St. John, KS Affordable Net+ Prototype Home

806 N BROADWAY, ST. JOHN, KS 67576

2018-21 U.S. Department of Energy Solar Decathlon

AS-BUILT CONSTRUCTION DOCUMENTS

PROJECT INFORMATION

ADDRESS: 806 N BROADWAY

PARCEL REF. ID: R2104

LOT AREA: 14,451 SQ FT

ZONING: RESIDENTIAL

BUILDING TYPE: SINGLE FAMILY DETACHED

PERMIT TYPE: RESIDENTIAL NEW CONSTRUCTION

CONSTRUCTION TYPE: TYPE V

BUILDING GROSS AREA: 1,138 SQ FT

BUILDING HEIGHT: SINGLE STORY, 13'-5"

JURISDICTION: CITY OF ST. JOHN, KS

DESIGN TEAM

2019-2020 NET+ STUDIO
KANSAS STATE UNIVERSITY
MANHATTAN, KS

Jordan Bezdek
Sergio Bichara
Braeden Busenitz
Brandon Cole
Catherine Gutman
Yu He
Jameson Jones
Somnath Mukherjee
Gaurav Neupane
Evan Ollenburger
Rebekka Poole
Prajakta Thipsay
Grant Urban
Jeremiah Vick

2018-2019 NET+ STUDIO
KANSAS STATE UNIVERSITY
MANHATTAN, KS

Stephen Bregande
Yueming Cao
Christian Carter
Matthew Dickman
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Mi Chele Lee
Catherine Matthews
Amber Morris
Kazem Namazi
Will Olds
Safa Salih
Jessica Wyatt

2020-2021 NET+ STUDIO
KANSAS STATE UNIVERSITY
MANHATTAN, KS

Salim Akli
Justin Cresswell
Aimee Farrell
Conrad Hively
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Autumn Kayl
Kyler Milligan
Atia Rahman
Harley Schuster
Abigail Steinert
Travis Surmeier
Alex Weber

ARCHITECT AND FACULTY LEAD:
Michael D. Gibson, AIA, NCARB, LEED A.P.

CLIENT:
Stafford County Economic Development
210 E. 3rd
Courthouse Annex
P.O. Box 233
St. John, KS 67576
ph: (620 549-3527

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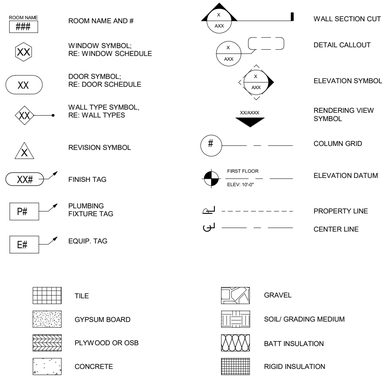
ABBREVIATIONS

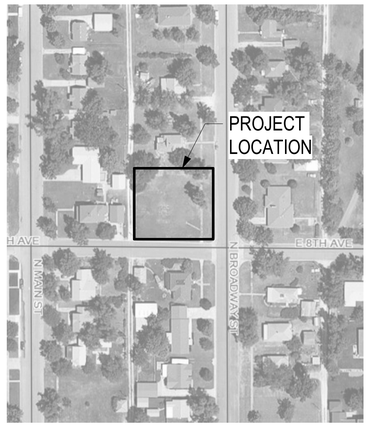
B.O.	BOTTOM OF	MFR	MANUFACTURER
BOT.	BOTTOM	MIN	MINIMUM
B.R.	BEDROOM	MTD	MOUNTED
BTW	BETWEEN	PJ	PANELS JOINT
C	CHANNEL (SHAPE)	PLT	PLATE
C.L.	CENTERLINE	PLY	PLYWOOD
CLG	CEILING	PTD	PAINTED
CTR	CENTER	RCP	REFLECTED CEILING PLAN
COL	COLUMN	REF	REFER
CONC	CONCRETE	REINF.	REINFORCING
CONT.	CONTINUOUS	REQ'D	REQUIRED
CONSTR.	CONSTRUCTION	R.O.	ROUGH OPENING
CW	CASEWORK	SHT	SHEET
DIAG	DIAGONAL	SPEC	SPECIFICATION(S)
DIM	DIMENSION	SPLY	SANDED PLYWOOD
DTL	DETAIL	STL	STEEL
EA.	EACH	T	TEE (SHAPE)
EQ	EQUAL	TBD	TO BE DETERMINED
EQUIP.	EQUIPMENT	T.O.	TOP OF
EL	ELEVATION	T.S.	TUBE STEEL
EXT	EXTERIOR	TYP	TYPICAL
F.F.	FINISH FACE	U.N.O.	UNLESS NOTED OTHERWISE
F.O.F.	FACE OF FRAMING	VERT.	VERTICAL
FORTH.	FORTHCOMING	W	WIDE FLANGE (SHAPE)
FLR	FLOOR	W/	WITH
HOR.	HORIZONTAL		
HT	HEIGHT		
HW	HARDWOOD		
INSUL.	INSULATION		
INT	INTERIOR		
MAX	MAXIMUM		

SYMBOL LEGEND



LOCATION MAP

SITE MAP



NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
Prof. Michael Gibson, AIA, NCARB, LEED A.P.
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mdgibson@ksu.edu

Client:
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210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:
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Issue Status:
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Date: March 2, 2021

Cover Sheet

G0.1

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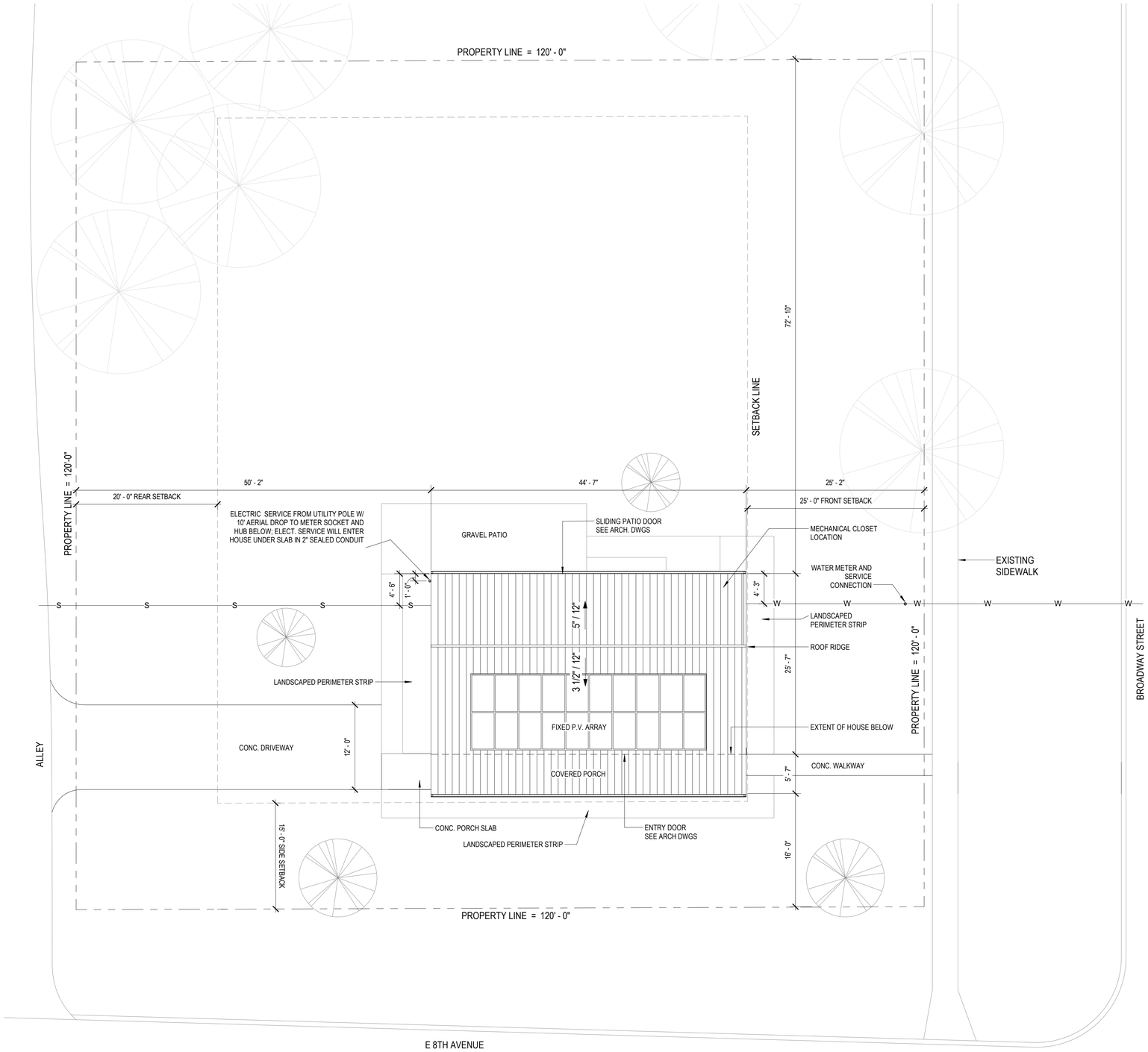

1 Site Plan
A0.1 SCALE: 1/8" = 1'-0"

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Architectural Site Plan

A0.1

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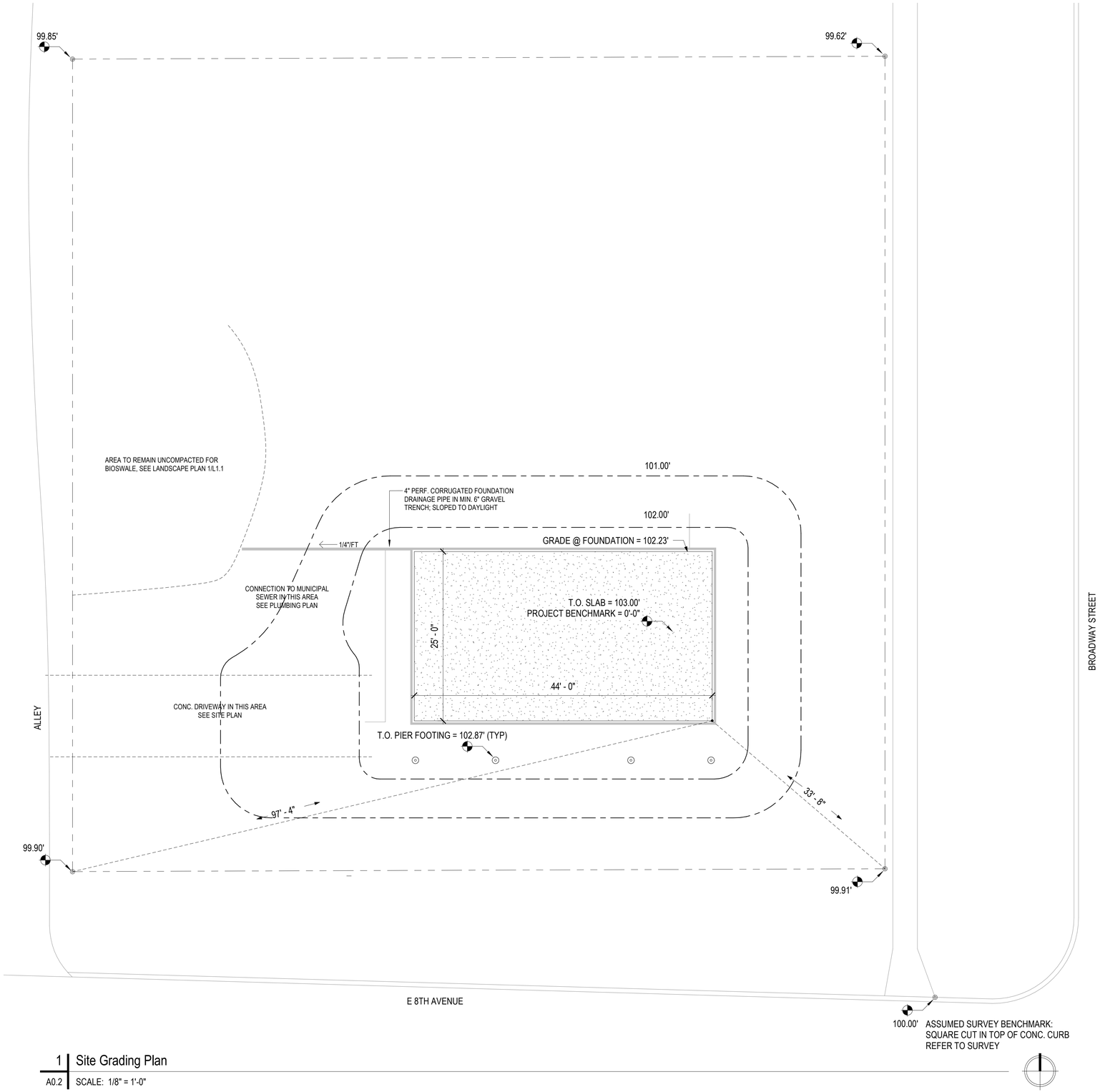

1 | A0.2 Site Grading Plan
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. REFER TO FOUNDATION PLAN FOR STRUCTURAL NOTES RELATED TO BUILDING PAD PREPARATION AND CONSTRUCTION.

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Site Grading Plan

A0.2

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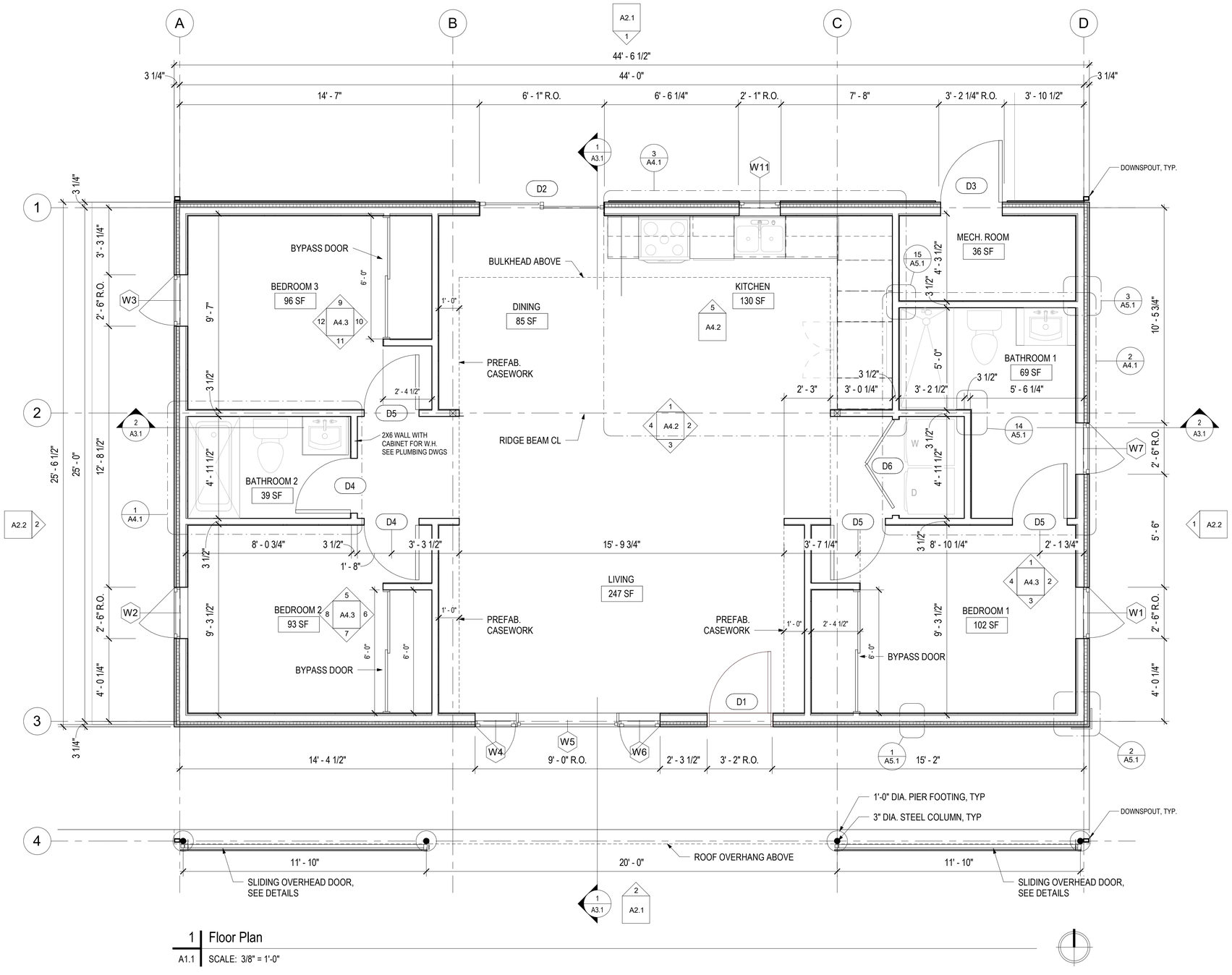

1 | Floor Plan
A1.1 | SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. WHERE CASEWORK INTERSECTS WALLS, GWB FINISH SHALL BE INSULATED + FINISHED BEHIND CASEWORK

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Floor Plan

A1.1

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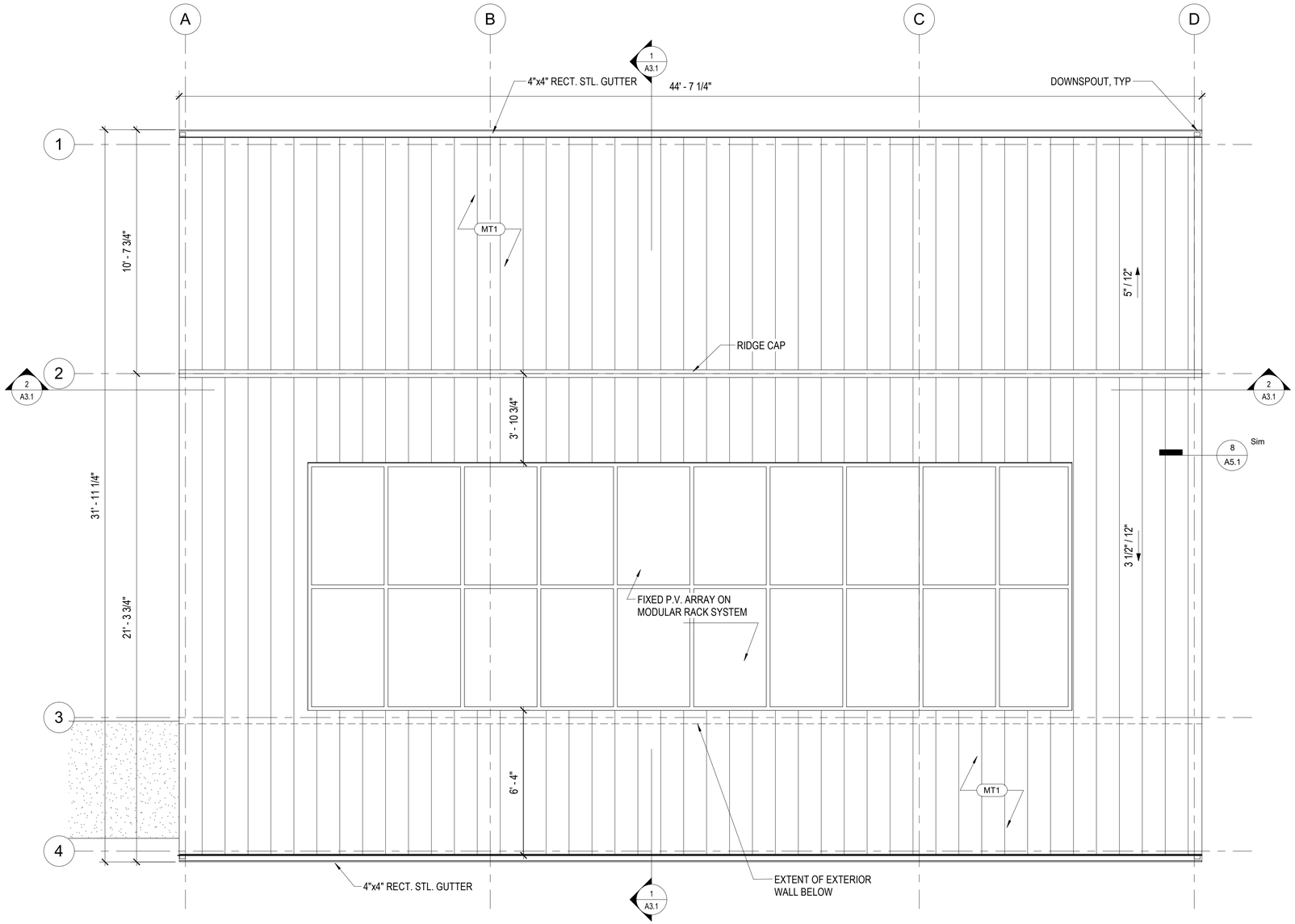

1 | A1.2 Roof Plan
SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. P.V. ARRAY SHALL ALLOW 3' MIN. ACCESS WAY ALONG GABLE TO RIDGE FOR FIRE DEPARTMENT ACCESS.
2. ARCHITECTURAL TEAM SHALL REVIEW AND APPROVE LOCATION OF PV ARRAY SUPPORT POINTS TO CONFIRM ADEQUATE TRANSFER OF STRUCTURAL LOADS. SUPPORTS SHALL BEAR DIRECTLY ON RAFTERS.
3. ARCHITECTURAL TEAM SHALL REVIEW PROPOSED PV ARRAY CONNECTION METHODS. PV ARRAY CONNECTORS SHALL COMPLY WITH ROOF MANUFACTURER RECOMMENDATIONS ON PV INTEGRATION AND SHALL NOT VOID ROOF WARRANTY.

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Roof Plan

A1.2

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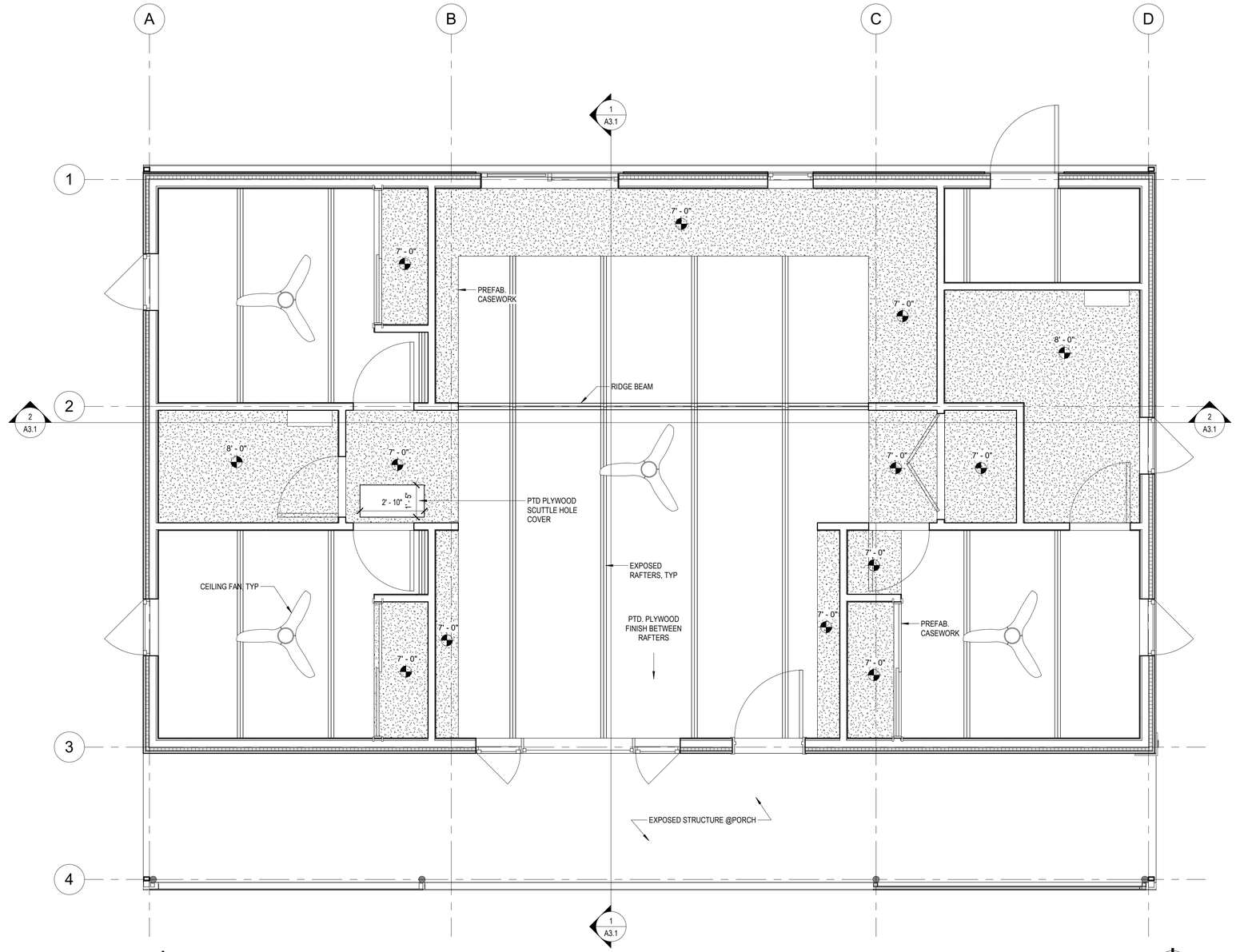

1 Reflected Ceiling Plan
A1.3 SCALE: 3/8" = 1'-0"

KEY

FRAMED CEILING W. GWB - SEE SECTIONS

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Reflected Ceiling Plan

A1.3

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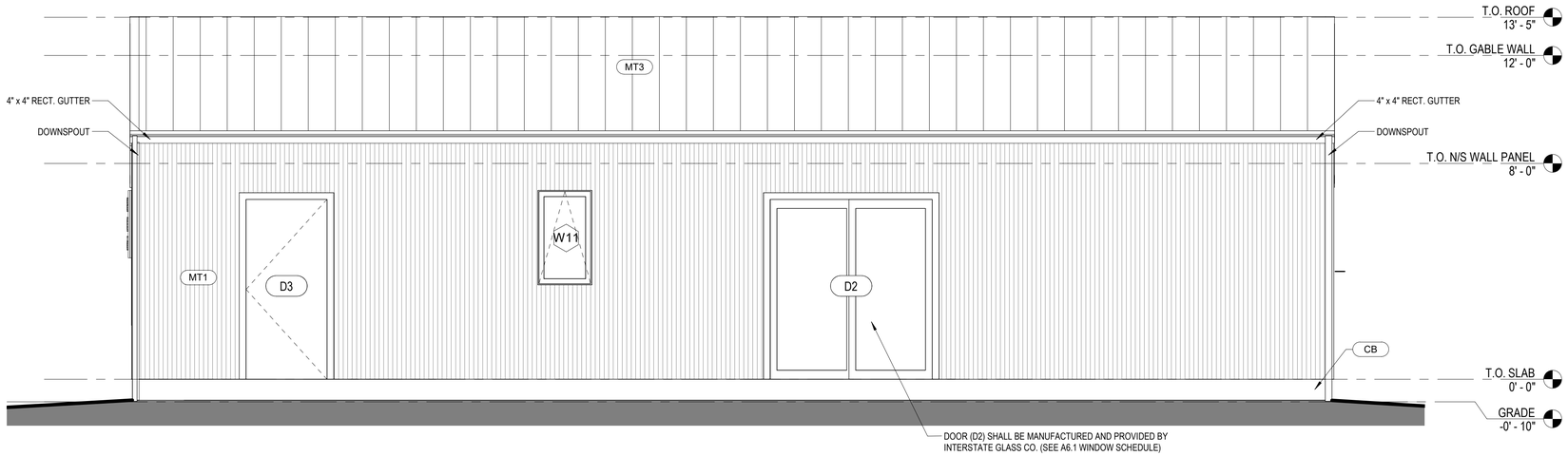
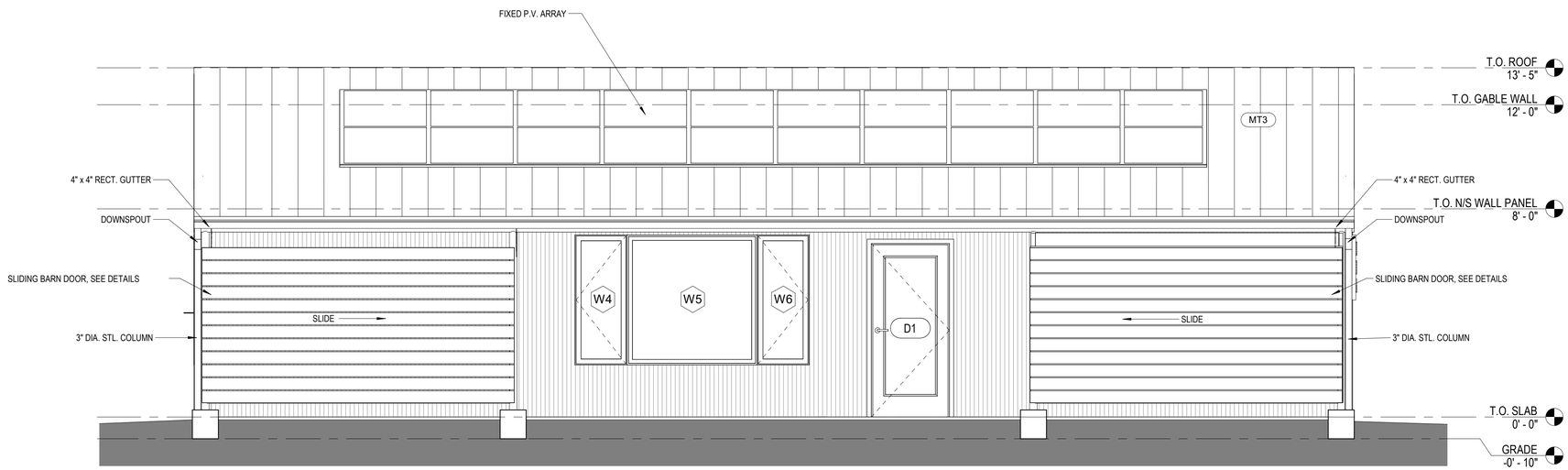


1 | North Elevation
A2.1 | SCALE: 3/8" = 1'-0"



2 | South Elevation
A2.1 | SCALE: 3/8" = 1'-0"

