal corrosion on significant surfaces after 1000 hours of salt spray exposure in accordance with ASTM B117
- + Stalgard® coating provides improved corrosion resistance compared with fasteners with standard zinc plating
- + Fasteners coated with Stalgard® are compatible with ACQ-treated lumber with a maximum retention of 0.4 pcf and CA-B treated lumber with a maximum retention of 0.3 pcf

APPROVALS AND LISTINGS

- International Code Council, Evaluation Service (ICC-ES), ESR-3294
- Tested in accordance with ICC-ES AC118 for use in Steel (#10 diameter self-drilling fasteners only)
- City of Los Angeles, LABC & LARC Supplement (within ICC-ES report)
- Florida Building Code, FBC Supplement including HVHZ (within ICC-ES report)

GUIDE SPECIFICATIONS

05 05 23 – Metal Fastenings, 06 05 23 – Wood, Plastic and Composite Fastening, 09 22 16.23 - Fasteners. Fasteners shall be Architectural Roof Clip Fasteners as supplied by DEWALT, Towson, MD. Fasteners shall be installed with published instructions and the Authority Having Jurisdiction

MATERIAL SPECIFICATIONS

Fastener Component	Specification
Fastener Body and Head	Case hardened carbon steel
Plating/Coating	Stalgard coating 1,000 hour rating in ASTM B117 salt spray test

SECTION CONTENTS

General Information.....	1
Material Specifications	1
Installation Procedures	2
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#3 POINT



PIERCE POINT

FASTENER MATERIAL

- Carbon Steel

HEAD STYLES

- Pan Head

DIAMETERS

- #10
- #12

FINISH

- Stalgard®

DRILL POINT TYPES

- #3
- Pierce

CODE LISTED
ICC-ES ESR-3294
STEEL

TABLE 3B—DESIGN (LRFD) SHEAR (BEARING) CAPACITY OF SCREW CONNECTIONS (lbf)^{1,2,3}

DESIGNATION	NOMINAL DIAMETER (in.)	THICKNESS OF STEEL IN CONTACT WITH SCREW HEAD (in.)	DESIGN THICKNESS OF STEEL NOT IN CONTACT WITH SCREW HEAD (in.)									
			0.030	0.036	0.048	0.060	0.075	0.090	0.125	0.188	0.250	0.375
Drilit® Standard Drill Screws												
#10-16	0.190	0.030	214	290	346	346	346	346	346	-	-	-
		0.036	214	281	416	416	416	416	416	-	-	-
		0.048	214	281	433	554	554	554	554	-	-	-
		0.060	214	281	433	605	693	693	-	-	-	-
		0.075	214	281	433	605	846	866	-	-	-	-
		0.090	214	281	433	605	846	1039	-	-	-	-
#12-14	0.216	0.030	225	307	383	383	383	383	383	383	-	-
		0.036	225	296	456	459	459	459	459	-	-	-
		0.048	225	296	455	612	612	612	612	-	-	-
		0.060	225	296	455	636	765	765	765	-	-	-
		0.075	225	296	455	636	889	957	957	-	-	-
		0.090	225	296	455	636	889	1148	1148	-	-	-
1/4-14	0.250	0.030	241	316	437	437	437	437	437	437	-	-
		0.036	241	316	487	525	525	525	525	-	-	-
		0.048	241	316	487	680	700	700	700	-	-	-
		0.060	241	316	487	680	875	875	875	-	-	-
		0.075	241	316	487	680	951	1094	1094	-	-	-
		0.090	241	316	487	680	951	1250	1312	-	-	-
#12-24	0.216	0.036	-	-	-	-	-	-	647	-	591	640
		0.060	-	-	-	-	-	-	1327	-	1008	1083
		0.090	-	-	-	-	-	-	941	-	1029	1068
Drilit® Extended Drilling Capacity Screws												
Architectural Roof Clip Fasteners												
#10-16	0.190	0.030	-	-	373	458	559	535	-	-	-	-
		0.036	-	-	548	676	775	755	-	-	-	-

For SI: 1 inch = 25.4 mm, 1 lbf = 4.4 N, 1 ksi = 6.89 MPa.

¹Values are based on steel members with a minimum yield strength of $F_y = 33$ ksi and tensile strength of $F_u = 45$ ksi. When both pieces of steel have $F_u \geq 58$ ksi, the capacities in the table may be multiplied by 1.29 and when both pieces of steel have $F_u \geq 65$ ksi, the capacities in the table may be multiplied by 1.44.

²For shear connections, the lower of the fastener shear strength and the shear (bearing) capacity must be used for design.

³Capacity for other member thickness may be determined by interpolating within the table.

