**HISTORIC AND DESIGN REVIEW COMMISSION**

**January 18, 2017**

**Agenda Item No: 27**

| | |
|---|---|
| **HDRC CASE NO:** | **2017-021** |
| **ADDRESS:** | 603 RIVER RD |
| **LEGAL DESCRIPTION:** | NCB 6202 BLK 3 LOT 14 (BELMONT PLACE SUBD) |
| **ZONING:** | R-4,H,RIO-1 |
| **CITY COUNCIL DIST.:** | 1 |
| **DISTRICT:** | River Road Historic District |
| **APPLICANT:** | Myfe Moore |
| **OWNER:** | Myfe Moore |
| **TYPE OF WORK:** | Installation of Solar Panels |

**REQUEST:**

The applicant is requesting a Certificate of Appropriateness for approval to install 38 solar panels at this address, including:

1. 8 panels on the flat roof to left of the front gable
2. 16 panels on the left front gable
3. 14 panels on the front slope of the accessory structure

**APPLICABLE CITATIONS:**

*Historic Design Guidelines, Chapter 3, Guidelines for Additions*

6. Designing for Energy Efficiency
C. SOLAR COLLECTORS
*i. Location*—Locate solar collectors on side or rear roof pitch of the primary historic structure to the maximum extent feasible to minimize visibility from the public right-of-way while maximizing solar access. Alternatively, locate solar collectors on a garage or outbuilding or consider a ground-mount system where solar access to the primary structure is limited.
*ii. Mounting* (sloped roof surfaces)—Mount solar collectors flush with the surface of a sloped roof. Select collectors that are similar in color to the roof surface to reduce visibility.

**FINDINGS:**

a. The home is a new construction home located in the River Road Historic District, which was designated in 2010.
b. The main structure has three front gables and a flat roof and standing seam metal. The side accessory structure along River Road is two-story with a side gable roof. Of the 38 proposed solar panels 16 panels will be installed on the left slope of the front gable; 8 panels will be installed on the flat roof to the left of the front gable, and 14 will be installed on the front slope of the side accessory structure. According to the Guidelines for Additions 6.C., installations should be in locations that minimize visibility from the public right-of-way.
c. Staff visited the site on January 11, 2017. The home is located on the corner of River Road and Armour Place., on the east edge of the district. Staff found that there are many trees on the lot that reduce the visibility of the solar panels, but that the front facing panels would still be seen from the public right-of-way and negatively impact the neighboring historic structures. Staff finds the proposed panels on the flat roof consistent with the Guidelines, but finds the panels mounted on the front gable and the front slope of the accessory structure not consistent with the Guidelines for locations of solar panels. Staff recommends that alternate locations be explored.
d. The proposed panels will be mounted flush with the pitched and flat roofs. According to the Guidelines for Additions 6.C.ii, solar collectors should be flush with the roof surface. Staff finds the proposal consistent with the guidelines.

**RECOMMENDATION:**

Staff recommends approval of item #1 based on finding a through d. Staff does not recommend approval of items #2 and 3 based on findings a through d and recommends the applicant explore alternate locations for the solar panels.