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Exterior Elevations

A2.1

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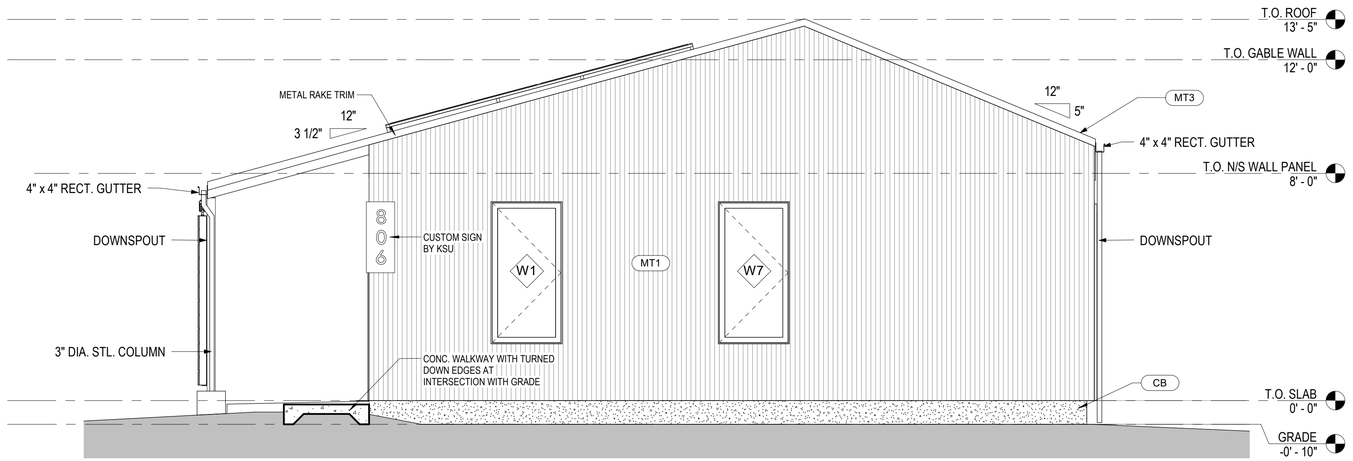
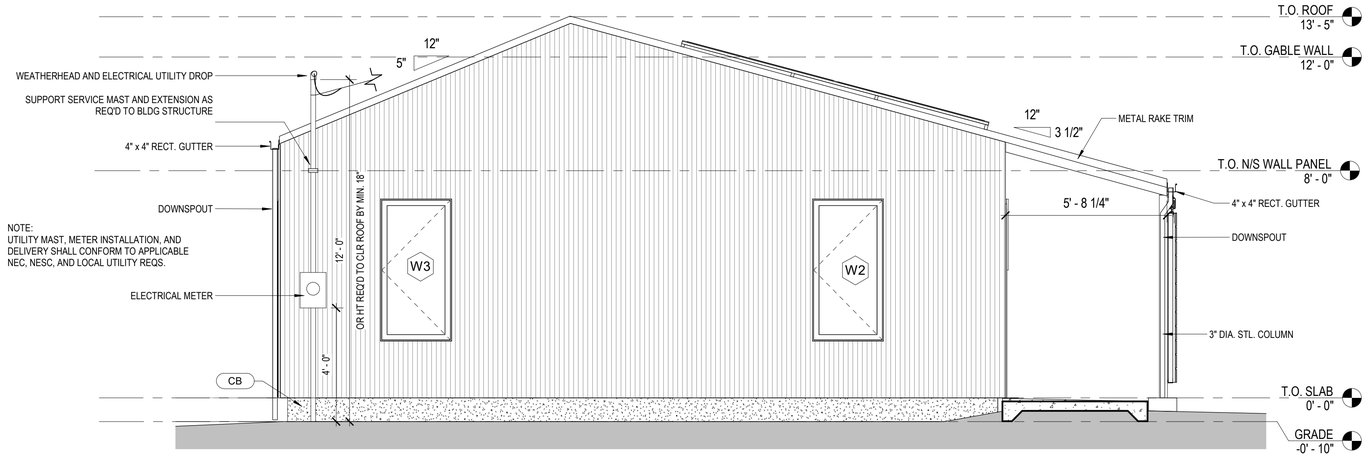


1 East Elevation

A2.2 SCALE: 3/8" = 1'-0"



2 West Elevation

A2.2 SCALE: 3/8" = 1'-0"

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Date: March 2, 2021

Exterior Elevations

A2.2

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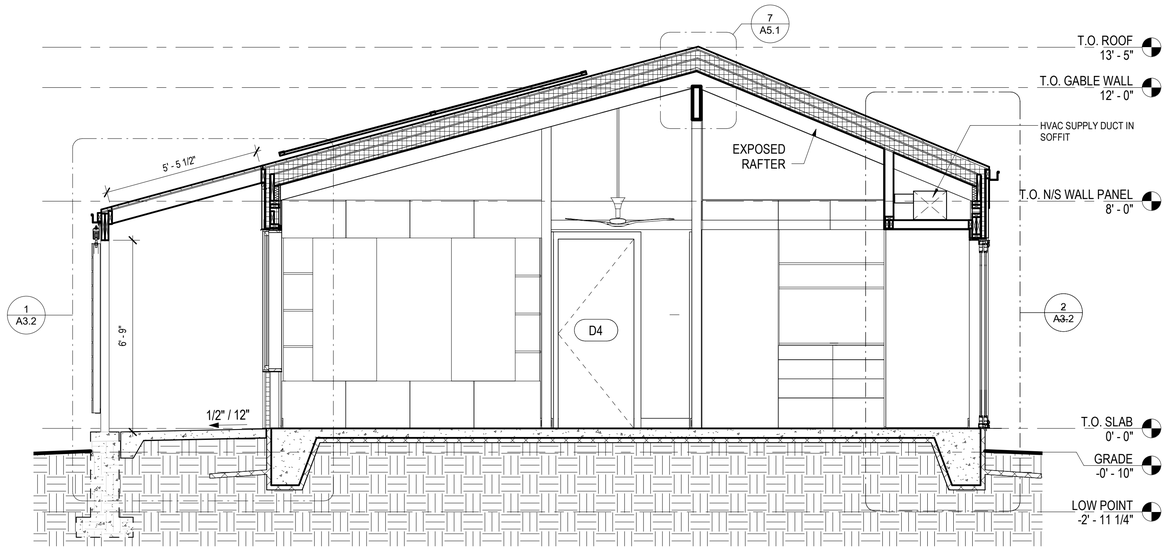
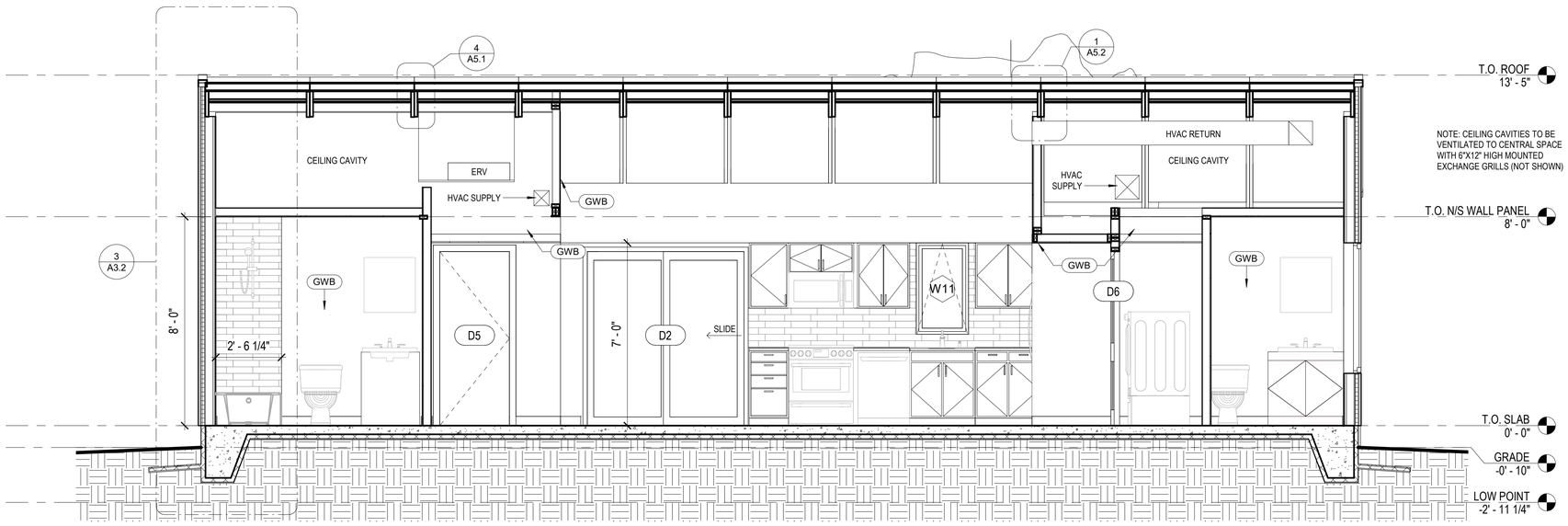


1 | A3.1 N-S Section

SCALE: 3/8" = 1'-0"



2 | A3.1 E-W Section

SCALE: 3/8" = 1'-0"

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Building Sections

A3.1

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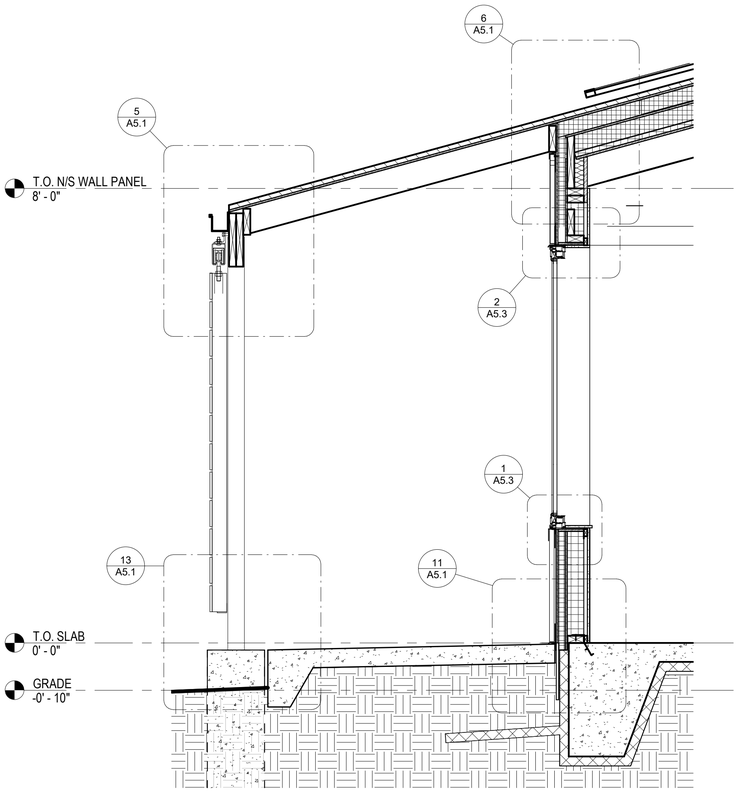
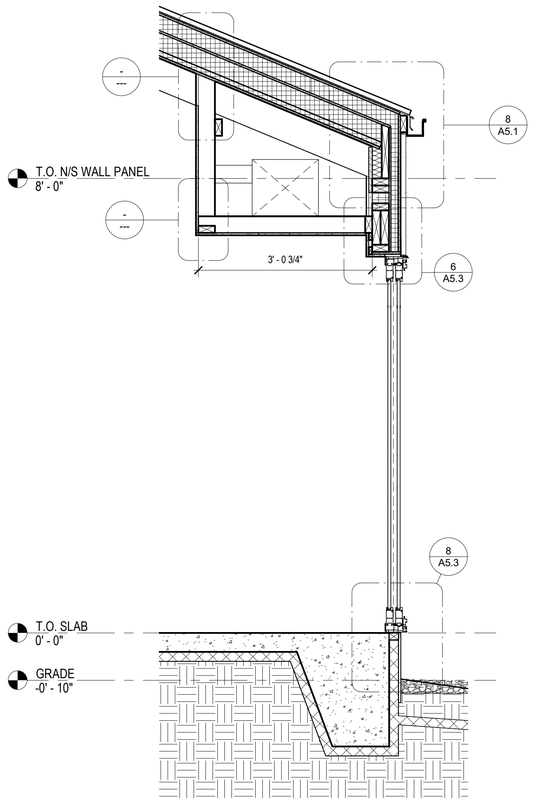
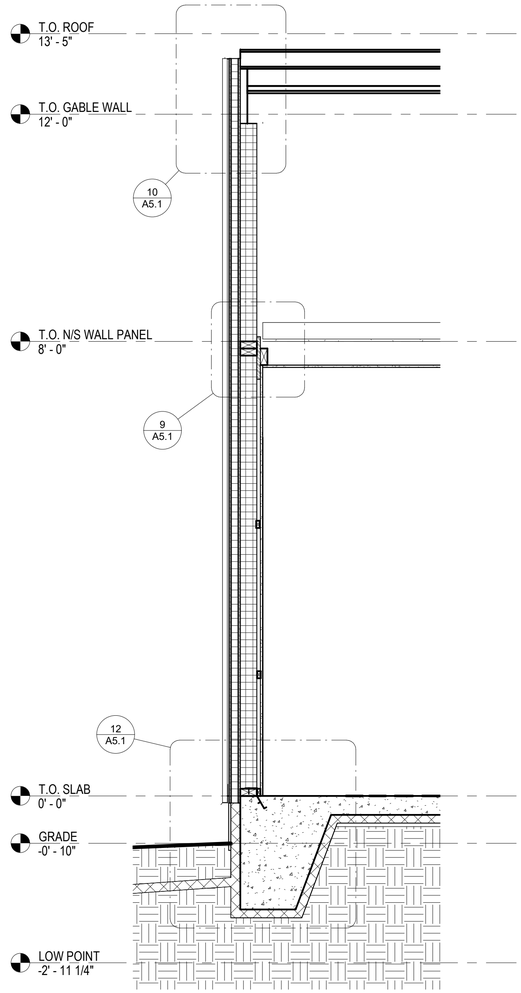


1 | South Ext. Wall Section @ Porch
A3.2 | SCALE: 3/4" = 1'-0"



2 | North Ext. Wall Section @ Dining Room
A3.2 | SCALE: 3/4" = 1'-0"



3 | West Ext. Rake Wall Section
A3.2 | SCALE: 3/4" = 1'-0"

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Wall Sections

A3.2

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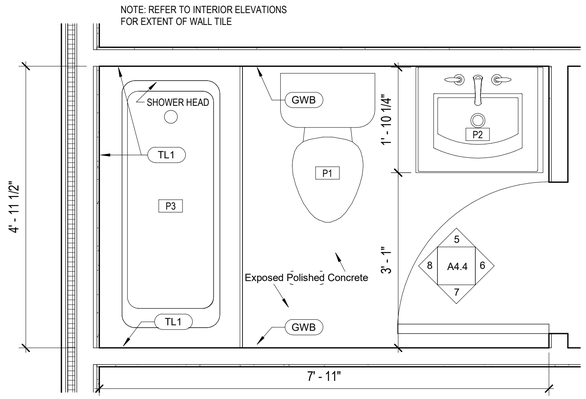
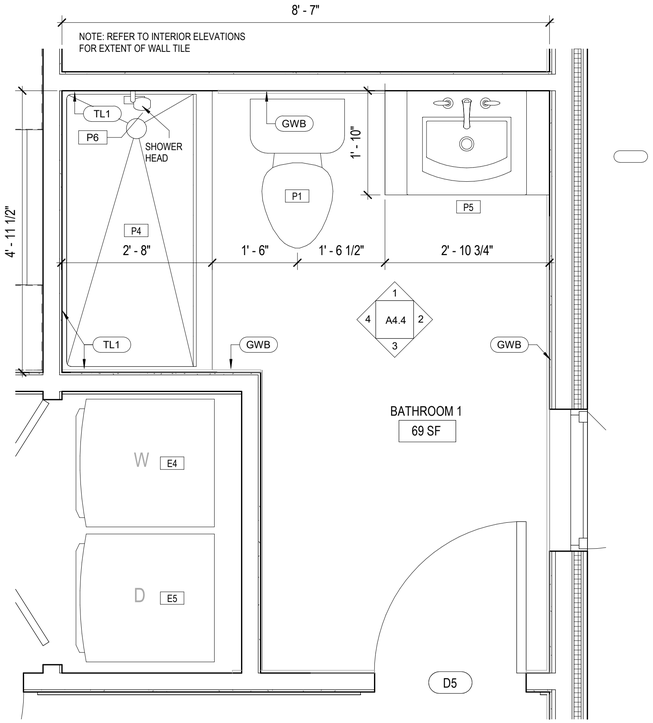
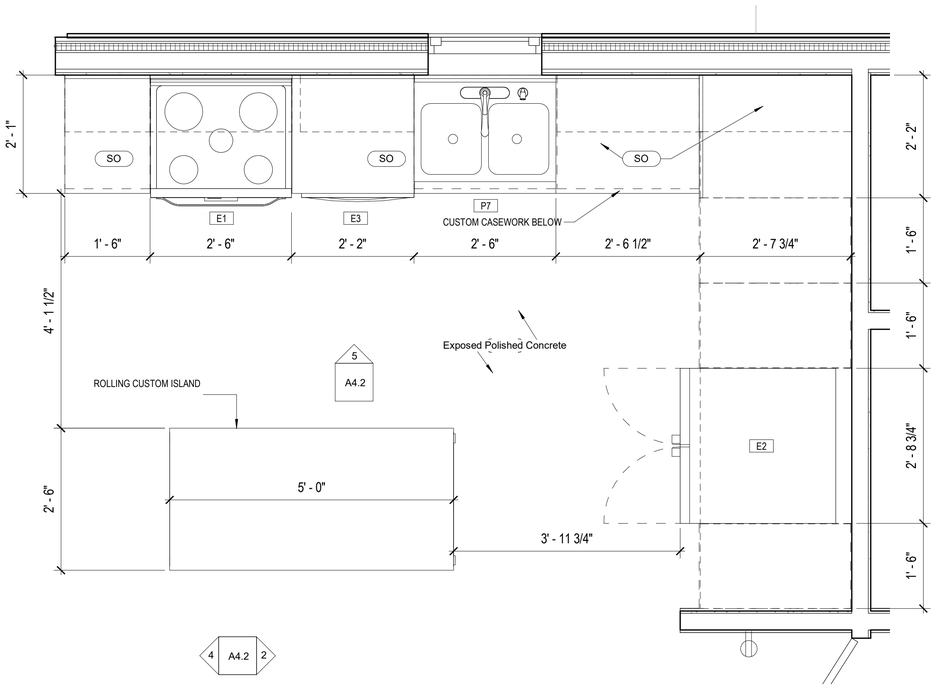


1 Enlarged Bathroom 2 Plan
A4.1 SCALE: 3/4" = 1'-0"



2 Enlarged Bathroom 1 Plan
A4.1 SCALE: 3/4" = 1'-0"



3 Enlarged Kitchen Plan
A4.1 SCALE: 3/4" = 1'-0"

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Enlarged Plans

A4.1

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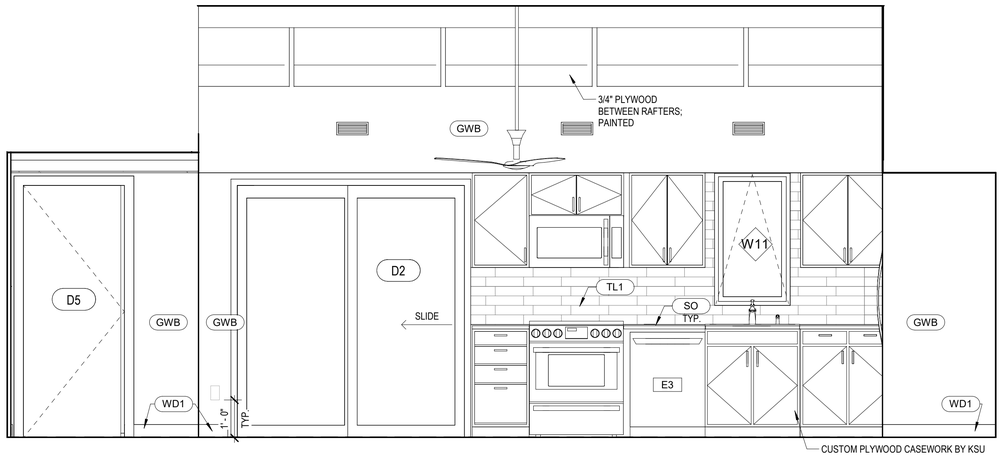
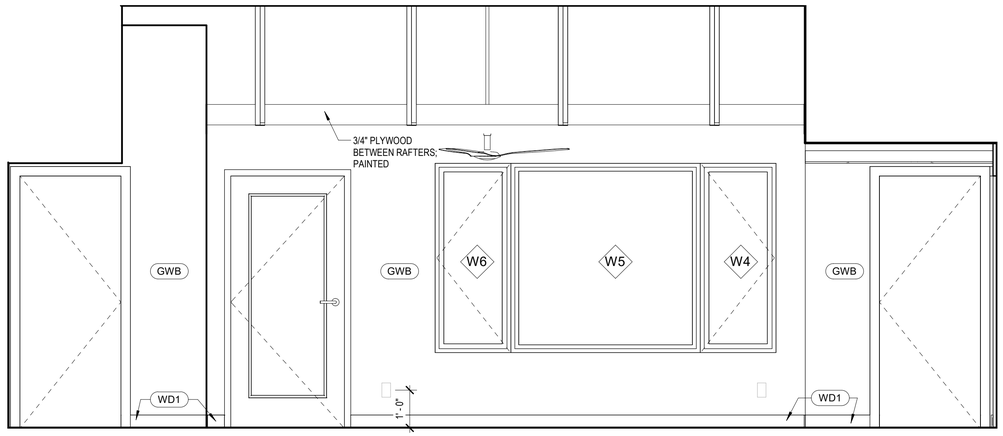


1 | Living Room & Kitchen - North

A4.2 | SCALE: 1/2" = 1'-0"

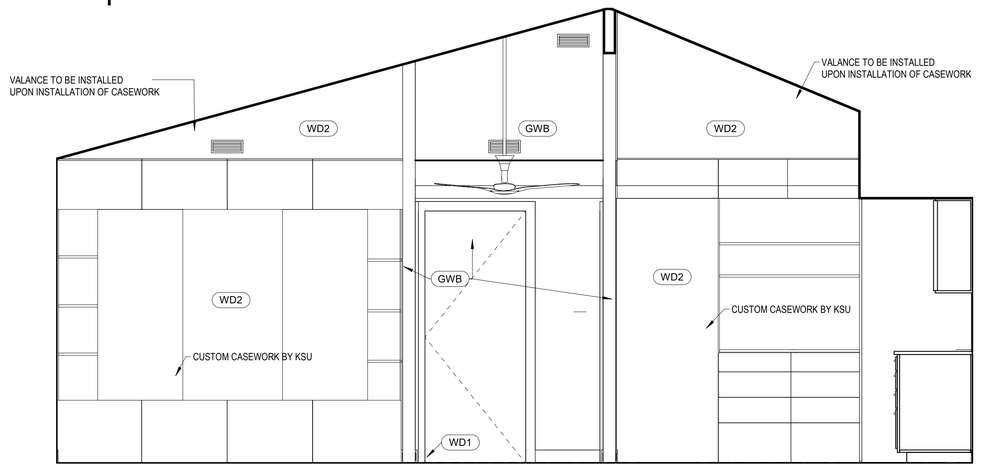
2 | Living Room & Kitchen - East

A4.2 | SCALE: 1/2" = 1'-0"



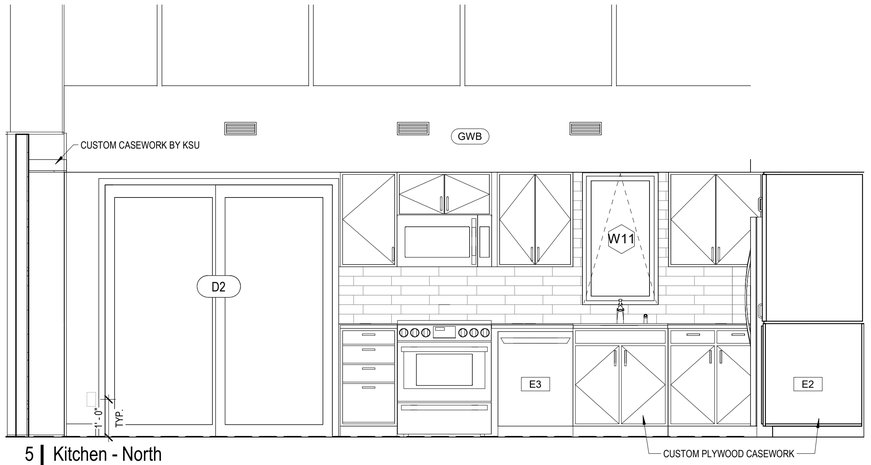
3 | Living Room - South

A4.2 | SCALE: 1/2" = 1'-0"



4 | Living and Dining - West

A4.2 | SCALE: 1/2" = 1'-0"



5 | Kitchen - North

A4.2 | SCALE: 1/2" = 1'-0"

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PH: (620) 549-3527

Project:

St. John, KS
Affordable Net+
Prototype Home

Issue Status:

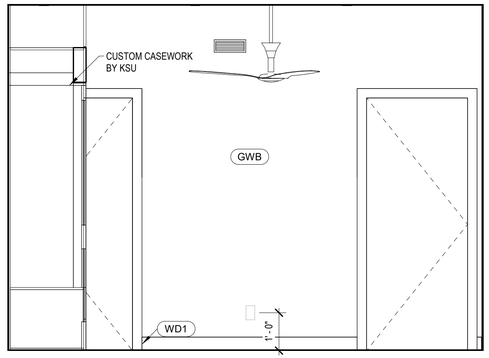
AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

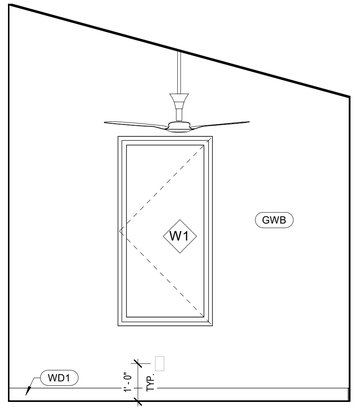
Interior Elevations -
Living, Kitchen, Dining

A4.2

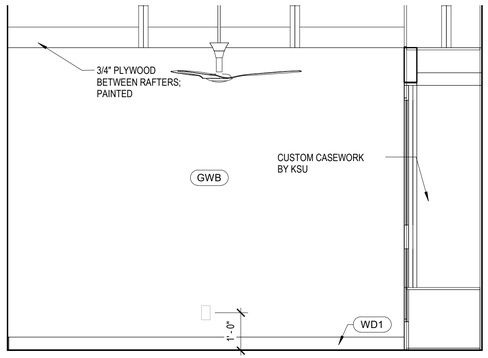
3/2/2021 3:13:50 PM



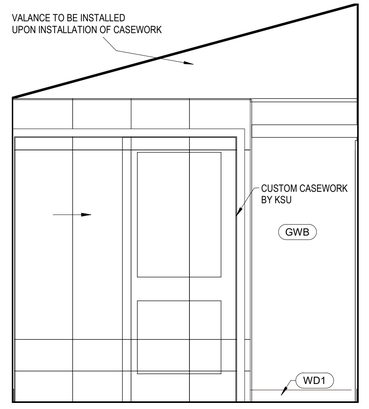
1 | Bedroom 1 - North
A4.3 | SCALE: 1/2" = 1'-0"



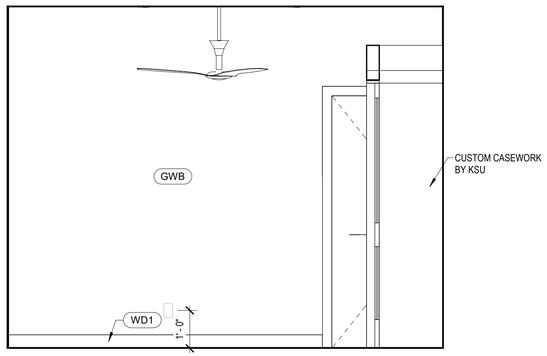
2 | Bedroom 1 - East
A4.3 | SCALE: 1/2" = 1'-0"



3 | Bedroom 1 - South
A4.3 | SCALE: 1/2" = 1'-0"



4 | Bedroom 1 - West
A4.3 | SCALE: 1/2" = 1'-0"



5 | Bedroom 2 - North
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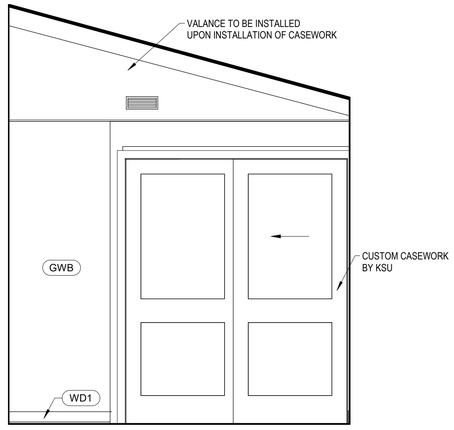
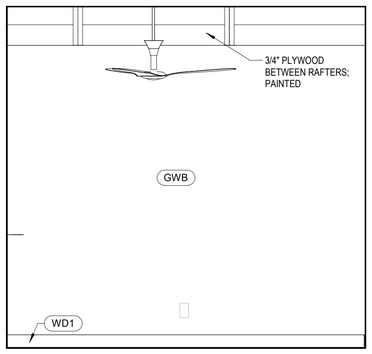
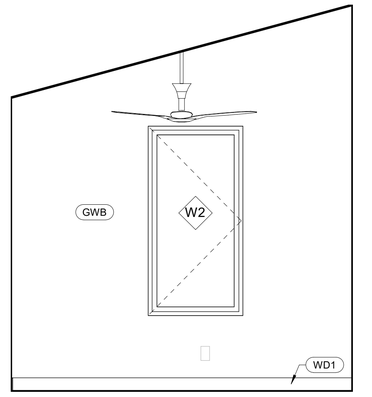


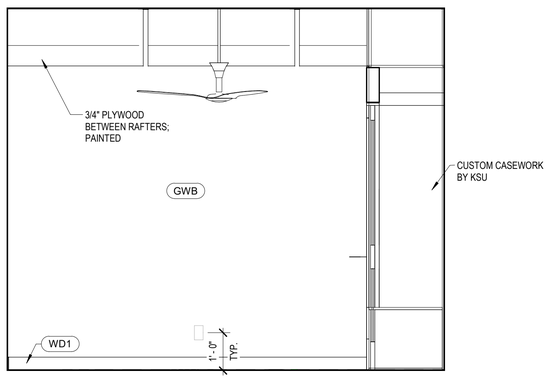
6 | Bedroom 2 - East
A4.3 | SCALE: 1/2" = 1'-0"



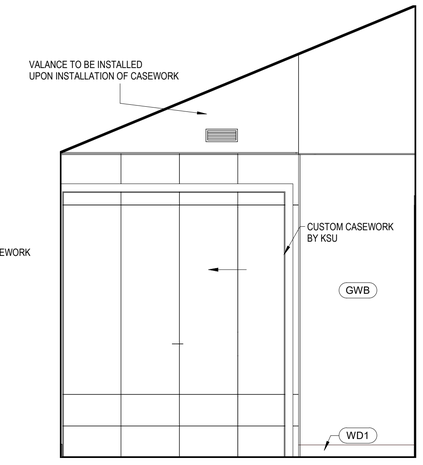
7 | Bedroom 2 - South
A4.3 | SCALE: 1/2" = 1'-0"