TABLE 4A—ALLOWABLE (ASD) TENSION PULL-OUT CAPACITY OF SCREW CONNECTIONS (lbf)^{1,2,3}

DESIGNATION	NOMINAL DIAMETER (in.)	THICKNESS OF STEEL NOT IN CONTACT WITH SCREW HEAD (in.)									
		0.030	0.036	0.048	0.060	0.075	0.090	0.125	0.188	0.250	0.375
Drilit® Standard Drill Screws											
#10-16	0.190	73	87	116	145	182	218	303	454	-	-
#12-14	0.216	80	96	129	161	201	241	335	502	-	-
1/4-14	0.250	92	110	147	184	230	275	383	574	-	-
Drilit® Extended Drilling Capacity Screws											
#12-24	0.216	-	-	-	-	-	-	257	-	808	986
Architectural Roof Clip Fasteners											
#10-16	0.190	-	-	127	173	215	324	-	-	-	-

For SI: 1 inch = 25.4 mm, 1 lbf = 4.4 N, 1 ksi = 6.89 MPa.

¹⁻³See notes following Table 4B.

TABLE 1—DRILIT® SELF-DRILLING STRUCTURAL SCREWS AND ARCHITECTURAL ROOF CLIP FASTENERS

SCREW TYPE	SIZE	TPI	NOMINAL DIAMETER (inch)	HEAD STYLE ¹	HEX DRIVE SIZE (inch) / PHILLIPS DRIVE SIZE (No.)	NOMINAL HEAD DIAMETER (inch)	POINT TYPE	DRILLING CAPACITY ² (inch)		MINIMUM REQUIRED PROTRUSION (inch)	COATING
								Min.	Max.		
Drilit® Standard Drill Screws											
1	10	16	0.190	HHWH	⁵ / ₁₆	0.399	#1	0.030	0.095	0.563	Stalgard
2	10	16	0.190	HWH/HHWH	⁵ / ₁₆	0.399	#3	0.030	0.175	0.500	Stalgard or Zinc
2A ⁽³⁾	10	16	0.190	HWH/HHWH	⁵ / ₁₆	0.500					Stalgard or Zinc
2B	10	16	0.190	HHWH	⁵ / ₁₆	0.399	#2	0.030	0.110	0.406	Stalgard
3	12	14	0.216	HWH	⁵ / ₁₆	0.415	#1	0.030	0.095	0.563	Stalgard
4	12	14	0.216	HWH	⁵ / ₁₆	0.415	#3	0.030	0.210	0.563	Stalgard or Zinc
4A ⁽³⁾	12	14	0.216	HWH	⁵ / ₁₆	0.563					Stalgard or Zinc
5	¹ / ₄	14	0.250	HWH	⁵ / ₁₆	0.415	#1	0.030	0.095	0.563	Stalgard
5A ⁽³⁾	¹ / ₄	14	0.250	HWH	⁵ / ₁₆	0.563					Stalgard
6	¹ / ₄	14	0.250	HWH	³ / ₈	0.500	#3	0.030	0.210	0.625	Stalgard or Zinc
6A ⁽³⁾	¹ / ₄	14	0.250	HWH	³ / ₈	0.630					Stalgard or Zinc
Drilit® Extended Drilling Capacity Screws											
7	12	24	0.216	HWH	⁵ / ₁₆	0.415	#4	0.125	0.312	0.625	Stalgard
7A ⁽³⁾	12	24	0.216	HWH	⁵ / ₁₆	0.563					Stalgard
8	12	24	0.216	HWH	⁵ / ₁₆	0.415	#4.5	0.125	0.375	0.750	Stalgard
8A ⁽³⁾	12	24	0.216	HWH	⁵ / ₁₆	0.563					Stalgard
9	12	24	0.216	HWH	⁵ / ₁₆	0.415	#5	0.125	0.500	0.906	Stalgard
9A ⁽³⁾	12	24	0.216	HWH	⁵ / ₁₆	0.563					Stalgard
Architectural Roof Clip Fasteners											
10	10	16	0.190	Pancake	2	0.437	#3	0.048	0.175	0.500	Stalgard

For SI: 1 inch = 25.4 mm.

¹Head styles: HWH = Hex Washer Head; HHWH = High Hex Washer Head²The drilling capacity of a fastener refers to the minimum and maximum thickness of the steel that the fastener is designed to drill through.³Screw has a bonded sealing washer, as shown in Figure 11. Nominal head diameter refers to the nominal diameter of the bonded sealing washer.