**CASE MANAGER:**

Lauren Sage

N

# Flex Viewer

## Powered by ArcGIS Server

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VIEW FROM RIVER ROAD

VIEW FROM RIVER ROAD
RIGHT 2-STORY ACCESSORY BUILDING

LEFT FRONT GABLE

LEFT FRONT GABLE

LEFT FRONT GABLE AND FLAT
PORTION OF ROOF

Front
Door

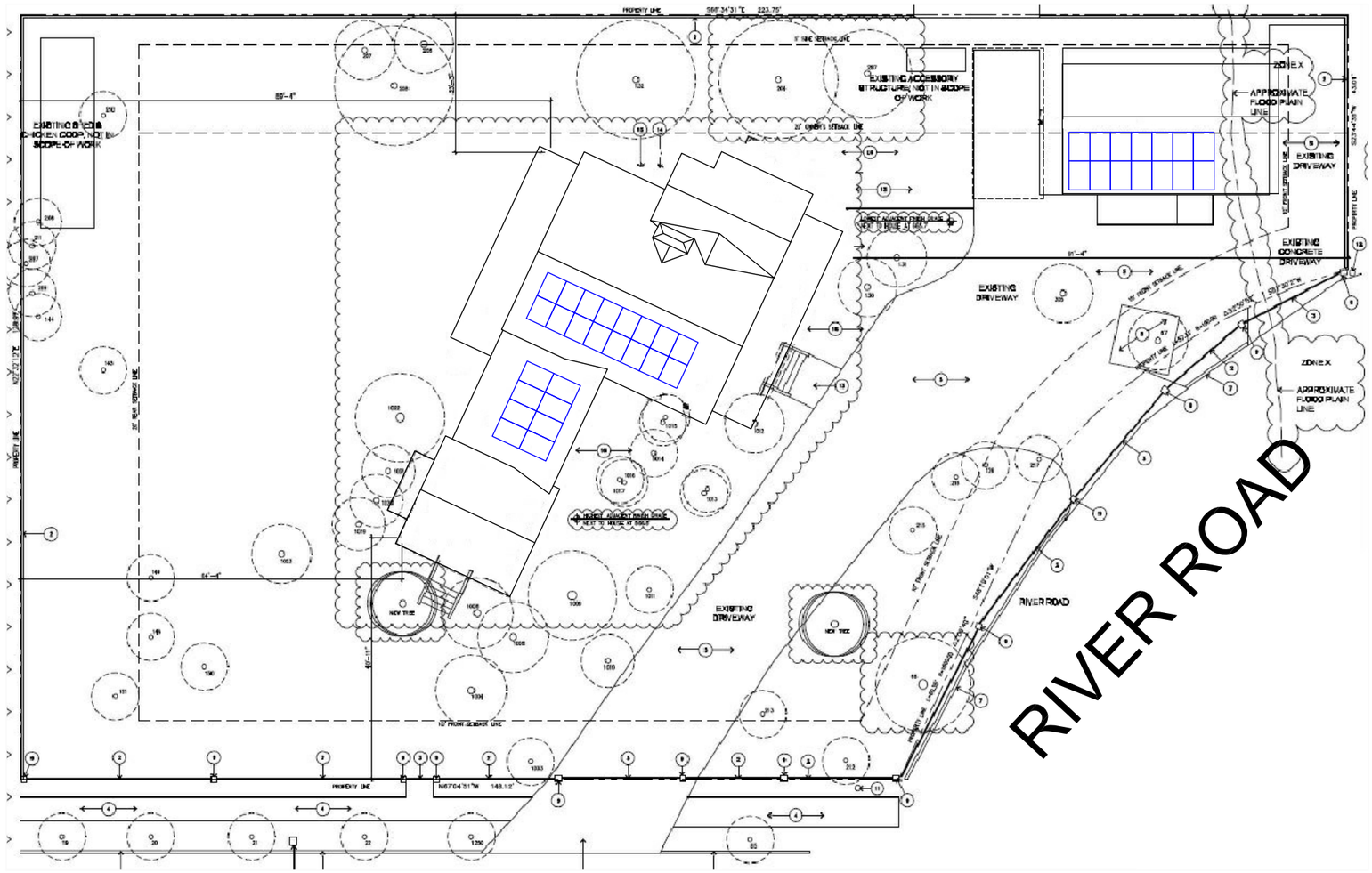
Front
Door

## CONSTRUCTION SUMMARY

(38) (SUNPOWER E20-327-C-AC) SOLAR MODULES, 12.4 kW DC STC
MODULE DIMENSIONS = 41.2" X 61.4" X 1.81"
(38) SUNPOWER E20-327-C-AC PV INVERTERS @ 12.2 kW AC
COMBINED INVERTER OUTPUT = 12.2 kW AC.
(280) (26 X 10.75') LINEAR FEET SUNPOWER INVISIMOUNT
(72) S-5-U MINI ROOF ATTACHMENTS

## SITE DETAILS

ROOF TYPE: STANDING SEAM METAL
ARRAY #1 - TILT = 34°, AZIMUTH = 208°
ARRAY #2 - TILT = 14°, AZIMUTH = 299°
ARRAY #3 - TILT = 26°, AZIMUTH = 180°




R.S.D.

# ARMOUR PLACE

## CONSTRUCTION NOTES

1.) ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2.) ALL OUTDOOR EQUIPMENT SHALL BE RAINTIGHT WITH MINIMUM NEMA 3R RATING.
3.) ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.

DESIGN & DRAFTING BY:
JOSH MEADE
NABCEP

REVISIONS

| DESCRIPTION | DATE | REV |
|---|---|---|
| ORIGINAL | 1/6/2017 | A |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

CONTRACTOR

FREEDOM SOLAR POWER

FREEDOM SOLAR POWER
4111 TODD LN, STE 100
AUSTIN, TX 78744
TECL # 28621

PROJECT NAME

MOORE, MYFE
603 RIVER ROAD
SAN ANTONIO, TX, 78212

SHEET NAME

SITE MAP & PV LAYOUT

SHEET SIZE

ANSI B
11" x 17"

SHEET NUMBER

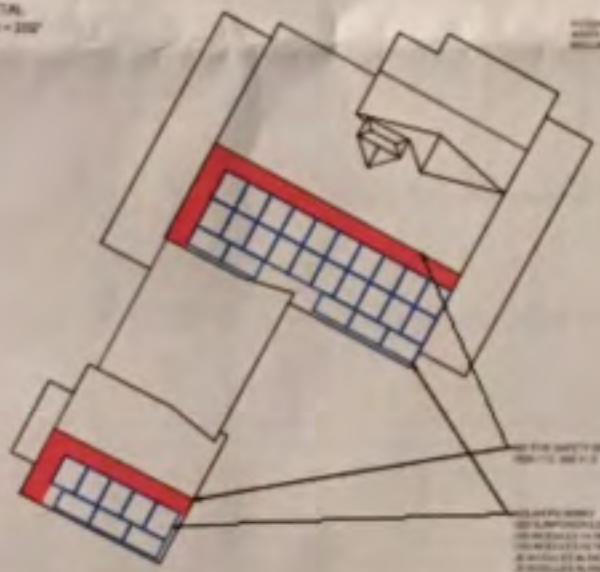
PV-1

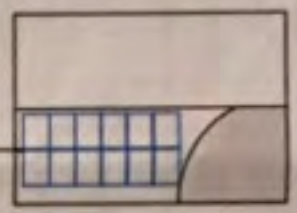
CONSTRUCTION SUMMARY

| | |
|---|---|
| (33) | (SUNPOWER E20-327-C-AC) SOLAR MODULES, 10.8 kW DC STC |
| | MODULE DIMENSIONS = 41.2" X 61.4" X 1.81" |
| (33) | SUNPOWER E20-327-C-AC PV INVERTERS @ 10.8 kW AC |
| | COMBINED INVERTER OUTPUT = 10.8 kW AC |
| (241) | (23 X 10.75') LINEAR FEET SUNPOWER INVISIMOUNT |
| (60) | SSI BRACKETS ROOF ATTACHMENTS |
| (1) | SUNPOWER MONITORING SOLUTION |

SITE DETAILS

ROOF TYPE: STANDING SEAM METAL
ARRAY #1 - TILT = 23.7°, AZIMUTH = 230°





TOTAL SYSTEM SIZE WITH ADDITIONAL MODULES
14.7 kW DC, 14.4kW AC

NOTES:
*TRENCHING WILL BE REQUIRED
*STRUCTURE MUST BE VIABLE
*SHADE REPORT REQUIRED

R.S.D.

CONSTRUCTION NOTES

1. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. ALL DC/AC/COM EQUIPMENT SHALL BE MANTOUNT WITH MINIMUM WIRE BENDING.
3. ALL LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION.