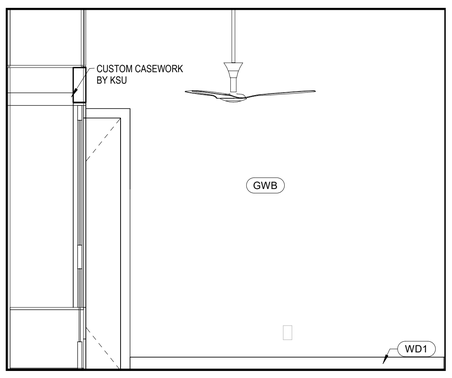
8 | Bedroom 2 - West
A4.3 | SCALE: 1/2" = 1'-0"



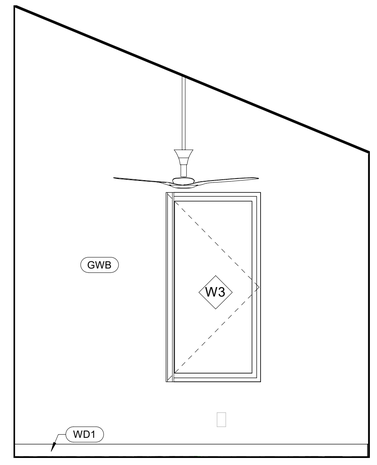
9 | Bedroom 3 - North
A4.3 | SCALE: 1/2" = 1'-0"



10 | Bedroom 3 - East
A4.3 | SCALE: 1/2" = 1'-0"



11 | Bedroom 3 - South
A4.3 | SCALE: 1/2" = 1'-0"



12 | Bedroom 3 - West
A4.3 | SCALE: 1/2" = 1'-0"

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
Prof. Michael Gibson, AIA, NCARB, LEED A.P.
ph: (785) 532-5953 (Architecture Department)
mdgibson@ksu.edu

Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

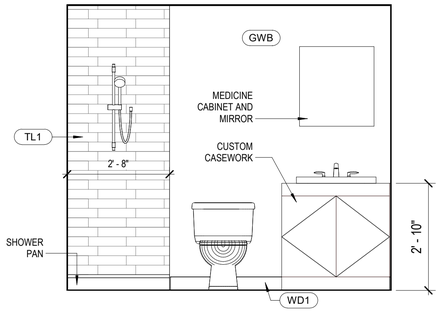
Issue Status:
AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

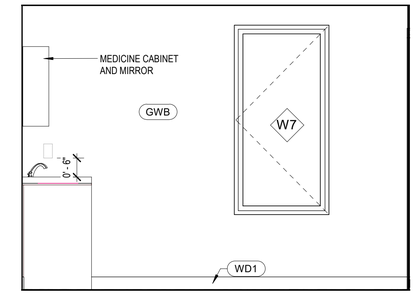
Interior Elevations - Bedrooms

A4.3

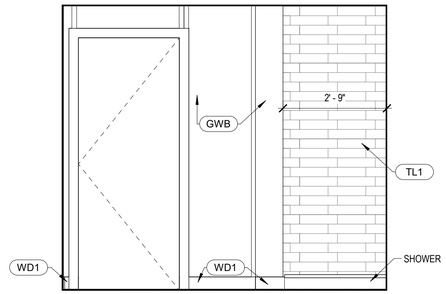
3/2/2021 3:13:53 PM



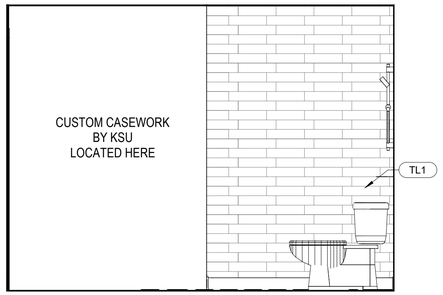
1 | Bathroom 1 - North
A4.4 | SCALE: 1/2" = 1'-0"



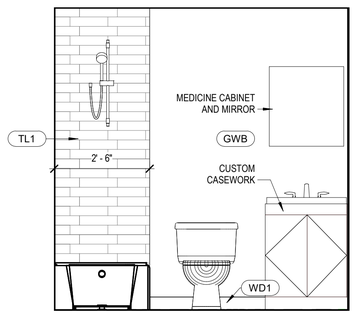
2 | Bathroom 1 - East
A4.4 | SCALE: 1/2" = 1'-0"



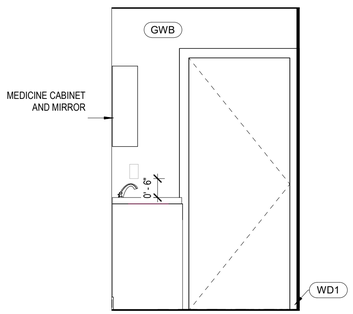
3 | Bathroom 1 - South
A4.4 | SCALE: 1/2" = 1'-0"



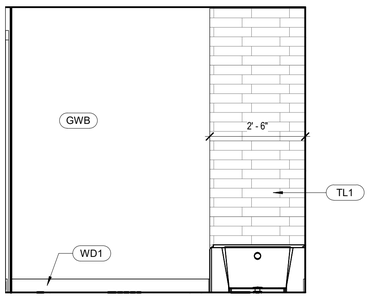
4 | Bathroom 1 - West
A4.4 | SCALE: 1/2" = 1'-0"



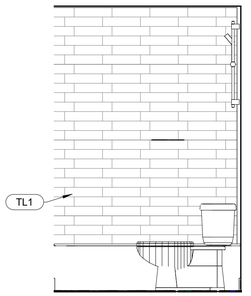
5 | Bathroom 2 - North
A4.4 | SCALE: 1/2" = 1'-0"



6 | Bathroom 2 - East
A4.4 | SCALE: 1/2" = 1'-0"



7 | Bathroom 2 - South
A4.4 | SCALE: 1/2" = 1'-0"



8 | Bathroom 2 - West
A4.4 | SCALE: 1/2" = 1'-0"

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210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

Issue Status:

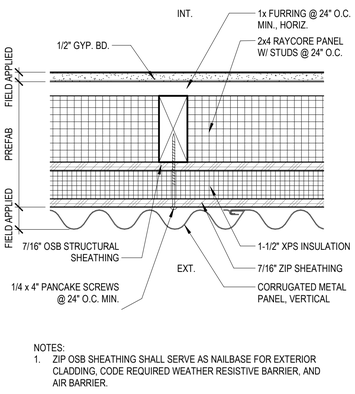
AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

Interior Elevations - Bathrooms

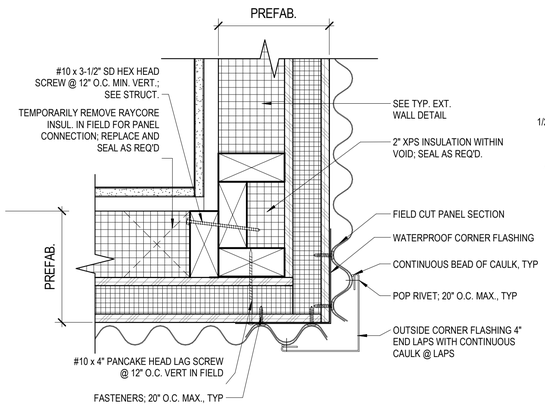
A4.4

3/2/2021 3:13:55 PM

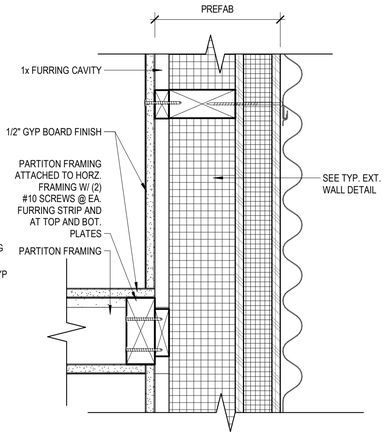


NOTES:
1. ZIP OSB SHEATHING SHALL SERVE AS NAILBASE FOR EXTERIOR CLADDING, CODE REQUIRED WEATHER RESISTIVE BARRIER, AND AIR BARRIER.

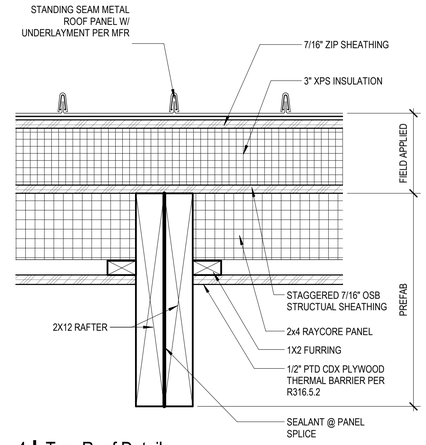
1 | Typical Exterior Wall Detail
A5.1 | SCALE: 3" = 1'-0"



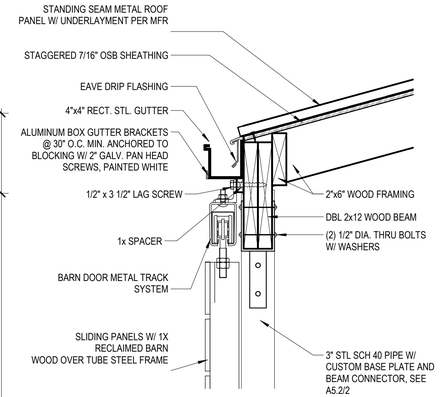
2 | Typ. Corner Plan Detail
A5.1 | SCALE: 3" = 1'-0"



3 | Typ. Int./Ext. Wall Connection Plan Detail
A5.1 | SCALE: 3" = 1'-0"



4 | Typ. Roof Detail
A5.1 | SCALE: 3" = 1'-0"



5 | Porch Roof Edge
A5.1 | SCALE: 1 1/2" = 1'-0"

6 | Roof @ South Ext. Wall Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

7 | Roof Ridge Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

8 | Roof @ North Ext. Wall Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

9 | Typ. Ceiling Joist Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

10 | Roof Connection @ Rake Wall
A5.1 | SCALE: 1 1/2" = 1'-0"

11 | Ext. Wall Base @ Porch Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

12 | Typ. Wall Base @ Foundation Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

13 | Foundation Edge Detail @ Porch
A5.1 | SCALE: 1 1/2" = 1'-0"

14 | Typ. Partition Corner Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

15 | Typ. Partition Intersection Detail
A5.1 | SCALE: 1 1/2" = 1'-0"

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Issue Status:

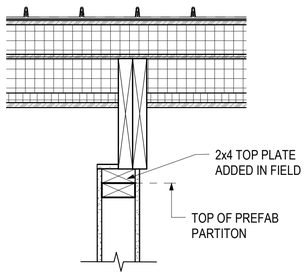
AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

Details

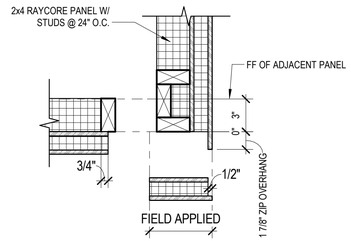
A5.1

3/2/2021 3:13:57 PM



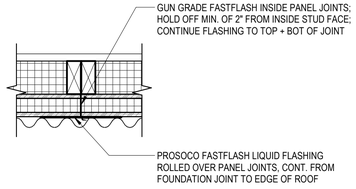
1 Rafter Connection @ Int. Partition

A5.2 SCALE: 1 1/2" = 1'-0"



2 Typical Panel Joint @ Corner

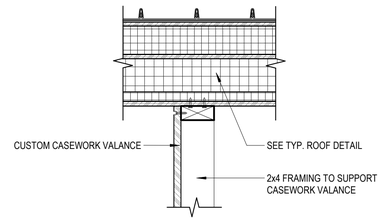
A5.2 SCALE: 1 1/2" = 1'-0"



NOTES:
1. CLAMP PANELS @ TOP AND BOTTOM PRIOR TO INSTALLING LAG SCREWS OR SECURING TO FOUNDATION ANCHORS.
2. WHERE PANEL JOINTS EXCEED 1/4", INSTALL BACK ROD AND CONTINUE TO FILL JOINT W/ GUNGRADE FASTFLASH UNTIL CLOSED.
3. PANEL JOINTS THAT EXCEED 1" MUST BE STRUCTURALLY IMPROVED BY FILED TRIMMING/ PLANNING. GC SHALL ENSURE LOAD-BEARING STUDS ARE NOT REDUCED IN DEPTH BY MORE THAN 25%, AS PERMITTED BY IRC 2012 CH. 6 NOTCHING ALLOWANCES.

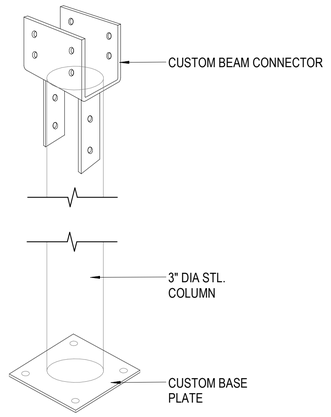
3 Typ. Panel Joint

A5.2 SCALE: 1 1/2" = 1'-0"



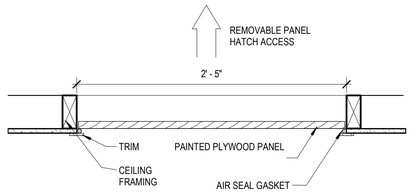
4 Casework Valance @ Ceiling

A5.2 SCALE: 1 1/2" = 1'-0"



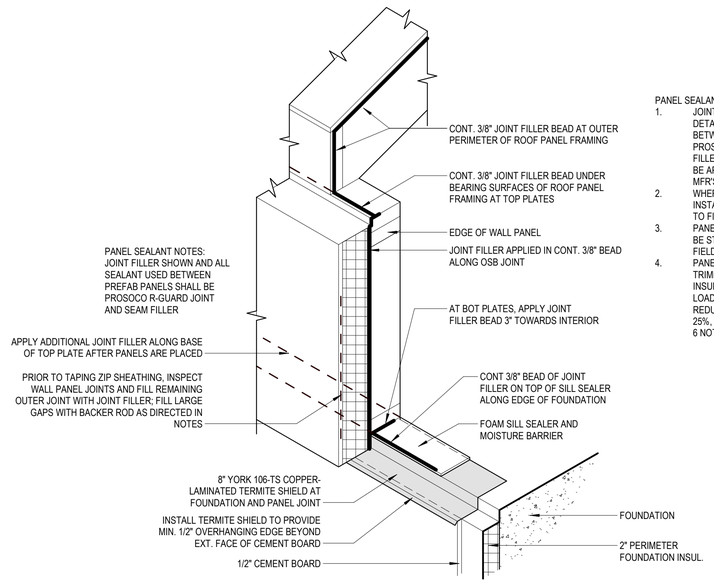
5 Column Cap

A5.2 SCALE: 1 1/2" = 1'-0"



6 Scuttle Hole Cover

A5.2 SCALE: 1 1/2" = 1'-0"



PANEL SEALANT NOTES
1. JOINT FILLER/SEALANT NOTED ON DETAILS AND ALL SEALANT USED BETWEEN PREFAB PANELS SHALL BE PROSOCO R-GUARD JOINT AND SEAM FILLER. JOINT FILLE/SEALANT SHALL BE APPLIED IN ACCORDANCE WITH MFR'S INSTALLATION INSTRUCTIONS.
2. WHERE PANEL JOINTS EXCEED 3/8", INSTALL BACKER ROD AND CONTINUE TO FILL JOINT W/ JOINT FILLER
3. PANEL JOINTS THAT EXCEED 1" MUST BE STRUCTURALLY IMPROVED BY FIELD MODIFICATION.
4. PANEL SECTIONS MAY BE TRIMMED/PLANED IF NECESSARY TO INSURE FITMENT. GC SHALL ENSURE LOAD-BEARING STUDS ARE NOT REDUCED IN DEPTH BY MORE THAT 25%, AS PERMITTED BY IRC 2012 CH. 6 NOTCHING ALLOWANCES.

7 Typ. Wall Sealant Details

A5.2 SCALE: 1 1/2" = 1'-0"

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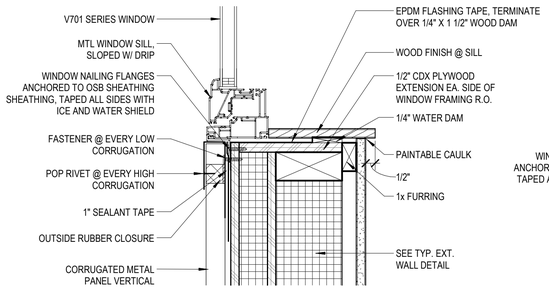
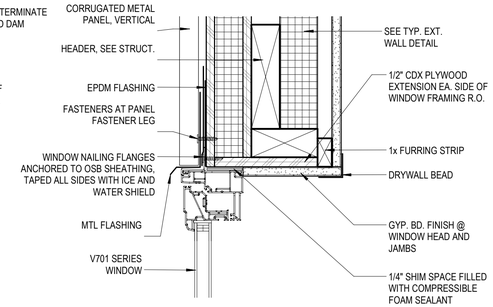
A5.2

3/2/2021 3:13:58 PM



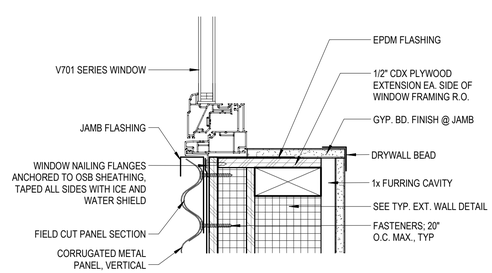
1 | Typ. Window Sill Detail

A5.3 | SCALE: 3" = 1'-0"



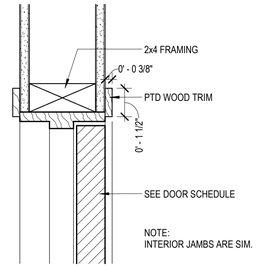
2 | Typ. Window Head Detail

A5.3 | SCALE: 3" = 1'-0"



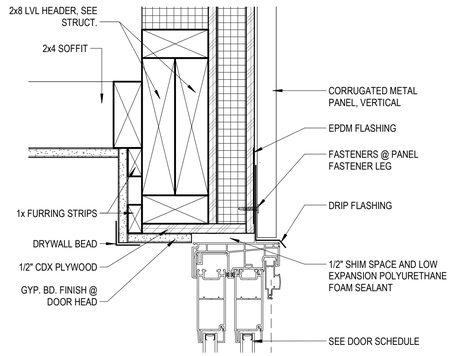
3 | Typ. Window Jamb Detail

A5.3 | SCALE: 3" = 1'-0"



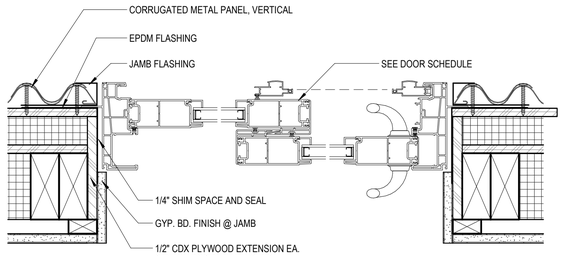
4 | Typ. Int. Door Head Detail

A5.3 | SCALE: 3" = 1'-0"



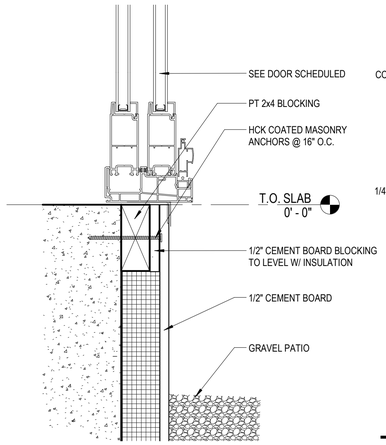
6 | Sliding Glass Door Head Detail

A5.3 | SCALE: 3" = 1'-0"



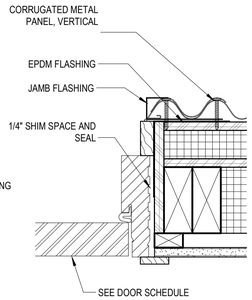
7 | Sliding Glass Door Jamb

A5.3 | SCALE: 3" = 1'-0"



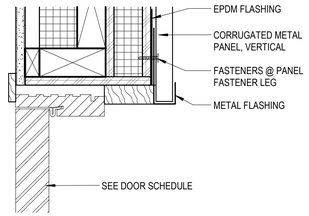
8 | Sliding Door @ Threshold

A5.3 | SCALE: 3" = 1'-0"



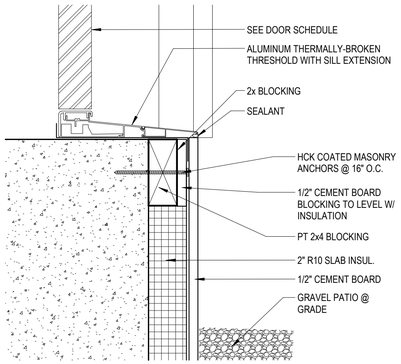
9 | Storage Rm. Door Jamb

A5.3 | SCALE: 3" = 1'-0"



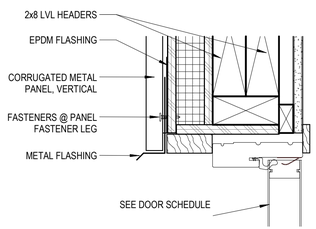
10 | Storage Rm. Door Head

A5.3 | SCALE: 3" = 1'-0"



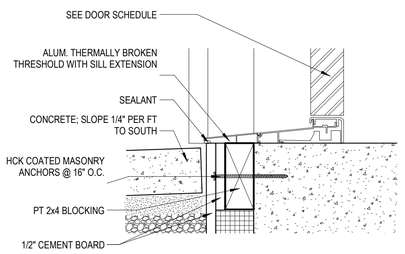
11 | Storage Rm. Door Threshold

A5.3 | SCALE: 3" = 1'-0"



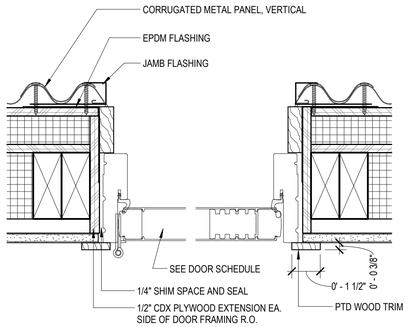
12 | Entry Door Head

A5.3 | SCALE: 3" = 1'-0"



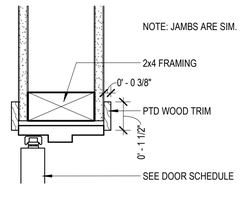
13 | Entry Door Threshold

A5.3 | SCALE: 3" = 1'-0"



14 | Entry Door Jamb

A5.3 | SCALE: 3" = 1'-0"



15 | Bi-Fold Door Head

A5.3 | SCALE: 3" = 1'-0"

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210 E. 3RD
COURTHOUSE ANNEX
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ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

Issue Status:

AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

Door and Window Details

A5.3

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Finish Schedule

Mark	Material	Finish	Specifications
GWB	GYPSUM WALL BOARD	PRIMED, PAINTED	ARCH TO PROVIDE COLOR SELECTIONS
MT1	CONCEALED SEAM METAL SIDING	PREFINISHED - BRISTOL BLUE	VERTICAL CORRIGATED BY BERRIDGE
MT2	METAL SIDING TRIM	PREFINISHED - SHASTA WHITE	BY BERRIDGE
WD1	WOOD BASEBOARD	PREFINISHED	
SO	SOLID SURFACE	RECYCLED PORCELAIN AND RESIN	RECYCLED SURFACES OF KC
WD2	INTERIOR PLYWOOD	SATIN POLYURETHANE	SANDED BIRCH PLYWOOD
MT3	STANDING SEAM METAL ROOFING	PREFINISHED - SHASTA WHITE	STANDING SEAM BY BERRIDGE
TL1	WALL TILE	GLAZED PORCELAIN	3" X 12" SUBWAY TILE
CB	CEMENT BOARD		
MT4	METAL ROOF TRIM	PREFINISHED - SHASTA WHITE	BY BERRIDGE
TL2	WALL TILE	GLAZED PORCELAIN	

Window Schedule

Window ID	Type	Frame Dimension		Sill Height	Head Height	Description	Comments
		Width	Height				
W1	Casement	2' - 6"	5' - 0"	2' - 0"	7' - 0"	RIGHT-HAND CASEMENT WINDOW	INSTALL EGRESS HARDWARE
W2	Casement	2' - 6"	5' - 0"	2' - 0"	7' - 0"	LEFT-HAND CASEMENT WINDOW	INSTALL EGRESS HARDWARE
W3	Casement	2' - 6"	5' - 0"	2' - 0"	7' - 0"	LEFT-HAND CASEMENT WINDOW	INSTALL EGRESS HARDWARE
W4	Casement	2' - 0"	5' - 0"	2' - 0"	7' - 0"	LEFT-HAND CASEMENT WINDOW	W4, W5, W6 TO BE MULLED; MANUFACTURER SHALL MULL IN FACTORY OR PROVIDE FIELD MULL HARDWARE
W5	Fixed	5' - 0"	5' - 0"	2' - 0"	7' - 0"	FIXED WINDOW	W4, W5, W6 TO BE MULLED; MANUFACTURER SHALL MULL IN FACTORY OR PROVIDE FIELD MULL HARDWARE
W6	Casement	2' - 0"	5' - 0"	2' - 0"	7' - 0"	RIGHT-HAND CASEMENT WINDOW	W4, W5, W6 TO BE MULLED; MANUFACTURER SHALL MULL IN FACTORY OR PROVIDE FIELD MULL HARDWARE
W7	Casement	2' - 6"	5' - 0"	2' - 0"	7' - 0"	RIGHT-HAND CASEMENT WINDOW	
W8	Awning	2' - 0"	3' - 6"	3' - 6"	7' - 0"	AWNING WINDOW	

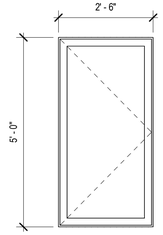
NOTES:
1. ALL WINDOWS SHALL BE MANUFACTURED AND PROVIDED BY INTERSTATE GLASS CO.
2. OPERABLE WINDOWS SHALL INCLUDE SCREENS
3. ALL WINDOWS SHALL INCLUDE INTEGRAL NAILING FLANGES
4. ALL WINDOWS SHALL BE WHITE VINYL W/ DBL PANE, LOW-E ARGON IGUs

Door Schedule

Door ID	Quantity	Door		Function	Description	Hardware
		Width	Height			
D1	1	3' - 0"	6' - 8"	Exterior	FULL LITE PRIMED WHITE RIGHT-HAND INSWING FIBERGLASS PREHUNG FRONT DOOR (BY KSU)	(BLACK) KEYED LEVER ENTRY DOOR HARDWARE W/ (BLACK) CYLINDER DEADBOLT (BY KSU)
D2	1	6' - 0"	6' - 8"	Exterior	FULL LITE WHITE LEFT-HAND SLIDING PATIO DOOR (BY INTERSTATE GLASS CO.)	(BLACK) SLIDING DOOR PULL AND LATCH LOCK (BY KSU)
D3	1	3' - 0"	6' - 8"	Exterior	FLUSH PRIMED WHITE RIGHT-HAND OUTSWING STEEL PREHUNG FRONT DOOR (BY KSU)	(BLACK) KEYED LEVER ENTRY DOOR HARDWARE (BY KSU)
D4	2	2' - 8"	6' - 8"	Interior	FULL LITE WHITE LEFT-HAND SLIDING PATIO DOOR (BY KSU)	(BLACK) LEVER PRIVACY INTERIOR DOOR HARDWARE (BY KSU)
D5	3	2' - 8"	6' - 8"	Interior	SOLID PANEL RIGHT-HAND PREHUNG INTERIOR DOOR (BY KSU)	(BLACK) LEVER PRIVACY INTERIOR DOOR HARDWARE (BY KSU)
D6	1	4' - 8"	6' - 8"	Interior	SOLID PANEL LEFT-HAND PREHUNG INTERIOR DOOR (BY KSU)	(BLACK) HALL/CLOSET DOOR KNOB HARDWARE (BY KSU)
D7	1	5' - 10"	7' - 0"	Interior		
D8	1	5' - 10"	7' - 0"	Interior		
D9	1	5' - 10"	7' - 0"	Interior		

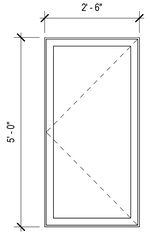
NOTE: DOOR (D2) SHALL BE MANUFACTURED AND PROVIDED BY INTERSTATE GLASS CO.

