



Architectural Review Board/
Plan Commission Meeting
Monday, November 7, 2022
5:30 p.m.

LOCATION OF MEETING: 96 RUSSELL DRIVE

NOTICE: Pursuant to the requirements of Section 19.84, Wis Stats., notice is hereby given of a meeting of the Village of Random Lake, at which a quorum of the Village Board may attend in order to gather information about a subject which they have decision making responsibility. The meeting will be held at the above noted date, time. (Chairperson to announce the following if a quorum of the Village Board is in attendance at the meeting: Please let the minutes reflect that a quorum of the Village Board are present and that the Village Board members may be making comments if the rules are suspended to allow them to do so.)

AMENDED AGENDA

1. Call to Order, Roll Call.
2. Discussion and Possible Action to approve the minutes of the September 19, 2022 meeting.
3. Discussion and Possible Recommendation to the Village Board regarding a solar panel installation at 89 E Shore Dr.
4. Discussion and Possible Recommendation to the Village Board regarding a solar panel installation at 918 Jessie Ln.
5. Discussion and Possible Recommendation to the Village Board regarding an addition at W4873 Co Rd RR.
6. Adjourn.

Items on the Agenda may be taken out of order as listed. Posted to all village posting locations on 11/04/2022.

WI Open Meeting Law (Wis. Stat. 19.83(2) and 19.84(2)) In general, the open meetings law grants citizens the right to attend and observe open session meetings of governmental bodies but does not require a governmental body to allow members of the public to speak or actively participate in the body's meeting. A governmental body is free to determine for itself whether and to what extent it will allow citizen participation at its meetings.



Architectural Review Board/
Plan Commission Meeting
Monday, September 19, 2022
6:00 pm

Location of Meeting: 96 Russell Drive

Meeting Minutes

1. Call to Order, Roll Call: Chairman Mike San Felippo called the meeting to order at 6:00 pm. Commission members present included Mike San Felippo, Elizabeth Manian, Barbara Ruege, Randy Soerens, John Schluechtermann and Peter Lederer. Village employees present were Clerk/ Treasurer Stephanie Waala. For additional attendees see attached sign-in sheet.
2. Discussion and Possible Action to approve the minutes of the August 15, 2022 meeting.

Member Ruege made a motion to approve as submitted, motion seconded by Member Schluechtermann. Motion carried 6-0.
3. Discussion and Possible Recommendation to the Village Board regarding a fence at 549 Western Ave.

Property owner not present due to work schedule.

Member San Felippo made a motion to approve as submitted upon verification it is a 16' long, 6' high privacy fence, motion was seconded by member Ruege. Motion carried 6-0.
4. Discussion and Possible Recommendation to the Village Board regarding an addition at 148 E Shore Dr.

Property owner Daniel Bolz presented an update survey verifying setbacks.

Member Schluechtermann made a motion to approve as submitted, motion was seconded by Member Manian. Motion carried 6-0.
5. Adjourn: meeting was adjourned at 6:09 pm.

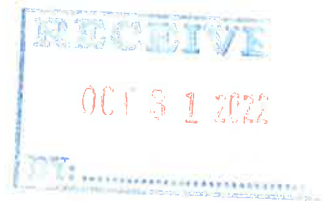
Items on the Agenda may be taken out of order as listed. Created by Clerk Waala on 09/30/2022.

WI Open Meeting Law (Wis. Stat. 19.83(2) and 19.84(2)) In general, the open meetings law grants citizens the right to attend and observe open session meetings of governmental bodies but does not require a governmental body to allow members of the public to speak or actively participate in the body's meeting. A governmental body is free to determine for itself whether and to what extent it will allow citizen participation at its meetings.



P.O. Box 344 • 96 Russell Drive • Random Lake, WI 53075

Phone: (920) 994-4852 • Fax: (920) 994-2390

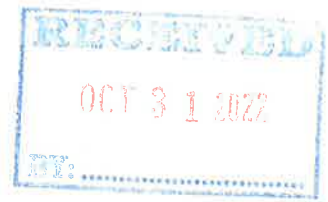


Building Permit Application

Job Location (<i>identify exact address</i>) 918 Jessie Ln, Random Lake			Date 10/14/22	Permit#		
Owner's Name Brett and Crystal Kichura	Phone Number 262-689-6514	Contact's Name (<i>When Relevant</i>) Arch Solar - Lindsey Hansen		Phone Number 920-838-5137		
Owners Address (<i>if different from above</i>)		City	State	Zip Code		
Contractor's Name Arch Solar	License Number S1097745	Contractor's Contact Name Lindsey		Phone Number		
Contractor's Address 1237 Pilgrim Rd, Plymouth WI 53073		City	State	Zip Code		
It is the responsibility of the permit holder to arrange for appointment times when entry is available for the required inspections. If the inspector cannot access the work site or if the work is not visible, a re-inspection fee will be charged.						
Use of Building	Type of Work	Item	Size	Qty.	Fee	Amount
<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> New	Residence (One & Two Family)			.30/sq. ft.	
<input type="checkbox"/> Multi-Family	<input type="checkbox"/> Addition	Residential Additions			.30/sq. ft.	
	<input checked="" type="checkbox"/> Alteration/Repair	Attached/Detached Garage			.25/sq. ft.	
		Plan Review: House & Garage			.12/sq. ft.	
		State Permit Seal (\$33.00 (State fee) + \$10.00)				\$43.00
		Occupancy Permit (House & Garage)			.05/sq. ft.	
		Remodeling (Includes Plan Review)			.20/sq. ft.	
		2020 Sewer Hook-up Fee				\$1744.00
		Erosion Control				\$150.00
		Decks & Porches			.20/sq. ft.	
		Storage Sheds				\$30.00
		Re-Roof				50.00
		Re-Siding				50.00
		Swimming Pools (above ground/in ground/spas)				80.00
		Fence				30.00
Required for exterior design, appearance and location		Architectural Review Board				45.00
Required for fences, accessory buildings, decks & porches, pools, etc.		Plan Commission Review				45.00
Required for new construction, additions, fences, pools, accessory buildings, etc.		Zoning Permit				45.00
		Expedited Meeting Fee (Nonrefundable)				100.00
		Re-inspection Fee				75.00
NOTE:						
Separate permits are needed for Electrical, HVAC, & Plumbing						
If any work is commenced before a building permit is obtained, all of the above fees shall be doubled.						
All calculations for square footage area are outside dimensions.						
I attest that the above information accurately describes the property and proposed work to be performed on it. I agree to comply with all Village of Random Lake and State of Wisconsin codes applicable to the occupancy and work stated above. I understand that any false misinformation may result in penalties prescribed in the Village of Random Lake ordinances.					SUB TOTAL:	
BASE FEE (add to subtotal):					\$40.00	
OFFICE USE ONLY			Date	Initials:	Permit Total:	
Permit Paid By:						
Applicant Signature <i>Lindsey Hansen</i>			Print Name Lindsey Hansen	Date 10/14/22		



P.O. Box 344 • 96 Russell Drive • Random Lake, WI 53075
 Phone: (920) 994-4852 • Fax: (920) 994-2390



Electrical Permit Application

Job Location (identify exact address) 918 Jessie Ln, Random Lake		Date 9/19/22	Permit#
Owners Name Brett Kichura	Phone Number 262-689-6514	Contact's Name (When Relevant) Lindsey Hansen	Phone Number 920-838-5137
Owners Address (if different from above)		City	State WI Zip Code 53075
Contractor's Name Arch Solar	License Number M270617	Contractor's Contact Name Lindsey Hansen	Phone Number 920-838-5137
Contractor's Address 1237 Pilgrim Rd		City Plymouth	State WI Zip Code 53073

It is the responsibility of the permit holder to arrange for appointment times when entry is available for the required inspections. If the inspector cannot access the work site or if the work is not visible, a re-inspection fee will be charged.

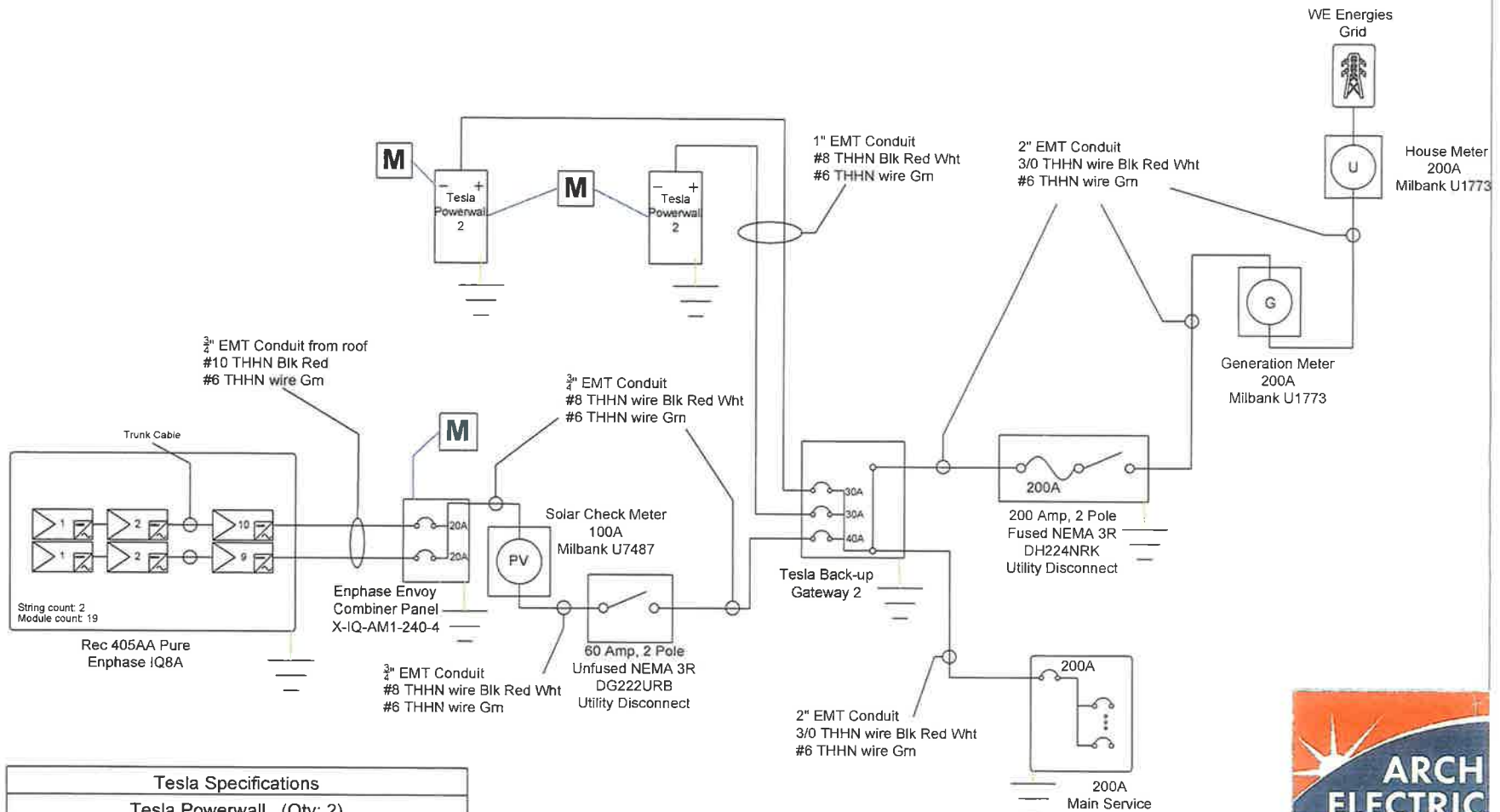
Use of Building	Type of Work	Item	Size	Qty.	Fee	Amount
<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Multi-Family	<input type="checkbox"/> New <input type="checkbox"/> Addition <input checked="" type="checkbox"/> Alteration/Repair	Built-ins			\$ 7.00	
		Clothes Dryer			\$ 7.00	
		Dishwasher			\$ 7.00	
Other Project Cost		Electric Heating			\$ 1.25/kw	
		Fans, exhaust and vent			\$ 7.00	
		Feeder or sub-feeder (sub-panel)			\$ 10.00	
		Fixtures: Medium Base			\$.65ea.	
		Fuel Dispensing Pumps			20.00/unit	
		Garbage Disposals			\$ 7.00	
Additional Information		Generator Transformer, Rectifiers or similar devices			\$ 1.50/kw	
19 REC405AA Pure solar panels		Heating unit and motor			\$ 7.00	
19 Enphase IQ8A Micros		Hot Tub, Whirlpool, Spa, etc.			\$ 7.00	
2 Tesla Powerwalls		Lamps: Tubular			\$.50ea.	
		Low voltage systems (intercom, bells, etc.)			\$ 1.50ea.	
		Motors			\$ 7.00	
		Neon Lights: Per Transformer			\$ 4.00	
		Outlets			\$.65/ea.	
		Power Receptacle			\$ 7.00	
		Range			\$ 8.00	
Department Notes		Refrigeration, air conditioner and cooling units			\$ 30.00	
		Service - Temporary & up to 600 amp Plus 10.00/every 100 amp over 600	200	1	\$ 35.00	35.00
		Signs, internally lighted			\$ 30.00	
		Sump pumps			\$ 3.00	
		Swimming pools			\$ 35.00	
		Water Heater			\$ 8.00	
		Wire ways, busways, under-floor raceways			\$ 1.50/ft.	
		Re-inspection Fee			\$ 60.00	

I attest that the above information accurately describes the property and proposed work to be performed on it. I agree to comply with all Village of Random Lake and State of Wisconsin codes applicable to the occupancy and work stated above. I understand that any false misinformation may result in penalties prescribed in the Village of Random Lake ordinances.