Blue

Armour

River Road

SA River

Main House
Roof Pics

Staff's Quarters
Roof Pic

# SunPower® InvisiMount™ | Residential Mounting System

## Simple and Fast Installation

- Integrated module-to-rail grounding
- Pre-assembled mid and end clamps
- Levitating mid clamp for easy placement
- Mid clamp width facilitates even module spacing
- Simple, pre-drilled rail splice
- UL 2703 Listed integrated grounding

## Flexible Design

- Addresses nearly all sloped residential roofs
- Design in landscape and portrait
- Rails enable easy obstacle management

## Customer-Preferred Aesthetics

- #1 module and #1 mounting aesthetics
- Best-in-class system aesthetics
- Premium, low-profile design
- Black anodized components
- Hidden mid clamps and end clamps hardware, and capped, flush rails

## Part of Superior System

- Built for use with SunPower DC and AC modules
- Best-in-class system reliability and aesthetics
- Combine with SunPower modules and monitoring app

## Elegant Simplicity

SunPower® InvisiMount™ is a SunPower-designed rail-based mounting system. The InvisiMount system addresses residential sloped roofs and combines faster installation time, design flexibility, and superior aesthetics. The InvisiMount product was specifically envisioned and engineered to pair with SunPower modules. The resulting system-level approach will amplify the aesthetic and installation benefits for both homeowners and installers.

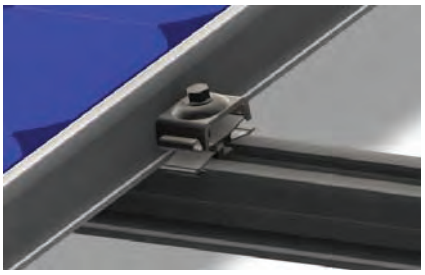
sunpower.com

SUNPOWER®

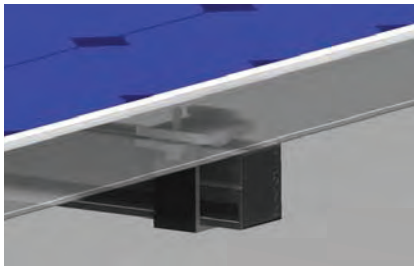
# SunPower® InvisiMount™ | Residential Mounting System

## InvisiMount Component Images

Module* / Mid Clamp and Rail



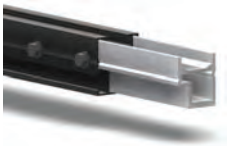
Module* / End Clamp and Rail



Mid Clamp

End Clamp

Rail & Rail Splice



Ground Lug Assembly

End Cap

| InvisiMount Component Details | | |
|---|---|---|
| Component | Material | Weight |
| Mid Clamp | Black oxide stainless steel AISI 304 | 63 g (2.2 oz) |
| End Clamp | Black anodized aluminum alloy 6063-T6 | 110 g (3.88 oz) |
| Rail | Black anodized aluminum alloy 6005-T6 | 830 g/m (9 oz/ft) |
| Rail Splice | Aluminum alloy 6005-T5 | 830 g/m (9 oz/ft) |
| Ground Lug Assembly | 304 stainless<br>(A2-70 bolt; tin-plated copper lug) | 106.5 g/m (3.75 oz) |
| End Cap | Black acetal (POM) copolymer | 10.4 g (0.37 oz) |

| Roof Attachment Hardware Supported by InvisiMount System Design Tool | |
|---|---|
| Application | • Composition Shingle Rafter Attachment<br>• Composition Shingle Roof Decking Attachment<br>• Curved and Flat Tile Roof Attachment<br>• Universal Interface for Other Roof Attachments |

| InvisiMount Operating Conditions | |
|---|---|
| Temperature | −40° C to 90° C (−40° F to 194° F) |
| Max. Load | 2400 Pa uplift<br>5400 Pa downforce |

| InvisiMount Warranties And Certifications | |
|---|---|
| Warranties | 25-year product warranty<br>5-year finish warranty |
| Certifications | UL 2703 Listed<br><br>Class A fire rating when distance between roof surface and bottom of SunPower module frame is ≤ 3.5″ |

| Roof Attachment Hardware Warranties |
|---|
| Refer to roof attachment hardware manufacturer's documentation |

*Module frame that is compatible with the InvisiMount system required for hardware interoperability.

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Specifications included in this datasheet are subject to change without notice.

sunpower.com
Document #509506 Rev B

SUNPOWER®

# SunPower® E20-327-C-AC | Residential AC Module Series

E20 SERIES

## Design-Driven Advantages

- #1 module aesthetics and efficiency[1]
- Unmatched module reliability[2]
- No electrolytic capacitors
- 25-year Combined Power and Product Warranty

## Maximize Value for Roof

- Size system for roof, not for string inverter
- Optimize performance of each module

## Expand Deployment Options

- Complex roofs and partial shading
- Small systems
- System expandability

## Simplify & Speed Installation

- Factory-integrated microinverter
- Robust, double-locking AC connectors
- Design flexibility offsite and onsite
- No DC string sizing process
- Fewer installation steps than competing systems
- Intuitive commissioning

## Component of Complete System

- Built for use with SunPower® InvisiMount™ and SunPower Monitoring System
- Superior system reliability and aesthetics

## Optimize System and Installation Efficiency

SunPower® AC Modules, which include a factory-integrated SunPower microinverter, provide a revolutionary combination of high efficiency, high reliability, and module-level DC-to-AC power conversion. Designed specifically for use with SunPower InvisiMount™ and SunPower Monitoring System, SunPower AC Modules enable rapid installation, best-in-class system aesthetics, and intuitive visibility into system performance. All this comes with the best Combined Power and Product Warranty.