TABLE 2— SELF-DRILLING SCREWS SHEAR AND TENSION FASTENER STRENGTH (lbf)

DESIGNATION	NOMINAL STRENGTH		ALLOWABLE STRENGTH (ASD)		DESIGN STRENGTH (LRFD)	
	Shear: P _s	Tension: P _t	Shear: P _s /Ω	Tension: P _t /Ω	Shear: ΦP _s	Tension: ΦP _t
Drilit® Standard Drill Screws						
#10-16	1679	2670	560	890	840	1335
#12-14	1788	3211	596	1070	894	1606
$\frac{1}{4}$ -14	2307	4803	769	1601	1154	2402
Drilit® Extended Drilling Capacity Screws						
#12-24	2283	3553	761	1184	1142	1777
Architectural Roof Clip Fasteners						
#10-16	1560	2326	520	775	780	1163

For SI: 1 inch = 25.4 mm, 1 lbf = 4.4 N.

TABLE 3A—ALLOWABLE (ASD) SHEAR (BEARING) CAPACITY OF SCREW CONNECTIONS (lbf)^{1,2,3}

DESIGNATION	NOMINAL DIAMETER (in.)	THICKNESS OF STEEL IN CONTACT WITH SCREW HEAD (in.)	THICKNESS OF STEEL NOT IN CONTACT WITH SCREW HEAD (in.)										
			0.030	0.036	0.048	0.060	0.075	0.090	0.125	0.188	0.250	0.375	
Drilit® Standard Drill Screws													
#10-16	0.190	0.030	143	193	231	231	231	231	231	231	-	-	-
		0.036	143	188	277	277	277	277	277	277	-	-	-
		0.048	143	188	289	369	369	369	369	369	-	-	-
		0.060	143	188	289	404	462	462	-	-	-	-	-
		0.075	143	188	289	404	564	577	-	-	-	-	-
		0.090	143	188	289	404	564	693	-	-	-	-	-
#12-14	0.216	0.030	150	205	255	255	255	255	255	255	255	-	-
		0.036	150	197	304	306	306	306	306	306	-	-	-
		0.048	150	197	304	408	408	408	408	408	-	-	-
		0.060	150	197	304	424	510	510	510	510	-	-	-
		0.075	150	197	304	424	593	638	638	638	-	-	-
		0.090	150	197	304	424	593	765	765	765	-	-	-
1/4-14	0.250	0.125	150	197	304	424	593	765	765	-	-	-	-
		0.030	160	222	292	292	292	292	292	292	292	-	-
		0.036	160	211	325	350	350	350	350	350	-	-	-
		0.048	160	211	325	454	467	467	467	467	-	-	-
		0.060	160	211	325	454	583	583	583	583	-	-	-
		0.075	160	211	325	454	634	729	729	729	-	-	-
#12-24	0.216	0.090	160	211	325	454	634	833	875	875	-	-	-
		0.125	160	211	325	454	634	833	833	-	-	-	-
		0.036	-	-	-	-	-	-	-	404	-	370	400
Drilit® Extended Drilling Capacity Screws													
#12-24	0.216	0.060	-	-	-	-	-	-	-	829	-	630	677
		0.090	-	-	-	-	-	-	-	588	-	643	667
		0.125	-	-	-	-	-	-	-	-	-	-	-
Architectural Roof Clip Fasteners													
#10-16	0.190	0.030	-	-	232	286	350	335	-	-	-	-	-
		0.036	-	-	343	423	484	472	-	-	-	-	-

For SI: 1 inch = 25.4 mm, 1 lbf = 4.4 N, 1 ksi = 6.89 MPa.

¹Values are based on steel members with a minimum yield strength of $F_y = 33$ ksi and tensile strength of $F_u = 45$ ksi. When both pieces of steel have $F_u \geq 58$ ksi, the capacities in the table may be multiplied by 1.29 and when both pieces of steel have $F_u \geq 65$ ksi, the capacities in the table may be multiplied by 1.44.

²For shear connections, the lower of the fastener shear strength and the shear (bearing) capacity must be used for design.

³Capacity for other member thickness may be determined by interpolating within the table.

TABLE 6—MINIMUM FASTENER SPACING AND EDGE DISTANCE

BASIC SCREW DIAMETER (inch)	FASTENED MATERIAL	MINIMUM SPACING ¹ (3d)	MINIMUM EDGE DISTANCE (1.5d)	MINIMUM EDGE DISTANCE FOR FRAMING MEMBERS UNDER THE 2018 and 2015 IBC (3d)
0.190 (#10)	Steel	9/16"	5/16"	9/16"
0.216 (#12)	Steel	1 1/16"	3/8"	1 1/16"
0.250 (1/4)	Steel	3/4"	3/8"	3/4"

For SI: 1 inch = 25.4 mm.