Sub Total: 35.00

Base Fee:	(Add to Subtotal)
	\$40.00
	Total: 75.00

Applicant Signature <i>Lindsey Hansen</i>	Print Name Lindsey Hansen	Date 9/19/22
Office use only: Permit Paid By	Initials	Date



Tesla Specifications	
Tesla Powerwall (Qty: 2)	
Max AC Power Rating	5 kW Each / 10 kW Total
Nominal AC Operating Voltage	240 V
Max AC Operating Current	24 A Each / 48 A Total

Module Specifications	
Rec Solar 405AA Pure (QTY:19)	
STC Rating	405 W
Vmp	42.4 V
Imp	9.56 A
Voc	48.9 V
Isc	10.3 A

Array Specifications		
1 String of 10 Modules / 1 String of 9 Modules		
Max DC Power Rating	4.05kW	3.645kW / 7.695 kWdc
Operating AC Voltage	240 V	240 V
Operating AC Current	14.5 A	13.05 A
Max AC System Voltage	240 V	240 V
AC Short Circuit Current	20 A	20 A

Inverter Specifications	
Enphase 366w IQ8A	
Max AC Power Rating	366W / 6.954kWac Total
Max DC Input Voltage	58 V
Max DC Input Current	15 A
Nominal AC Operating Voltage	240 V
Max AC Operating Current	1.45A Each / 27.55A Total



THE SOLAR - ENERGY STORAGE EXPERTS
 Customer: Crystal and Brett Kichura
 Address: 918 Jessie Ln
 City: Random Lake
 State: WI
 Zip Code: 53075
 Contact: Crystal Kichura
 Phone: (262) 689-6514
 Email: crystal.binder@aah.org

Project Number: 22R-265
 System Size: 7.695kWdc
 Designer: Mike Gietman
 920.838.6610

One Line Diagram

Revision: 1 Date: 8/29/22

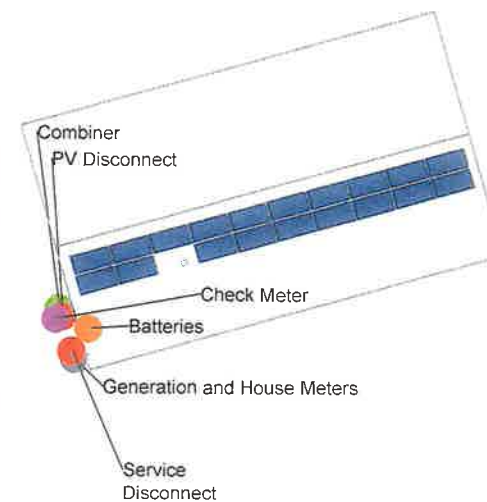
Equipment Location:

Meter outside West side of the house. Combiner, check meter, and pv disconnect will be located to left of basement window. Service disconnect, generation meter, and house meter will be located to the right of window. Relocate cable box as necessary.

Array #	Array Pitch	True Azim.	Mag. Azim.	PV SqFt
1	5/12	164°	167°	378.29



Main service panel in basement. Gateway and batteries will be located to the right of main panel. Customer will have entire wall cleared.



Plot Plan: Scale - NTS



THE SOLAR • ENERGY STORAGE EXPERTS

Customer: Crystal and Brett Kichura
 Address: 918 Jessie Ln
 City: Random Lake
 State: WI
 Zip Code: 53075
 Contact: Crystal Kichura
 Phone: (262) 689-6514
 Email: Crystal.binder@aah.org

Project Number: 22R-265 System Size: 7.695kWdc

Designer: Mike Gietman

Site Plan

Revision: 1 Date: 6/29/22

Page A.2

STRUCTURAL CERTIFICATION REPORT*Roof-mounted Solar Panels*

October 21, 2022

To: Arch Solar
1237 Pilgrim Road
Plymouth, WI 53073**Re: Crystal Kichura**
918 Jessie Ln
Random Lake, WI 53075

Arch Solar proposes to install new roof-mounted solar panels at this residence and asked Right Angle Engineering to review the existing structure for suitability. This letter summarizes the methods that were used to survey, evaluate, and certify the existing roof framing and the attachment of the new solar panels to it. Pictures and calculations are available on request.

STRUCTURAL DESIGN

Building Code: International Residential Code 2018
Design Standards: ASCE 7-16
Snow: Ground: $p_g = 35.0$ psf | Flat Roof: $p_f = 24.26$ psf | Sloped Roof: $p_s = 17.79$ psf
Wind: Basic Wind Speed = 115.0 mph | Exposure = C
Seismic: Risk Category = 2 | Seismic Design Category = A | Site Class = D

STRUCTURAL FRAMING

Field Technicians from Arch Solar visited the site and observed the existing roof framing:

Array Name	Panel Quantity	Roof Framing	Material	Pitch
Array 1	19	2x6 Rafter DF#2 16" o.c.	Asphalt Shingles	26

ANCHORAGE

The solar panel anchorage shall be installed according to the manufacturer's most current installation manual. Anchorage shall be staggered to distribute the load evenly to adjacent roof members. The solar panels should be mounted flush to the roof surface.

Array Name	Connection Type	Fastener	Max Anchorage Spacing
Array 1	FlashFoot2	5/16" or 18/8 SS lag screw (2.5" embedment) into roof substructure	72"

Installation Instructions

Solar panels and the equipment shall be installed per the manufacturer's installation specifications. Improper installation will void this certification. Deviations from the approved structural plans (including equipment substitutions) are not allowed without written approval from Right Angle Engineering. Prior to installation, the installer should:

- Confirm that the existing structure matches the information provided in the structural survey, the approved installation plans and this certification.
- Identify discrepancies between this certification and the approved installation plans. If found, then this certification shall govern.
- Identify structural elements that are dangerous (cracked, broken, excessive sag, signs of overstress, rot, decay, fire, water). If found, installation shall cease until those elements are adequately abated and made to comply with the referenced building code.
- Provide fire setbacks and access pathways as required by local ordinances

STRUCTURAL CERTIFICATION

I certify the addition of solar panels on the roof of this structure does not cause the structure to become unsafe or make it generally less compliant with the life-safety requirements of the referenced building code. Based on the evaluation methods described below, for the loads that exist at this site, the existing framing should safely support the new solar panels if they are installed and attached correctly. Electrical design is not included in this certification.

Array Name	Certification Method	Retrofits
Array 1	Prescriptive method International Existing Building code	None required

Regards,

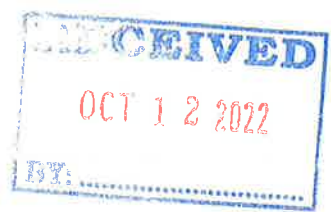


10/21/2022

Robert D. Smythe, P.E.
Right Angle Engineering



P.O. Box 344 • 96 Russell Drive • Random Lake, WI 53075
 Phone: (920) 994-4852 • Fax: (920) 994-2390



Building Permit Application

Job Location (identify exact address) 89 East Shore Dr Random Lake		Date	Permit#
Owner's Name CURT BARCLAY	Phone Number 706.388.8599	Contact's Name (When Relevant) Phone Number	
Owners Address (if different from above)		City	State Zip Code
Contractor's Name ENDRIES SOLAR + ELECTRIC	License Number 1458580	Contractor's Contact Name Krystal Pfeifer Phone Number 920.889.7734	
Contractor's Address 200 S BUSINESS PARK DR #5		City OOSTBURG	State WI Zip Code 53070

It is the responsibility of the permit holder to arrange for appointment times when entry is available for the required inspections. If the inspector cannot access the work site or if the work is not visible, a re-inspection fee will be charged.

Use of Building	Type of Work	Item	Size	Qty.	Fee	Amount
<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Multi-Family	<input type="checkbox"/> New	Residence (One & Two Family)			.30/sq. ft.	
	<input type="checkbox"/> Addition	Residential Additions			.30/sq. ft.	
	<input checked="" type="checkbox"/> Alteration/Repair	Attached/Detached Garage			.25/sq. ft.	
		Plan Review: House & Garage			.12/sq. ft.	
		State Permit Seal (\$33.00 (State fee) + \$10.00)				\$43.00
		Occupancy Permit (House & Garage)			.05/sq. ft.	
		Remodeling (Includes Plan Review)			.20/sq. ft.	
		2020 Sewer Hook-up Fee				\$1744.00
		Erosion Control				\$150.00
		Decks & Porches			.20/sq. ft.	
		Storage Sheds				\$30.00
		Re-Roof				50.00
		Re-Siding				50.00
		Swimming Pools (above ground/in ground/spas)				80.00
		Fence				30.00
Required for exterior design, appearance and location		Architectural Review Board		(1)	45.00	\$45.00
Required for fences, accessory buildings, decks & porches, pools, etc.		Plan Commission Review			45.00	
Required for new construction, additions, fences, pools, accessory buildings, etc.		Zoning Permit			45.00	
		Expedited Meeting Fee (Nonrefundable)			100.00	
		Re-inspection Fee			75.00	

NOTE:
 Separate permits are needed for Electrical, HVAC, & Plumbing
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 All calculations for square footage area are outside dimensions.

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SUB TOTAL: 45.00

BASE FEE (add to subtotal): \$40.00

OFFICE USE ONLY	Date:	Initials:	Permit Total: \$85.00
Permit Paid By:			
Applicant Signature 	Print Name Russel Endries	Date 10-10-2022	



P.O. Box 344 • 96 Russell Drive • Random Lake, WI 53075
 Phone: (920) 994-4852 • Fax: (920) 994-2390

RECEIVED
 OCT 12 2022
 BY:

Electrical Permit Application

Job Location (identify exact address) 89 EAST SHORE DR RANDOM LAKE		Date	Permit#
Owners Name CURT BARCLAY	Phone Number 206.388.8599	Contact's Name (When Relevant)	
Owners Address (if different from above) IPAW		City	State
Contractor's Name ENDRIES SOLAR	License Number 1458500	Contractor's Contact Name KRYSTAL PFEIFER	
Contractor's Address 200 S BUSINESS PARK DR #5		City OOSTBURG	State WI
		Zip Code	Phone Number 920.889.7734

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Use of Building	Type of Work	Item	Size	Qty.	Fee	Amount
<input checked="" type="checkbox"/> Residential <input type="checkbox"/> Multi-Family	<input type="checkbox"/> New	Built-ins			\$ 7.00	
	<input type="checkbox"/> Addition	Clothes Dryer			\$ 7.00	
	<input type="checkbox"/> Alteration/Repair	Dishwasher			\$ 7.00	
Other Project Cost		Electric Heating			\$ 1.25/kw	
		Fans, exhaust and vent			\$ 7.00	
		Feeder or sub-feeder (sub-panel)			\$ 10.00	
		Fixtures: Medium Base			\$.65ea.	
		Fuel Dispensing Pumps			20.00/unit	
		Garbage Disposals			\$ 7.00	
Additional Information		Generator Transformer, Rectifiers or similar devices			\$ 1.50/kw	
		Heating unit and motor			\$ 7.00	
		Hot Tub, Whirlpool, Spa, etc.			\$ 7.00	
		Lamps: Tubular			\$.50ea.	
		Low voltage systems (intercom, bells, etc.)			\$ 1.50ea.	
		Motors			\$ 7.00	
		Neon Lights: Per Transformer			\$ 4.00	
		Outlets			\$.65/ea.	
		Power Receptacle			\$ 7.00	
		Range			\$ 8.00	
Department Notes		Refrigeration, air conditioner and cooling units			\$ 30.00	
		Service - Temporary & up to 600 amp Plus 10.00/every 100 amp over 600			\$ 35.00	\$ 35.00
		Signs, internally lighted			\$ 30.00	
		Sump pumps			\$ 3.00	
		Swimming pools			\$ 35.00	
		Water Heater			\$ 8.00	
		Wire ways, busways, under-floor raceways			\$ 1.50/ft.	
		Re-inspection Fee			\$ 60.00	