[1]Highest of over 3,200 silicon solar panels, Photon Module Survey, Feb. 2014

[2]#1 rank in "PV Module Durability Initiative Public Report," Fraunhofer CSE, Feb 2013. Five out of the top eight largest manufacturers were tested. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, Feb 2013. See www.sunpowercorp.com/facts for details.

c UL us

sunpower.com

# SunPower® E20-327-C-AC | Residential AC Module Series

Model: E20-327-C-AC

| DC Electrical Data<br>Measured at Standard Test Conditions (STC): irradiance of 1000 W/m², AM 1.5, and cell temperature 25° C | | |
|---|---|---|
| Nominal Power[3] | $P_{nom}$ | 327 W |
| Power Tolerance | $P_{tol}$ | +5/–0% |
| Avg. Power Efficiency[4] | η | 20.4% |
| Temperature Coefficient (Power) | P | –0.38 % / °C |
| Shade Tolerance | • Three bypass diodes<br>• Integrated panel-level maximum power point tracking | |

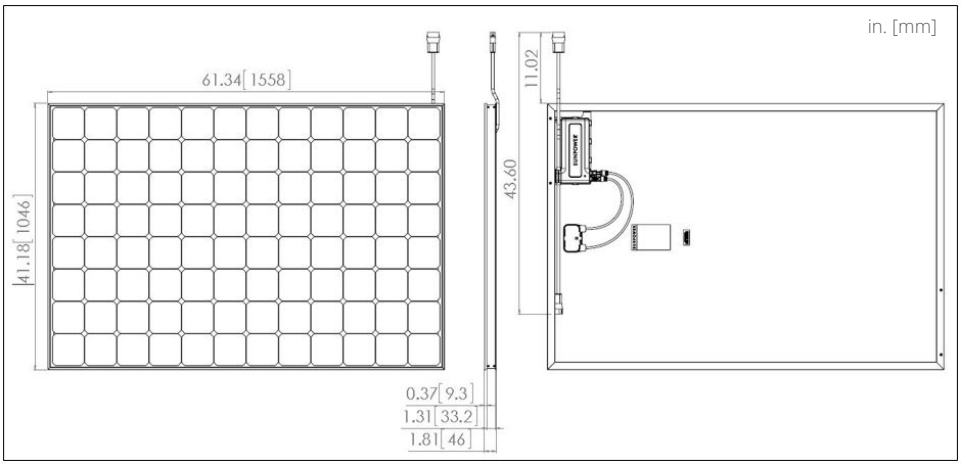
| AC Electrical Data | |
|---|---|
| Output @ 240 V (min./nom./max.)<br>Output @ 208 V (min./nom./max.) | 211/240/264 V<br>183/208/229 V |
| Operating Frequency (min./nom./max.) | 59.3/60.0/60.5 Hz |
| Output Power Factor (min.) | 0.99 |
| AC Max. Continuous Output Current @ 240 V<br>AC Max. Continuous Output Current @ 208 V | 1.33 A<br>1.54 A |
| AC Max. Continuous Output Power | 320 W |
| DC/AC CEC Conversion Efficiency | 96.0% |
| Max. Units Per Branch Circuit @ 240 V<br>Max. Units Per Branch Circuit @ 208 V | 12 (single phase)<br>10 (two pole) |

| Mechanical Data | |
|---|---|
| Solar Cells | 96 Monocrystalline Maxeon® Gen III |
| Front Glass | High-transmission tempered glass with anti-reflective (AR) coating |
| Environmental Rating | Outdoor Rated |
| Frame | Class 1 black anodized (highest AAMA rating) |
| Weight | 45.5 lbs (20.6 kg) |
| Max. Recommended Module Spacing | 1.3 in. (33 mm) |

| Tested Operating Conditions | |
|---|---|
| Operating Temp. | –40° F to +185° F (–40° C to +85° C) |
| Max. Ambient Temp. | 133° F (56° C) |
| Max. Load | Wind: 3000 Pa (62.6 psf, 305.6 kg/m²) front & back<br>Snow: 6000 Pa (125.3 psf, 611.7 kg/m²) front |
| Impact Resistance | 1 inch (25 mm) diameter hail at 52 mph (23 m/s) |

| Warranties and Certifications | |
|---|---|
| Warranties | • 25-year limited power warranty<br>• 25-year limited product warranty |
| Certifications | • UL 1741, including compliance with applicable requirements of IEEE 1547 and IEEE 1547.1<br>• Alternating Current (AC) Module designation enables installation in accordance with NEC 690.6<br>• Type 2 Fire Rated |

## Dimensions




[3]Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration standard: SOMS current, LACCS FF and voltage.

[4]Based on average of measured power values during production.

See www.sunpower.com/facts for more reference information. For more details, see extended datasheet: www.sunpower.com/datasheets. Read safety and installation instructions before using this product.

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Specifications included in this datasheet are subject to change without notice.

SUNPOWER®

# S-5!®

## The Right Way!

## S-5-U Clamp

The S-5-U clamp is by far our most popular and most versatile clamp. It fits about 85% of the standing seam profiles manufactured in North America—including most structural and architectural profiles. It can be used on vertically oriented seams and, by rotating the clamp 90 degrees, it can also be used on most horizontal 2" seam profiles.

Its simple design, generous dimensioning, and multiple hole orientations are what make the S-5-U clamp so versatile for use with the S-5!® snow retention products, such as ColorGard®, as well as with other heavy-duty applications.

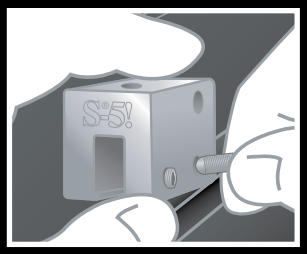
Installation is as simple as setting the specially patented round-point setscrews into the clamp, placing the clamp on the seam, and tightening them to the specified tension. Then, affix ancillary items using the bolt provided with the product. Go to www.S-5.com/tools for information and tools available for properly attaching and tensioning S-5! clamps.

## S-5-U Mini Clamp

The S-5-U Mini is a bit shorter than the S-5-U and has one setscrew rather than two. The mini is the choice for attaching all kinds of rooftop accessories: signs, walkways, satellite dishes, antennas, rooftop lighting, lightning protection systems, solar arrays, exhaust stack bracing, conduit, condensate lines, mechanical equipment—just about anything!*

*S-5! mini clamps are not compatible with, and should not be used with S-5! SnoRail™/SnoFence™ or ColorGard® snow retention systems.