¹For screws used in framing connections, when the spacing between screws is less than 3 times the nominal screw diameter, but at least 2 times the screw diameter, the connection shear strength values in Tables 3A and 3B must be reduced by 20 percent (Refer to Section B1.5.1.3 of AISI S240).

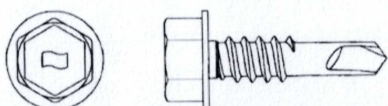


FIGURE 1—#10-16 HIGH HEX WASHER HEAD TYPE 1 SCREW

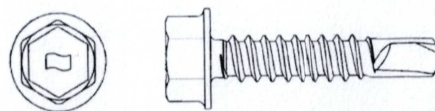


FIGURE 2—#10-16 HIGH HEX WASHER HEAD TYPE 2 SCREW

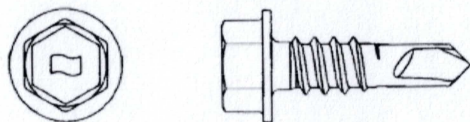


FIGURE 3—#12-14 HEX WASHER HEAD TYPE 3 SCREW

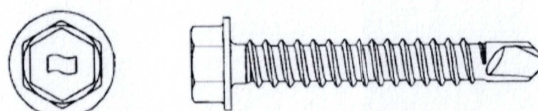


FIGURE 4—#12-14 HEX WASHER HEAD TYPE 4 SCREW

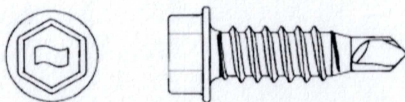


FIGURE 5—1/4-14 HEX WASHER HEAD TYPE 5 SCREW

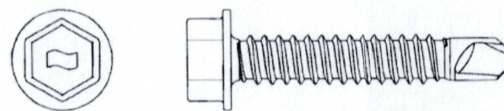


FIGURE 6—1/4-14 HEX WASHER HEAD TYPE 6 SCREW

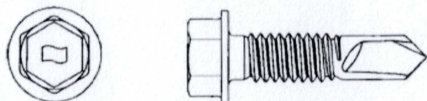


FIGURE 7—#12-24 HEX WASHER HEAD TYPE 7 SCREW

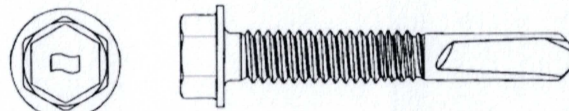


FIGURE 8—#12-24 HEX WASHER HEAD TYPE 8 SCREW

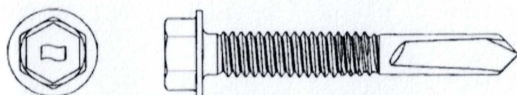


FIGURE 9—#12-24 HEX WASHER HEAD TYPE 9 SCREW

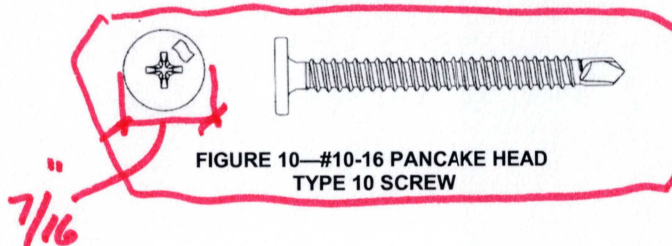


FIGURE 10—#10-16 PANCAKE HEAD TYPE 10 SCREW

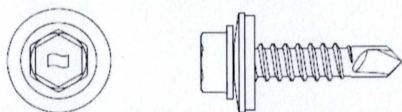


FIGURE 11—TYPICAL HEX WASHER HEAD SCREW WITH BONDED SEALING WASHER (TYPE A SCREW)

TABLE 7—CODE SECTION NUMBER REFERENCE MATRIX

2024 IBC	2021 IBC	2018 IBC	2015 IBC
2206	2211	2211	2211
AISI S100-16(2020) w/S2-20 A3.1	AISI S100-16(2020) w/S2-20 A3.1	AISI S100-16 A3.1	AISI S100-12 A2.1
AISI S100-16(2020) w/S2-20 J4	AISI S100-16(2020) w/S2-20 J4	AISI S100-16 J4	AISI S100-12 E4
AISI S100-16(2020) w/S2-20 J6	AISI S100-16(2020) w/S2-20 J6	AISI S100-16 J6	AISI S100-12 E6
AISI S240-20 B1.5.1.3	AISI S240-20 B1.5.1.3	AISI S240-20 B1.5.1.3	AISI S200-12 D1.5