NOTE:
W1 + W7 WINDOWS SHALL BE MANUFACTURED BY **INTERSTATE GLASS CO.**



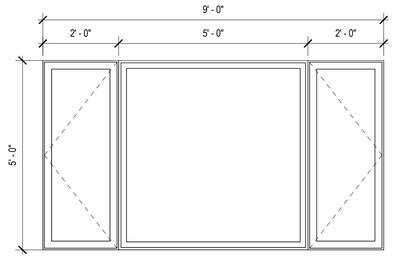
1 Window W1, W7
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
W2 + W3 WINDOWS SHALL BE MANUFACTURED BY **INTERSTATE GLASS CO.**



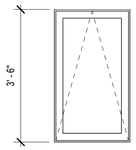
2 Window W2, W3
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
W4, W5 AND W6 WINDOWS SHALL BE MANUFACTURED BY **INTERSTATE GLASS CO.**, MULLED PER MANUFACTURER'S RECOMMENDATIONS



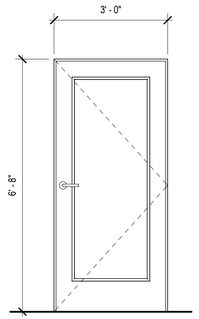
3 Window W4, W5, W6
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
W8 WINDOW SHALL BE MANUFACTURED BY **INTERSTATE GLASS CO.**



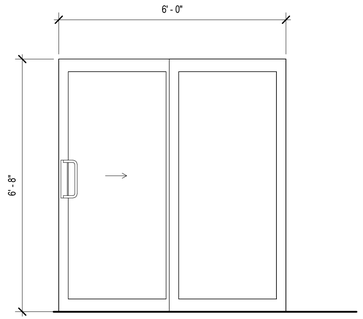
4 Window W8
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
DOOR D1 AND CORRESPONDING HARDWARE SHALL BE PRE-SELECTED, PURCHASED AND INSTALLED BY KSU



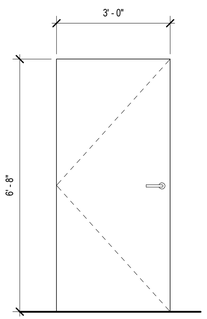
5 Door D1
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
DOOR D2 SHALL BE MANUFACTURED AND PROVIDED BY **INTERSTATE GLASS CO.**



6 Door D2
A6.1 SCALE: 1/2" = 1'-0"

NOTE:
DOOR D3 AND CORRESPONDING HARDWARE SHALL BE PRE-SELECTED, PURCHASED AND INSTALLED BY KSU



8 Door D3
A6.1 SCALE: 1/2" = 1'-0"

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Schedules

A6.1

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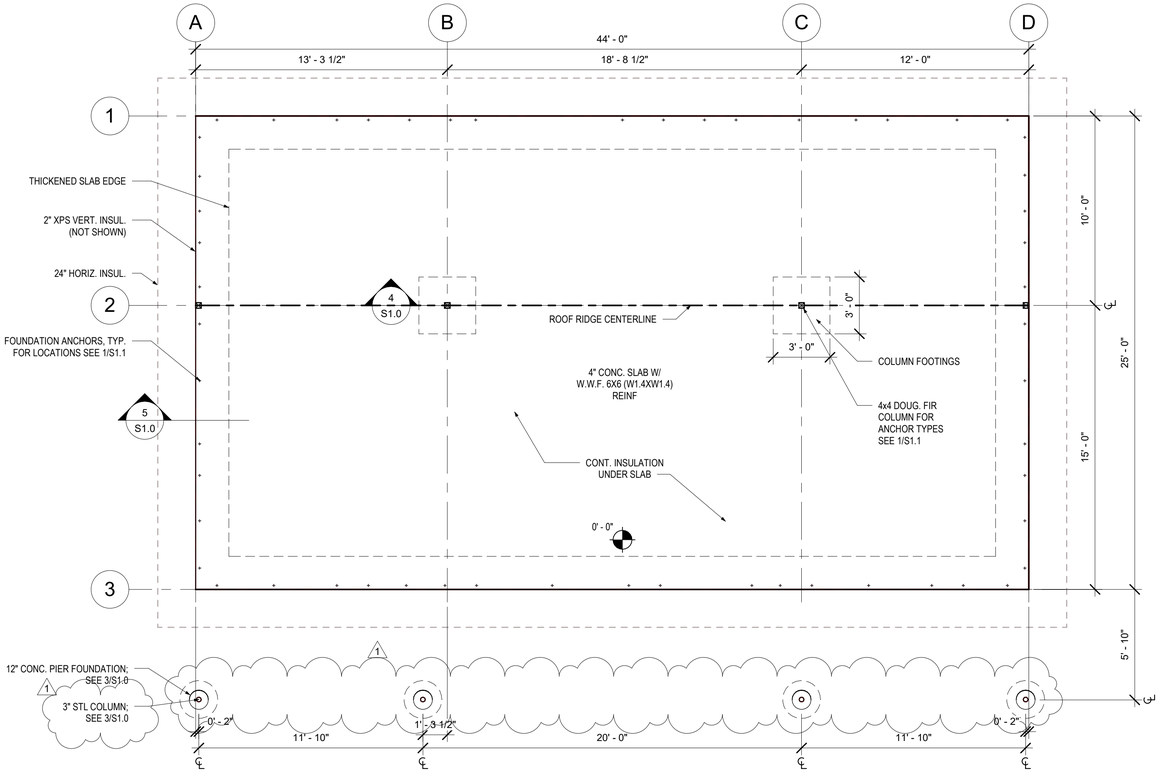
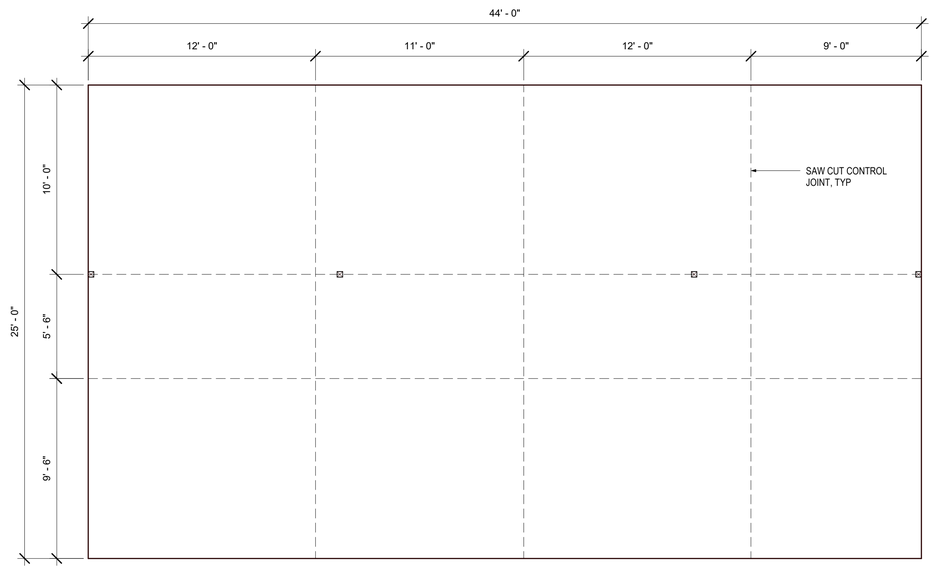


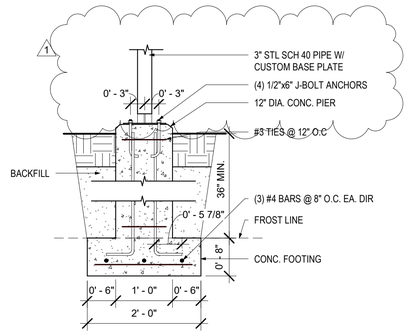
1 | Foundation Plan

S1.0 | SCALE: 1/4" = 1'-0"



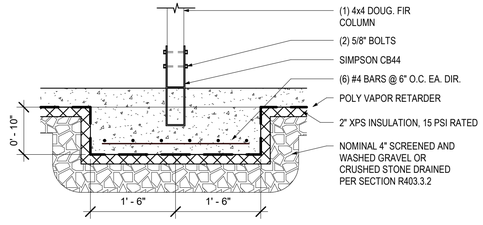
2 | Control Joint Plan

S1.0 | SCALE: 1/4" = 1'-0"



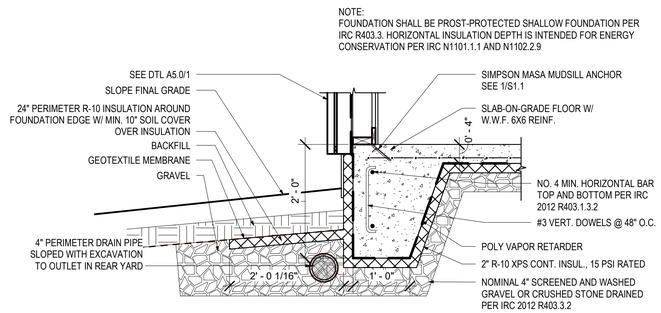
3 | Typ. Pier Foundation

S1.0 | SCALE: 3/4" = 1'-0"



4 | Typ. Column Foundation

S1.0 | SCALE: 3/4" = 1'-0"



5 | Typ. Foundation Edge

S1.0 | SCALE: 3/4" = 1'-0"

GENERAL NOTES

1. FOUNDATION DESIGN ASSUMS MIN. 1500 PSF SOIL BEARING CAPACITY BENEATH SLAB.
2. PROPERLY REMOVE VEGETATION, ORGANIC TOPSOIL, AND ROOT SYSTEMS FROM BELOW PROPOSED BUILDING FOOTPRINT PLUS MINIMUM OF 5 FEET BEYOND FOOTPRINT.
3. FOUNDATION CONTRACTOR SHALL PROOF ROLL BASE SOIL CONDITIONS OR HAVE COMPACTION TEST PERFORMED TO ENSURE MIN. 1500 PSF BEARING CAPACITY.
4. UNDERCUT ANY SOFT ZONES IN BASE SOIL AND BACKFILL WITH CONTROLLED DENSITY FILL AND COMPACTED.
5. CONSTRUCTED BUILDING PAD SHALL USE FILL MATERIALS ADEQUATE FOR ACHIEVING A MINIMUM 1500 BEARING CAPACITY AND BE COMPACTED PRIOR TO SLAB CONSTRUCTION. FILL TYPE SHALL BE GW, GP, SW, OR SP. PLACE CONTROLLED FILLS IN MAX 8-IN THICK LOOSE LIFTS AND COMPACT EACH LIFT TO A MIN. OF 98% STANDARD PROCTOR DRY DENSITY (ASTM D-698). ADJUST MOISTURE OF FILL TO ACHIEVE PROPER COMPACTION.
6. CONCRETE STRENGTH SHALL BE MIN. 3,000 PSI AND CONCRETE SHALL BE 6% (+/- 1%) AIR-ENTRAINED FOR SLABS, FOUNDATIONS, AND FOOTINGS SHOWN.
7. REBAR SHALL BE MIN. 40 KSI
8. 6MM POLYETHYLENE VAPOR RETARDER USED WITH 6" LAPPED JOINTS.
9. FOUNDATION DRAINAGE WILL BE IN ACCORDANCE WITH IRC R-405.
10. EXCAVATION TO BE SLOPED TO OUTFLOW POINT W/ 6" PERIMETER DRAIN AND LINED WITH MIN. OF 6" OF SCREENED AND WASHED GRAVEL. SEE GRADING PLAN.
11. CONCRETE-ENCASED GROUNDING ELECTRODE TO BE ATTACHED TO MIN. 20' LENGTH OF CONCRETE-ENCASED REBAR PER E3608.1 AND EXTENDED ABOVE SLAB WHERE NOTED.
12. SEE 1-S1.1 FOUNDATION ANCHOR PLAN FOR THE LOCATION OF FOUNDATION MASA MUDSILL ANCHORS.
13. FOUNDATIONS AND FOOTINGS SHALL NOT BE POURED ON FROZEN OR SNOW-COVERED GROUND.
14. REFER TO FORTHCOMING PLUMBING PLAN FOR THE LOCATION AND CONFIGURATION OF UNDERSLAB WASTE AND WATER LINES.
15. REFER TO FORTHCOMING ELECTRICAL PLAN FOR THE LOCATION OF UNDERSLAB ELECTRICAL UTILITY ENTRANCE.

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1 2020-03-14

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Foundation Plan

S1.0

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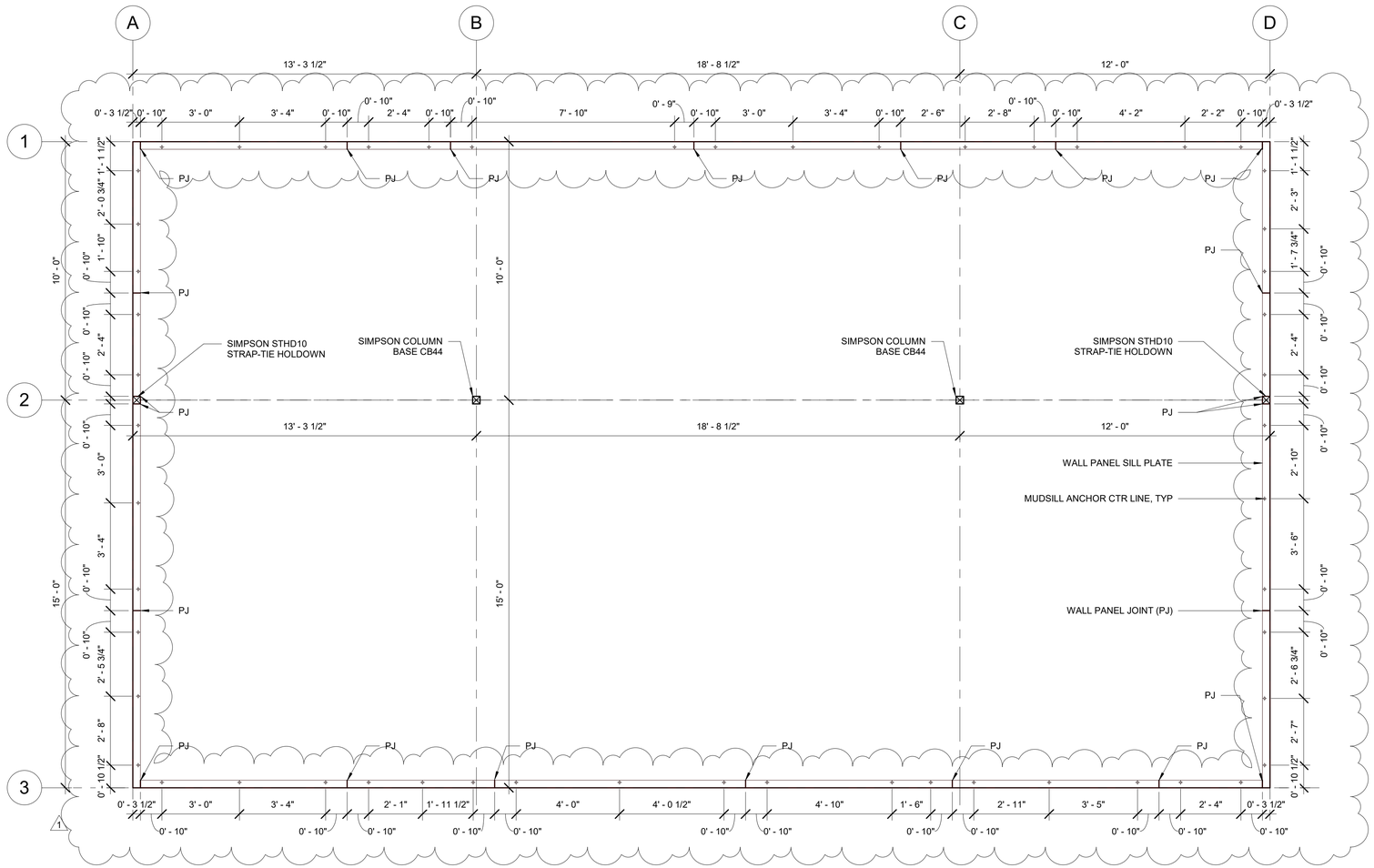

1 Foundation Anchorage Plan

S1.1 SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. ANCHORS SHALL BE SIMPSON MASA MUDSILL ANCHORS INSTALLED PER MANUFACTURERS INSTRUCTION FOR "ALTERNATE INSTALLATION FOR INSIDE OF WALL CONTINUITY".

2. ANCHOR LOCATIONS AS SHOWN ARE NO CLOSER THAN 3 1/2" FROM END OF PLATES OF WALL PANELS.

3. ANCHORS LOCATIONS AS SHOWN CONFORM TO THE FOLLOWING: A MIN. OF 6' O.C. AND WITHIN MIN. OF 12" OF ALL PANEL SPLICES AND WITHIN 12" OF CORNERS.

4. "PJ" NOTATION ON THIS DWG INDICATES PANEL JOINTS, WHERE WALL PANELS INTERSECT.

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Foundation Anchor Plan

S1.1

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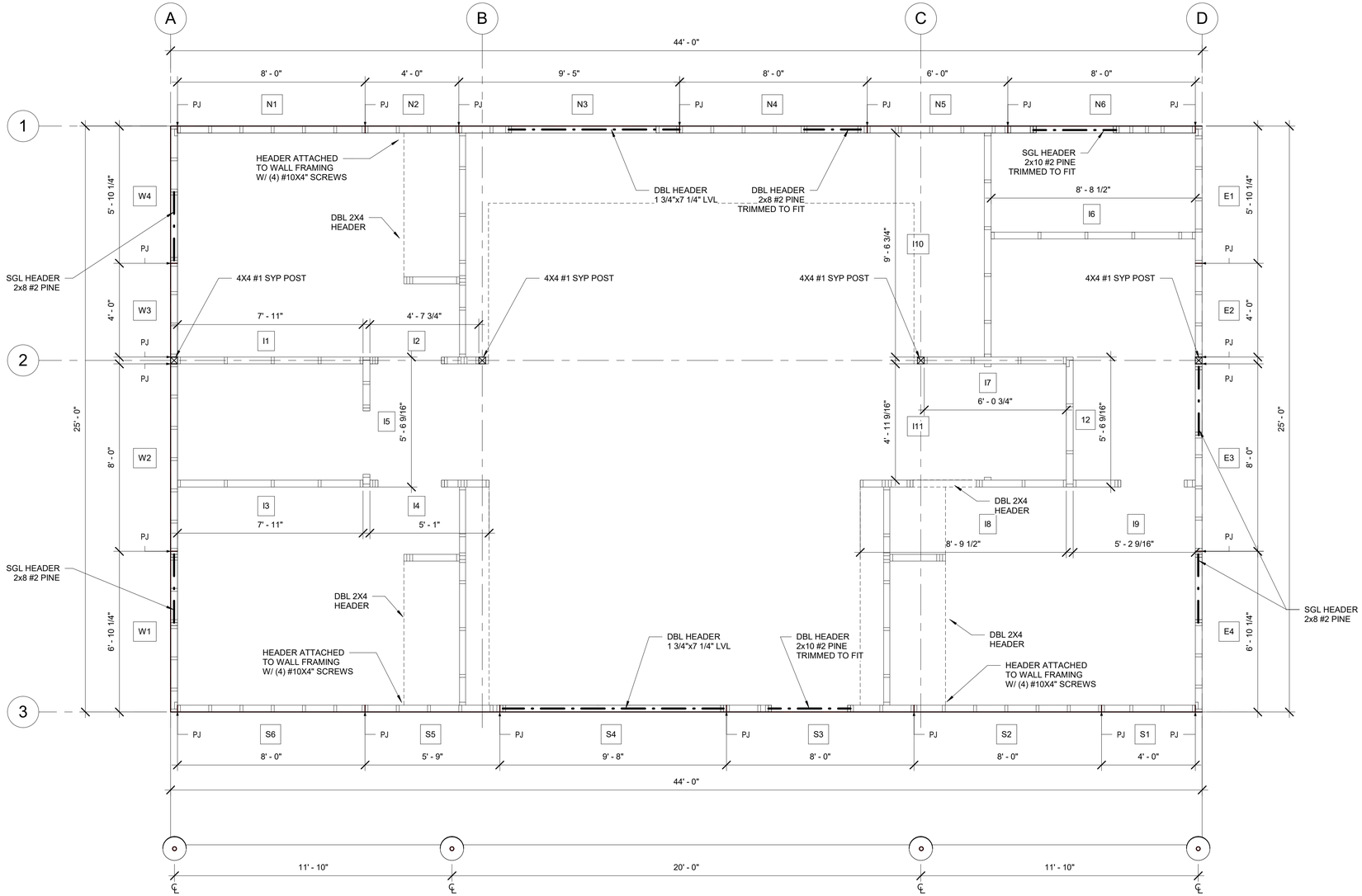

1 Wall Framing Plan
S2.0 SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. WALL STUDS ARE CONTINUOUS FROM THE FLOOR TO THE ROOF DIAPHRAGM PER R602.3.

2. WALL PANELS ARE CONTINUOUS FROM FOUNDATION TO CONNECTION WITH ROOF.

3. WALL PANELS WILL BE JOINED AT TOPS BY 2X4 TOP PLATES, NAILED IN FIELD TO IRC CH.6 REQS.

4. "PJ" DENOTES PANEL JOINT

5. SEE S1.1 FOR MUDSILL ANCHOR LOCATIONS.

6. ALL FRAMING LUMBER IS #2 S.P.F., UNLESS NOTED OTHERWISE.

7. CLG. FRAMING (NOT SHOWN) SHALL BE 2x4 JOIST @ MIN. 24" O.C.

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Wall Framing Plan

S2.0

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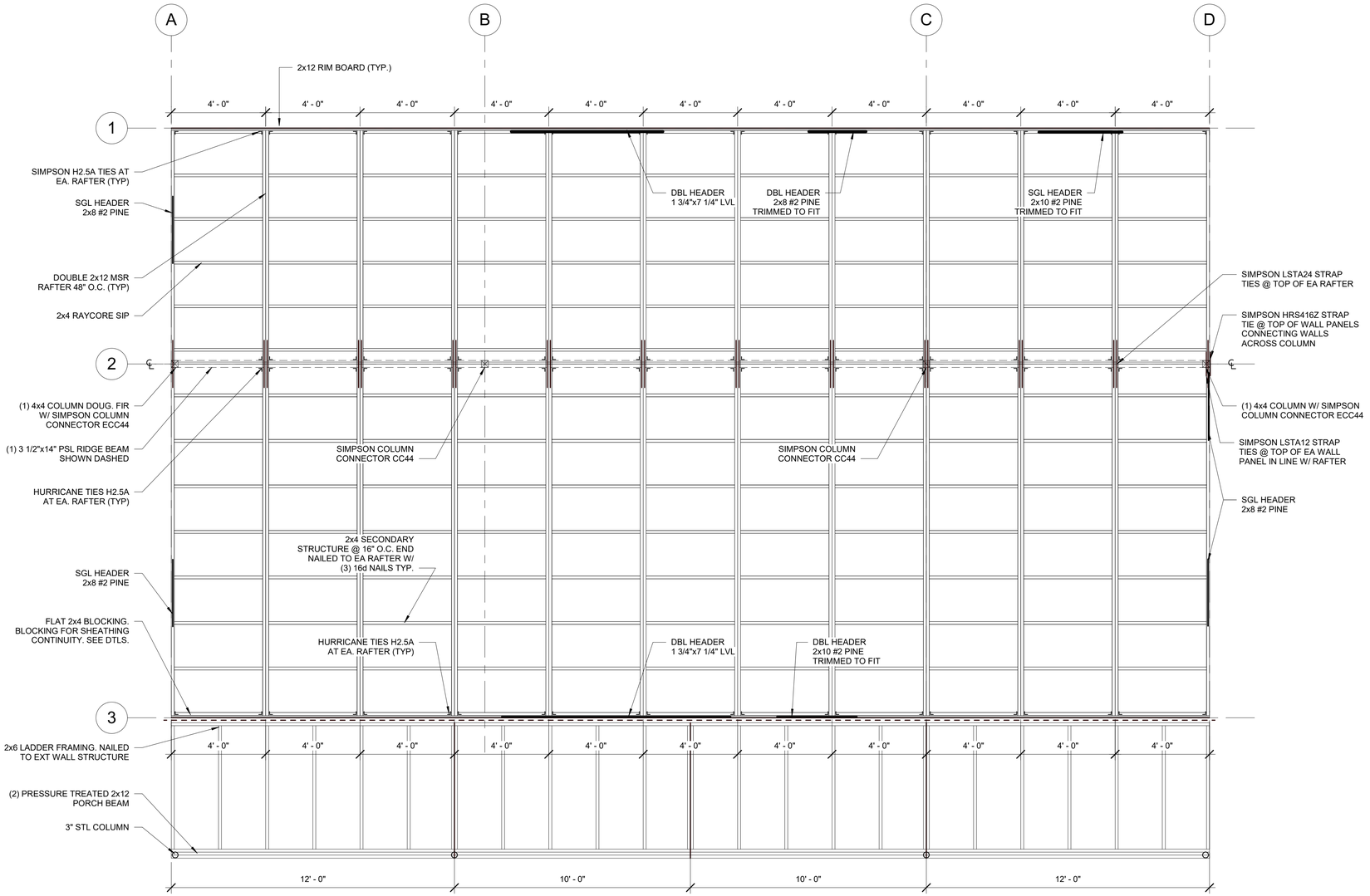

1 | Roof Framing Plan

S2.1 | SCALE: 3/8" = 1'-0"

GENERAL NOTES

1. ROOF TO BE FRAMED FROM PANELS. PANELS WILL BE 4'-0" TYP AND WILL SPAN FROM EXTERIOR WALLS TO CENTER RIDGE BEAM OR LOAD BEARING WALL AS NOTED.

2. STRUCTURAL DIAPHRAGM OF ROOF WILL BE STAGGERED OSB INSTALLED ON TOP OF PANELS AND ANCHORED TO RAFTERS W/ 8D COMMON NAILS PER IRC CH.8. SEE DTLS ON A5.0 AND A5.1.

3. CALCULATIONS FOR CENTER RIDGE BEAM AND DBL 2x12 BEAMS AT PORACHES ARE SHOWN ON S3.3.

4. ROOF DESIGNED FOR 20 P.S.F. ROOF SNOW LOAD

5. UNLESS NOTED OTHERWISE, RAFTERS AND HEADERS SHALL USE #2 N. HEM/FIR LUMBER

6. RIDGE BEAM WITH ALIGNED RAFTERS IS PROVIDED IN LIEU OF CEILING JOISTS PER AWC WFCM 2015 PRESCRIPTIVE DESIGN CRITERIA

7. ROOF PITCH IS 4 7/8:12

8. RAFTER END UPLIFT FORCES ARE 155 LBS PER IRC TABLE 802.11

9. RIDGE BEAM WORST CASE UPLIFT 1240 LBS FOR 8 RAFTER CONNECTIONS, OR 620 LBS EA. END

10. MSR RAFTERS SHALL HAVE F_b of 2400 PSI AND E OF 2.0 MIN.

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Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS

1 2020-03-14

Issue Status:

AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

Roof Framing Plan

S2.1

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Braced Wall Line Schedule						
NAME	WALL HEIGHT	BRACED WALL SPACING	REQ'D LENGTH	ADJUSTMENT FACTOR (SEE NOTE #2)	ADJUSTED REQ'D...	PROVIDED LENGTH
BW-A	12	44	8.1	1.4 [A] * 1.1 [B]	12.5'	14.25'
BW-B	12	44	8.1	1.4 [A] * 1.1 [B]	12.5'	14.25'
BW-1	8	25	4.75	1.4 [A] * 0.9 [B]	6.0'	10.0'
BW-2	8	25	4.75	1.4 [A] * 0.9 [B]	6.0'	8.0'

NOTES:

1. BRACING METHOD IS INTERMITTENT BRACING, METHOD WSP.

2. ADJUSTMENT FACTORS APPLIED ARE AS FOLLOWS:
   A. ADJUSTMENT FACTOR OF 1.4 FOR OMISSION OF INT. GWB (TABLE R602.10.3 (2))
   B. ADJUSTMENT FOR MAX HT OF BWP FOR WIND SPEED OF 90 MPH (TABLE R602.10.3(1))

3. BWPS SHALL BE CONTINUOUS TO ROOFING FRAMING, REF. R602. 10. 8. 2. WHEN FINAL SHEATHING IS INSTALLED

4. BWPS SHALL BE CONTINUOUS TO SLAB, REF. R602.3.

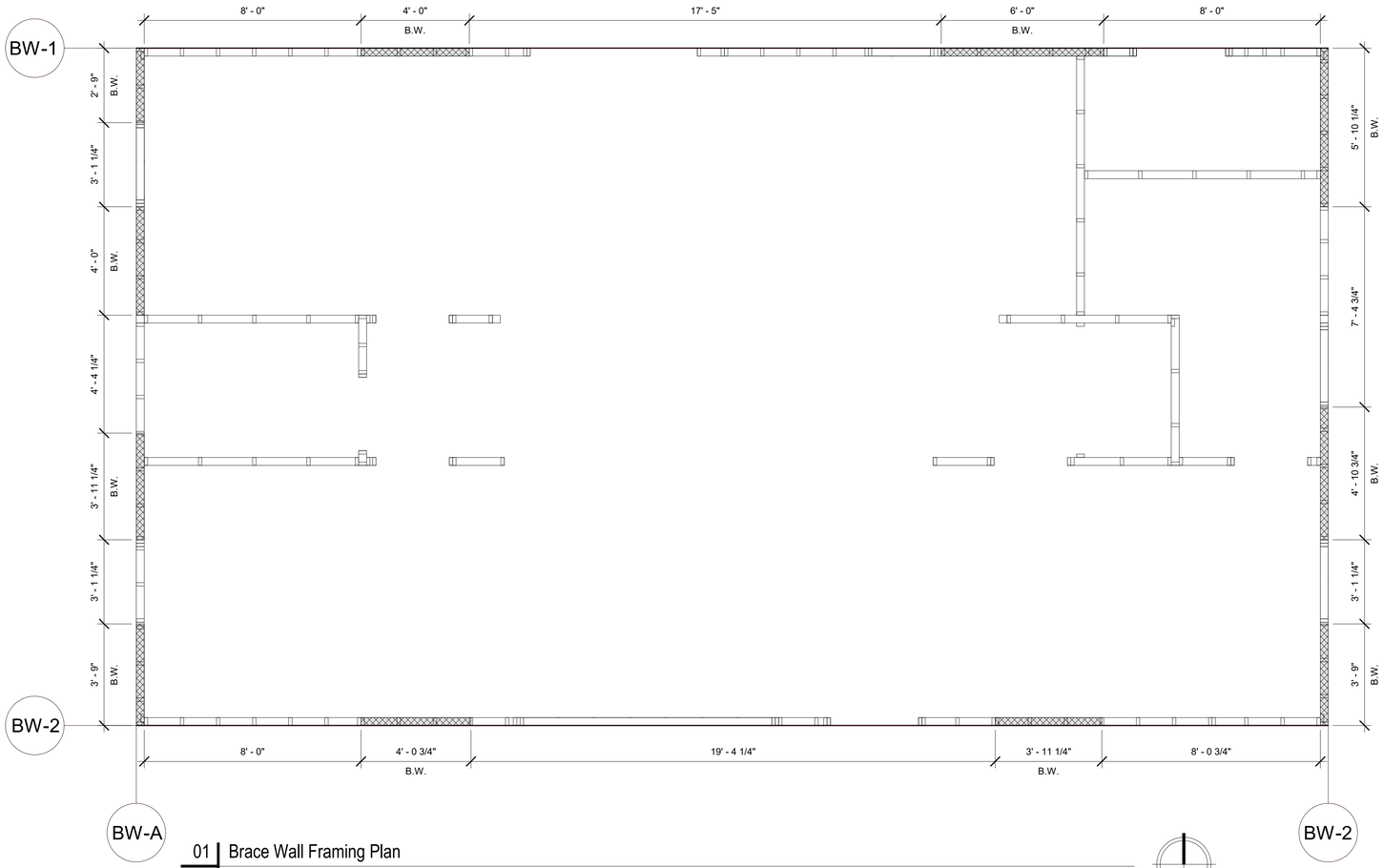
5. BWPS WILL CONNECT TO ADJACENT WALLS PANELS W/ CONT. TOP PLATE.