1



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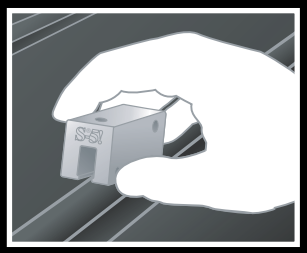

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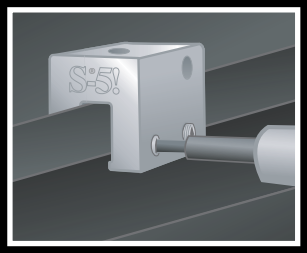


**The S-5-U clamp is our most popular and versatile clamp, fitting about 85% of the standing seam profiles in North America.**

**S-5-U and S-5-U Mini**

**The right way to attach almost anything to metal roofs!**

**888-825-3432 | www.S-5.com |** MADE IN THE USA

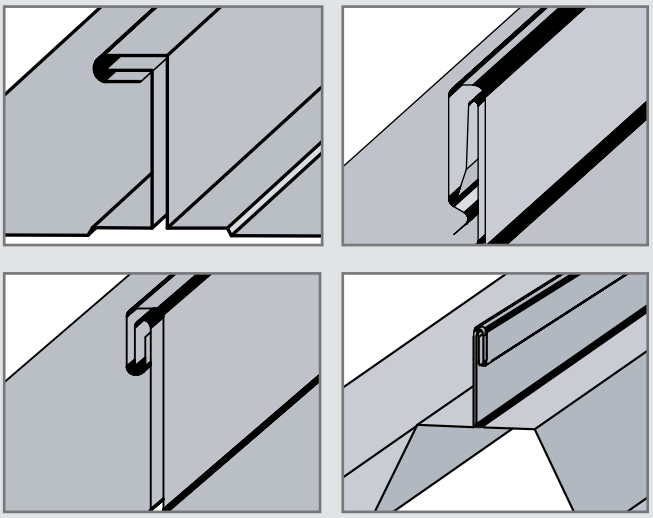
S-5!®
The Right Way!

**The strength of the S-5-U clamp is in its simple design. The patented setscrews will slightly dimple the metal seam material but not pierce it—leaving the roof manufacturer's warranty intact.**

The **S-5-U and S-5-U Mini clamps** are each furnished with the hardware shown to the right. Each box also includes a bit tip for tightening setscrews using an electric screw gun. A structural aluminum attachment clamp, the S-5-U is compatible with most common metal roofing materials excluding copper. All included hardware is stainless steel. Please visit **www.S-5.com** for more information including CAD details, metallurgical compatibilities and specifications.

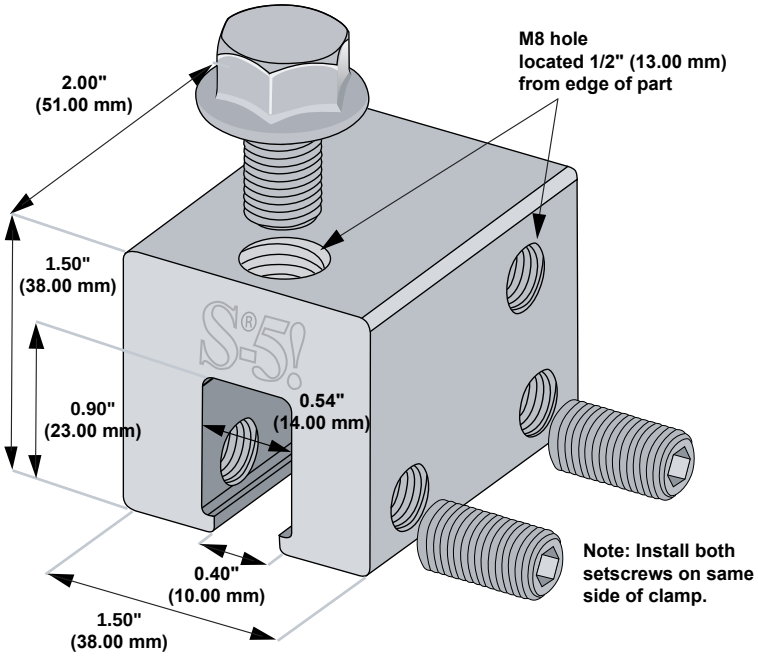
The S-5-U clamp has been tested for load-to-failure results on most major brands and profiles of standing seam roofing. The independent lab test data found at www.S-5.com can be used for load-critical designs and applications. S-5!® holding strength is unmatched in the industry.

## Example Profiles

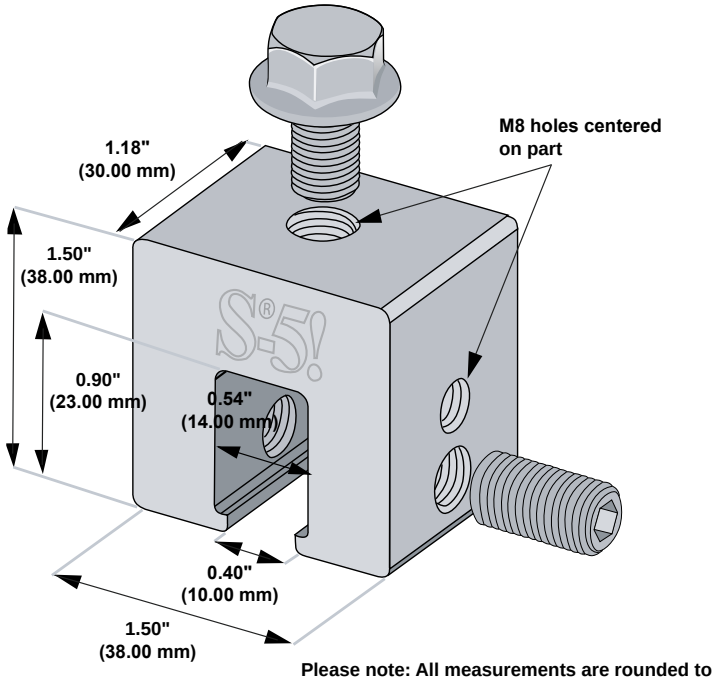


For horizontal seams under 0.65", do not use this clamp. Visit www.S-5.com for more detailed information and proper clamp usage.