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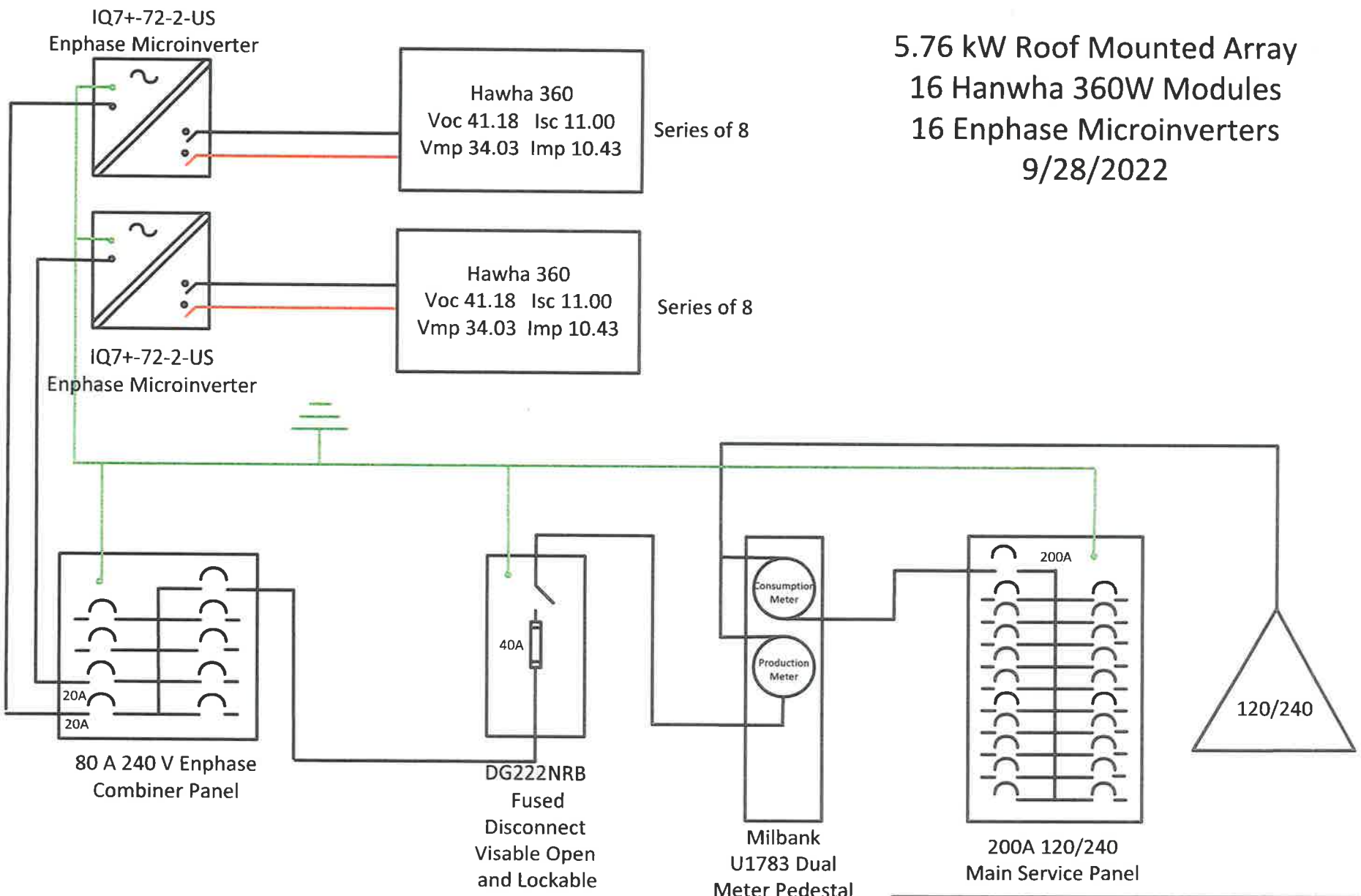
Sub Total: \$ 35.00

Base Fee:	(Add to Subtotal)	\$40.00
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Total: \$ 75.00

Applicant Signature 	Print Name Russel Endries	Date 10-10-2022
Office use only: Permit Paid By	Initials	Date

5.76 kW Roof Mounted Array
 16 Hanwha 360W Modules
 16 Enphase Microinverters
 9/28/2022



Hanwha 360
 Voc 41.18 Isc 11.00
 Vmp 34.03 Imp 10.43

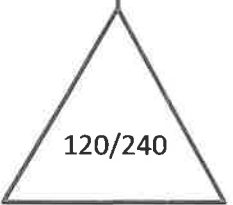
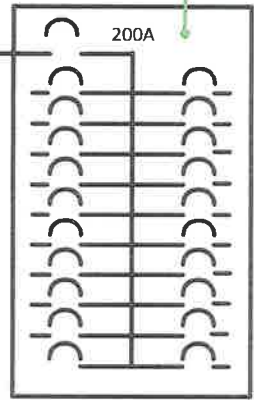
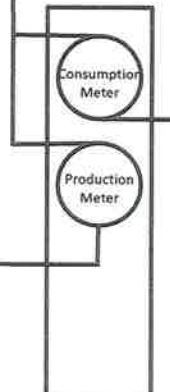
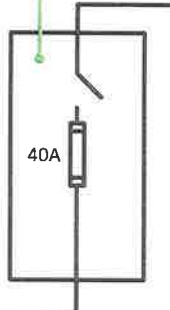
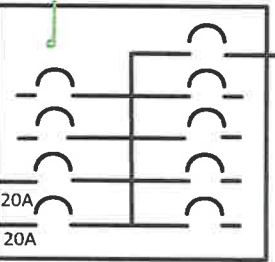
Series of 8

Hanwha 360
 Voc 41.18 Isc 11.00
 Vmp 34.03 Imp 10.43

Series of 8

IQ7+-72-2-US
 Enphase Microinverter

IQ7+-72-2-US
 Enphase Microinverter

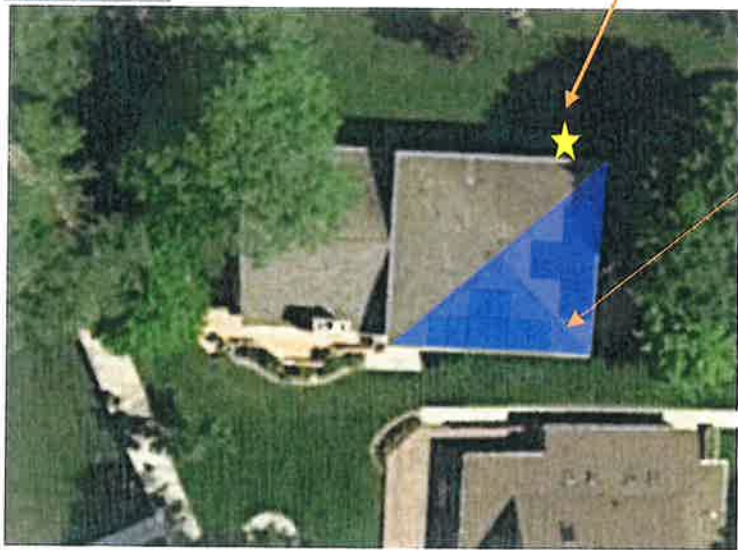


Interconnection One Line Diagram
 Drawing by: Endries Solar & Electric LLC
 Owner: Curt Barclay
 89 East Shore Dr, Random Lake Wi 53075

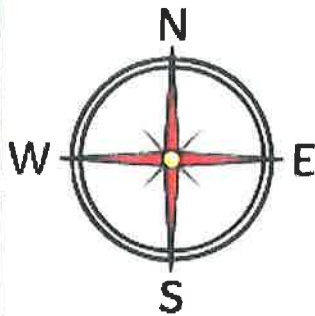
Curt Barclay
89 East Shore Dr
Random Lake Wi 53075

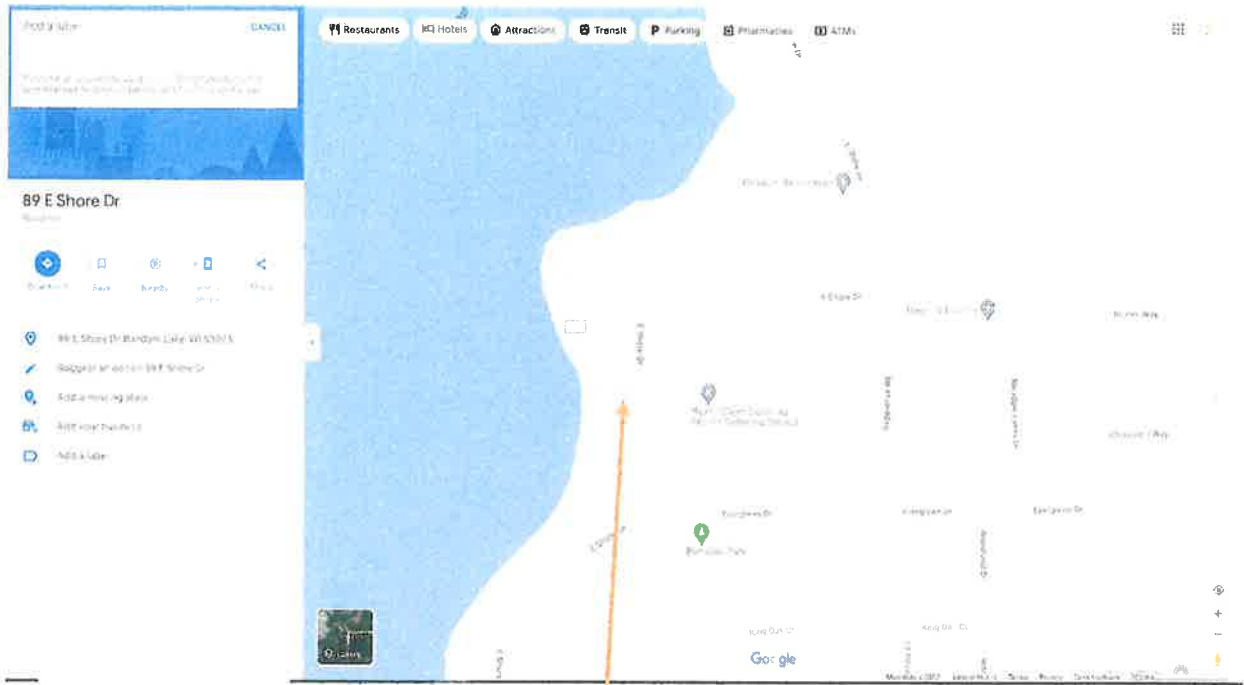


Location of utility required disconnect and meter pedestal.



Solar Panel location





Location of Residence

Project Details

Name	Curt Barclay	Date	09/28/2022
Location	89 East Shore Drive, Random Lake, WI 53075	Total modules	16
Module	Hanwha Q.Cells: Q.PEAK DUO BLK-G10+ 360 (32mm)	Total watts	5,760
Dimensions	Dimensions: 67.6" x 41.14" x 1.26" (1717.0mm x 1045.0mm x 32.0mm)	Attachments	32
ASCE	7-10	Rails per row	2

System Weight

Total system weight	860.4 lbs
Weight/attachment	26.9 lbs
Racking weight	158.4 lbs
Distributed weight	2.7 psf

Load Assumptions

Wind exposure	B
Wind speed	115 mph
Ground snow load	30 psf
Attachment spacing portrait	4.0'

Roof Information

Roof Material Family	Comp Shingle	Roof material	Comp Shingle
Building height	30 ft	Roof attachment	Flashfoot2
Roof slope	30 °	Attachment hardware	T Bolt
Risk category	II		

Span Details XR100 - Portrait

Zone	Max span	Max cantilever
1	7' 10"	3'
2	7' 10"	3'
3	7' 10"	3'

Reaction Forces XR100 - Portrait

Zone	Down (lbs)	Uplift (lbs)	Lateral (lbs)
1	205	116	81
2	205	144	81
3	205	144	81

Roof Section 1

Details

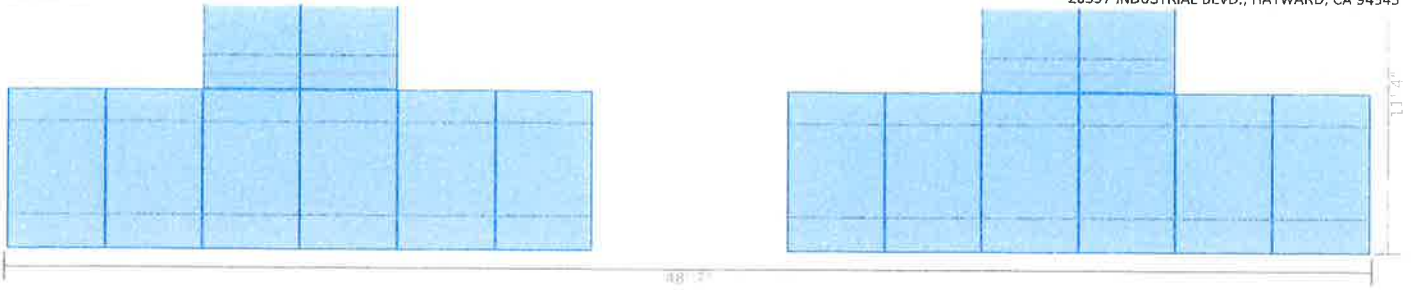
Panels: 16	Provided rail: 168' [12 x 168"]
Rail orientation: East-West	Attachments: 32
Panel orientation: Portrait	Splices: 4
Entry type: Graphical	Clamps: 40

Weights

Total weight: 860.4 lbs
Weight/attachment: 26.9 lbs
Total Area: 315.8 sq ft
Distributed weight: 2.7 psf