PERFORMANCE DATA

Fastener Strengths^{1,2,3,4,5,6,7}

Description	Point Type	Tension (lbf)			Shear (lbf)			Minimum Torsional Strength (in-lbs)
		Ultimate	ASD	LRFD	Ultimate	ASD	LRFD	
#10-16	#3	2,325	775	1,165	1,560	520	780	61
#12-14	#3	3,210	1,070	1,605	1,785	595	895	92

1. Ultimate strengths are based on laboratory tests.
2. Allowable (ASD) strengths are based on a safety factor, Ω , of 3.0 in accordance with ICC-ES AC118 and AISI S100-16.
3. Design (LRFD) strengths are based on a resistance factor, ϕ , of 0.50 in accordance with ICC-ES AC118 and AISI S100-16.
4. For ASD tension connections, the lower of the ASD tension strength and ASD pull-out strength must be used for design.
5. For LRFD tension connections, the lower of the LRFD tension strength and LRFD pull-out strength must be used for design.
6. For ASD shear connections, the lower of the ASD shear (bearing) capacity and the ASD fastener shear strength must be used for design.
7. For LRFD shear connections, the lower of the LRFD shear (bearing) capacity and the LRFD fastener shear strength must be used for design.

Ultimate Shear (Bearing) Capacity of Screw Connections, lbf^{1,2}

Description	Point Type	Steel Thickness (Lapped Sheets/Bars)						
		26-26 Ga.	24-24 Ga.	22-22 Ga.	20-20 Ga.	18-18 Ga.	16-16 Ga.	14-14 Ga.
#10-16	#3	200	305	430	565	865	1,210	1,690
#12-14	#3	210	325	455	600	920	1,290	2,755

1. Ultimate strengths were calculated in accordance with AISI S100-16 based on steel with a minimum tensile strength of $F_u = 45$ ksi.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).

Allowable (ASD) And Design (LRFD) Shear (Bearing) Capacity of Screw Connections (Steel)^{1,2,3,4}

Description	Point Type	Steel Thickness (Lapped Sheets/Bars)									
		26-26 Ga.		24-24 Ga.		22-22 Ga.		20-20 Ga.		18-18 Ga.	
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
#10-16	#3	65	100	100	155	145	215	190	285	290	435
#12-14	#3	70	105	110	165	150	230	200	300	430	645

1. Allowable (ASD) strengths are based on a safety factor, Ω , of 3.0 in accordance with ICC-ES AC118 and AISI S100-16.
2. Design (LRFD) strengths are based on a resistance factor, ϕ , of 0.50 in accordance with ICC-ES AC118 and AISI S100-16.
3. For ASD shear connections, the lower of the ASD shear (bearing) capacity and the ASD fastener shear strength must be used for design.
4. For LRFD shear connections, the lower of the LRFD shear (bearing) capacity and the LRFD fastener shear strength must be used for design.

Ultimate Tension Pull-out Capacity of Screw Connections, lbf^{1,2}

Description	Point Type	Minimum Thickness of Steel Not in Contact with Screw Head							
		26 Ga.	24 Ga.	22 Ga.	20 Ga.	18 Ga.	16 Ga.	14 Ga.	12 Ga.
#10-16	#3	135	205	270	300	420	550	660	1,125
#12-14	#3	140	210	295	345	580	765	1,075	1,550

1. Ultimate strengths are based on laboratory tests.
2. Ultimate load capacities must be reduced by a minimum safety factor to determine allowable loads (ASD) or by a load resistance factor to determine strength design capacities (LRFD).

Allowable (ASD) And Design (LRFD) Pull-out Capacity of Screw Connections (Steel)^{1,2,3,4}

Description	Point Type	Minimum Thickness of Steel Not in Contact with Screw Head													
		26 Ga.		24 Ga.		22 Ga.		20 Ga.		18 Ga.		16 Ga.		14 Ga.	
		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
#10-16	#3	45	65	65	100	90	135	100	150	140	210	180	275	220	330
#12-14	#3	45	70	70	105	95	145	115	170	190	290	255	380	355	535

1. Allowable (ASD) strengths are based on a safety factor, Ω , of 3.0 in accordance with ICC-ES AC118 and AISI S100-16.
2. Design (LRFD) strengths are based on a resistance factor, ϕ , of 0.50 in accordance with ICC-ES AC118 and AISI S100-16.
3. For ASD tension connections, the lower of the ASD tension strength and the ASD pull-out strength must be used for design.
4. For LRFD tension connections, the lower of the LRFD tension strength and the LRFD pull-out strength must be used for design.