## S-5-U Clamp




## S-5-U Mini Clamp



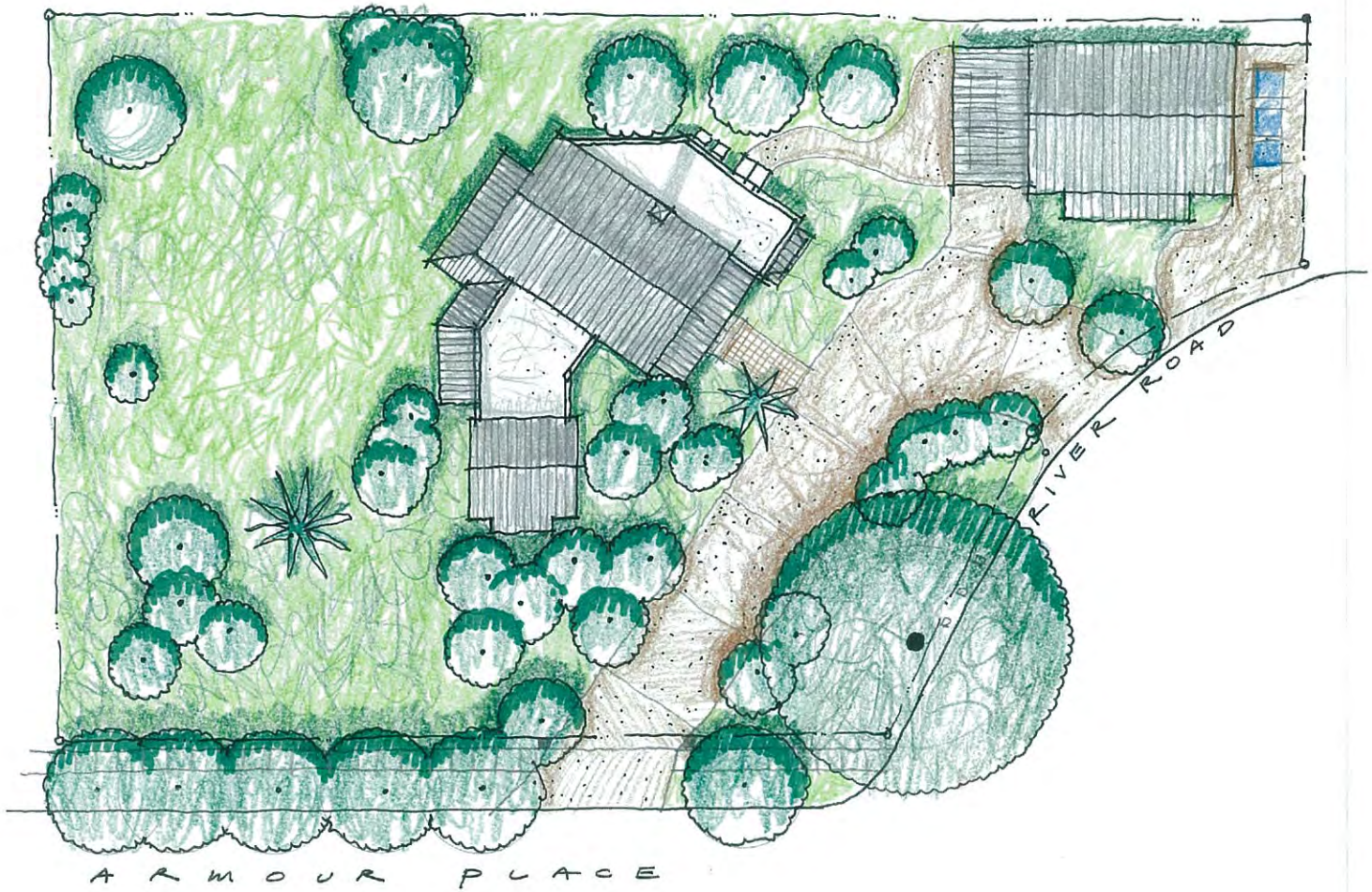

**Please note: All measurements are rounded to the second decimal place.**

**S-5!® Warning! Please use this product responsibly!**

**Products are protected by multiple U.S. and foreign patents. Visit the website at www.S-5.com for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at www.S-5.com for published data regarding holding strength.**

Copyright 2015, Metal Roof Innovations, Ltd. S-5! products are patent protected.
S-5! aggressively protects its patents, trademarks, and copyrights. Version 052115.