Diagram





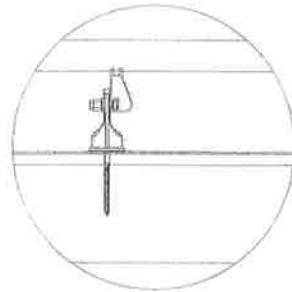
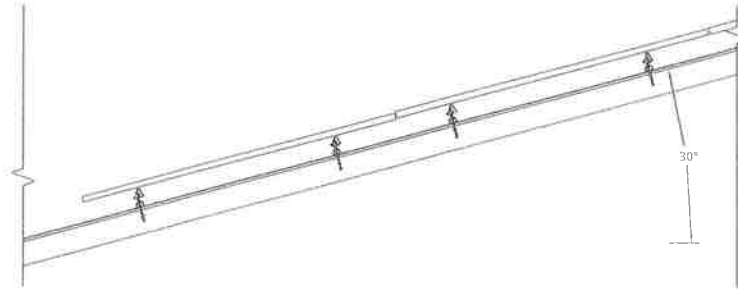
Segments

Identifier	Columns	Row length	Rail length	Cantilever	Cantilever Violations	Rail	Attachments	Splices	Clamps
A	2	7' 1"	7' 1"	1' 6"	None	28' [2 x 168"]	4	0	6
Row segment totals (x 2) →						56' [4 x 168"]	8	0	12
B	6	20' 11"	20' 11"	5"	None	56' [4 x 168"]	12	2	14
Row segment totals (x 2) →						112' [8 x 168"]	24	4	28

Contour Plan - Trim Cut List

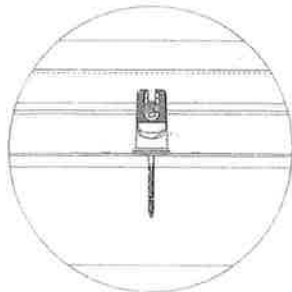
Identifier	Scrap from	Length	Scraps Created	Discard
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Side View (portrait)



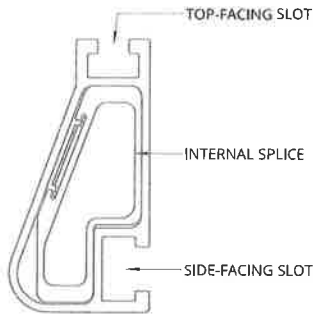
- PV MODULE
- RAIL
- FLASHFOOT2
- ROOF MEMBRANE
- BUILDING STRUCTURE

Front View (portrait)

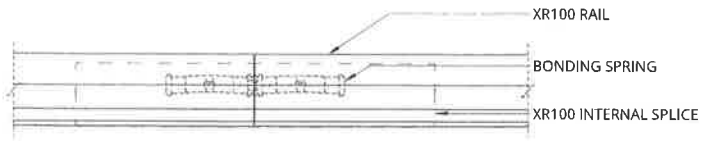


- PV MODULE
- RAIL
- FLASHFOOT2
- ROOF MEMBRANE
- BUILDING STRUCTURE

Splice Details

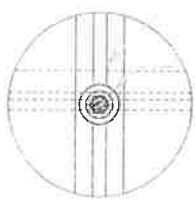


XR100

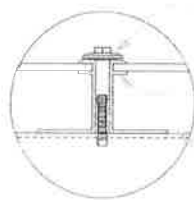


Splice Connection

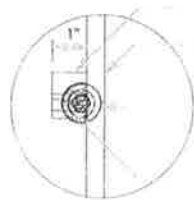
Clamp Detail



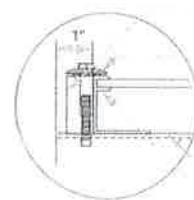
Mid Clamp, Plan



Mid Clamp, Front

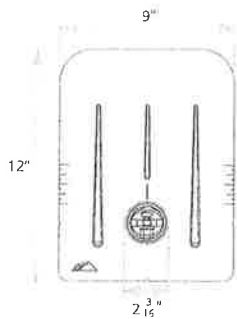


End Clamp, Plan

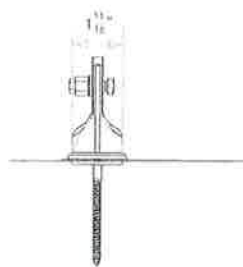


End Clamp, Front

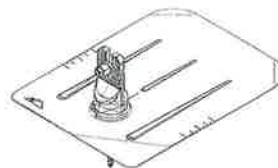
FlashFoot2 Detail



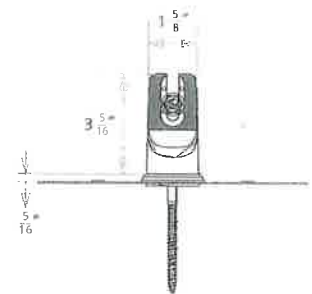
Plan View



Side View

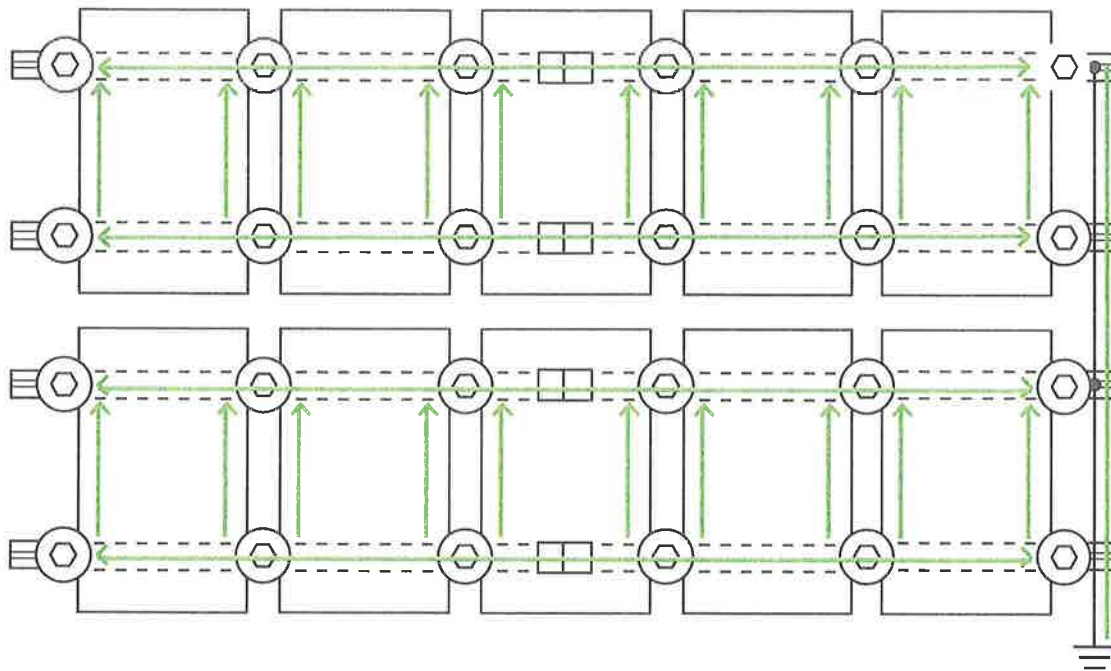


Perspective View




Front View


Grounding Diagram




 UFO Clamp

 Fault Current Ground Path

 Grounding Lug *

 Min 10 AWG Copper Wire *

 Bonded Splice (Rail Connection)

* Grounding Lugs and Wire are not required in systems using Enphase microinverters.

Bill of Materials

Part	Spares	Total Qty
Rails & Splices		
XR-100-168A XR100, Rail 168" (14 Feet) Clear	0	12
XR100-BOSS-01-M1 Bonded Splice, XR100	0	4
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	40
UFO-STP-32MM-M1 Stopper Sleeve, 32MM, Mill	0	16
XR-LUG-03-A1 Grounding Lug, Low Profile	0	4
Attachments		
FF2-01-M2 FlashFoot2, Mill	0	32
BHW-TB-02-A1 T-Bolt Bonding Hardware	0	32
Accessories		
BHW-MI-01-A1 Microinverter/MLPE Bonding Hardware, T-Bolt	0	16

powered by

Q.ANTUM DUO Z

PRELIMINARY

Q.PEAK DUO BLK-G10+ 350-370

ENDURING HIGH
PERFORMANCE



Quality
Controlled PV

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ID 1111232615



BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.



THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty².

¹ APT test conditions according to IEC/TS 62804-1 2015, method A (-1500 V, 96h)

² See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:



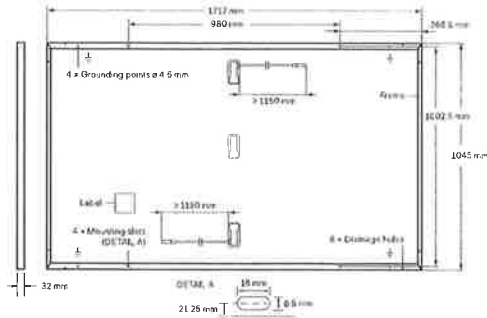
Rooftop arrays on
residential buildings

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	1717 mm × 1045 mm × 32 mm (including frame)
Weight	19.9 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 20 monocrystalline Q ANTUM solar half cells
Junction box	53-101 mm × 32-60 mm × 15-18 mm Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable, (+) ≥ 1150 mm, (-) ≥ 1150 mm
Connector	Stäubli MC4; IP68

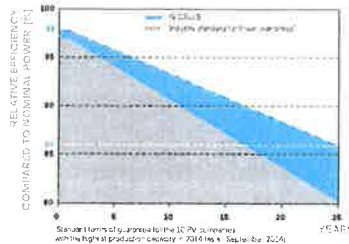


ELECTRICAL CHARACTERISTICS

POWER CLASS		350	355	360	365	370	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC (POWER TOLERANCE +5W/-0W)							
Minimum	Power at MPP ¹	P_{MPP} [W]	350	355	360	365	370
	Short Circuit Current	I_{SC} [A]	10.97	11.00	11.04	11.07	11.10
	Open Circuit Voltage ²	V_{OC} [V]	41.11	41.14	41.18	41.21	41.24
	Current at MPP	I_{MPP} [A]	10.37	10.43	10.49	10.56	10.62
	Voltage at MPP	V_{MPP} [V]	33.76	34.03	34.31	34.58	34.84
	Efficiency ³	η [%]	≥ 19.5	≥ 19.8	≥ 20.1	≥ 20.3	≥ 20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ⁴							
Minimum	Power at MPP	P_{MPP} [W]	262.6	266.3	270.1	273.8	277.6
	Short Circuit Current	I_{SC} [A]	8.84	8.87	8.89	8.92	8.95
	Open Circuit Voltage	V_{OC} [V]	38.77	38.80	38.83	38.86	38.90
	Current at MPP	I_{MPP} [A]	8.14	8.20	8.26	8.31	8.37
	Voltage at MPP	V_{MPP} [V]	32.24	32.48	32.71	32.94	33.17

¹Measurement tolerances $P_{MPP} \pm 3\%$; I_{SC} , $V_{OC} \pm 5\%$ at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 • 1800 W/m², NMOT, spectrum AM 1.5

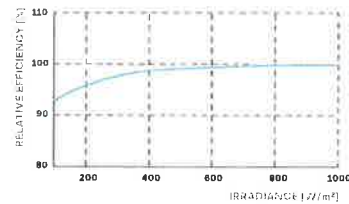
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α [%/K]	+0.04	Temperature Coefficient of V_{OC}	β [%/K]	-0.27
Temperature Coefficient of P_{MPP}	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°C]	43 ± 3

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	V [V]	1000	PV module classification	Class II
Maximum Reverse Current	I_R [A]	20	Fire Rating based on ANSI/UL 61730	C / TYPE 2
Max. Design Load Push/Pull	[Pa]	3600/2660	Permitted Module Temperature on Continuous Duty	-40 °C - +85 °C
Max. Test Load Push/Pull	[Pa]	5400/4000		

QUALIFICATIONS AND CERTIFICATES

Quality Controlled PV - TÜV Rheinland;
IEC 61215:2016, IEC 61730:2016
This data sheet complies
with DIN EN 50380
GCPV Certification ongoing



Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS GmbH

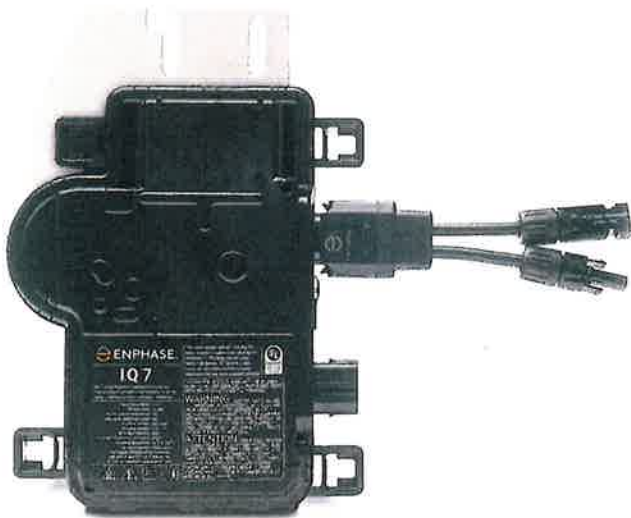
Sonnenallee 17-21, 06766 Bitterfeld-Wolfen, Germany | TEL +49 (0)3494 66 99-23444 | FAX +49 (0)3494 66 99-23000 | EMAIL sales@q-cells.com | WEB www.q-cells.com

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules



To learn more about Enphase offerings, visit enphase.com



Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US		IQ7PLUS-72-2-US	
Commonly used module pairings ¹	235 W - 350 W +		235 W - 440 W +	
Module compatibility	60-cell PV modules only		60-cell and 72-cell PV modules	
Maximum input DC voltage	48 V		60 V	
Peak power tracking voltage	27 V - 37 V		27 V - 45 V	
Operating range	16 V - 48 V		16 V - 60 V	
Min/Max start voltage	22 V / 48 V		22 V / 60 V	
Max DC short circuit current (module Isc)	15 A		15 A	
Overvoltage class DC port	II		II	
DC port backfeed current	0 A		0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range ²	240 V /	208 V /	240 V /	208 V /
	211-264 V	183-229 V	211-264 V	183-229 V
Maximum continuous output current	1.0 A (240 V)	1.15 A (208 V)	1.21 A (240 V)	1.39 A (208 V)
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit ³	16 (240 VAC)	13 (208 VAC)	13 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging		0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %
MECHANICAL DATA				
Ambient temperature range	-40°C to +65°C			
Relative humidity range	4% to 100% (condensing)			
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)			
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)			
Weight	1.08 kg (2.38 lbs)			
Cooling	Natural convection - No fans			
Approved for wet locations	Yes			
Pollution degree	PD3			
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category / UV exposure rating	NEMA Type 6 / outdoor			
FEATURES				
Communication	Power Line Communication (PLC)			
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.			
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.			
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.			