Ultimate Tension Pull-out Capacity of Screw Connections (Wood)¹

Description	Point Type	Base Material				
		1/2" Plywood	5/8" Plywood	3/4" Plywood	Yellow Pine	3/4" OSB
#10-12	Pierce	365	380	400	580	290
#12-11	Pierce	375	390	425	675	325

1. Ultimate strengths are based on laboratory tests.

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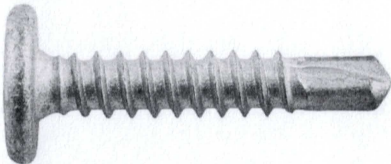
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FEATURES

- Eliminates separate drilling and tapping operations
- Pancake head improves aesthetics, prevents panel dimpling
- Fasteners coated with Stalgard® typically show no red rust or other base metal corrosion on significant surfaces after 1000 hours of salt spray exposure in accordance with ASTM B117
- Stalgard® coating provides improved corrosion resistance compared with fasteners with standard zinc plating
- Fasteners coated with Stalgard® are compatible with ACQ-treated lumber with a maximum retention of 0.4 pcf and CA-B treated lumber with a maximum retention of 0.3 pcf

SPECIFICATIONS

CATALOG NUMBER	DESCRIPTION	NOMINAL HEAD DIAMETER	NOMINAL HEAD HEIGHT	SHANK DIAMETER	THREADS PER INCH	FASTENER LENGTH	POINT TYPE	
<u>DFSETA850</u>	#10 - 12 X 1"	0.437"	0.075"	#10	12	1"	PIERCE POINT	
<u>DFSEDO450</u>	#10 - 16 X 1"	0.437"	0.075"	#10	16	1"	#3	
<u>DFSETA855</u>	#10 - 12 X 1-1/2"	0.437"	0.075"	#10	12	1-1/2"	PIERCE POINT	
<u>DFSEDO460</u>	#10 - 16 X 1-1/2"	0.437"	0.075"	#10	16	1-1/2"	#3	
<u>DFSETA860</u>	#10 - 12 X 2"	0.437"	0.075"	#10	12	2"	PIERCE POINT	
<u>DFSEDO470</u>	#10 - 16 X 2"	0.437"	0.075"	#10	16	2"	#3	
<u>DFSETA870</u>	#12 - 11 X 1"	0.437"	0.075"	#12	11	1"	PIERCE POINT	
<u>DFSEDO735</u>	#12 - 14 X 1"	0.437"	0.075"	#12	14	1"	#3	

GENERAL APPLICATION & USES

APPLICATIONS

- The efficiency of self-drilling fasteners and the aesthetics of an unobtrusive head are ideal for attaching metal roof clips to metal and wood.

APPROVALS & LISTINGS

APPROVALS

- International Code Council, Evaluation Service (ICC-ES), ESR-3294
- Tested in accordance with ICC-ES AC118 for use in Steel (#10 diameter self-drilling fasteners only)
- City of Los Angeles, LABC & LARC Supplement (within ICC-ES report)
- Florida Building Code, FBC Supplement including HVHZ (within ICC-ES report)



BROCHURES & MANUALS

Additional Information Requested from Jill Thacher

S1.1:

- On the east elevation, what are the dimensions of the New Wood Overhang? How is it being mounted to the wall? **Dimensions are 11.25" tall, 76" long, 3.5" depth. It will be mounted the same way as the artwork - at mortar joints.**
- What are the architectural roof clip fasteners fastening? Are they to hold something to the furring channels, or are they an attachment to the wall? **Architectural roof clips fasteners are attaching the Azek panels to the furring channels only. They do not go into the building's wall. The furring channels are attached to wall in other locations noted in drawing.**
- Are the ¼" biscuits glued to the furring strips, or to the azek panels, or to something else? **Biscuits glue Azek panels together at their seams, not to furring strips. They are only at the vertical joint between the two panels on the east elevation**