6. SEE S2.2 FOR TYP. BRACED WALL ELEVATIONS.

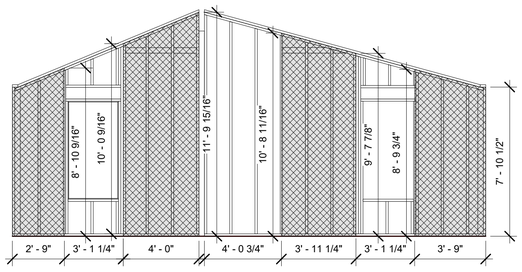
7. BRACE WALL PANELS AS SHOWN WILL NOT OVERLAP JOINTS IN PREFABRICATED WALL PANELS

8.BWPS WILL BE FASTENED ACCORDING TO SCHEDULE ON S3.0

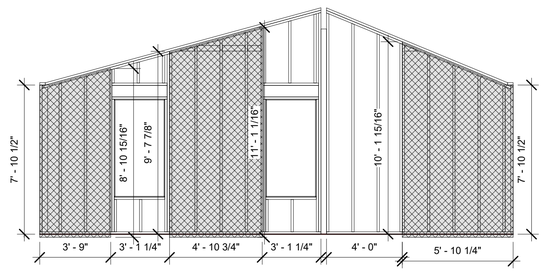
9. BWPS OVER 8' IN HEIGHT WILL HAVE SOLID BLOCKING INSTALLED AT SHEATHING JOINTS



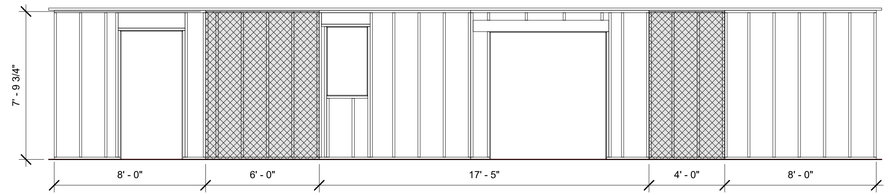
01 | Brace Wall Framing Plan
S2.2 | SCALE: 3/8" = 1'-0"



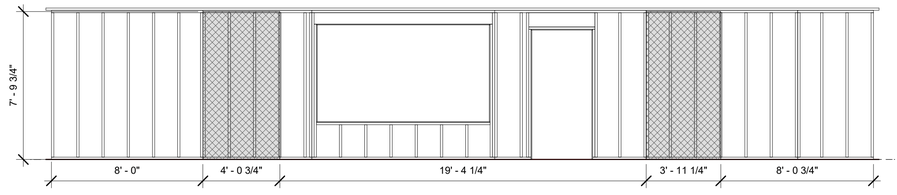
04 | Brace Wall W - Elevation
S2.2 | SCALE: 1/4" = 1'-0"



05 | Brace Wall E- Elevation
S2.2 | SCALE: 1/4" = 1'-0"



02 | Brace Wall N - Elevation
S2.2 | SCALE: 1/4" = 1'-0"



03 | Brace Wall S- Elevation
S2.2 | SCALE: 1/4" = 1'-0"

NET+ STUDIO
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Brace Wall Framing

S2.2

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GENERAL FRAMING NOTES

1. WALL PANELS WILL BE ANCHORED TO THE FOUNDATION PER R403.1.6 -- SEE S1.1 AND S1.2 FOR ANCHOR LOCATION AND SIZE.

2. STRUCTURAL CONTINUITY AT THE BASE OF PANELS WILL BE ESTABLISHED BY THE FOUNDATION.

3. STRUCTURAL CONTINUITY AT THE TOP OF PANELS WILL BE ESTABLISHED BY CONT. TOP PLATE INSTALLED AFTER PANELS ARE PLACED.

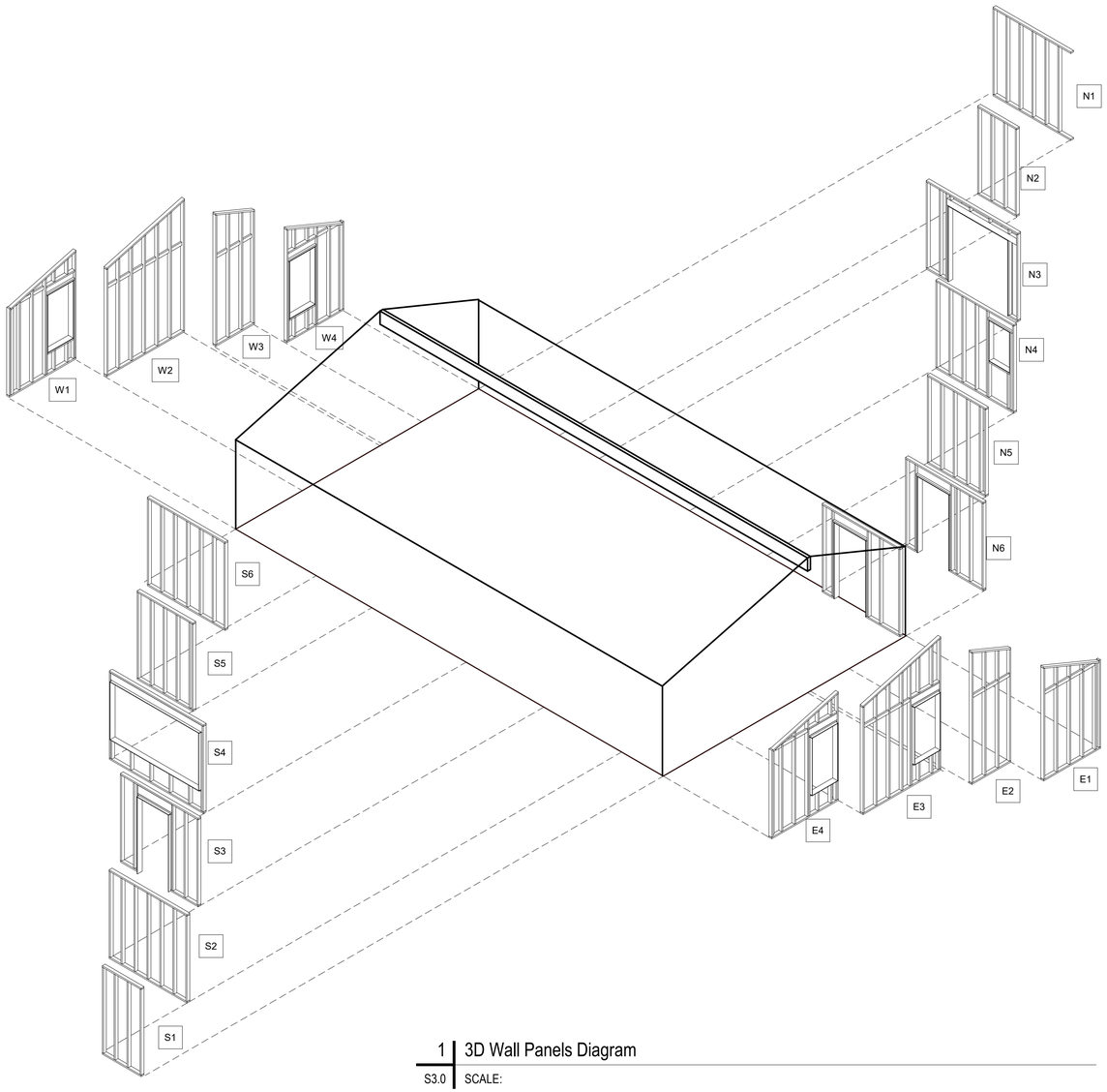
4. PANELS WILL BE BOLTED TOGETHER IN THE FIELD DURING ASSEMBLY AT TOP AND BOTTOM OF WALLS, USING 1/4" LAG SCREWS. THESE BOLTED CONNECTIONS ARE TO ASSIST IN ERECTION ONLY AND ARE NOT INTENDED FOR STRUCTURAL COMPLIANCE.

5. BRACED WALL PANELS CONSTRUCTED WITHIN PANELS WILL NOT CROSS OVER PANEL JOINTS.

6. WALL PANELS ARE CONTINUOUS FROM THE SLAB TO THE BOTTOM OF ROOF FRAMING.

7. ADDITIONAL HORIZ. BLOCKING WILL BE ADDED WHERE REQ'D BY WALL HEIGHT.

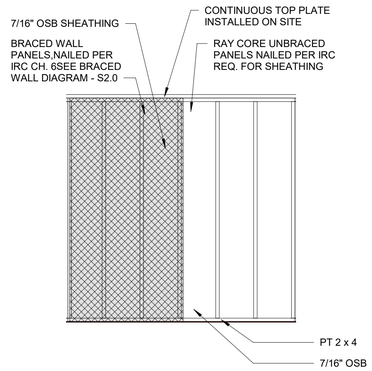
8. SEE FRAMING PLANS AND ELEVATIONS FOR PANEL SIZE AND CONFIGURATION



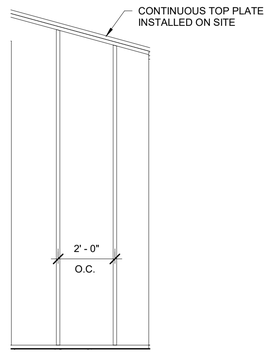
1 | 3D Wall Panels Diagram
S3.0 | SCALE:

Fastening Schedule		
Description of Element	Number and Type of Fastener	Spacing of Fasteners and Location
FULL LENGTH STUDS	(2) 16d	END NAIL
CRIPPLE STUDS	(2) 16d	END NAIL
CRIPPLE STUDS	(3) 8d	END NAIL
SILLS AND HORZ. BLOCKING	(3) 8d	TOE NAIL
JACK STUDS, BUILT-UP STUDS, DBL STUDS	10d	24" O.C.
SINGLE HEADERS	10d	12" O.C. FACE NAIL TO TOP PLATES
SINGLE HEADERS	(2) 16d	END NAIL
DBL HEADERS	16d	12" O.C. TOP & BOT FACE NAIL
DBL HEADERS	(3) 16d	END NAIL
STUD TO STUD WITHIN BRACED WALL PANELS	16d	12" O.C. FACE NAIL
SECONDARY ROOF FRAMING MEMBERS	(3) 16d	END NAIL
DBL TOP PLATES	10d	24" O.C.
DBL TOP PLATES @ JOINTS W/MIN 24" OFFSET FROM PANEL...	(8) 16d	IN LAPPED AREAS
ABUTTING STUDS @ INTERSECTING WALL CORNERS	#10 X 4" SCREWS	12" O.C. FACE OF STUDS
BLOCKING BTW RAFTERS	(3) 16d	END NAIL
RAFTER BLOCKING TO TOP PLATES	(3) 8d	TOENAIL @ EA. END
BRACED WALL PANELS	8d	6" O.C. EDGES
BRACED WALL PANELS	8d	12" O.C. INTERMEDIATE FRAMING
ALL OTHER SHEATHING	8d	12" O.C.
2x12 RIM BOARD & END RAFTERS	16d	12" O.C. TOE NAIL

ADDITIONAL FASTENING NOTES:
- ALL NAILS NOTED ABOVE SHALL BE GALVANIZED WHEN USED IN TREATED LUMBER OR ON STRUCTURAL SHEATHING.
- FASTENING WIL MEER OR EXCEED TABLE R602.3(1)
- # 10 x 2 1/2 SD SCREWS SHALL BE STRONG-DRIVE STRUCTURAL CONNECTOR SCREWS BY SIMPSON W/ GALVANIZED COATING; SINGLE FASTENER LOAD VALUES EXCEED 16d NAILS.



2 | Typical Exterior Wall Panel
S3.0 | SCALE: 3/8" = 1'-0"



3 | Typical Interior Wall Panel
S3.0 | SCALE: 3/8" = 1'-0"

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Typical Plan Information

S3.0

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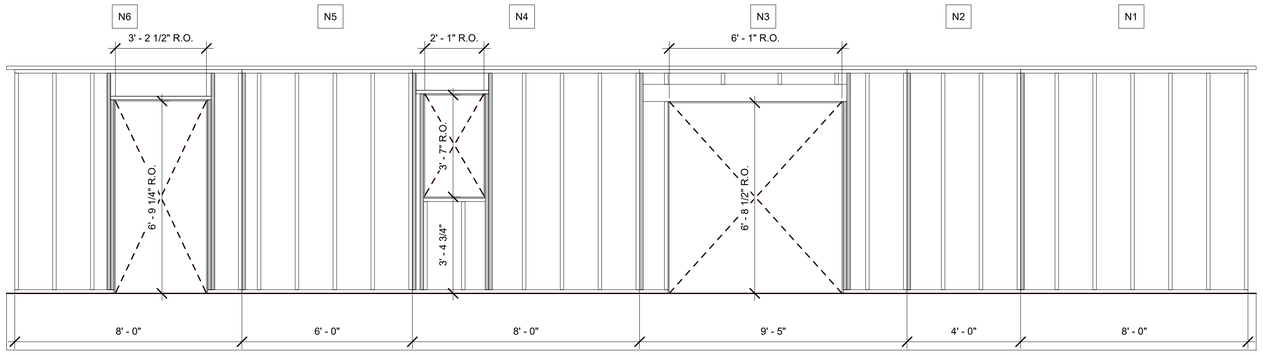
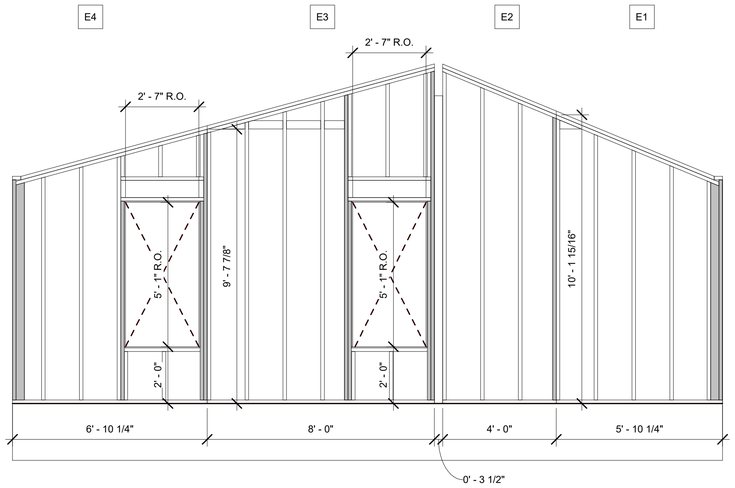


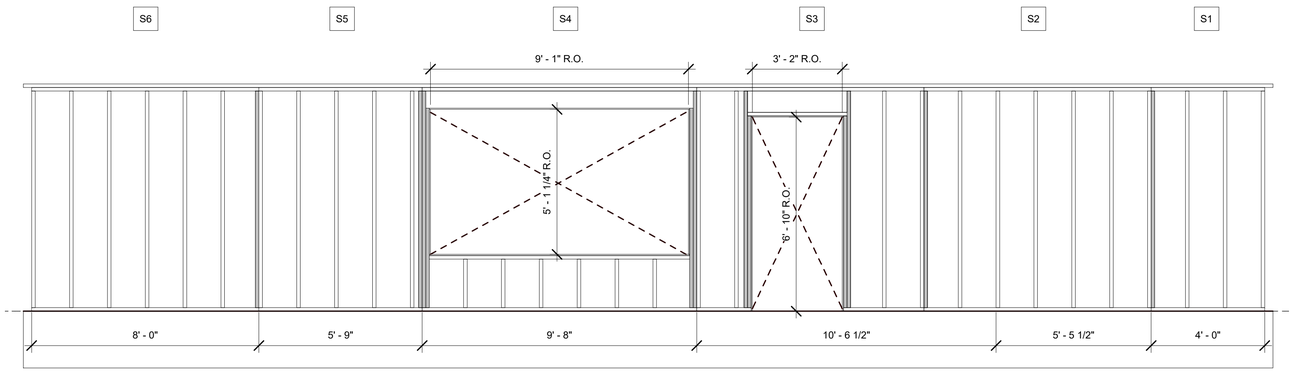
1 | North Framing Elevation

S3.1 | SCALE: 3/8" = 1'-0"



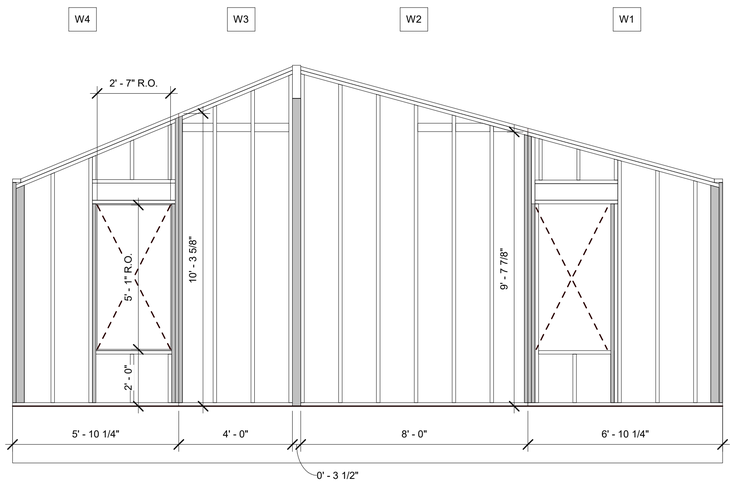
3 | East Framing Elevation

S3.1 | SCALE: 3/8" = 1'-0"



2 | South Framing Elevation

S3.1 | SCALE: 3/8" = 1'-0"



4 | West Framing Elevation

S3.1 | SCALE: 3/8" = 1'-0"

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Wall Panel Elevations

S3.1

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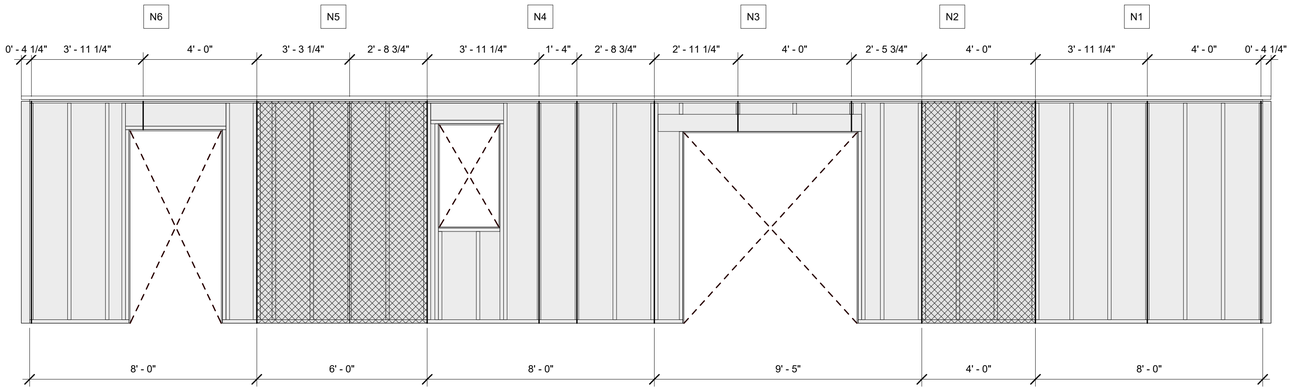
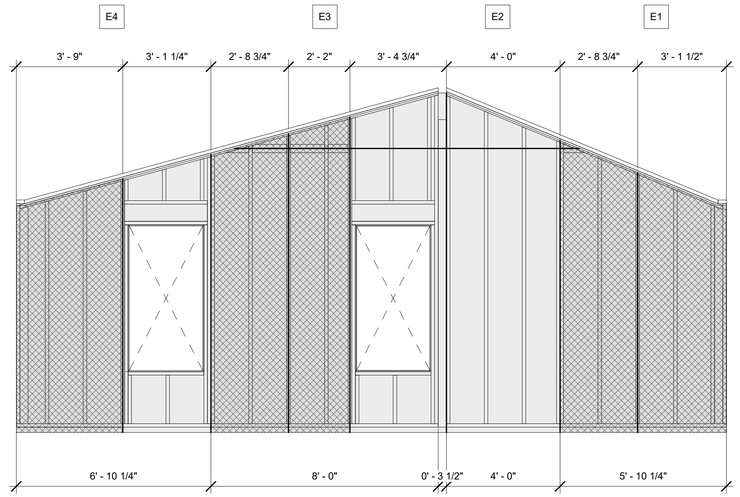


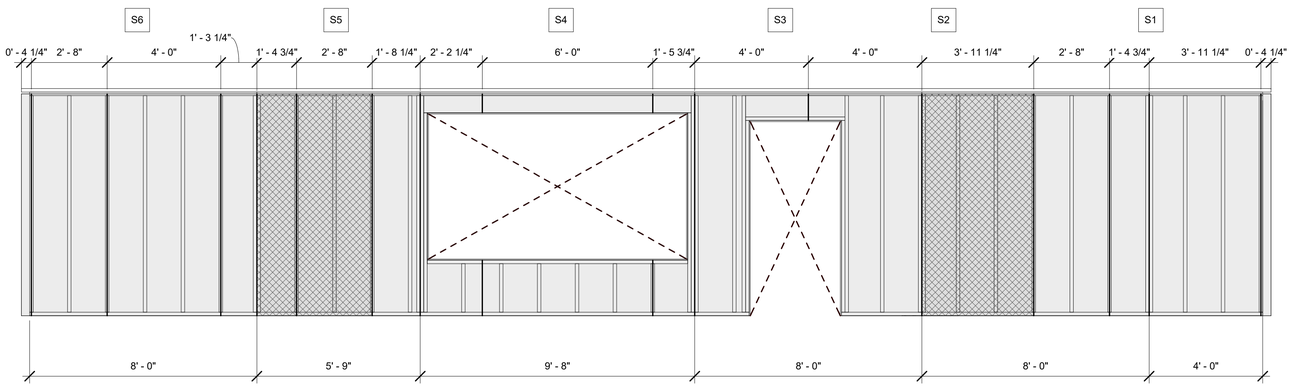
1 | North Sheathing Elevation

S3.2 | SCALE: 3/8" = 1'-0"



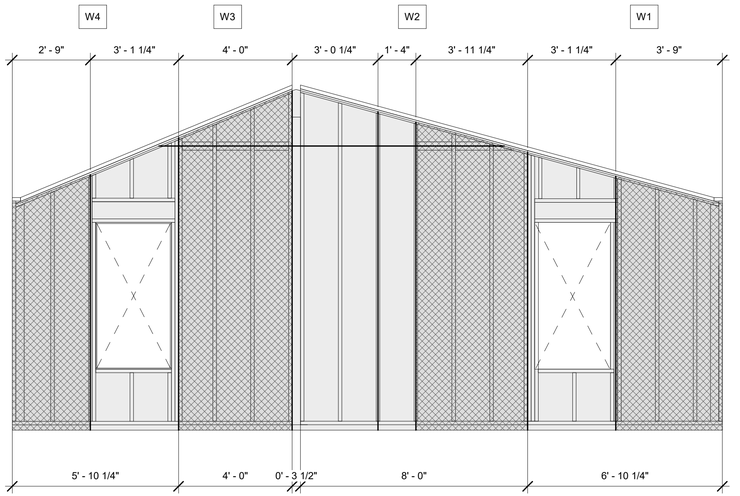
3 | East Sheathing Elevation

S3.2 | SCALE: 3/8" = 1'-0"



2 | South Sheathing Elevation

S3.2 | SCALE: 3/8" = 1'-0"



4 | West Sheathing Elevation

S3.2 | SCALE: 3/8" = 1'-0"

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Sheathing Elevations

S3.2

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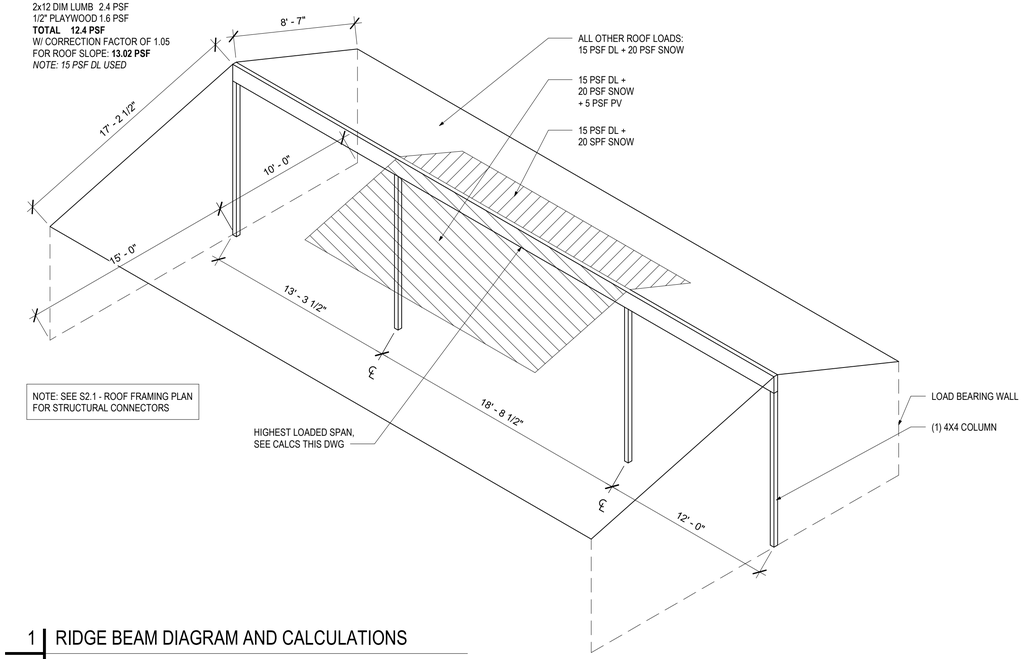
MTL ROOFING 1.0 PSF
1/2" OSB 1.6 PSF
3" XPS 0.6 PSF
1/2" OSB 1.6 PSF
1/2" OSB 1.6 PSF
2x4 RAYCORE 1.7 PSF
1 1/2" XPS 0.3 PSF
2x12 DIM LUMB 2.4 PSF
1/2" PLAYWOOD 1.6 PSF
TOTAL 12.4 PSF
W/ CORRECTION FACTOR OF 1.05
FOR ROOF SLOPE: **13.02 PSF**
NOTE: 15 PSF DL USED



1 RIDGE BEAM DIAGRAM AND CALCULATIONS
S3.3 SCALE: 3/16" = 1'-0"

3 1/2" x 14" 2.0E PSL RIDGE BEAM BENDING AND DEFLECTION CALCULATIONS

$Total\ Load = (93\ ft^2(35\ psf)) + (140.625\ ft^2(40\ psf)) = 8880\ lbs$

$w = 8880\ lbs/18.75\ ft\ = 473.6\ lb/ft$

$$M = \frac{wl^2}{8} = \frac{\left(473.6\frac{lb}{ft}\right)(18.75ft)^2}{8} = 20812.5\ ft * lbs$$

$$F_{max} = \frac{Mc}{I}$$

for (1) 3 ½" x 14" PSL
$c = 7\ in$
$I = 800\ in^4$

$$F_{max} = \frac{(20812.5\ ft * lb)\left(12\frac{in}{ft}\right)(7in)}{800\ in^4} = 2185.3125\ psi$$

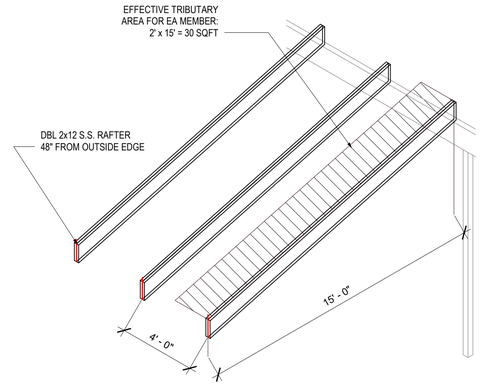
F_b for a 3 ½"x14" 2.0E PSL = 2900 psi (Source: Weyerhaeuser Trus Joist #TJ-9000 Specifier's Guide)
$F_{max} < F_b$

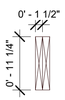
$$\Delta_{allow} = \frac{l}{240} = \frac{225in}{240} = 0.9375in$$

$$\Delta_{max} = \frac{5wl^4}{384EI} = \frac{(5)\left(473.6\frac{lb}{ft}\right)\left(\frac{1ft}{12in}\right)(225in^4)}{(384)(2.0 * 10^6 psi)(800in^4)} = 0.8232in$$

GENERAL NOTES

1. ROOF DESIGNED FOR 20 P.S.F. ROOF SNOW LOAD
2. RAFTER END UPLIFT FORCES ARE 155 LBS PER IRC TABLE 802.11
3. RIDGE BEAM WORST CASE UPLIFT **2480** LBS TOTAL FOR **16** RAFTER CONNECTIONS, OR **1240** LBS EA. END





(2) 2x12 P.T. PORCH BEAM BENDING AND DEFLECTION CALCULATIONS

$Total\ Load = 100\ lbs + 100\ lbs + (60ft^2 * 30\ psf) = 2000\ lbs$

$w = 2000\ lbs/20\ ft\ = 100\ lb/ft$

$$M = \frac{wl^2}{8} = \frac{\left(100\frac{lb}{ft}\right)(20ft)^2}{8} = 5000\ ft * lbs$$

$$F_{max} = \frac{Mc}{I}$$

for (2) 2x12:
$c = 5.625\ in$
$I = 406\ in^4$

$$F_{max} = \frac{(5000\ ft * lb)\left(12\frac{in}{ft}\right)(5.625in)}{406\ in^4} = 831\ psi$$

F_b for Spruce/Pine/Fir #2 = 875 psi (Source: 2018 NDS Supplement: Design Values for Wood Construction)
$F_{max} < F_b$

$$\Delta_{allow} = \frac{l}{240} = \frac{240in}{240} = 1in$$

$$\Delta_{max} = \frac{5wl^4}{384EI} = \frac{(5)\left(100\frac{lb}{ft}\right)\left(\frac{1ft}{12in}\right)(240in^4)}{(384)(1.4 * 10^6 psi)(406in^4)} = 0.6334in$$

2 PORCH BEAM CALCULATIONS
S3.3 SCALE: 3/4" = 1'-0"

(2) 1 3/4" x 7 1/4" LVL DOUBLE HEADER WORST CASE LOAD IN BEARING WALL (PANEL S3)

$w = 310.7\ lb/ft$

$$M = \frac{wl^2}{8} = \frac{\left(310.7\frac{lb}{ft}\right)(9.75ft)^2}{8} = 3692.31\ ft * lbs$$

$$F_{max} = \frac{Mc}{I}$$

for (2) 1 ¾" x 7 ¼" LVL
$c = 3.625\ in$
$I = 95.27\ in^4$

$$F_{max} = \frac{(3692.31\ ft * lb)\left(12\frac{in}{ft}\right)(3.625in)}{95.27\ in^4} = 1685.9\ psi$$

F_b for a 1 ¾" x 7 ¼" 1.9E LVL = 2850 psi (Source: Global LVL 1.9E-2850Fb User Guide)
$F_{max} < F_b$

$$\Delta_{allow} = \frac{l}{240} = \frac{117in}{240} = 0.4875in$$

$$\Delta_{max} = \frac{5wl^4}{384EI} = \frac{(5)\left(310.7\frac{lb}{ft}\right)\left(\frac{1ft}{12in}\right)(117in^4)}{(384)(1.9 * 10^6 psi)(95.27in^4)} = 0.349\ in$$

3 HEADER CALCULATIONS
S3.3 SCALE: 3/4" = 1'-0"

(1) 2x8 SINGLE HEADER WORST CASE LOAD IN BEARING WALL (PANEL E3)

$Total\ Load = (10\ psf + 2.4\ psf) * 11\ ft^2 = 136.4\ lbs$

$w = \frac{136.4lbs}{2.833ft} = 48.15\ lb/ft$

$$M = \frac{wl^2}{8} = \frac{\left(48.15\frac{lb}{ft}\right)(2.833ft)^2}{8} = 48.3\ ft * lbs$$

$$F_{max} = \frac{Mc}{I}$$

for (1) 2 x 8:
$c = 3.625\ in$
$I = 47.6\ in^4$

$$F_{max} = \frac{(48.3\ ft * lb)\left(12\frac{in}{ft}\right)(3.625in)}{47.6\ in^4} = 44.15\ psi$$

F_b for Spruce/Pine/Fir #2 = 875 psi (Source: 2018 NDS Supplement: Design Values for Wood Construction)
$F_{max} < F_b$

$$\Delta_{allow} = \frac{l}{240} = \frac{34in}{240} = 0.1417in$$

$$\Delta_{max} = \frac{5wl^4}{384EI} = \frac{(5)\left(48.3\frac{lb}{ft}\right)\left(\frac{1ft}{12in}\right)(34in^4)}{(384)(1.4 * 10^6 psi)(47.6in^4)} = 0.0011\ in$$

(1) 2x12 S.S. RAFTER BENDING AND DEFLECTION CALCULATIONS

$Total\ Load = (30\ ft^2(40\ psf)) = 1200\ lbs$

$w = 1200\ lbs/15\ ft\ = 80\ lb/ft$

$$M = \frac{wl^2}{8} = \frac{\left(80\frac{lb}{ft}\right)(15ft)^2}{8} = 2250\ ft * lbs$$

$$F_{max} = \frac{Mc}{I}$$

for (1) 2x12
$c = 5.625\ in$
$I = 178\ in^4$

$$F_{max} = \frac{(2250\ ft * lb)\left(12\frac{in}{ft}\right)(5.625in)}{178\ in^4} = 853.2\ psi$$

F_b for Spruce/Pine/Fir Select Structural = 1250 psi (Source: 2018 NDS Supplement: Design Values for Wood Construction)
$F_{max} < F_b$

$$\Delta_{allow} = \frac{l}{240} = \frac{180in}{240} = 0.75in$$

$$\Delta_{max} = \frac{5wl^4}{384EI} = \frac{(5)\left(80\frac{lb}{ft}\right)\left(\frac{1ft}{12in}\right)(180in^4)}{(384)(1.5 * 10^6 psi)(178in^4)} = 0.341in$$

4 RAFTER DIAGRAM AND CALCULATIONS
S3.3 SCALE: 1/4" = 1'-0"

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Project:
St. John, KS Affordable Net+ Prototype Home

REVISIONS
1 2020-03-14

Issue Status:
AS-BUILT CONSTRUCTION DOCUMENTS

Date: March 2, 2021

Structural Calculations

S3.3

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ELECTRICAL REQUIREMENTS

1. The Electrical Contractor shall provide all conduit and wiring and shall connect complete and ready for operation all electrical equipment provided by other trades as shown on the drawings and as required for complete and operating systems.