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>

2. Nominal voltage range can be extended beyond nominal if required by the utility.

3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com



ENGINEERINC

Structural Engineering Letter

Date: 10/07/2022

Project Name: Curt Barclay

Project Address: 89 E Shore Dr , Random Lake, WI, 53075

Contractor : Endries Solar & Electric LLC

Contractor Address : 200 S Business Park Dr Suite 5, Oostburg, WI 53070

Attn : To Whom It May Concern

A Field observation of the condition of the existing framing system was performed by an audit team from **Endries Solar & Electric LLC**. From the Field observation of the property, the existing roof structure observed as follows:

- Existing roof is supported by **2 x 6 @ 16"** rafters at the solar array. The rafters are sloped at approximately **30 degree** and have maximum projected horizontal span of **14 feet** in between load bearing supports.

Design Criteria

- Applicable codes: Uniform Dwelling Code (UDC)
SPS 321-325 One & Two Family Buildings
- Ground Snow Load: 30 psf
- Roof Dead Load: 20 psf
- Wind speed: 125 mph
- Risk Category: II



A handwritten signature in black ink, appearing to read "M. Hakhamaneshi".

Date Certified and
Signed: 10/07/2022

I certify that the capacity of the structural roof framing that directly supports the additional gravity loading due to the solar panel supports and modules had been reviewed and determined to meet or exceed the requirements in accordance with the Design Criteria.

If you have any questions or concerns please contact us,

Engineerinc.io,
303 N Glenoaks Blvd Suite 200
Burbank, CA 91502
(747) 333 - 5991
new@engineerinc.io

ENGINEERINC

Date: 10/07/2022

Job Number: 10636

Prepared for : Endries Solar & Electric LLC, 200 S Business Park Dr Suite 5, Oostburg, WI 53070

Project.: Curt Barclay , 89 E Shore Dr , Random Lake, WI, 53075

The following calculations are for the structural engineering design of the photovoltaic panels and are valid only for the structural info referenced in the stamped plan set. The verification of such info is the responsibility of others. After review, I certify that the roof structure has sufficient structural capacity for the applied PV loads. All PV mounting equipment shall be designed and installed per manufacturer's approved installation specifications.

Engineerinc.io
303 N Glenoaks Blvd Suite 200
Burbank, CA 91502
(747) 333 - 5991
new@engineerinc.io



Date Certified and
Signed: 10/07/2022

ENGINEERING

Solar Module Details

Module Type	HANWHA
Module Quantity	16
Module Model Number	360 WATT

Design Criteria

Code: Uniform Dwelling Code (UDC) SPS 321-325 One & Two Family Buildings

Live Load (psf)	20
Ult Wind Speed (mph)	125
Exposure Cat	C
Ground Snow (psf)	30

Structure Geometry

Eave Height, h_e (ft)	15 to 20ft
Pitch of main roof (deg)	30
Building Length, L (ft)	40
Building Width, B (ft)	50
Roof Area (Module Area) ft²	2000.00
Standoff (i.e., Roof Mount) Spacing Feet	4'

NOTE: attachments should be installed in a staggered configuration to properly distributor loading.

Roof Properties

Roof Geometry type	Gable Roof
Roof Type	Truss
Roof Pitch (deg)	30

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Roofing Type	Comp Shingles
Sheathing Type	1/2" OSB Board
Wood species	No. 2, Douglas Fir-Larch
Wood Fb (psf)	900
Wood Fv (psf)	180
Wood E (psf)	1600000
Purlin C/C Spacing (in)	12
Rafter C/C. Spacing (in.)	16

Purlin

Section Thickness, b (In.)	2
Section Depth, d (In.)	4

Rafter

Section Thickness, b (In.)	2
Section Depth, d (In.)	6
Maximum Rafter Span (ft)	14

Factors

Cd(wind)	1.60
Cd(Snow)	1.60
CLS	1.15
CM	1
Ct	1
CL	0.75
CF	1.5
Cfu	1
Cv	1
Cr	1
M allowable_wind	1020.94
M allowable_snow	733.80

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Dead Load(psf)

Comp Shingles	3.00 psf
1/2" OSB Board	2.00 psf
Insulation	2.00 psf
Total Roof 1DL	7 psf
No. 2, Douglas Fir-Larch	31.00 lb/ft ³
Solar Panel DL	3.00 psf
Roof 1	
Roof_Dist_DL	7.00 psf
M_Roof_Dist_DL	6685.56
Def_Roof_Dist_DL	4.10
PV_uni_Dist_DL	3.00 psf
M_PV_uni_Dist_DL	63.21
Def_PV_uni_Dist_DL	0.04
Total_Uni_DL	11.00 psf
M_Total_DL	6748.77
Def_Total_DL	4.14

Snow Load(psf)

Ground Snow Load, pg	30
Importance Factor, Ic	1
Thermal Factor, Ct	1
Exposure Factor, Ce	1
Flat roof snow, pF	30
Slope Factor, Cs	1

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Sloped Row Snow, ps | 30

Uni_Dist_S	30.00
M_uni_Dist_s	735.00
Def_uni_Dist_S	0.45

Wind Load

Ultimate Wind Speed	125
Directionality Factor,kd	0.85
Topographic factor	1.00
Velocity pressure exposure factor,kz	0.88
Ground Elevation Factor,ke	-7.57
Side Wall Width	50
Median Roof Height	-302.77
Velocity pressure,qz	29.92
External Pressure Up,GCp_1	-0.2
External Pressure Up,GCp_2	-0.6
External Pressure Up,GCp_3	-0.9
External Pressure Down,GCp	0.3
Design Pressure Up,p_1	-5.00
Design Pressure Up,p_2	-15.01
Design Pressure Up,p_3	-22.51
Design Pressure Up,p	7.50
Uni_Dist_W_up	-22.51
M_uni_Dist_W_up	-551.50
Def_uni_Dist_W_up	-0.34
Uni_Dist_W_down	7.50

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M_uni_Dist_W_down	183.75
Def_uni_Dist_W_down	0.11

Lag Screw Uplift Check (ASD)

5/16" Lag Screw Withdrawl value	205.00 lb/n
Lag Screw Penetration	2.50 in
Roof1 0.6D+0.6W(up z1)	2289.192 > 512.5
Roof1 0.6D+0.8W(up z2)	2283.186 > 512.5

Framing Check (ASD):

Roof1 uni 1.0D+0.6W	6859.02 > 1020.94
Lag Screw Penetration	7382.71 > 1020.94
Roof1 0.6D+0.6W(up z1)	7483.77 > 733.80
Roof1 0.6D+0.6W(up z2)	3718.36 > 1020.94

Seismic Check:

Wood	5.00 psf
2x4 Studs @ 16"	2.00 psf
Gypsum	3.00 psf
Misc(Insulation,etc)	2.00 psf
Total wall DL	12.00 psf
Total Wall Area (Approx)	2310.00 ft ²
Total Wall W	27720 lbs
Total Roof DL	7.50 psf
Total Roof Area (Approx)	923.62 ft ²
Total Roof W	6927.15 lbs

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PV Panel W	3.00 psf	
Area of panel	320.00 ft ²	
Total Roof W	331.67 lbs	
% Increase=(Wadditional)/Wexisting	1.01%	OK

The increase in weight as a result of the solar system is less than 10% of the existing structure and therefore no further seismic analysis is required.

Limits of Scope of Work and Liability

Existing structure is assumed to have been designed and constructed following appropriate codes at time of erection, and assumed to have appropriate permits. The calculations produced are only for the roof framing supporting the proposed PV installation referenced in the stamped plan set and were completed according to generally recognized structural analysis standards and procedures, professional engineering and design experience, opinions and judgements. Existing deficiencies which are unknown or were not observable during time of inspection are not included in this scope of work. All PV modules, racking, and mounting equipment shall be designed and installed per manufacturer's approved installation specifications. The Engineer of Record and Engineerinc assume no responsibility for misuse or improper installation. This analysis is not stamped for water leakage. Framing was determined based on information in provided plans and/or photos, along with engineering judgement. Prior to commencement of work, the contractor shall verify the framing sizes, spacings, and spans noted in the stamped plans, calculations, and cert letter (where applicable) and notify the Engineer of Record of any discrepancies prior to starting construction. Contractor shall also verify that there is no damaged framing that was not addressed in stamped plans, calculations, and cert letter (where applicable) and notify the Engineer of Record of any concerns prior to starting construction. Prior to the commencement of work, the contractor shall verify the existing roof and framing conditions. Notify Engineerinc and the engineer of record of any Discrepancies prior to starting construction. Prior to the commencement of work, the contractor shall inspect framing for any damage such as water damage, cracked framing, etc. and notify the E.O.R. if any issues are found. These plans/calculations are stamped for structural code compliance of the roof framing supporting the proposed PV installation reference only. These plans/calculations are not stamped for water leakage. PV modules, racking, and attachment components must follow manufacturer guidelines and requirements.