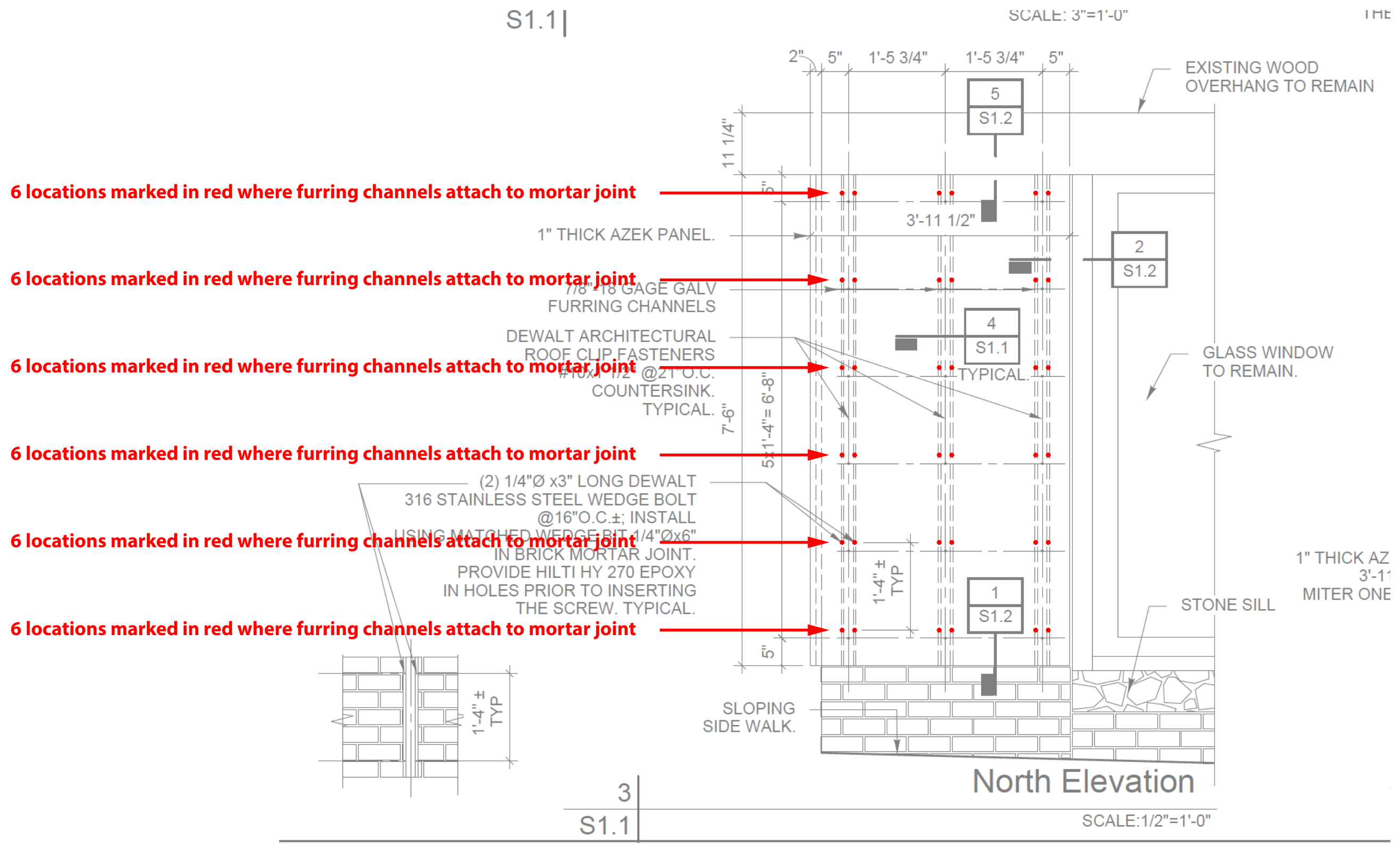
Page 9:

"...load capacities for...wedge bolt installed into Multiple Wythe Solid Clay Brick Masonry" (underlined in red) sounds an awful lot like the bolt is installed into masonry units. No masonry joints are mentioned. Can you explain? **Everything shows it mounted into joints matching existing conditions. Masonry refers to the combination of the brick and mortar. The demand on the screws is less than 10lb per screw in shear and tension. The allowable load capacities are 235 lb in tension and 275 in shear which is a 5 to 1 reduction of the tested failure capacity. Also we are setting the screw in epoxy while the test values were for screws set dry.**

General:

- It would be very helpful to include the total number of mortar joint penetrations that will be needed to install the mosaic, and if possible, to show them on a drawing (either a new one or dots added to an existing drawing). **72 on the East elevation at 3.6 lb shear per screw and 36 on the North Elevation at 4.53 lb shear per screw. Reference Drawing.**
- What is the weight of the complete installation on each of the elevations? **258 lb East, 162 North. Reference Drawing**