2. Provide smoke detectors per plans, 120 volt, with battery backup and interconnection capability. All detectors in building are to alarm together.

3. The contractor shall pay any and all required utility service fees associated with this project direct to the local utility company.

4. Underground Service: Service work shall include secondary .conduits and feeders, primary conduits, meter can, and support pad for transformer and sectionalizing switch or aerial weatherhead as required by the utility. Electrical Contractor shall leave adequate conductor length at the transformer to allow connections by the Electric Utility. Contractor shall provide all trenching, backfilling, and pavement removal and replacement as necessary for the primary and secondary raceway systems. Local utility company will provide all primary cable from the new sectionalizing switch to the primary compartment of transformer including sectionalizing equipment. Local utility company will provide all connections to primary equipment and shall make all transformer connections. Local utility company will provide the meter. Local utility company will provide all metering equipment, wiring and meter installation.

5. Telephone Service: Arrange for Telephone company to provide underground service to complex. All wiring for installation of phones provided by electrical contractor including pre-wiring, outlets and covers. Service shall be 2-pair wiring.

6. Cable TV / Internet Wiring: coax cable compatible with service provided by local cablevision company. Electrical Contractor shall be responsible for all cable installation. All Cable TV / Internet outlets shall have a dedicated home run to the source. Electrical Contractor is to coordinate with local cablevision company.

7. Provide the wire as specified and the circuiting as shown on the drawings. All power wires and cables #10 ang and smaller shall be annealed soft copper, solid construction, code type THWN or THHN. All power wires and cables #8 awg and larger shall be annealed soft copper, compressed strand construction, code type THWN-2 or THHN.

8. Color coding for 120/240 volt systems shall be Black/Red for phase conductors, White for neutral and green for grounding conductors.

9. Underground service shall be UL Listed Copper Service Entrance (SE) cable by Southwire or equivalent.

10. All interior circuits shall be UL Listed Nonmetallic-Sheathed (NM-B) cable by Southwire or equivalent. All circuits shall be run parallel or perpendicular to the building surfaces. All conduit shall be concealed in walls and fully supported. Overhead conduit shall be concealed except in rooms without ceilings.

11. Power, lighting and switching wire: Size #12 minimum for power and lighting. Use larger as required by load or as shown on drawings. Run cable through or along studs and joists, with no wire exposed below joists. No drilling of holes without Architect's specific permission.

12. Each 120-volt outlet circuit shall be provided with dedicated neutral conductors.

13. Provide conduits and raceways; electrical pull, junction and device boxes as specified and shown on the drawings, as well as those required for a complete and code acceptable installation. Use electrical metallic tubing (EMT) and metal boxes in exposed locations. Use metal boxes for supporting pendant light fixtures or ceiling fans.

14. 120/240 Volt Panelboards: Provide Square D, type HOMELINE load center, 1 phase, 3-wire panelboards with circuit breakers as scheduled. Circuit breakers shall be plug-on thermal-magnetic molded case type. Arc Fault breakers shall be provided for all circuits as required in section 210.12 of the NEC.

15. Inside each panel door, provide an approved typewritten schedule card showing what each circuit feeds.

16. Provide residential grade decora-style tamper-resistant wiring
devices as shown on the drawings. Device and coverplate colors shall be as directed by the architect.

17. Typical mounting heights above finished floor (to center of box unless noted otherwise)

A. Wall outlets : 12" aff indoors or 18" afg outdoors.
B. Wall outlets : 42" aff at counters (or 4" above backsplash).
C. Switches : 46" aff
D. Thermostats : 46" aff
E. Consult Engineer for others

18. Install light fixtures as specified. Material, equipment or services necessary to complete the installation of these fixtures, but not specifically mentioned shall be furnished as though specified.

19. All wall mounted fixtures shall be coordinated with the architectural features of the building. Where specific elevations or dimensions are not indicated, verify the correct location with the Architect prior to beginning any work.

20. Fixtures located on ceilings shall have cabling routed to top of exterior walls and transitioned to galvanized EMT conduit. Conduit shall run parallel to roof rafters directly to galvanized EMT junction boxes at fixtures. Fixtures and junction boxes shall be attached to roof/ceiling structure.

21. Electrical contractor shall install an eGauge device and (4) current transformers at the electrical panel. KSU will provide the eGauge device with programming and will confirm the circuits to be monitored prior to installation. The eGauge device shall be given a dedicated breaker in the electrical panel.

22. Electrical contractor shall provide junction boxes in walls where circuits shall be routed through casework as shown in drawings. Contractor shall coordinate with KSU to complete installation of receptacles in casework once casework has been installed.

23. Ceiling fans shall use EMT junction boxes approved for use with ceiling fans. Boxes shall be connected to structure according to manufacturer's instructions. Ceiling fans shall be tested and balanced after installation by contractor.

24. Provide power circuits and receptacles for other trades' equipment shown elsewhere in MEP drawings and electrical schedule.

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
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Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

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Affordable Net+
Prototype Home

NOT FOR CONSTRUCTION

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Electrical General Notes

E1.1

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LIGHTING FIXTURE SCHEDULE

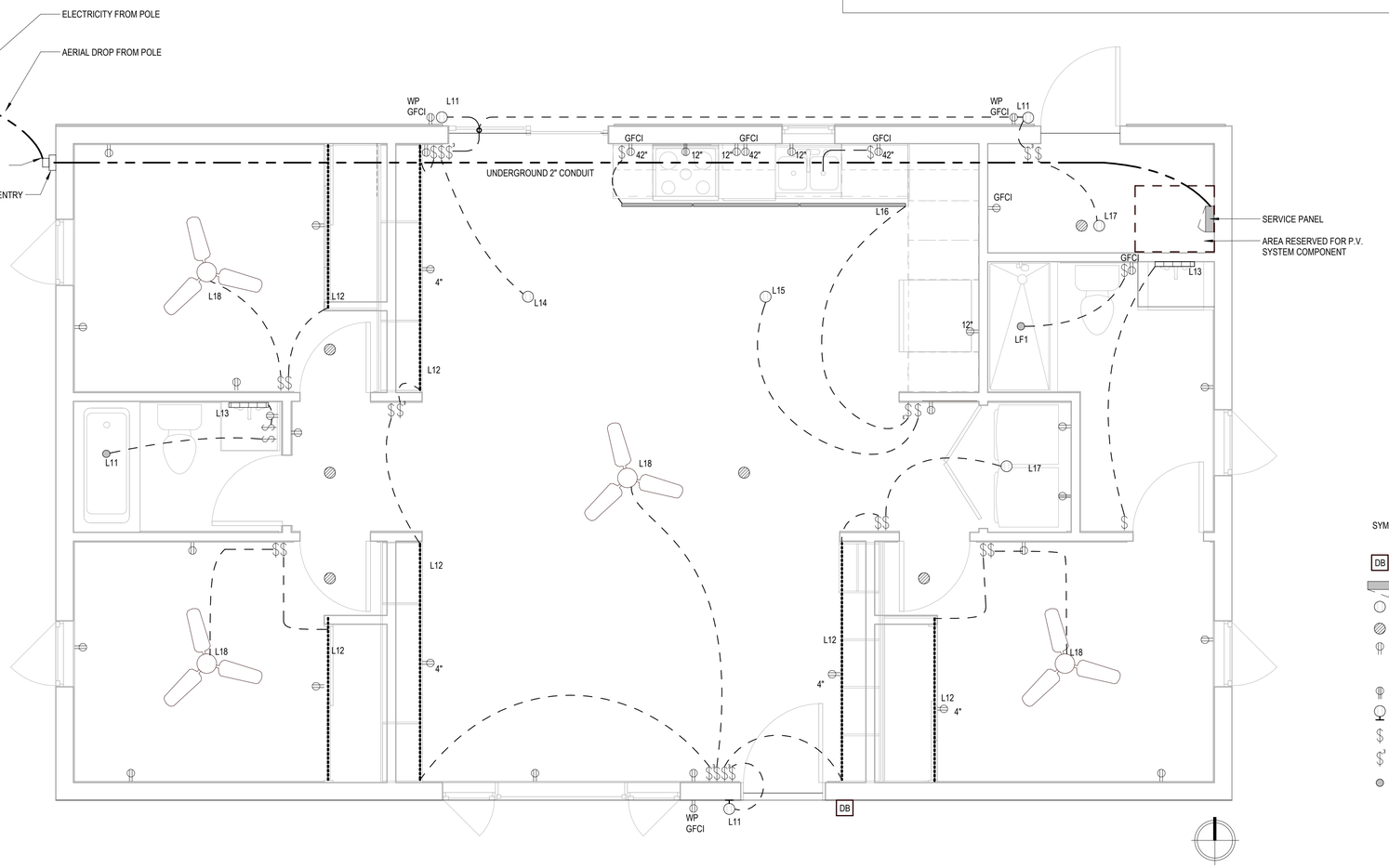
ID	TYPE	MANUFACTURER	CATALOG NUMBER	LAMP	WATTS	LUMENS	COMMENTS
L11	SURFACE WALL SCONCE	WAC/MODERNFORMS	WS-W1911-AL	LED	12	860	
L12	LED TAPE	WAC	LED-TC-RCB	LED	1.5 PER FT	175	INCLUDE POWER SUPPLIES, 6 CONTROLLERS & 6 REMOTE CONTROLLER CLIPS, SINGLE WIRE AND JOINTER CABLE
L13	VANITY LIGHT	WAC	WS-6718-30-AL	LED	16.5	1004	
L14	SURFACE CLG	WAC	FM-05RN-930-NI	LED	12	1050	
L15	PENDANT	WAC	PD-W1915-AL	LED	12	722	
L16	42" PENDANT	GLOWBACK LED	LVLBPH	LED	24	2080	
L17	SURFACE CLG	WAC	FM-616G2-930-WT	LED	16	1050	
L18	54-INCH CEILING FAN	WAC/MODERNFORMS	FR-W1809-54L-TT	LED	76	622	
LF1	EXHAUST & LIGHT	BROAN	744	LED	125	-	EXHAUST AND LIGHT COMBO.

GENERAL NOTES:
- LIGHTING FIXTURES SHALL BE SUPPLIED BY OTHERS AND INSTALLED BY CONTRACTOR.

ELECTRICAL EQUIPMENT SCHEDULE

ID	TYPE	LOCATION	MFR	MODEL	CIRCUIT	WATTS	COMMENTS
E1	RANGE	KITCHEN	BEKO	PRIR34450SS	240V, 40A	9600	PROVIDE RECEPTACLE.
E2	REFRIGERATOR	KITCHEN	BEKO	BFBF3018SSIML	120V, 20A	228	PROVIDE RECEPTACLE.
E3	DISHWASHER	KITCHEN	BEKO	DDN25401X	120V, 20A	1400	PROVIDE RECEPTACLE.
E4	WASHER	LR CLOSET	BEKO	WMY10148C2	240V, 10A	2400	PROVIDE RECEPTACLE.
E5	DRYER	LR CLOSET	BEKO	HPD24412W	240V, 30A	900	PROVIDE RECEPTACLE.
E6	OVER-RANGE MICROWAVE	KITCHEN	BEKO	MWOTR30200CSS	120V, 20A	1500	W/ HOOD. PROVIDE RECEPTACLE.
P11	TANKLESS ELECT. W.H.	BATHROOM 2	ECOSMART	ECO-11	240V, 60A	11800	PROVIDE HEAVY-DUTY TOGGLE SWITCH AND MAKE FINAL CONNECTION TO UNIT WITH LIQUIDTITE FLEXIBLE CONDUIT.
P12	TANKLESS ELECT. W.H.	MECH CLOSET	ECOSMART	ECO18	240V, (2) 40A	18000	PROVIDE HEAVY-DUTY TOGGLE SWITCH AND MAKE FINAL CONNECTION TO UNIT WITH LIQUIDTITE FLEXIBLE CONDUIT.
M1	AIR HANDLING UNIT	MECH CLOSET	MITSUBISHI	SVZ-KP30NA	240V, 20A	991	PROVIDE 3-POLE TOGGLE SWITCH AT AHU AND EXTEND WIRING TO MAKE POWER CONNECTION AT TERMINAL IN CONDENSING UNIT
M2	CONDENSING UNIT	OUTDOOR	MITSUBISHI	SUZ-KA30NA2	240V, 30A	4080	PROVIDE WEATHERPROOF DISCONNECT ADJACENT TO UNIT AND MAKE FINAL CONNECTION WITH LIQUIDTITE FLEXIBLE CONDUIT
M3	ERV	HALL CLG	PANASONIC	FV-10VE1	120V, 20A	64	PROVIDE UNIT WITH RECEPTACLE. UNIT COMES WITH CORD AND PLUG.

GENERAL NOTES:
- SPECIALTY EQUIPMENT WITH PREFIX 'E' WILL BE SUPPLIED BY OTHERS AND INSTALLED BY KSU ARCHITECTURAL TEAM.
- REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL NOTES RE. MECHANICAL AND PLUMBING EQUIPMENT.
- ALL BOXES, RECEPTACLE, AND SWITCHES SHALL CONFORM TO NEMA STANDARDS AND BE SIZED TO MEET MIN CIRCUIT REQUIREMENTS SHOWN IN SCHEDULE.



1 | Electrical Plan
E1.2 | SCALE: 3/8" = 1'-0"

SYMBOL LEGEND

DB	DOOR BELL AND DOOR BELL BUTTON
	ELECTRICAL PANELBOARD, TOP 6'. 30" X 36" CLEAR IN FRONT.
	CEILING MOUNTED LIGHT
	SMOKE DETECTOR
	20 AMP DUPLEX RECEPTABLE 12" AFF TO CL OF BOX UNLESS OTHERWISE NOTED 42" AFF WHERE HASHTAGGED
	SPECIAL RECEPTABLE AS NOTED ON PLAN OR SCHEDULE
K	OUTDOOR LIGHT
$	SINGLE POLE SWITCH, TOP BOX AT 48"
$3	3-WAY SWITCH, TOP OF BOX AT 48" AFF OR AS NOTED
	LIGHT/FAN

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Electrical Plan

E1.2

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PROJECT GENERAL NOTES

ENERGY CONSERVATION CODE COMPLIANCE

2012 IRC – CH 11 [RE] ENERGY EFFICIENCY PRESCRIPTIVE REQUIREMENTS

	EXTERIOR WALLS	CEILINGS OR ATTICS	FLOOR SLABS	FENESTRATION	DUCTWORK
REQUIRED	R-13	R-38 [4]	R-10	U-0.35	R-8
PROVIDED [1]	R-26 [2] + R-7.5 c.i.[3]	R-41 [5]	R-10 [6]	U-0.26 [7]	[8]

[1] Total R-value of installed insulation.
[2] Listed R-Value of a pre-insulated 3.5" closed-cell polyurethane foam and lumber panel by Raycore
[3] "c.i." denotes continuous insulation. R-7.5 insulation is 1.5" of XPS. See typical wall and roof details.
[4] A minimum of R-38 insulation req'd per N1102.2.1 for ceilings where full depth of insulation extends over top wall plates.
[5] Total R-value of installed insulation per N1102.1.2; 3.5" panel as listed in [2] above plus 3" or cont. R-15 insulation above deck.
[6] Under-slab insulation is continuous along slab edges, under slab, and for 24" horizontally around foundation. See foundation details.
[7] NRFC standard tested U-Factor for windows to be provided by Interstate Glass.
[8] Exemption to duct insulation due to ducts being located completely within thermal envelope [N1103.2.1]

GENERAL CONDITIONS AND REQUIREMENTS

- Project design and documents created by the KSU architectural team shall be owned by KSU, along with any copyrightable works produced by the architectural team. The client and client's contractors are authorized to use and reproduce documents for only this project, unless specific written permission is given by KSU.
- Construction shall comply with 2012 IRC.
- Prefabricated components for the project have been constructed under the supervision of the Faculty Lead / Design Professional of Record. Structural features not visibly accessible upon delivery and installation of panels, including nailing, bracing, and internal framing components have been inspected during off-site construction for conformance with IRC 2012 requirements and conformance with these drawings.
- Wall panel connections to slab, roof panel connections to walls, and roof panel connections to the ridge beam will be accessible to onsite inspection during and after erection. Connections will use engineered connectors. Panel placement and final assembly will be supervised by the Faculty Lead / Design Professional.
- **KSU Scope of Work:** KSU architectural team (hereafter KSU) will provide the following components, listed below, and shall install these components on site. KSU shall provide delivery of these components, including required accessories and hardware not noted elsewhere in drawings or general notes.
  1. Prefabricated exterior wall panels: consisting of framing, exterior structural sheathing, exterior foam insulation, and exterior nailbase.
  2. Prefabricated roof/ceiling panels: consisting of framing and interior cladding.
  3. Site-installed roof deck and above deck layers: consisting of structural sheathing, continuous above deck foam insulation, exterior nailbase, roof underlayment . These components shall be installed on site by KSU.
  4. Installation of all flashing, tape, sealants, and fasteners required for final field assembly of prefabricated panels for temporary exposure prior to the installation of exterior finishes.
  5. Installation of windows and exterior doors. Windows, where feasible, will be pre-installed in exterior wall panels. Additional windows and exterior doors will be installed on site by KSU. KSU will complete final flashing and sealing of windows.
  6. Interior wall panels: including framing.
  7. Prefabricated casework: consisting of base and wall cabinets, doors, drawers, and additional panels required for filling and finishing casework at intersections with other interior finishes.
  8. Kitchen casework: consisting of cabinets, doors, drawers, countertops, and additional panels required for filling and finishing casework at intersections with other interior finishes. Casework scope will include rolling kitchen island.
  9. Bathroom vanities: consisting of base cabinets and vanity sink tops.
  10. Porch roof framing, steel columns, and sliding wood/metal screens.
  11. Any additional items referred to in general notes or elsewhere in the set as "by KSU."

SITE WORK

- Entire excavation area shall be treated with Fiprinol-based termiticide in strict accordance to MFR's application instructions.
- Downspouts shall discharge roof runoff to impervious concrete splashblocks sloping a minimum of 24" from foundation walls.
- Refer to A0.2 and S1.0 for notes regarding preparation of site and construction of building pad below foundations.

CONCRETE

- See foundation drawings for foundation height, reinforcement grade, spacing, and position from inside face of wall. Pier pads are sized for the loads imposed and show reinforcement, size, and thickness. Required air entrainment is 5 to 7%.
- Foundation shall be frost-protected foundation conforming to R403.3.
- A 6 mil polyethylene vapor retarder with joints lapped a minimum of 6" shall be installed below the concrete floor slab.

METALS

- Steel columns will be minimum Schedule 40.

WOOD

- Framing will be Douglas Fir #2 unless noted otherwise.
- Rafter ties and structural ridge beam will be installed per R802.3 and R802.3.1. of the 2012 IRC. See structural drawings for detail showing compliance for condition where rafter ties are perpendicular to rafters at end walls. Rafter ties are provided at every rafter.
- Roof beam and rafter connections for uplift per R802.11 are noted on the roof framing plan. Ends of typical rafters are connected to walls with H2.5 ties.
- Rafters are shown from bearing point to bearing point on Roof Framing Plan.
- All studs are continuous from the floor to the roof diaphragm per R602.3 and noted on plans where this is required.
- Connection details for beam to wall, beam to column, and column to floor are noted on the plans. See details.
- Rafters are supported by a structural ridge beam and typical rafter ends will be connected with H2.5 ties providing minimum of (4) 16d nails. Per exception 'c' of R802.5.1(9) rafter heel connections are not required to meet additional connection criteria.
- See structural drawings for wall bracing details and notes, in compliance with R602.10

THERMAL AND MOISTURE PROTECTION

- Water-resistive exterior wall covering required by R703.2 and air barrier is provided by ZIP System Wall Sheathing by Huber. ZIP System shall be installed with exterior seams taped, following mfr's requirements.
- Contractor installation of exterior finishes should avoid damage to ZIP substrates. Any damage should be repaired according to ZIP mfr's requirements prior to the installation of exterior finishes.
- Metal siding and roofing installation shall include all panels, flashing, hardware, and accessories required to complete installation.
- A lighting protection system (LPS) shall be installed in accordance with NFPA 780, using air terminals along the roof ridge, exposed conductor cables, and earth grounding. LPS shall be connected to proposed PV solar array. Installation of the LPS shall not void roof and siding warranties.
- Sill moisture barrier shall meet ICC AC380 criteria for physical termite barriers.

DOORS AND WINDOWS

- Egress windows shall comply with section R301 of the IRC. Egress window size and location are noted on these plans.
- Windows, doors, and other glazing will comply with the requirements of section R308 of the IRC for safety glazing.
- All windows shall be provided by KSU.
- All exterior doors shall be provided by KSU. See A6.1 for more information.
- All interior doors shall be provided by KSU and installed by finish contractor.
- After installation of doors and windows, fully seal shim space voids with compressible window and door foam sealant. Seal thresholds with silicone sealant.

FINISHES

- Finishes shall be installed according to MFR's recommendations and in compliance w/ req's necessary for product warranties.
- All finishes shall be reviewed by both architectural team and client prior to construction.
- Substitutions shall be reviewed and approved by both architectural team and client prior to construction.
- Gypsum wall board (GWB) finishes shall be completed by contractor. Contractor shall protect all installed components from damage during GWB installation.
- GWB work shall include all required GWB accessories, taping, mudding, sanding, and priming necessary for final paint work. KSU architectural team shall inspect and approve GWB installation prior to painting.
- Interior paint selections shall be made by KSU architectural team and approved by client specified prior to finishing.

EQUIPMENT

- The following appliances shall be provided and installed by KSU: dishwasher, refrigerator, range, range hood/microwave combo, clothes washer, and clothes dryer
- Contractors shall confirm electrical, plumbing, and ducting requirements for listed appliances and ensure that these requirements are met in the respective system installations.

PLUMBING

- Home shall have one frost-protected hose bib installed at rear of the house.
- All plumbing installation work shall comply with Ch. 29 of IRC 2012.
- Domestic hot water shall be provided by tankless electric water heaters at the points of use. Equipment and equipment installation shall comply with applicable IRC sections and local codes.
- Water and sewage lines shall be roughed into ground below slab. General contractor will coordinate installation of slab insulation with rough-in.
- Refer to plumbing fixture schedule in plumbing dwgs for fixtures to be provided by KSU and installed by contractor.

HEATING, VENTILATION, AND COOLING

- Heating and cooling system shall be a ducted mini-split system, located in the mechanical closet. Some ductwork and diffusers will be located within casework as shown in drawings. Installation shall be coordinated with KSU.
- HVAC equipment installation will conform to IRC Ch. 13 and 14 for mechanical system installation and clearances.

ELECTRICAL

- The house shall be provided with a concrete-encased "ufer" ground per R36081. See Foundation Plan.
- Electrical cabling along exterior walls shall be routed through furred out wall space. Cabling shall be restrained per IRC requirements and protected by metal cabling protection plates where crossing behind furring strips.
- Front and rear porch shall have one GFCI receptacle with weather-resistant cover.
- Front and rear porch shall have one exterior-rated, switch controlled light fixture.
- Receptacle locations, spacing, and installation shall comply with Ch. 39 of IRC 2012.
- All habitable rooms shall have one switch-controlled lighting fixture or lighting receptacle, in compliance with Ch. 39 of IRC 2012.
- Lighting fixtures shall be provided by KSU and installed by contractor.
- Electrical utlity mast, extensions, meter, and service entrance shall comply with local ordinance and local utility requirements
- Electrical service shall enter home beneath slab as shown in drawings. Installation of conduit below slab shall be coordinated with GC during foundation construction.

FIRE, LIFE SAFETY, AND SECURITY

- No walls or soffits are within 5 feet of the property line.
- Hardwired and interconnected smoke detectors will be installed per R314.
- No fuel-fired appliances will be installed in the house and there is no attached garage; therefore there will be no installed carbon monoxide alarms per R315.
- The house will comply with the physical security ordinance R326

TELECOMMUNICATIONS

- Owner shall install internet service with ethernet capability. Internet modem or connection device shall be located in mechanical closet near electrical panel.

PHOTOVOLTAIC SYSTEM

- Photovoltaic system and accessories shall be specified by KSU and its installation coordinated by KSU. Photovoltaic contractor shall coordinate with electrical contractor to connect system and components with household electrical system and utility.

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General Information

G1.1

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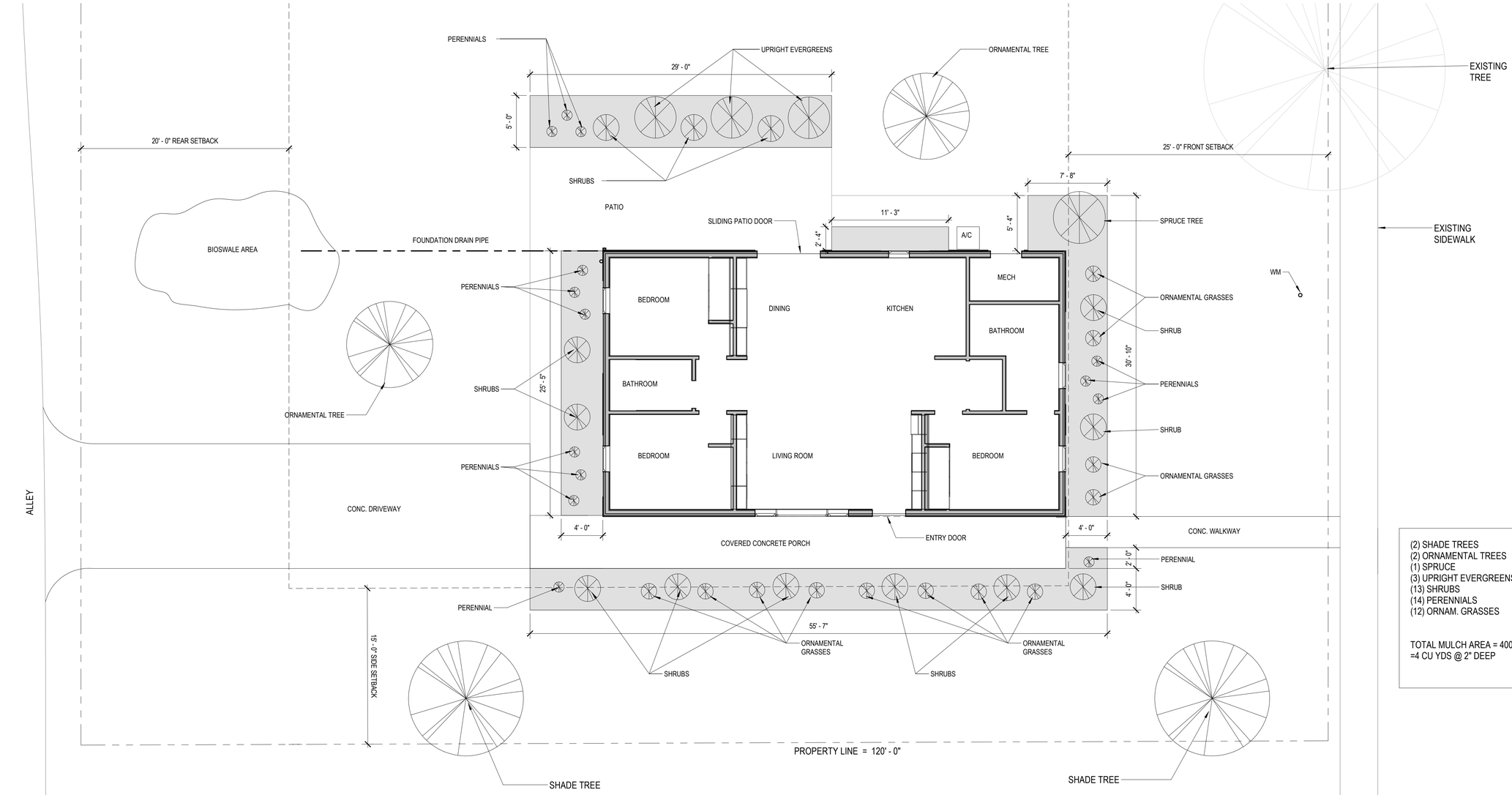

(2) SHADE TREES
(2) ORNAMENTAL TREES
(1) SPRUCE
(3) UPRIGHT EVERGREENS
(13) SHRUBS
(14) PERENNIALS
(12) ORNAM. GRASSES

TOTAL MULCH AREA = 400 SF
=4 CU YDS @ 2" DEEP

1 | Landscape Plan
L1.1 | SCALE: 3/16" = 1'-0"

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Landscape Plan

L1.1

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GENERAL MEP REQUIREMENTS

1. The contract includes all labor, material, and equipment required for the complete systems as shown and specified. Provide all devices and accessories as necessary for complete and working systems.