ERIC VON SCHLEDORN

ADDITION AND ALTERATIONS
W4873 CO. RD. RR
RANDOM LAKE, WI 53075

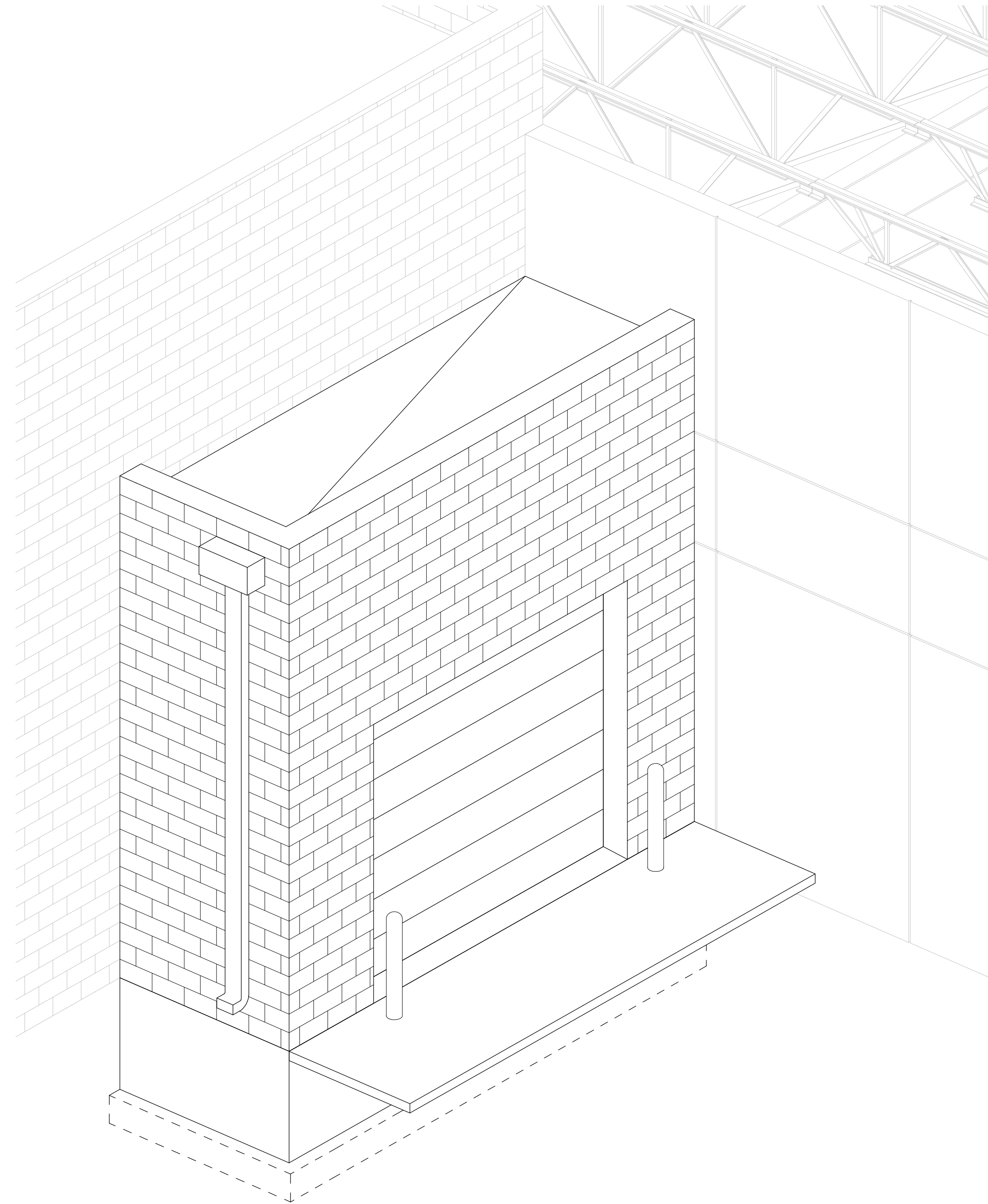
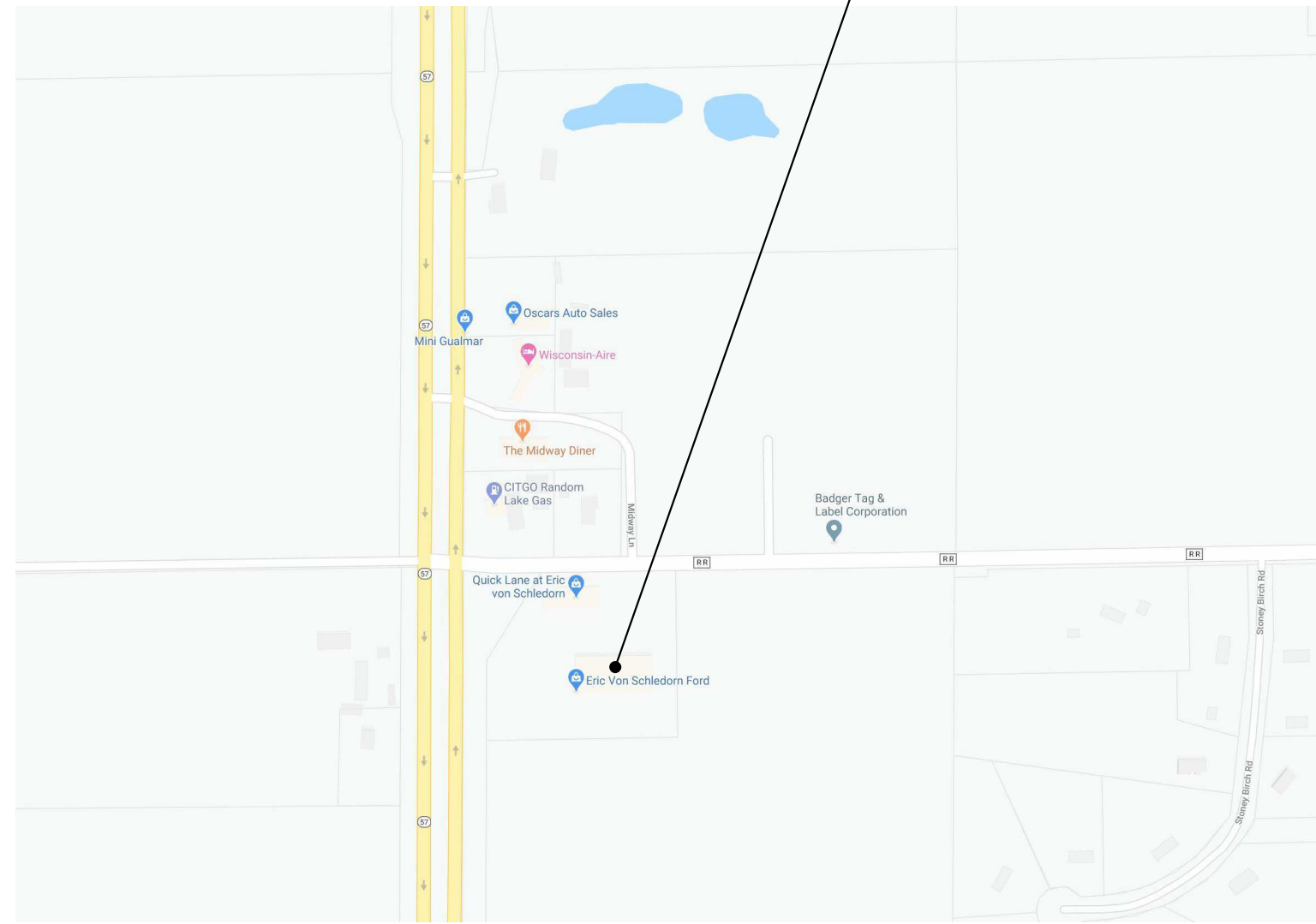
CAR WASH ADDITION

10/17/2022

SHEET INDEX

01-GENERAL	
G-1.0	COVER SHEET
09-ARCHITECTURAL	
A-1.5	CAR WASH ADDITION

SITE LOCATION

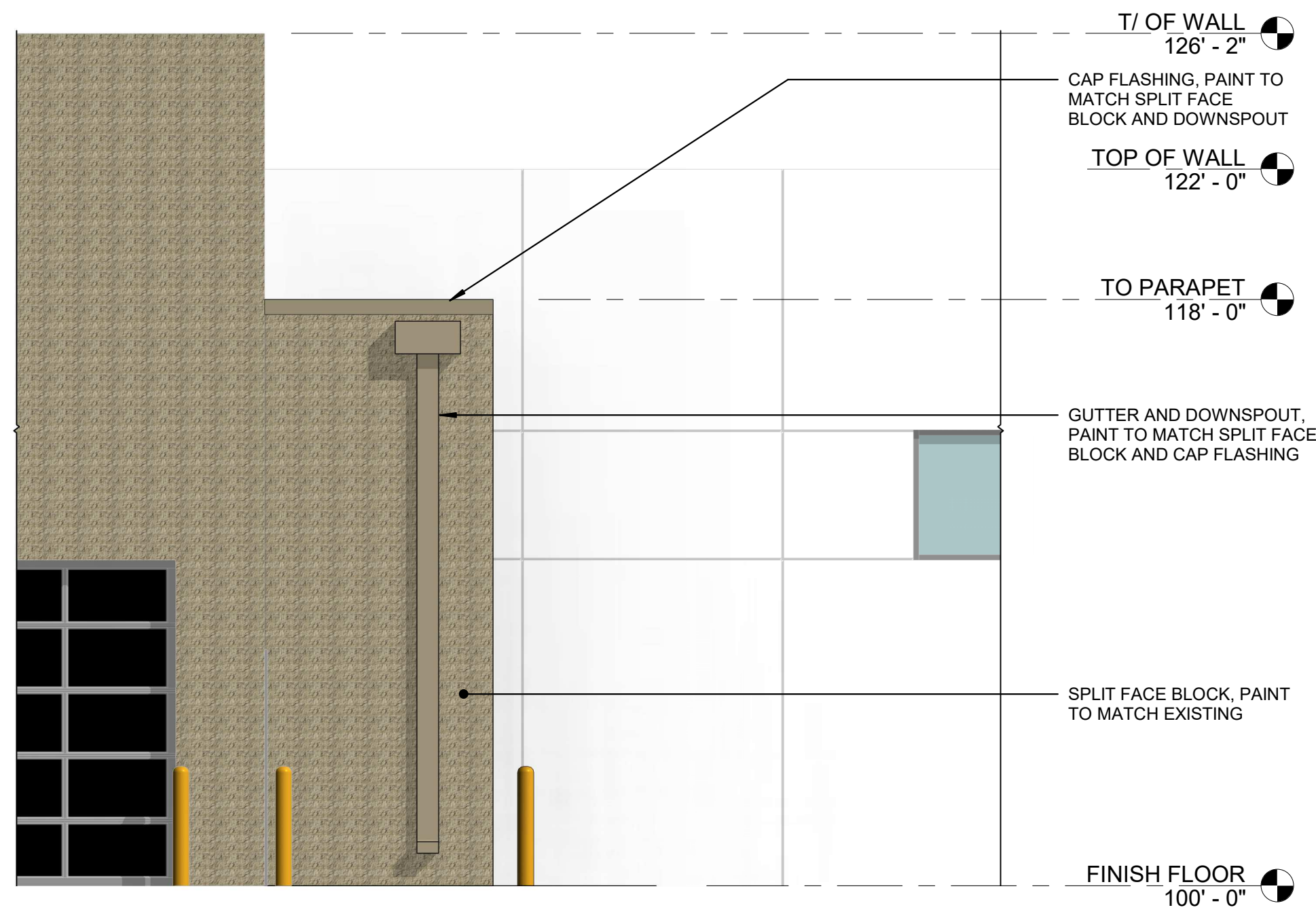


STAMPS & APPROVALS:

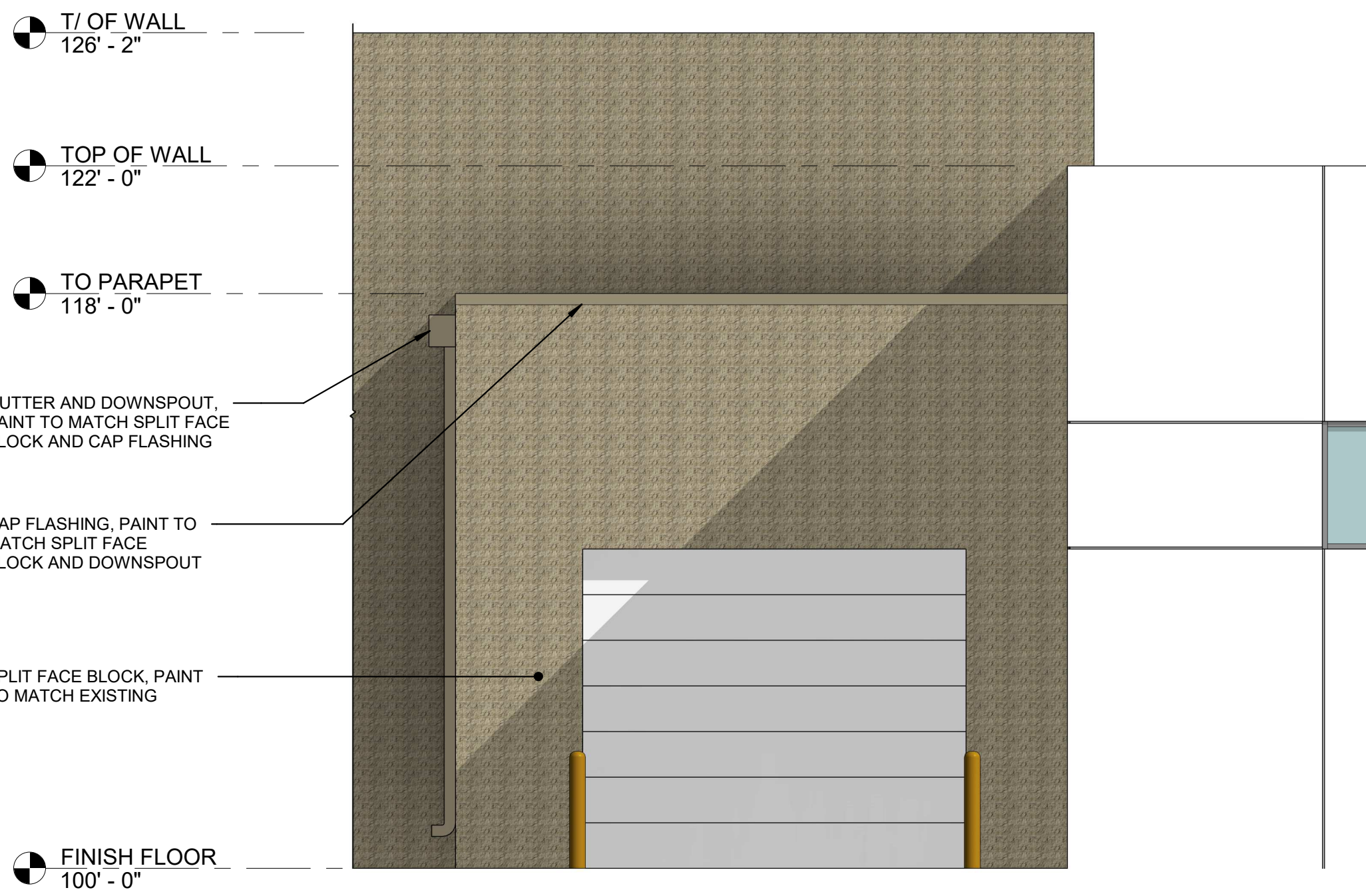


ERIC VON SCHLEDORN FORD * ACAR WASH ADDITION * 21-012

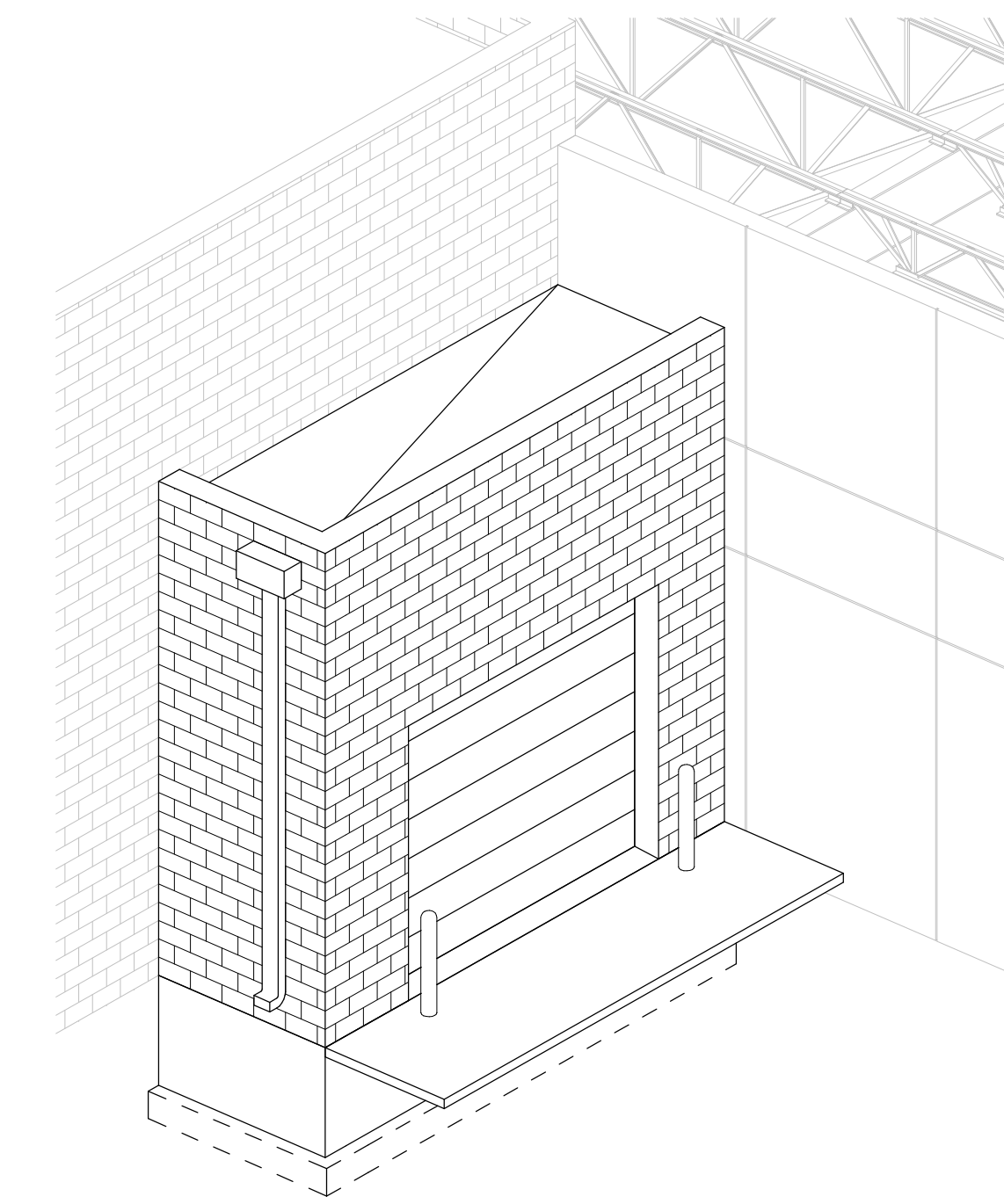
G-1.0



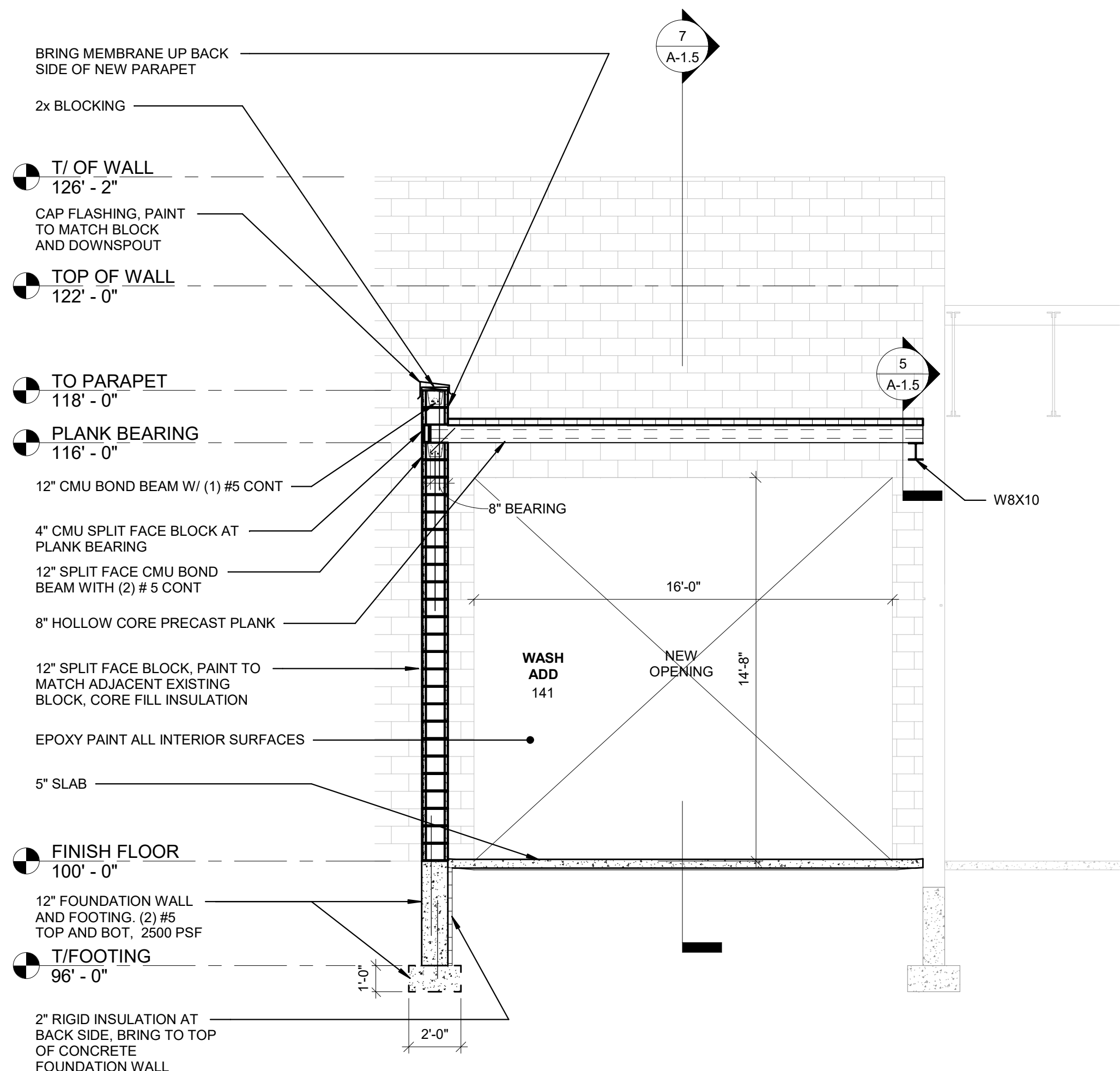
10 SOUTH ELEVATION AT CARWASH
1/4" = 1'-0"



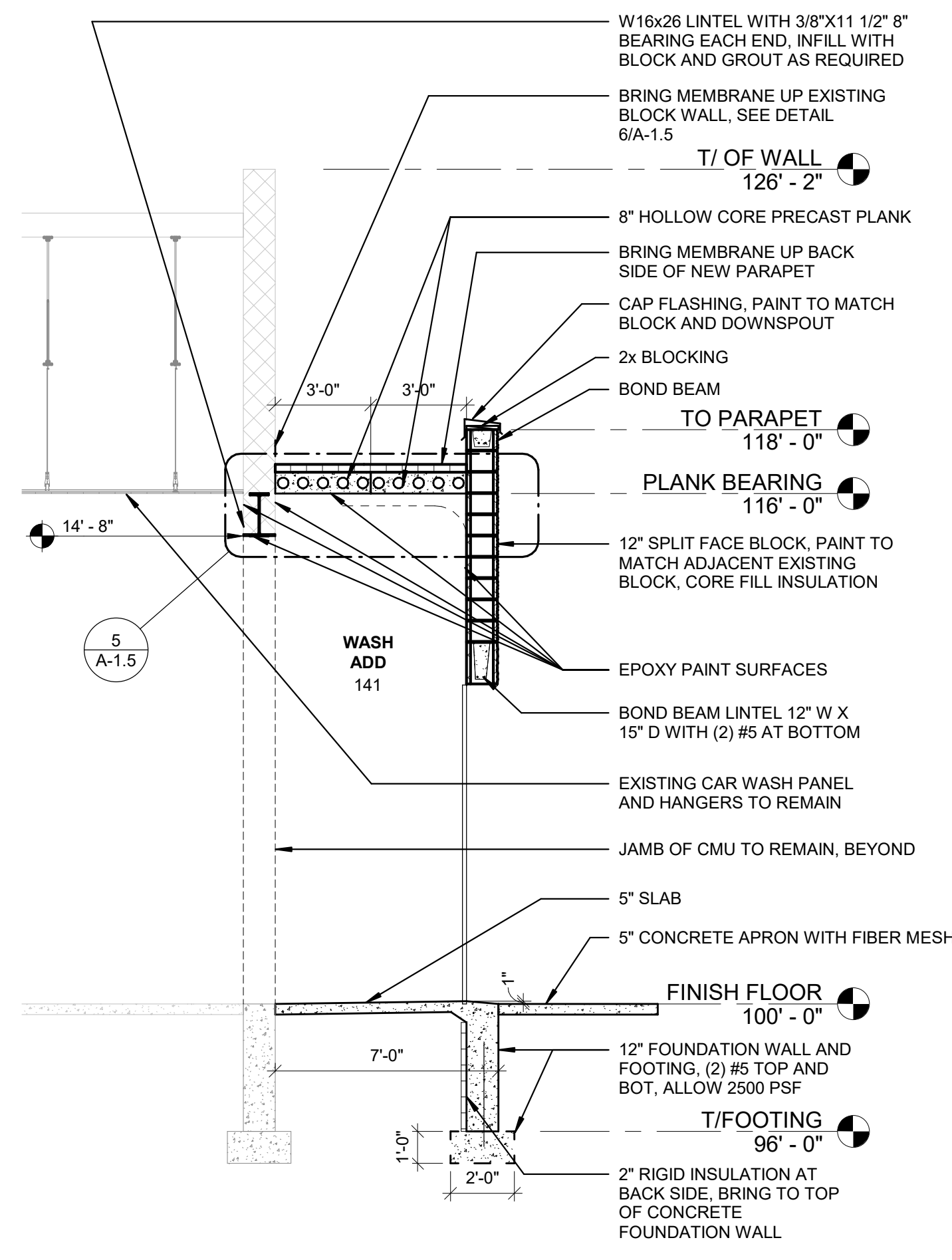
8 EAST ELEVATION AT CARWASH
1/4" = 1'-0"