NORTH elevation



6 locations marked in red where furring channels attach to mortar joint

6 locations marked in red where furring channels attach to mortar joint

6 locations marked in red where furring channels attach to mortar joint

6 locations marked in red where furring channels attach to mortar joint

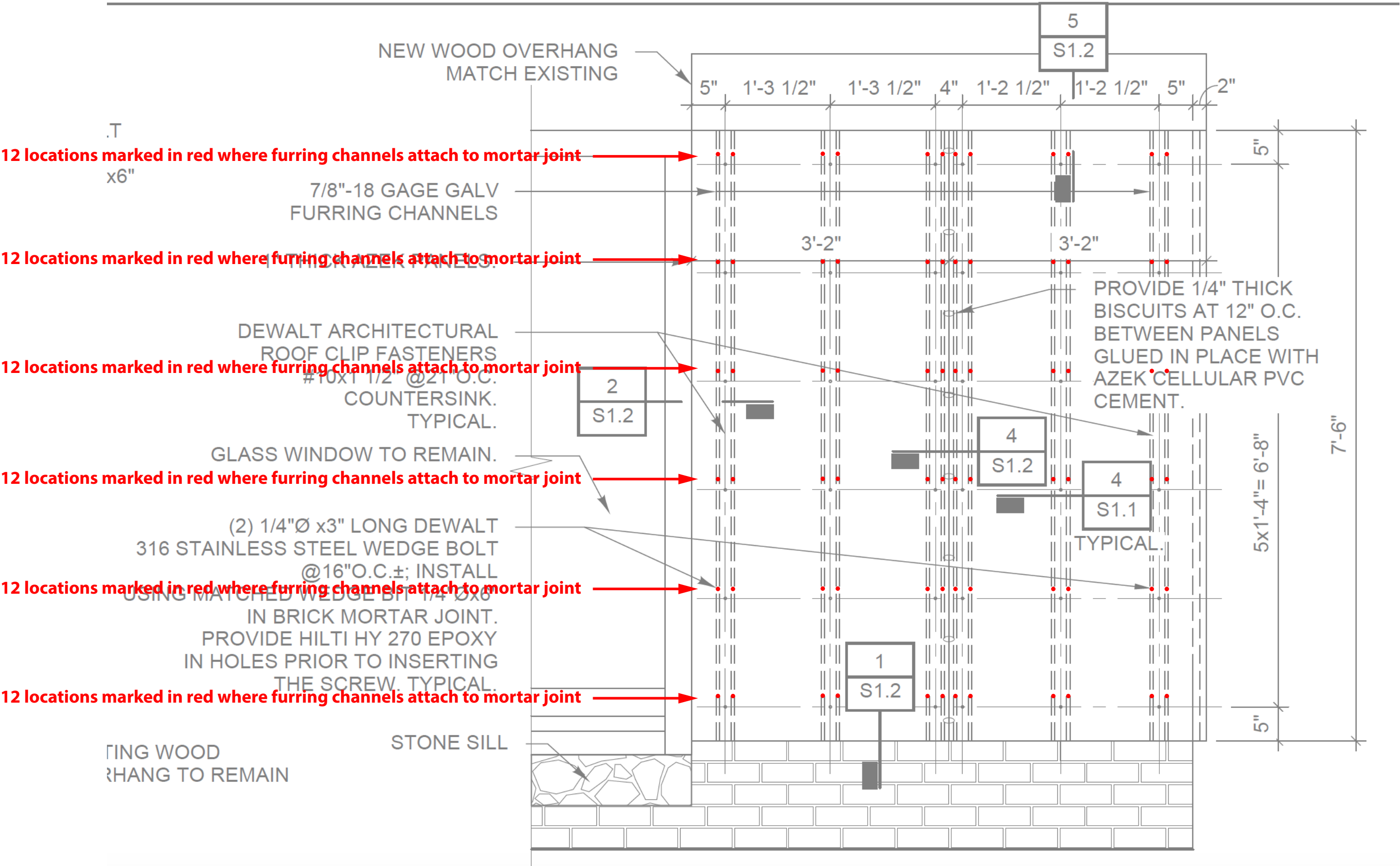
6 locations marked in red where furring channels attach to mortar joint

6 locations marked in red where furring channels attach to mortar joint

36 locations total on North Elevation where furring channels attach to mortar joint

Approx Weight of all materials on North Elevation: 162 lb

EAST elevation



72 locations total on East Elevation where furring channels attach to mortar joint

Approx Weight of all materials on East Elevation: 258 lb

Questor Development, LLC
209 S. Fourth Avenue, 1C • Ann Arbor • MI • 48104
info@shaffran.com • 734-665-1200

Friday, June 13, 2025

Jill Thacher
City of Ann Arbor
Ann Arbor Historic District Commission
301 E. Huron
Ann Arbor, MI 48104

RE: Mosaic - 120 E. Liberty St., Ann Arbor, MI 48104

Jill,

The purpose of this letter is confirm my approval of the installation of the mosaic at the corner of our building located at the southwest corner of E. Liberty and S. Fourth Avenue, commonly known as the Pretzel Bell Building.

If you have any questions or require additional information, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'E. Shaffran', with a long horizontal line extending to the right.

Edward A. Shaffran,
Managing Member
Questor Development, LLC