2. The contractors shall become familiar with the work of all other trades and shall fully coordinate their work prior to ordering equipment or installation of systems.

3. The materials, products and equipment described in these specifications or on the drawings establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution. Listing of these manufacturers shall in no way be construed as a device intended to limit the bidders to those specifically listed.

4. Reference to any article, device, product, material, fixture, form or type of construction by name, make, or catalog number, shall be interpreted as having established a standard of quality and shall not be construed as limiting competition. Articles, fixtures, etc. of equal quality by manufacturers listed in this specification for the applicable use, shall be acceptable, subject to performance, spatial, structural, and electrical constraints of the project design. The Engineer reserves last opinion as to a product's equality or superiority to that specified.

5. Shop drawings shall be submitted for all equipment and major materials supplied and shall include: manufacturer, model number, materials, and miscellaneous data as required to describe the equipment; capacity, voltage, phase, ampacity, and other miscellaneous data to quantify the size of the equipment; dimensional drawings showing layout, connection points, and detailed layout of components; electrical full load amps and minimum circuit ampacities; and other pertinent information needed for complete review by the engineer. Conspicuously mark on each submittal the exact model, fittings, accessories, and devices to be supplied. When a schedule is shown on the drawings or in the specifications, provide a copy of that schedule with the submittal. Contractor shall check all shop drawings to verify that they meet the requirements of the drawings and specifications before forwarding to the architect and engineer. All shop drawings submitted shall bear the stamp of the contractor to show that they have been reviewed in detail. No work shall be fabricated and no equipment ordered until the architect and engineer have returned acceptable reviewed shop drawings.

6. Before project close-out, submit three copies of installation, operating, maintenance instructions, and parts lists for equipment provided, plus all information in PDF format. Include in the manual a list of emergency service organizations capable of rendering service for each piece of equipment. Keep in a safe place all keys, wrenches, and other specialty tools furnished with equipment. Present to owner at project close-out and receive a receipt showing the owner has received the same.

7. Locations of equipment, piping, and other work are indicated diagrammatically on the drawings. Each contractor shall coordinate exact locations subject to structural conditions, work of other contractors, and access requirements. Discrepancies shall be brought to the attention of the architect and engineer.

8. Drawings and specifications indicate minimum construction standards, but should any work indicated be sub-standard, to any ordinances, laws, codes, rules, or regulations bearing on work, the contractor shall execute work in accordance with such without increased cost to the owner, but not before such variances have been brought to the attention of the architect and engineer

9. The contractors shall secure and pay for the necessary permits and certificates of inspection for their trade. Keep record of all permits and inspections and submit two copies to the engineer with request for final inspection.

10. The owner shall be provided with training on each piece of equipment as to startup, shutdown, normal maintenance, seasonal changeover, and other pertinent information as recommended by the manufacturer.

II. This contractor shall warrant that the complete systems installed under this contract shall be free of defects in workmanship and materials for a period of one (1) year from the date of substantial completion by the arch/owner. If defects occur during the one-year guarantee period, this contractor shall repair or replace such defects at no expense to the owner and to the satisfaction of the owner and engineer.

12. Provide 3-1/2 in concrete bases for all floor mounted equipment unless shown or noted otherwise. Provide 6x6 Welded wire fabric reinforcing minimum or as required by the structural engineer.

13. Adequately protect equipment from damage after delivery to the jobsite. Cover with heavy polyethylene plastic. Elevate equipment when there is danger of water damage. Damaged equipment will be rejected.

14. Any scratches to factory finishes shall be touched up using factory supplied paint before final acceptance. If extensive damage to factory finishes has occurred, equipment panels shall be replaced to the satisfaction of the engineer. If rust has formed, remove as recommended by the manufacturer prior to touch-up.

15. Install all equipment in strict accordance with the manufacturer's recommendations and the shop drawings reviewed by the Engineer. The complete installation shall function as designed and intended with respect to efficiency, capacity, and noise level, etc. Any abnormal noise caused by rattling equipment, conduit, or fixtures will not be acceptable.

16. Contractor shall perform initial start-up of systems and shall provide necessary supervision and labor to make the first seasonal change-over of systems. Owner's operating personnel shall be present during this operation.

17. It is the contractor's responsibility to provide materials and trim which fit properly the types of ceiling, wall, or floor finishes installed whether or not included in the model numbers in specifications or shown on drawings.

18. Contractor shall provide all miscellaneous steel, wood, etc., for the proper installation of the systems specified and/or indicated on the plans. Any item connecting to building structure shall be done in a manner accepted by the architect or structural engineer. When bar joists are used for steel construction, items shall be supported from angle iron spanning the top chord of the joists.

19. Periodically during construction and prior to Owner acceptance of the building, Contractor shall remove from the premises and dispose of all packing material and debris.

20. Before submitting a bid, the Contractor shall visit the actual location of the job and shall fully understand the scope of the work to be done and the conditions under which it is to be performed. In no case shall additional compensation be granted when existing conditions could reasonably be determined.

21. Locate and mark all known utilities prior to proceeding with work. Proceed with caution since unmarked utilities may exist on site. Should any existing utilities be damaged or disrupted, immediately notify owner and repair to existing conditions.

22. The Electrical Contractor shall provide all conduit and wiring and shall connect complete and ready for operation all electrical motors and equipment in the other contracts. The other contractors shall furnish to the Electrical Contractor all switches, electrical controls, and other accessories required. Installation of all motors, equipment, etc., shall be made by the Contractor furnishing the equipment, unless otherwise indicated.

23. Unless integral to the equipment supplied or noted otherwise, the Electrical Contractor shall provide disconnect switches, motor starters, and variable frequency drives as required by code and/or as shown on the drawings. The contractors responsible for installing the associated equipment shall coordinate with the Electrical Contractor to ensure devices of the proper size are furnished. Further, the other trades shall furnish all electric control items needed to the Electrical Contractor for installation and connection.

24. The contractor shall provide openings and chases, cutting and patching, excavation and backfilling, and pipe sleeves as needed for proper execution of the work.

25. The Contractor shall do all excavation and backfilling necessary to complete work under this contract. Trenches close to walls and Columns of the building shall not be excavated without the Architect's prior consent. As a minimum, backfill in 6" lifts, compacting to a minimum of 90%. The first 12" of fill above any buried item outside the building shall be sand in order to contrast with other fill material. Provide a yellow warning tape at the top of the sand layer.

26. Sleeves are required in all penetrations through new exterior walls, masonry walls, floors and fire rated qup board walls. Sleeves shall be either Schedule 5 steel pipe, EMT conduit, field fabricated from minimum 16-gauge steel with 2" overlap at the seam, or as required by UL listed fire-stopping system. Sleeves will not be required in wall penetrations of masonry construction when such openings are made by "core-drilling." Space between sleeves and pipe in outside walls shall be sealed using silicone sealant.

27. All sidewalks, streets, or alley surfaces that are broken in connection with this contract shall be patched to the satisfaction of the owner.

28. Provide fire stopping to maintain the fire rating of walls, floors, ceilings, or other building components. Fire stopping shall be composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the fire stopping under conditions of service and application, as demonstrated by the fire stopping manufacturer based on testing and field experience. Firestop system installation must meet requirements of ASTM E-814, UL Standard 1479 or UL Standard 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

29. Contractor shall coordinate with architectural team and client on final selection and installation of diffusers and other visible hardware that must integrate with interior finishes.

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Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS
Affordable Net+
Prototype Home

NOT FOR CONSTRUCTION

Issue Status:

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Date: March 2, 2021

Mechanical General Notes

M1.1

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VENTILATION REQUIREMENTS (IRC TABLE M1507.3.3(1) CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION)			
DWELLING UNIT FLOOR AREA	NUMBER OF BEDROOMS		
<1200 SF	3	AIRFLOW IN CFM REQUIRED =	**45 CFM REQUIRED**
VENTILATION AIR PROVIDED	NUMBER OF BEDROOMS		**100 CFM PROVIDED AT M3**
IRC TABLE M1507.4 MINIMUM REQUIRED LOCAL EXHAUST RATES			
KITCHENS	100 CFM INTERMITTENT OR 25 CFM CONTINUOUS		**300 CFM INTERMITTENT PROVIDED AT M5**
BATHROOMS	50 CFM INTERMITTENT OR 20 CFM CONTINUOUS EACH		**70 CFM CONTINUOUS PROVIDED AT M3**
			70 CFM INTERMITTENT PROVIDED AT M4

SCHEDULE OF DIFFUSERS AND REGISTERS

MARK A CFM	MANUFACTURER / MODEL	TYPE	NECK SIZE	FACE SIZE	MOUNTING	MATERIAL	FINISH	NC MAX	ACCESSORIES
A1		SUPPLY		8 x 4	SURFACE	STEEL	WHITE		
A2		SUPPLY		12 x 4	SURFACE	STEEL	WHITE		
A3		SUPPLY		6 x 6	SURFACE	STEEL	WHITE		
B		RETURN		30 x 20	SURFACE	STEEL	WHITE		
C		WALL CAP			SURFACE	STEEL	WHITE		
D		WALL CAP			SURFACE	PLASTIC	WHITE		
E		TRANSFER		12 x 4	SURFACE	STEEL	WHITE		

MECHANICAL EQUIPMENT SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
M1	AIR HANDLING UNIT	MITSUBISHI	SVZ-KP30NA	
M2	OUTDOOR CONDENSOR	MITSUBISHI	SUZ-KA30NA2	
M3	ENERGY RECOVERY VENTILATOR	PANASONIC	FV-10VE1	
M4	BATHROOM LIGHT / EXHAUST FAN...	BROAN	744	PROVIDE GFI PROTECTED CIRCUIT BRANCH FROM GFCI RECEPTACLE IN BATHROOM
M5	RANGE HOOD	BEKO	MWOTR30200CSS	RANGE HOOD INTEGRATED IN MICROWAVE UNIT. PROVIDED BY OTHERS.

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Mechanical Schedules

M1.2

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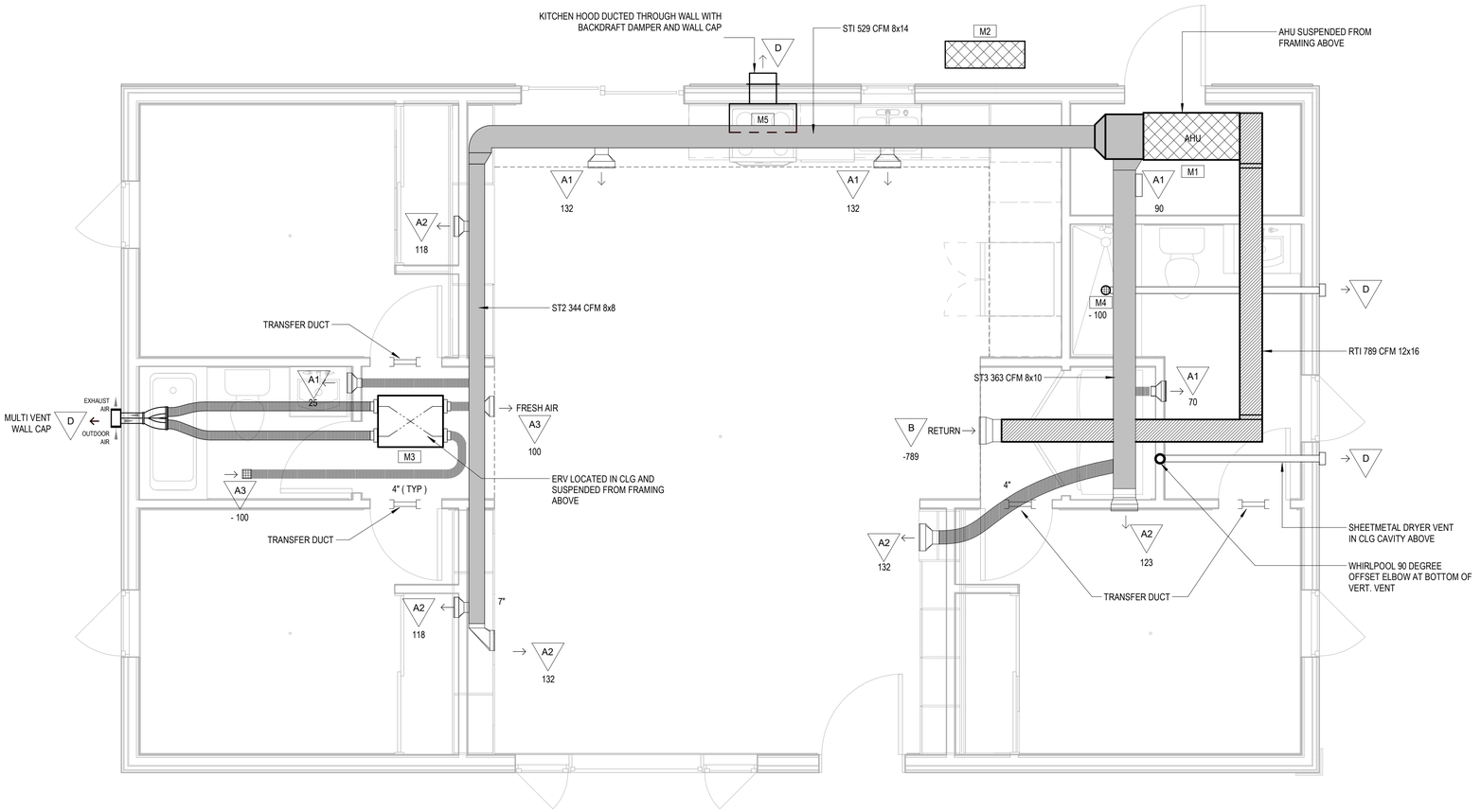

1 | Mechanical Plan

M1.3 | SCALE: 3/8" = 1'-0"

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Mechanical Plan

M1.3

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PLUMBING REQUIREMENTS

1. This contractor shall make connection to the water and sewer utilities; coordinate all connection requirements with civil engineer. Installation of utility connections shall be in complete conformance with all regulations having jurisdiction, and the requirements of each serving wtility.

2. The Contractor shall pay any and all required utility service fees associated with this project and arrange for water meter installation to building.

3. Provide unions or grooved mechanical couplings at all equipment connections, at points where disconnection of piping will be required, and at other locations show on the drawings.

4. Bronze or brass ball valves rated at 150 psi SWP and 600 psi WOG, shall have two or three piece stainless steel, cast bronze, or brass bodies with TFE seats, stainless steel full port ball, separate packing nut with adjustable stem packing, and anti-blowout stem shall be used in 3" and smaller copper and steel lines for domestic water duties.

5. All insulated horizontal piping shall be supported from outside the insulation. Provide inserts and saddles as recommended by the insulation manufacturer.

6. Pipe hangers for lines 1/2" to 2" shall be adjustable swivel ring. Provide hanger rods in diameters as required by the hanger rod holes.

7. Soil, waste, vent and drain pipe shall be properly supported.

8. Domestic water piping interior lines shall be hydrostatically tested at 100 psi.

9. Soil, waste, vent and roof drain pipe underground shall be tested before complete covering. This test shall be made by extending a 10 length of pipe vertically, temporarily caulking, and filling with water. This test shall remain 12 hours.

10. All water piping to be insulated with 1/2" unicellular elastomeric (Armaflex or equivalent) insulation on domestic hot and cold water. Miter the insulation at tees and elbows. Seal all joints with adhesive. For condensate prevention and heat loss prevention, all water piping above ceiling must be fully insulated.

11. Potable domestic water piping:

a. Meter to house pipe: Type K-weight soft or rigid copper with silfos joints. At contractor's option, PEX may be used if approved by local jurisdiction. PEX pipe, fittings, and connectors shall all be by the same manufacturer and piping laid out with no underslab fittings.

b. Interior Piping, above slabs: Type L, soft or rigid copper with 95/5 solder or silfos brazed connections, brass nipples, valves and unions. Provide dielectric unions or dielectric fittings and ball valves at both hot and cold connections of water heaters. At contractor's option, PEX may be used if approved by local jurisdiction. PEX pipe, fittings, and connectors shall all be by the same manufacturer and piping laid out with no underslab fittings.

c. Ball valve shut-off (of same size as entrance pipe) at service entrance. Provide accessible ball valves as locations require for proper serviceability. Provide a pressure regulator and pressure gauge on service entrance. Provide backflow preventer on the incoming service in the meter pit if required by the water department.

12. Exterior buried piping shall have a minimum of 36" cover.

13. All runs of pipe shall be installed as shown on drawings, unless some condition should arise which would make it necessary or seem advisable to alter same.

14. Air chambers shall be provided on all water supplies near each faucet control valve or Flush valve. Air chamber shall be equal in length to at least 12 diameters of the pipe.

15. All piping shall be concealed in walls, below floors, or above ceilings unless indicated otherwise or shown running through areas with exposed structure. All pipe shall be installed parallel or perpendicular to building surfaces.

16. Schedule 40 ABS or PVC drain waste and vent piping with solvent welded joints shall be used for all soil, waste, storm and vents lines.

17. The arrangement of waste and vent systems must be as direct as possible avoiding all unnecessary offsets. All pipe shall run as indicated on the drawings, unless some condition should arise which would make it necessary or seem advisable to alter same. Horizontal lines shall be graded at 1/4" per foot where possible or 1/8" per foot minimum, unless noted otherwise.

18. Each fixture and piece of equipment requiring connection to the sanitary drainage system shall be equipped with a trap. Each trap shall be placed as near the fixture as possible and no fixture shall be double trapped.

19. Provide cleanouts where shown or required by code. Cleanouts shall be the full pipe size.

20. Provide complete, all fixtures indicated. All fixtures shall be set firm and true, connected to all pipe and ready for use.

21. Quarter turn stop valves shall be provided on the hot and cold-water connections to all plumbing fixtures. Stainless steel braided flexible supply connections or supply risers are allowed.

22. Install plumbing Fixtures and specified components in accordance with designations and locations indicated on Drawings and in complete compliance with the manufacturer's recommendations and instructions.

23. Refer to elevations on the Architect's drawings for installation height of wall mounted fixtures. Refer to architectural plans to ensure flush valve control handle is mounted for use from the wide side of handicapped toilet stalls.

24. Install stop valve in an accessible location in each water supply to each fixture.

25. Install escutcheons at each wall, floor, and ceiling penetration in exposed finished locations and within cabinets and millwork. Use deep pattern escutcheons where required to conceal protruding pipe fittings.

26. Seal fixtures to walls, floors, and counters using a sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color

27. Operate and adjust all plumbing fixtures and equipment. Replace damaged and malfunctioning fixtures, fittings, and controls. Adjust water pressure regulating valve at service entrance to 30-psi

28. Vents through roof shall use 12" high min. preformed metal plumbing vents with boots, secured to vent pipes with stainless steel draw bands. Assembly shall be set with butyl sealant tape and screwed down with roof manufacturer's approved screws, fastening to roof deck. Anchor vent pipes to roof deck or joists with U-bolt around pipe and angle iron screwed to deck. Provide 1/2" insulation around vent pipe on interior of building.

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Plumbing General Notes

P1.1

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PLUMBING FIXTURE SCHEDULE

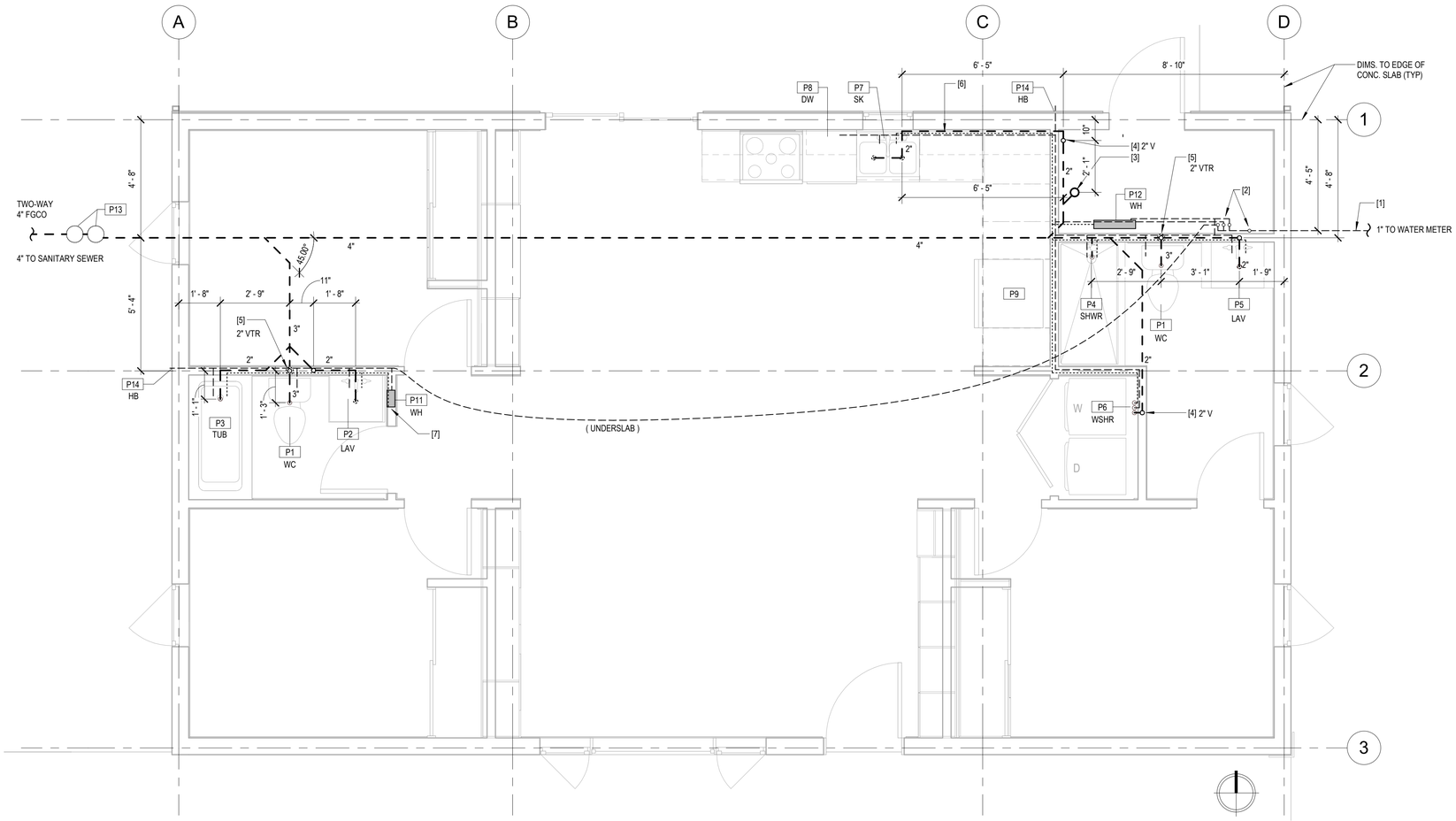
ID	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	DIMENSIONS	COMMENTS
P1	BATHROOM 1 & 2	WATER CLOSET SEAT TRIM	KOHLER BEMIS -	WELLWORTH K-3988-0 1200SLOWT -		FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE WAX RING, SUPPLY, AND STOP
P2	BATHROOM 2	LAVATORY FAUCET TRIM	KOHLER KOHLER -	K-2956-8 K-45102-4 -	25 1/4"W x 22"D - -	FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE AERATOR, STOPS, AND TRIM NOT SUPPLIED WITH SINK
P3	BATHROOM 2	BATH TUB FAUCET SHOWERHEAD TRIM	KOHLER - - -	BELLWETHER K-837 - - -		FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE BATH DRAIN WASTE AND OVERFLOW ASSEMBLY
P4	BATHROOM 1	SHOWER BASE SHOWER KIT TRIM	KOHLER KOHLER -	K-8458 K-99242-G -		FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE SHOWER DRAIN AND ACCESSORIES NOT SUPPLIED WITH SHOWER BASE
P5	BATHROOM 1	LAVATORY FAUCET TRIM	KOHLER KOHLER -	K-2779-1-0 K-45102-4	31"W x 22 3/8"D	FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE AERATOR, STOPS, AND TRIM NOT SUPPLIED WITH SINK
P6	LIVING ROOM	WASHING MACHINE BOX				
P7	KITCHEN	SINK FAUCET TRIM GARBAGE DISPOSAL	KOHLER KOHLER - INSINKERATOR	K-75791-1 K-R29669 - EVOLUTION 78238A		FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR FIXTURE TO BE FURNISHED BY OTHERS AND INSTALLED BY CONTRACTOR PROVIDE 1 1/2" P-TRAP AND SUPPLIES WITH STOPS 3/4 HP GARBAGE DISPOSAL
P8	KITCHEN	DISHWASHER				DISHWASHER FURNISHED BY OTHERS. CONNECT HOT AND COLD WATER SUPPLIES WITH SEPARATE SHUT OFF VALVES. CONNECT DRAIN TO GARBAGE DISPLOSAL KNOCK-OUT.
P9	KITCHEN	REFRIGERATOR				REFRIGERATOR FURNISHED BY OTHERS. CONNECT COLD WATER SUPPLY TO SINK WITH SHUT OFF VALVE.
P10	MECH. CLOSET	FLOOR DRAIN				INSTALL WITH PLUMBING TRAP AND TRAP SEAL
P11	BATHROOM 2	WATER HEATER	ECOSMART	ECO-11		240V, 60A, 11.8 KW, TANKLESS, 0.3 GPM ACTIVATION
P12	MECH. CLOSET	WATER HEATER	ECOSMART	ECO-18		240V, (2) 40A, 18 KW, TANKLESS, 0.3 GPM ACTIVATION
P13	EXTERIOR	CLEAN OUT				DOUBLE CLEAN OUT, INSTALLATION SHALL ENSURE CAPS ARE LOCATED MIN. 3" ABOVE GRADE
P14	EXTERIOR	HOSE BIB				NON FREEZE TYPE, SELF-DRAINING W/ VACUUM BREAKER, WHEEL HANDLE W/ 14" EXTENSION

KEY

- SANITARY WASTE (SW)
- COLD WATER (CW)
- HOT WATER (HW)
- VTR PLUMBING VENT (V) AND VENT THRU ROOF (VTR)
- PIPE TURNING UP OR DOWN
- WATER DRAIN (2)
- CLEANOUT
- FLOOR DRAIN

PLUMBING PLAN NOTES

1. 1" DOMESTIC WATER SERVICE RUN UNDERGROUND FROM WATER METER & PIT. FIELD VERFIY EXACT LOCATION AND COORDINATE WITH UTILITY PROVIDER
2. DOMESTIC WATER SERVICE STUBBED UP WITH BALL VALVE AND GROUNDING CLAMP FOR ELECTRICAL SERVICE. RUN PIPE TO MANIFOLD WITH INDIVIDUAL SHUT OFF VALVES AND BRANCH WATER SUPPLY TO ROOMS OR BELOW SLAB AS INDICATED.
3. INSTALL FLOOR DRAIN AT LEVEL TO PROVIDE DRAINAGE OF FINISHED SLAB IN MECHANICAL CLOSET.
4. INSTALL VENT PIPE UP THROUGH CEILING FRAMING AND CONNECT TO VENT THROUGH ROOF INDICATED BY NOTE [5] IN CAVITY ABOVE CEILING.
5. EXTEND VENT PIPE UP FROM FIXTURE THROUGH ROOF. SEE "VENT-THRU-ROOF" NOTES IN PLUMBING GENERAL NOTES.
6. WASTE PIPE AND WATER LINES SHALL BE RUN ALONG INTERIOR FINISH FACE OF WALL BEHIND KITCHEN CASEWORK. CASEWORK DESIGN WILL PROVIDE PASSAGEWAY TO AVOID INTERFERENCE WITH PLUMBING. ENSURE VENT CONNECTION IS ABOVE TRAP WEIR AT SINK.
7. TANKLESS WATER HEATER TO BE MOUNTED WITHIN WALL CAVITY AND ACCESSED FROM OUTSIDE BATHROOM THROUGH STEEL ACCESS PANEL. ACCESS PANEL TO BE PROVIDED BY OTHERS.



1 Plumbing Plan
P1.2 SCALE: 3/8" = 1'-0"

PLUMBING PLAN GENERAL NOTES

A. INSTALLATION SHALL BE ACCORDANCE WITH ALL APPLICABLE AND LOCAL CODES

B. DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL DRAWING FOR DIMENSIONAL ELEMENTS.

C. REFER TO THE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS NOT SHOWN ON THE PLAN.

D. PLUMBING CONTRACTOR SHALL FULLY COORDINATE WITH OTHER TRADES.

E. PLUMBING CONTRACTOR SHALL FULLY COORDINATE WITH OTHER TRADES.

F. PLUMBING CONTRATOR SHALL COORDINATE WITH SITE PLAN FOR RUNNING UTILITIES AND TO OBTAIN WATER AND SEWER SERVICE AND MAKE CONNECTIONS.