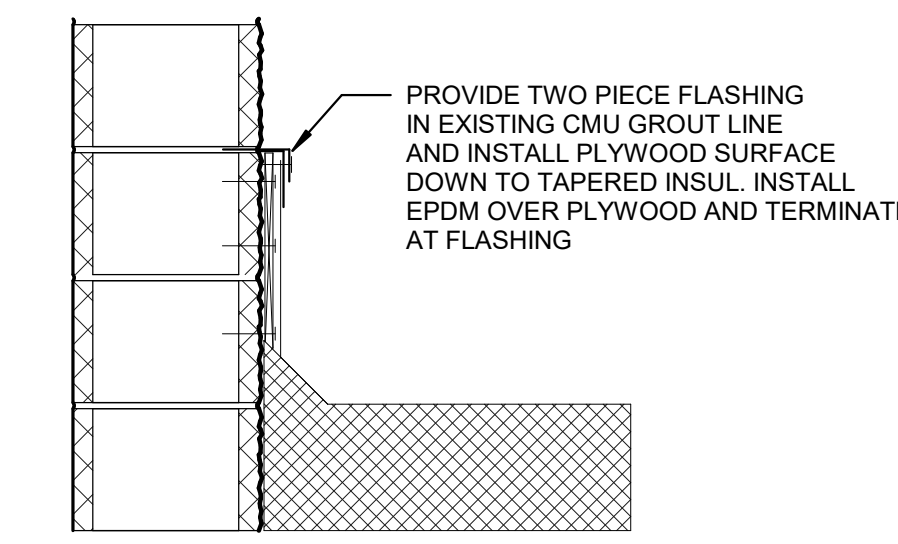
3 3D PERSPECTIVE



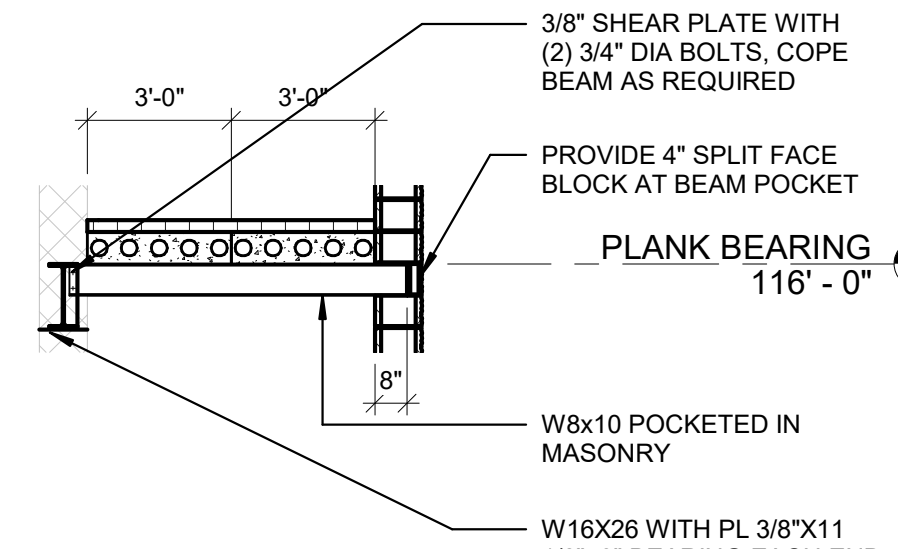
9 WALL SECTION
1/4" = 1'-0"



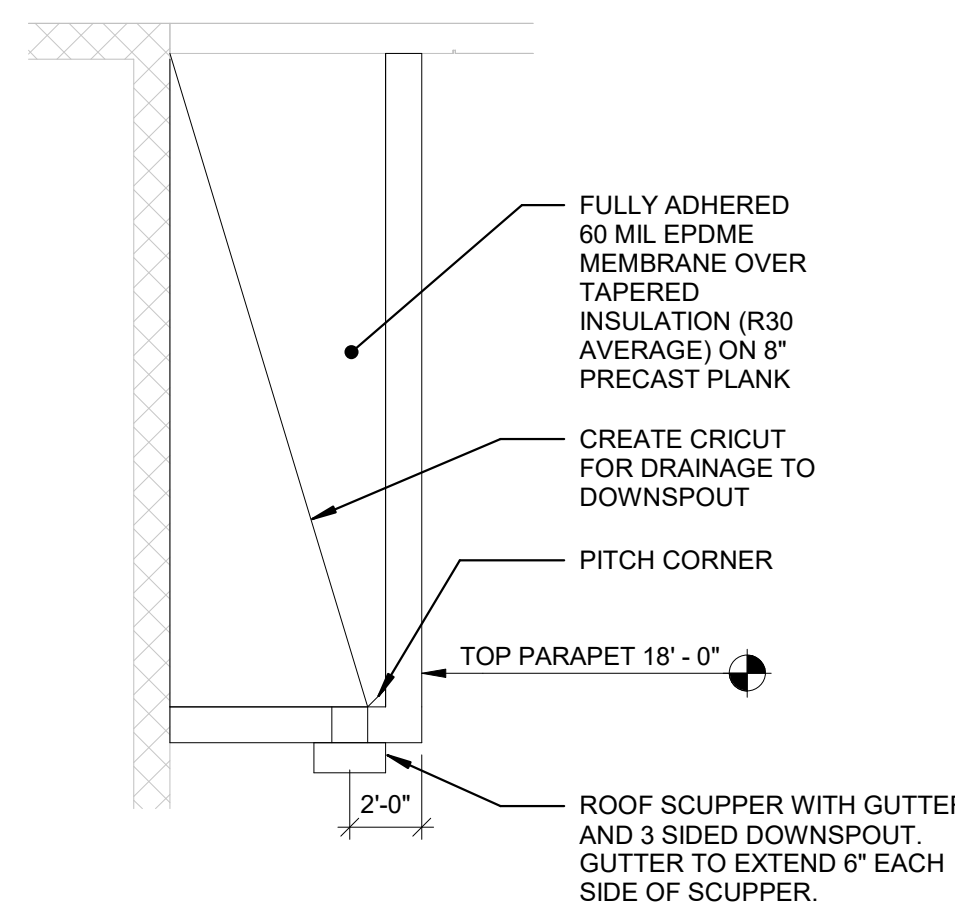
7 WALL SECTION
1/4" = 1'-0"



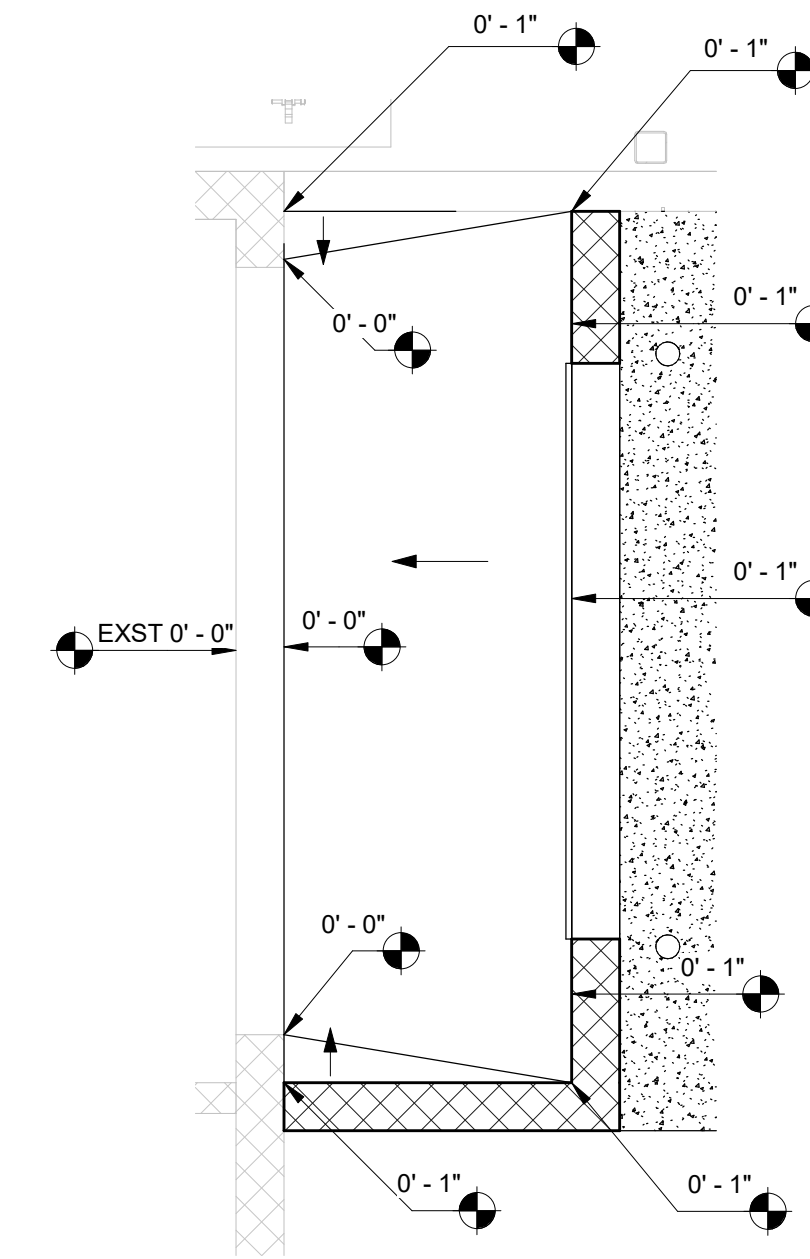
6 FLASHING DETAIL AT SPLIT FACE CMU
1" = 1'-0"



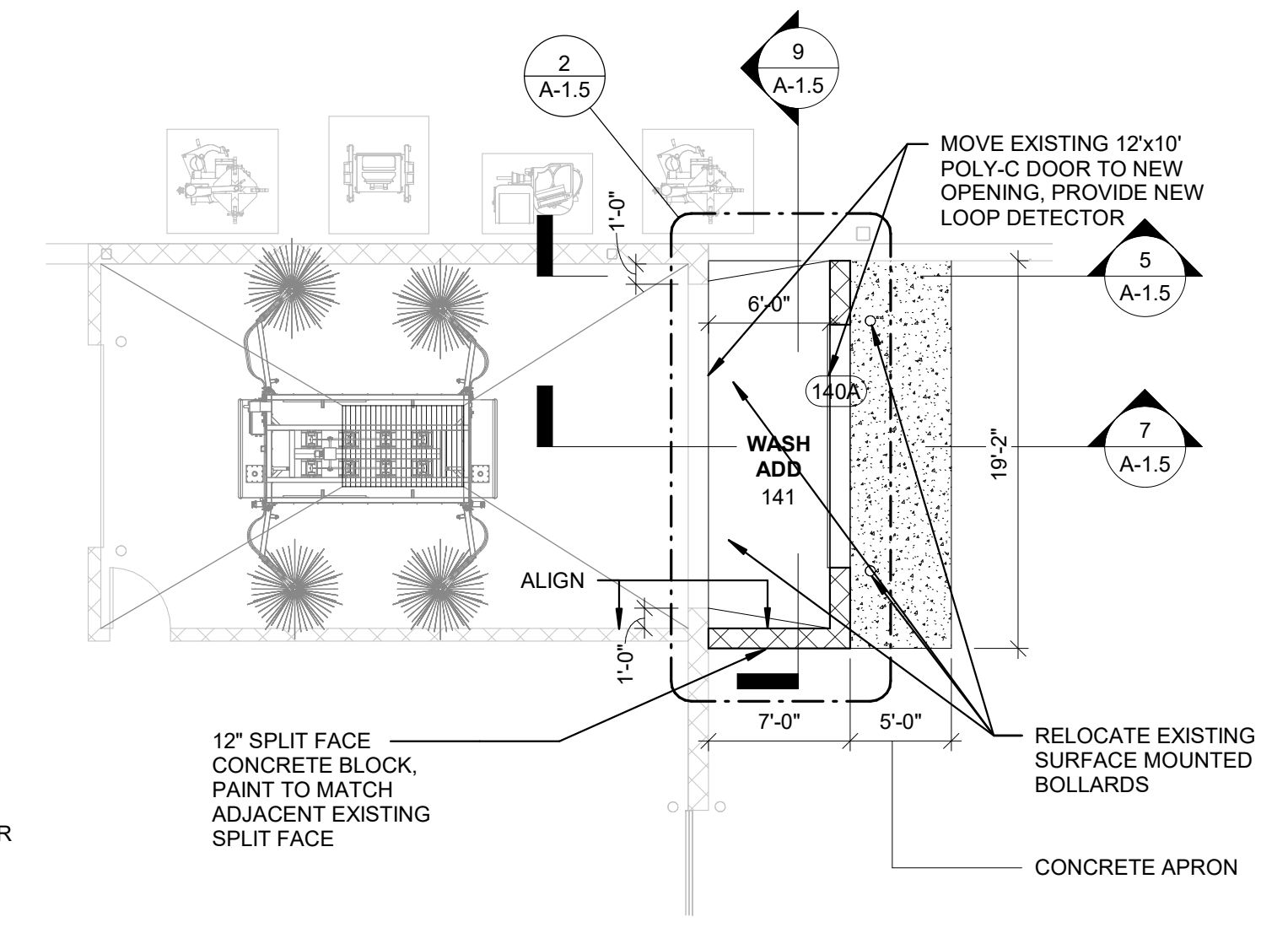
5 BEAM POCKET DETAIL
1/4" = 1'-0"



4 ROOF PLAN
3/16" = 1'-0"



2 SLAB GRADING PLAN
1/4" = 1'-0"



1 OVERALL PLAN
1/8" = 1'-0"

ERIC VON SCHLEDORN

BUILDING ADDITION

W4873 CO. RD RR
RANDOM LAKE, WI 53075



1314 Emil St. Madison, WI 53713
Tel: (608) 257-2289 * Fax: (608) 257-2906

Revision Schedule		
No.	Description	Date
1	CAR WASH ADDITION	10/17/22

DRAWING NAME:
CAR WASH
ADDITION

SCALE: AS NOTED
DRAWN BY: SMC
DATE: 10/12/2022

SHEET NO.
A-1.5

21-012