Distributed by




MOORE RESIDENCE
603 River Road San Antonio, TX 78212

Request for Certificate of Appropriateness
Historic and Design Review Commission

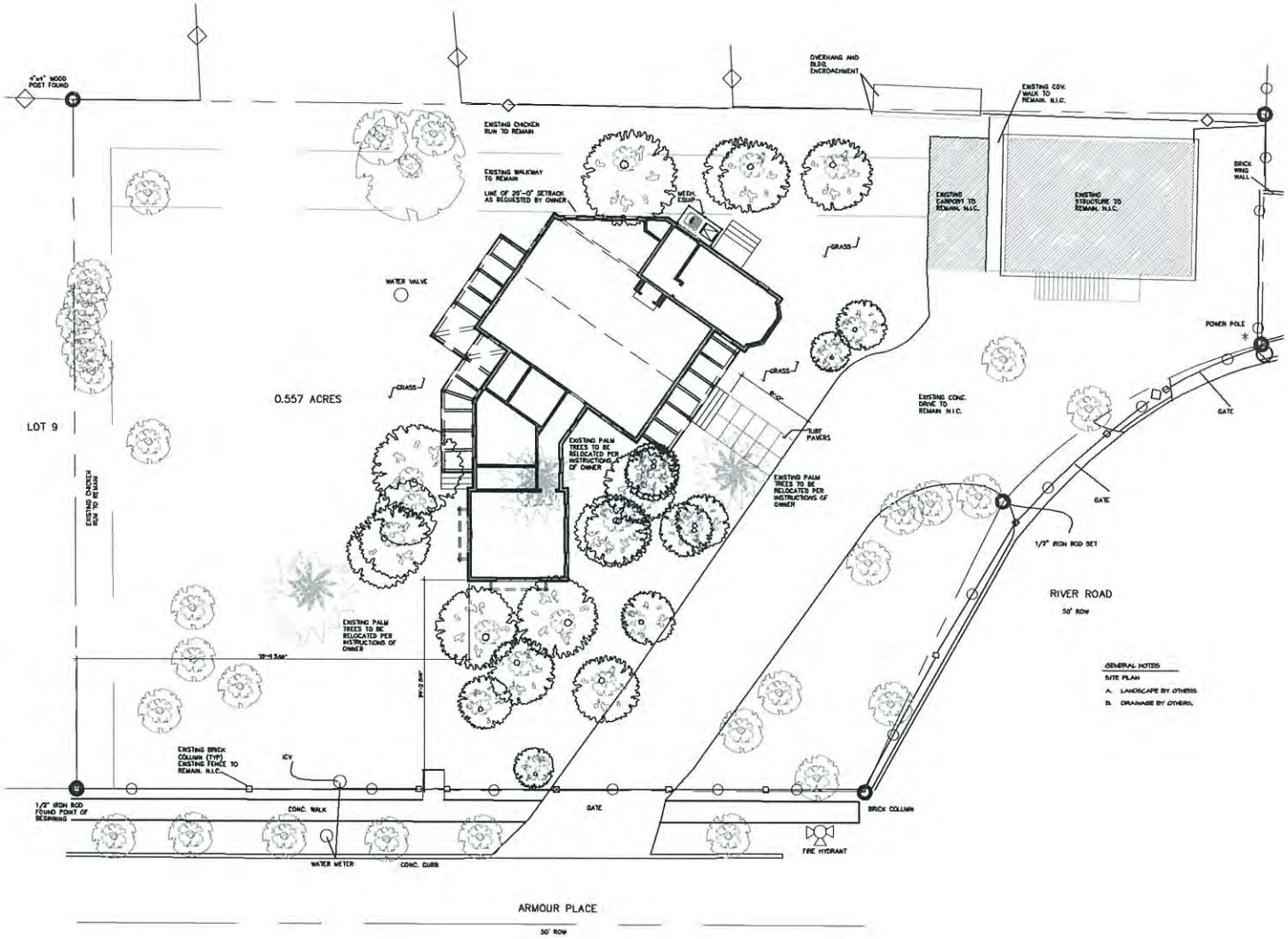
EXHIBIT: P - Revised Site Rendering/012916

29 - January - 2016

KISSLING
ARCHITECTURE

3420 WEST AMMANN ROAD
BULVERDE, TEXAS 78163
T 830.980.4773 F 888.832.4859
EMAIL INFO@KISSLINGARCHITECTURE.COM

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION




# MOORE RESIDENCE

603 River Road San Antonio, TX 78212

Request for Certificate of Appropriateness
Historic and Design Review Commission

EXHIBIT: G-R

29 - January - 2016


KISSLING ARCHITECTURE

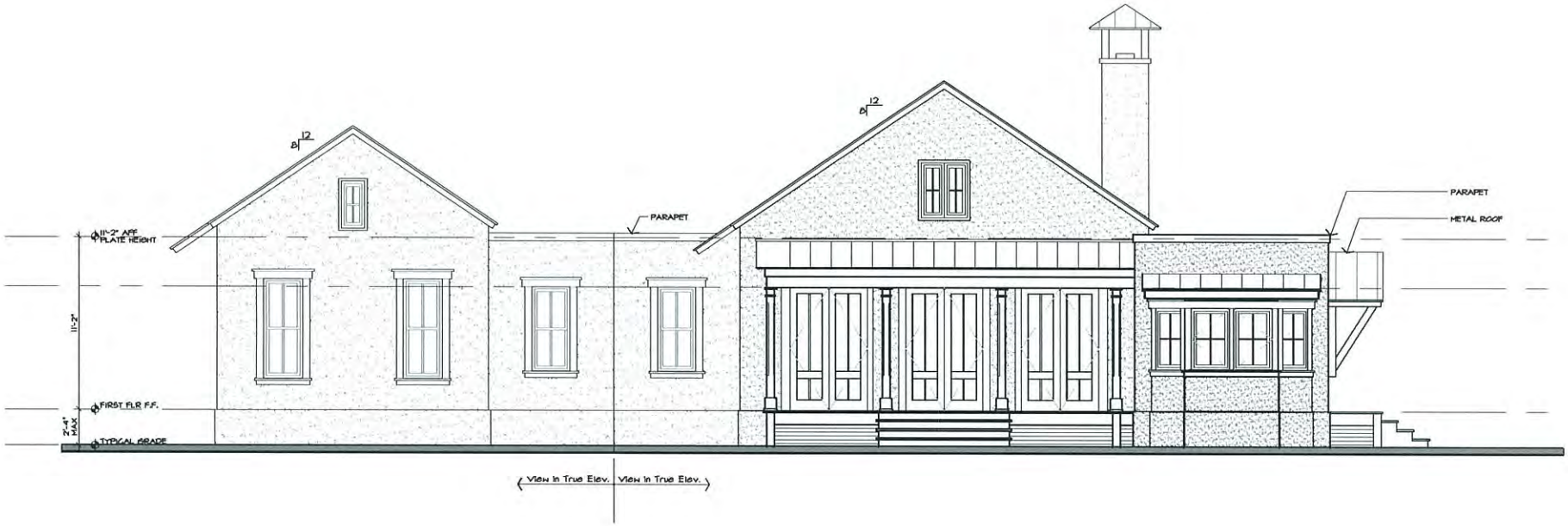
3420 WEST AMMANN ROAD
BULVERDE, TEXAS 78163
T 830.980.4773 F 888.832.4859
EMAIL INFO@KISSLINGARCHITECTURE.COM


NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION

## 1 Site Plan

SCALE : 1/32" = 1'-0"

TRUE NORTH PLAN NORTH




MOORE RESIDENCE
603 River Road San Antonio, TX 78212

Request for Certificate of Appropriateness
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EXHIBIT: I-R

29 - January - 2016

KISSLING
ARCHITECTURE

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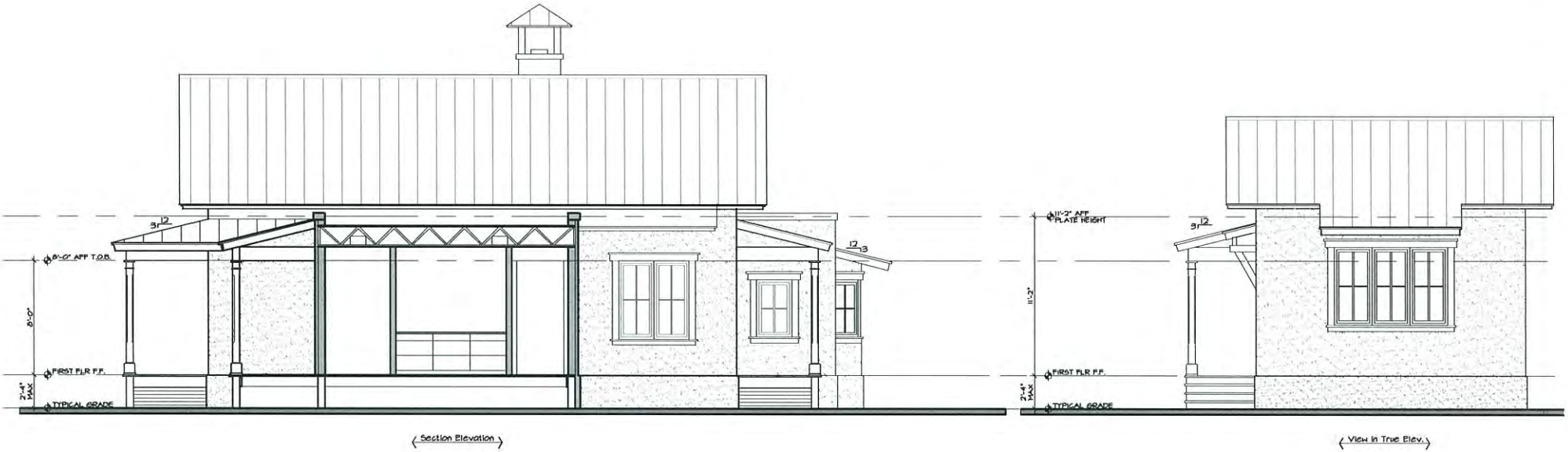
BULVERDE, TEXAS 78163
T 830.980.4773 F 888.832.4859
EMAIL INFO@KISSLINGARCHITECTURE.COM

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION

1 East Elevation
SCALE : 3/32" = 1'-0"




MOORE RESIDENCE
603 River Road San Antonio, TX 78212

Request for Certificate of Appropriateness
Historic and Design Review Commission

EXHIBIT: J-R

29 - January - 2016

KISSLING
ARCHITECTURE

3420 WEST AMMANN ROAD
BULVERDE, TEXAS 78163
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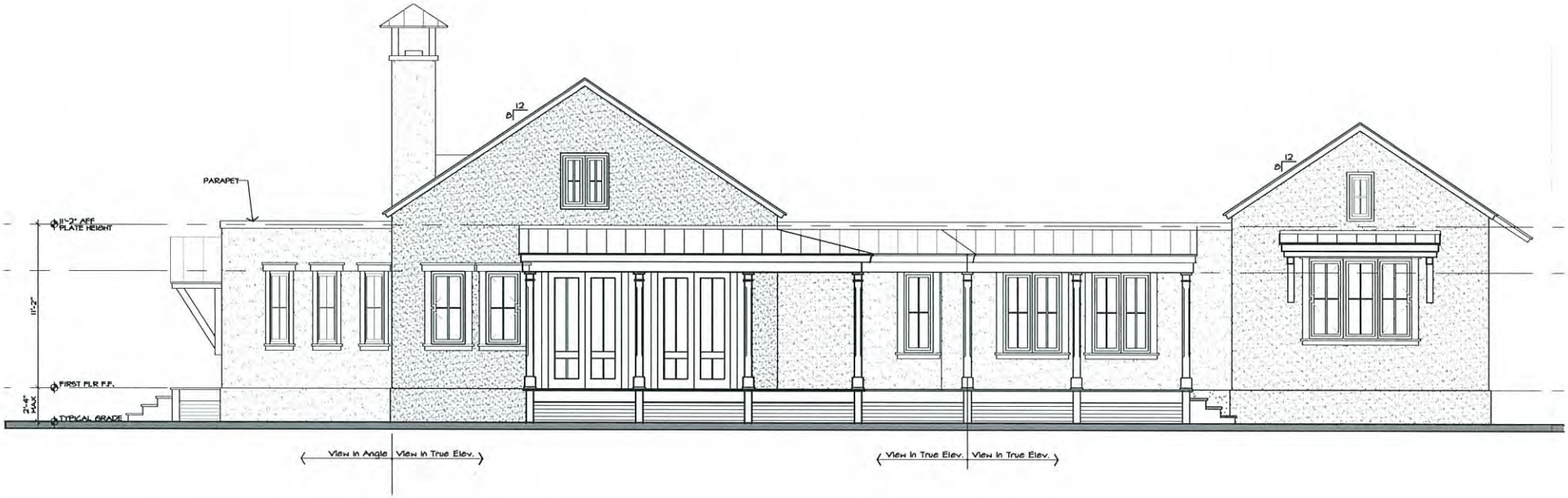
EMAIL INFO@KISSLINGARCHITECTURE.COM

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION

1 South Elevation
SCALE : 3/32" = 1'-0"

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1 West Elevation
SCALE : 3/32" = 1'-0"

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1 North Elevation
SCALE : 3/32" = 1'-0"