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Plumbing Plan

P1.2

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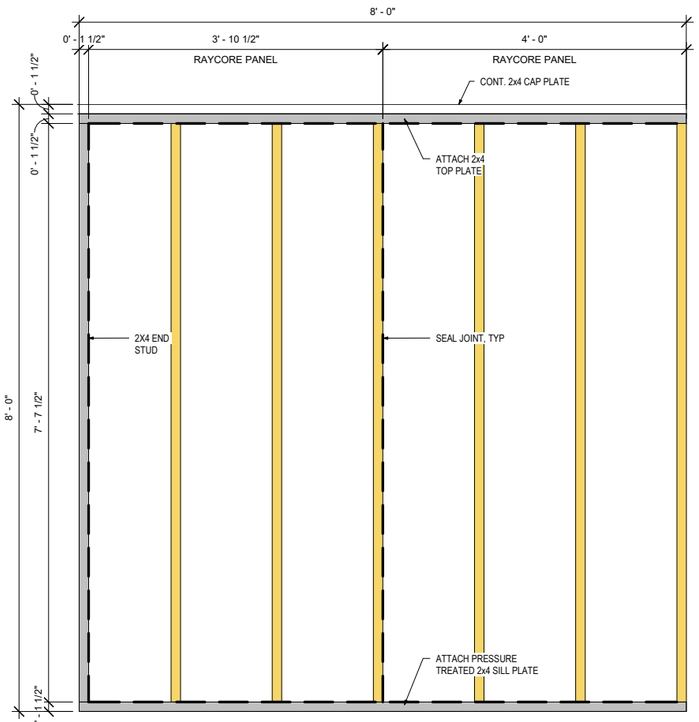
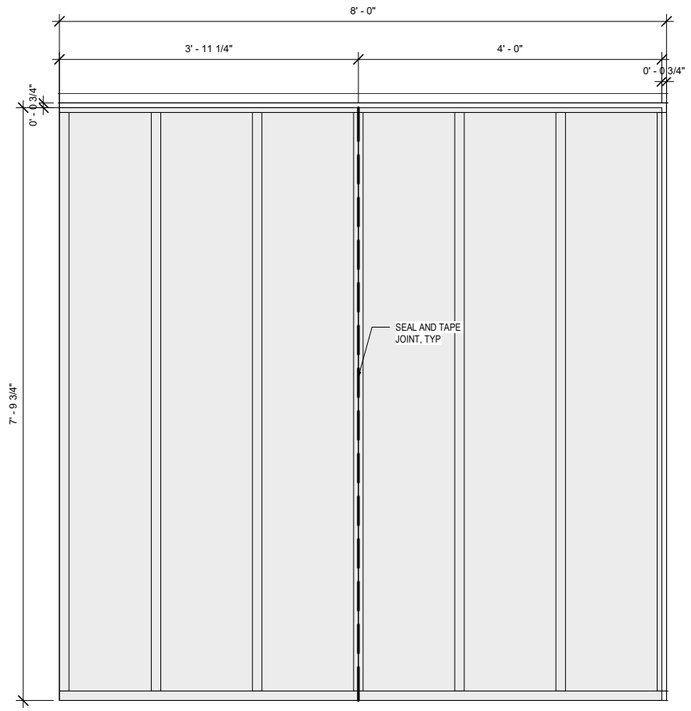


1 Panel Framing Elevation - N1
F2.N1 SCALE: 1" = 1'-0"

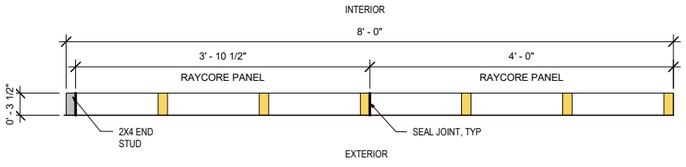


3 Sheathing Elevation - N1
F2.N1 SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

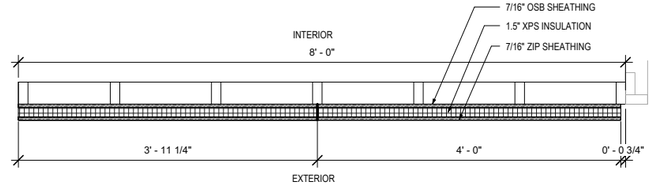


2 Panel Plan - N1
F2.N1 SCALE: 1" = 1'-0"

LEGEND

TYPICAL SHEATHING- 12" O.C. NAILING

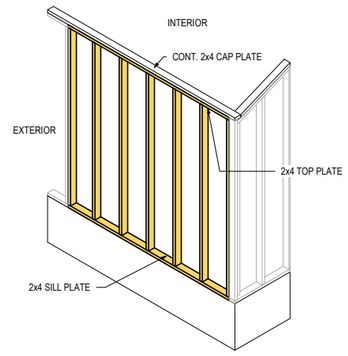
BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING

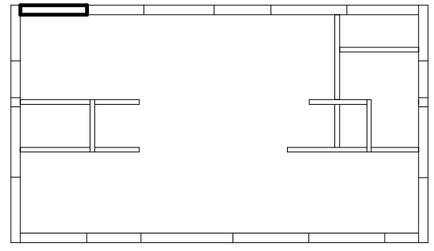


4 Sheathing Plan - N1
F2.N1 SCALE: 1" = 1'-0"

WALL PANEL NOTES

1. EXTERIOR WALL PANEL NUMBERING BEGINS AT THE NORTHWEST CORNER AND CONTINUES IN CLOCKWISE ORDER.
2. CONTINUOUS 2x4 CAP PLATE SHOWN IN DRAWINGS IS TO BE ATTACHED ON-SITE.
3. APPLY ADHESIVE AND FOAM SEALANT BETWEEN ALL RAYCORE JOINTS, AND WHERE RAYCORE INSULATION ABUTS STUDS
4. 4'x8' OSB SHEATHING, INSULATION AND ZIP BOARDS APPLIED DURING PREFABRICATION SHALL BE 3/4" BELOW THE TOP OF THE TOP PLATE, AND EXTEND 2-1/4" BELOW THE BOTTOM OF THE SILL PLATE.
5. FASTENING COMPLIES W/IRC 2012 MINIMUM. SEE FASTENING SCHEDULE ON F0.1
6. SHEATING EDGES SHALL BE NAILED TO SOLID WOOD MEMBERS OR BLOCKING
7. SHEATING+NAILBASE SHALL BE GAPPED 1/8" AT JOINTS
8. PANEL TO PANEL JOINT WILL BE SEALED IN FIELD
9. ZIP INSULATION SHALL BE SEALED IN THE FIELD
10. XPS INSULATION JOINT IN BETWEEN SHOULD BE STAGGERED SO THAY DO NOT FALL AT ZIP JOINTS





PANEL CODE: N1

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REVISIONS

1 2020-03-14

Issue Status:

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Date: March 14, 2020

Framing Panel N1

F2.N1

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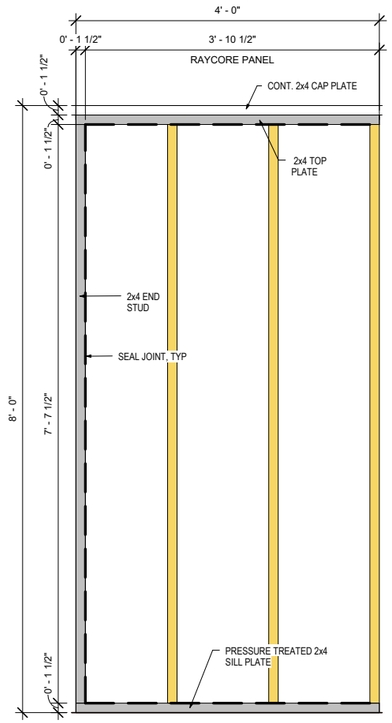
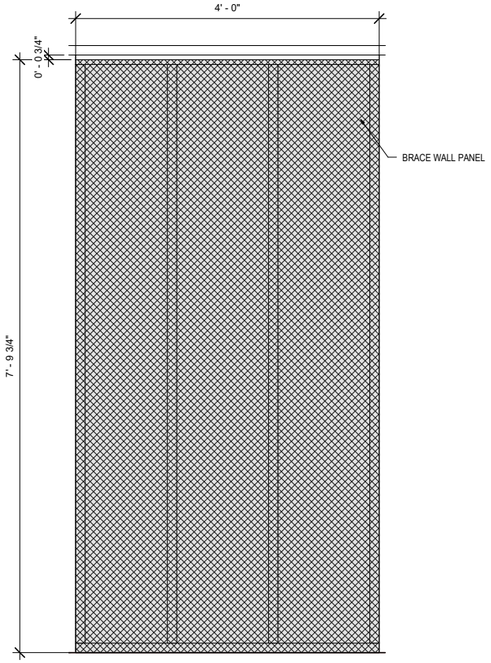
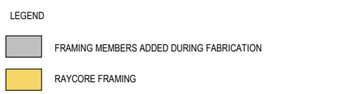
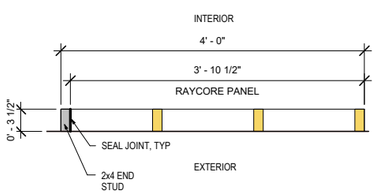


1 Panel Framing Elevation - N2
F2.N2 SCALE: 1" = 1'-0"

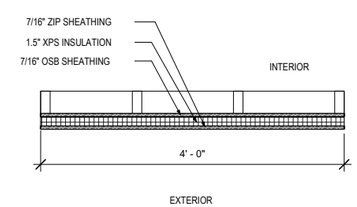


3 Sheathing Elevation - N2
F2.N2 SCALE: 1" = 1'-0"





2 Panel Plan - N2
F2.N2 SCALE: 1" = 1'-0"



4 Sheathing Plan - N2
F2.N2 SCALE: 1" = 1'-0"

WALL PANEL NOTES

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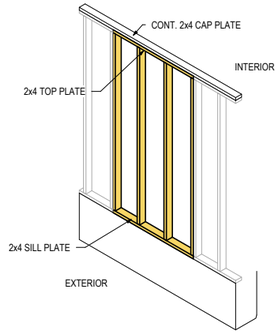

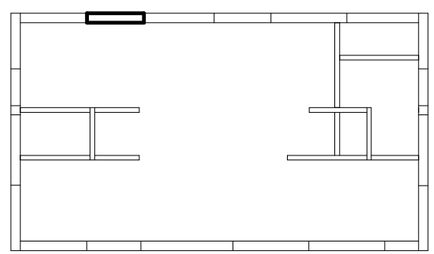

PANEL CODE: N2

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
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210 E. 3RD
COURTHOUSE ANNEX
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PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS
1 2020-03-14

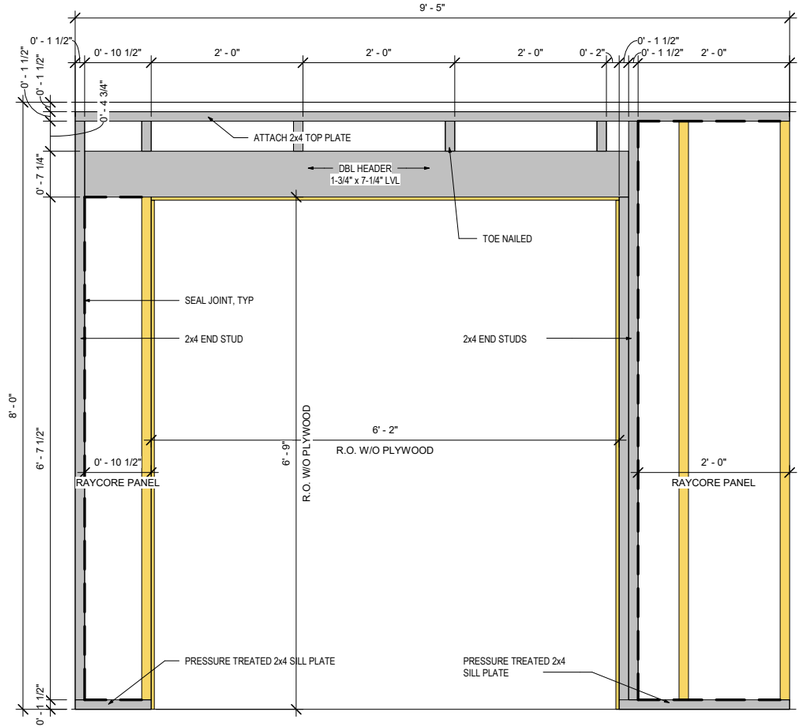
Issue Status:
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel N2

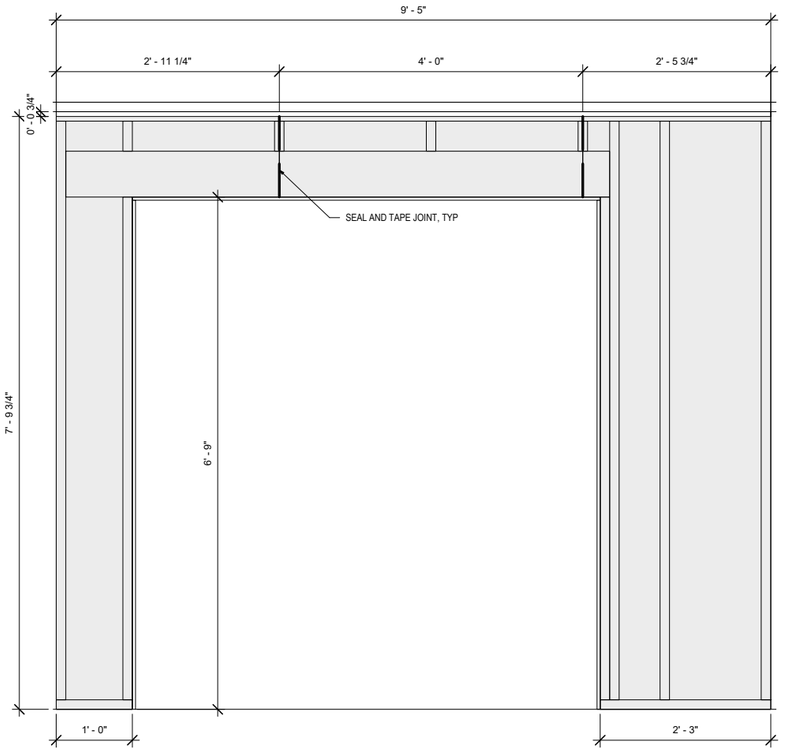
F2.N2

7/27/2020 8:50:12 AM



1 | Panel Framing Elevation - N3

F2.N3 SCALE: 1" = 1'-0"



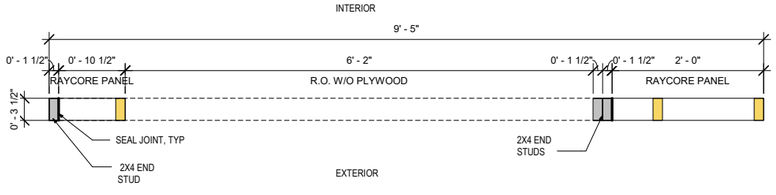
3 | Sheathing Elevation - N3

F2.N3 SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



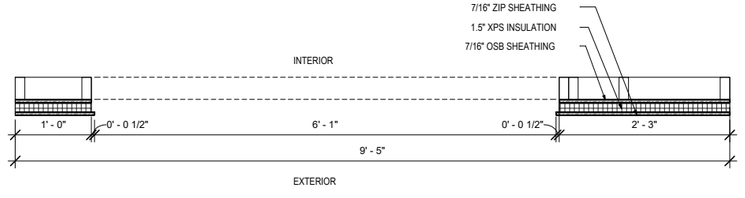
2 | Panel Plan - N3

F2.N3 SCALE: 1" = 1'-0"

LEGEND

TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



4 | Sheathing Plan - N3

F2.N3 SCALE: 1" = 1'-0"

WALL PANEL NOTES

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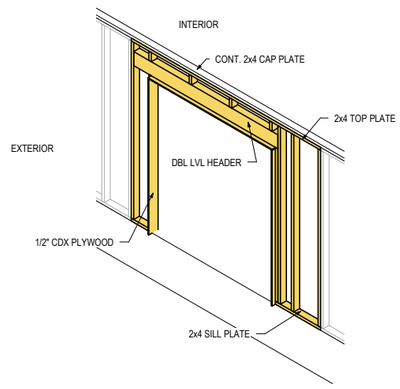

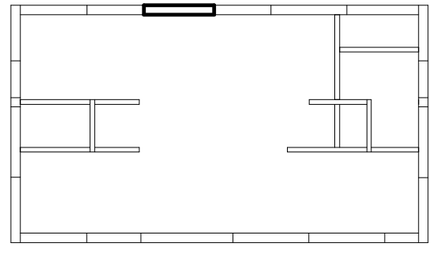

PANEL CODE: N3

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REVISIONS

1 2020-03-14

Issue Status:

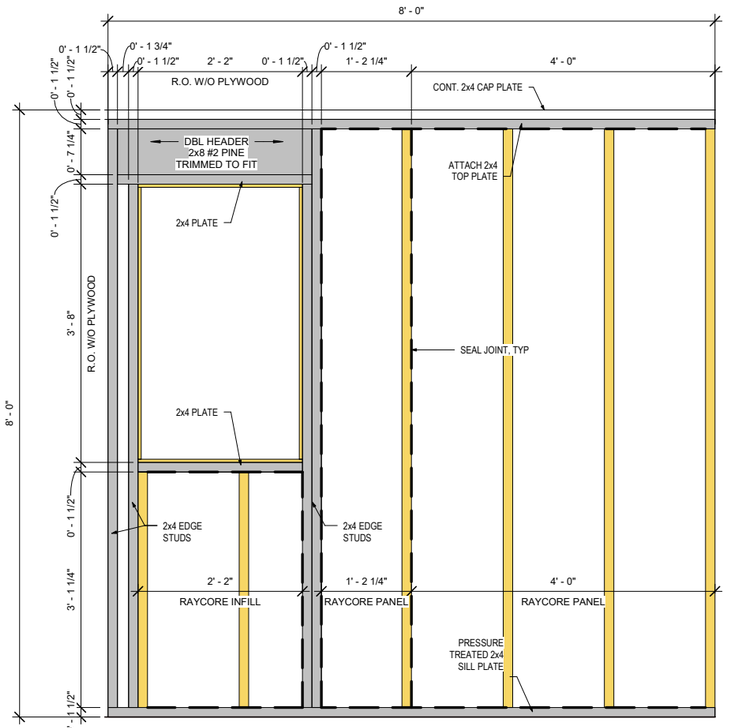
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel N3

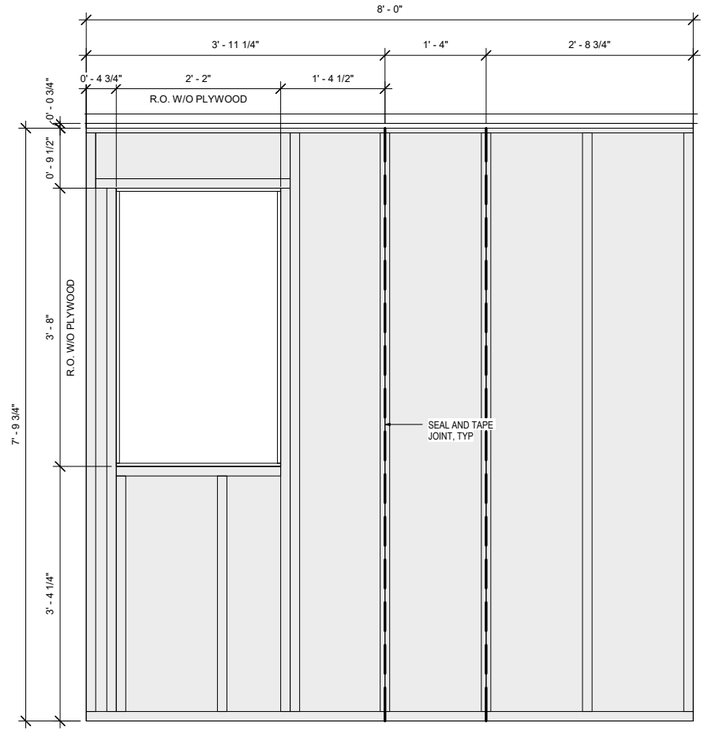
F2.N3

7/27/2020 8:50:13 AM



1 | Panel Framing Elevation - N4

F2.N4 SCALE: 1" = 1'-0"



3 | Sheathing Elevation - N4

F2.N4 SCALE: 1" = 1'-0"

LEGEND

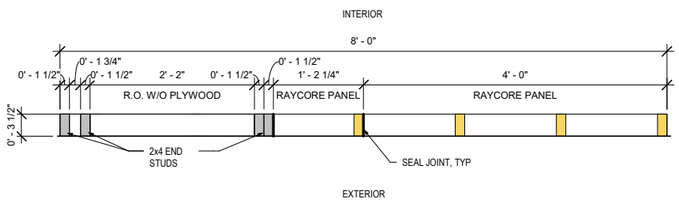
FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

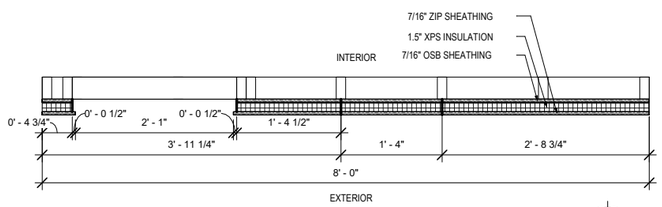
TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



2 | Panel Plan - N4

F2.N4 SCALE: 1" = 1'-0"



4 | Sheathing Plan - N4

F2.N4 SCALE: 1" = 1'-0"

WALL PANEL NOTES

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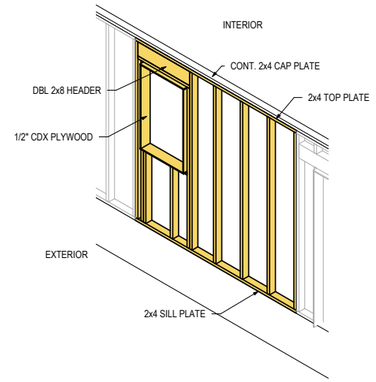

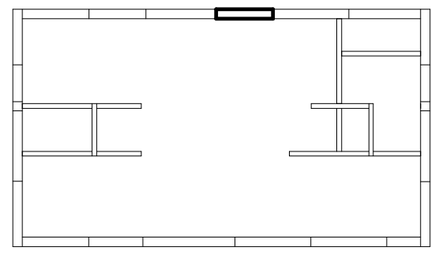

PANEL CODE: N4

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REVISIONS

1 2020-03-14

Issue Status:

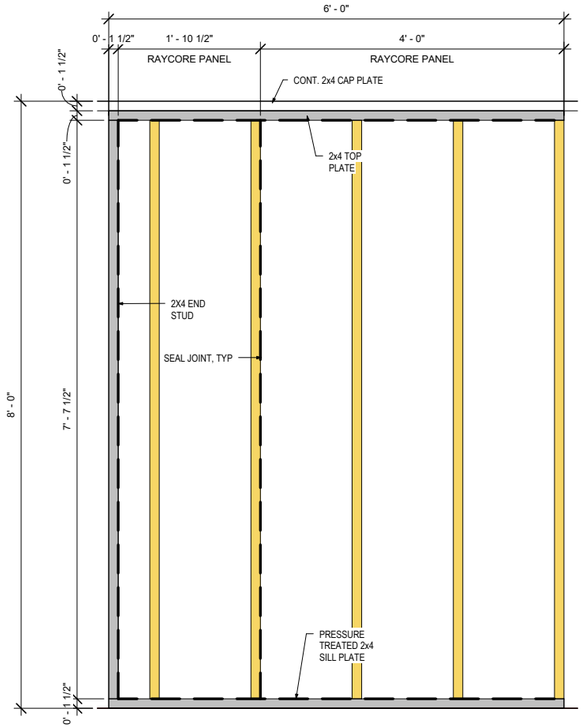
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel N4

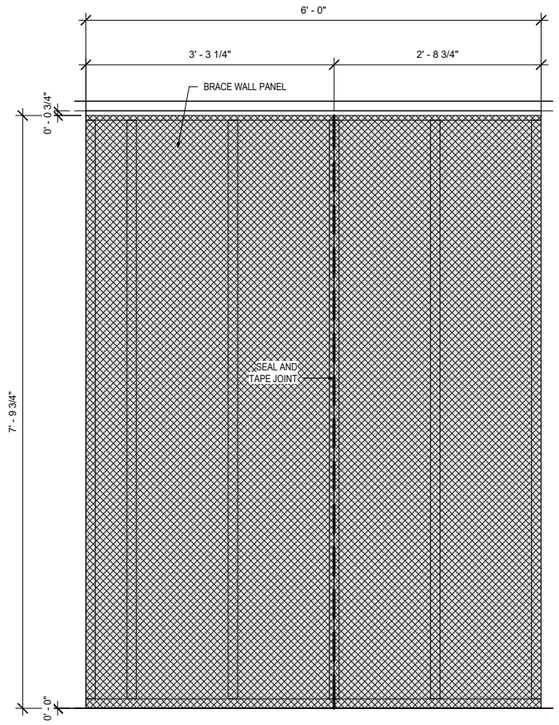
F2.N4

7/27/2020 8:50:14 AM



1 | Panel Framing Elevation - N5

F2.N5 SCALE: 1" = 1'-0"



3 | Sheathing Elevation - N5

F2.N5 SCALE: 1" = 1'-0"

LEGEND

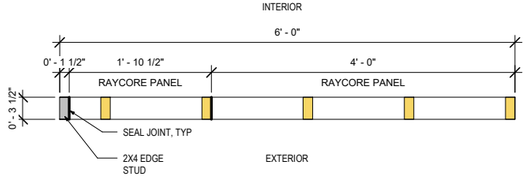
FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

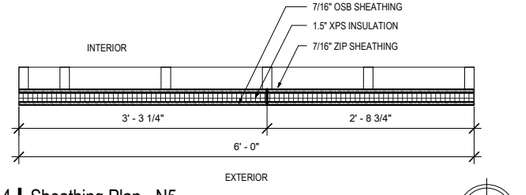
TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



2 | Panel Plan - N5

F2.N5 SCALE: 1" = 1'-0"



4 | Sheathing Plan - N5

F2.N5 SCALE: 1" = 1'-0"

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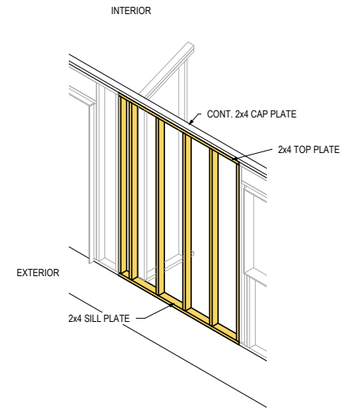

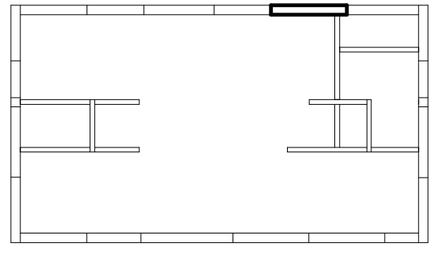

PANEL CODE: N5

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REVISIONS

1 2020-03-14

Issue Status:

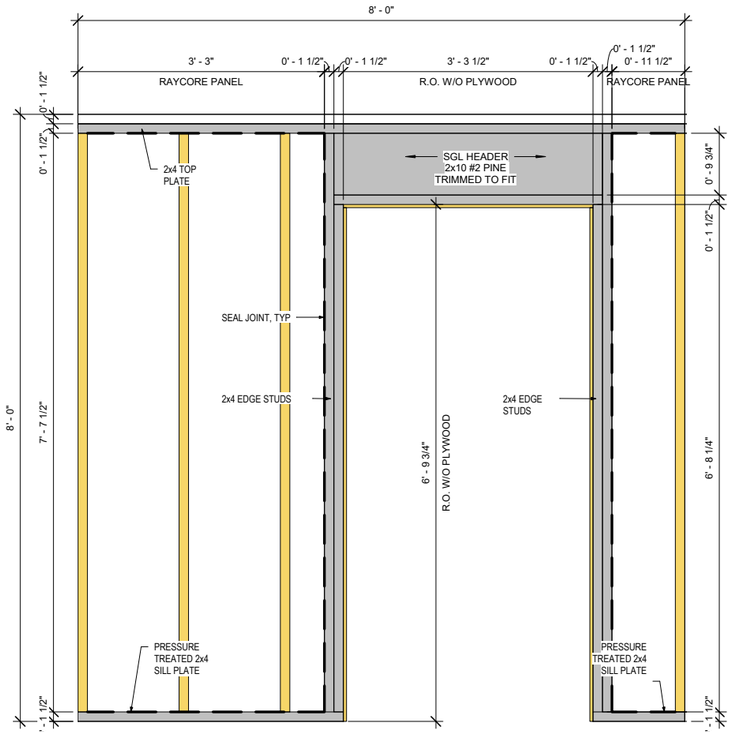
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel N5

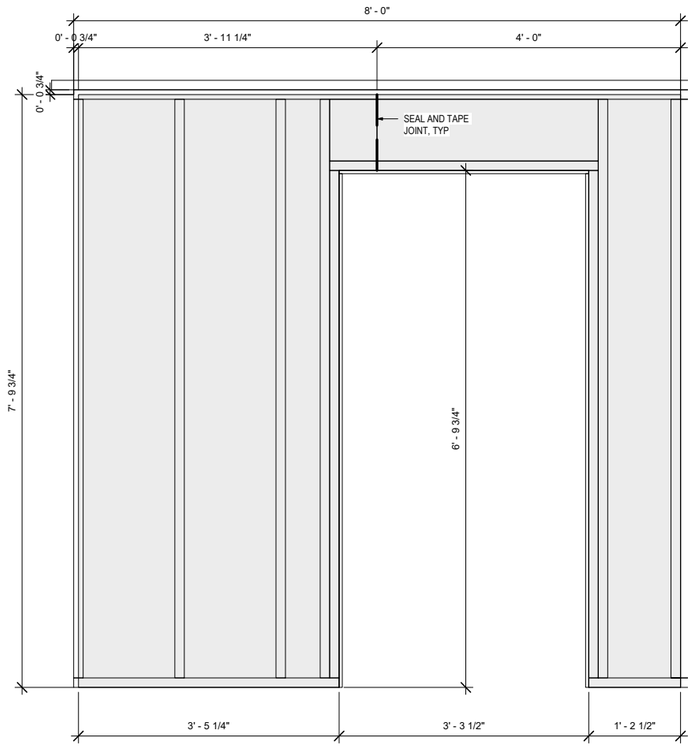
F2.N5

7/27/2020 8:50:15 AM



1 | Panel Framing Elevation - N6

F2.N6 | SCALE: 1" = 1'-0"



3 | Sheathing Elevation - N6

F2.N6 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

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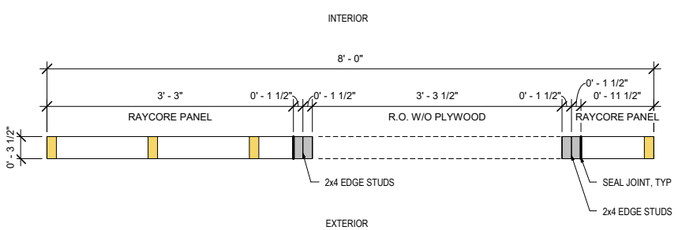
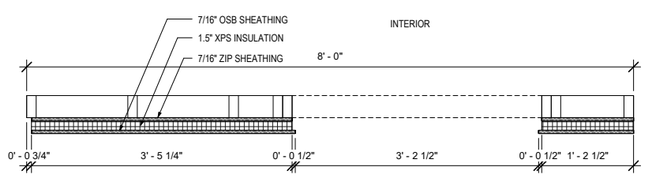


2 | Panel Plan - N6

F2.N6 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - N6

F2.N6 | SCALE: 1" = 1'-0"

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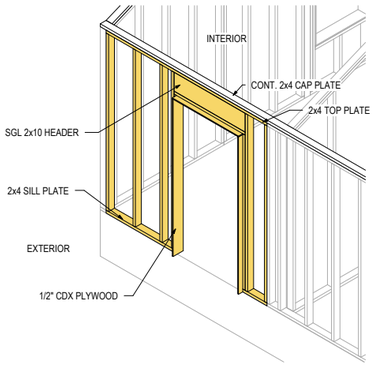

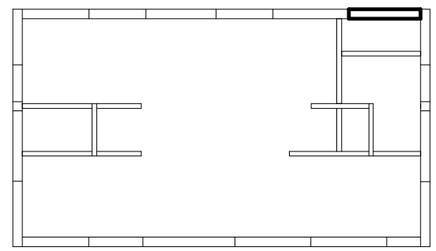

PANEL CODE: N6

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1 2020-03-14

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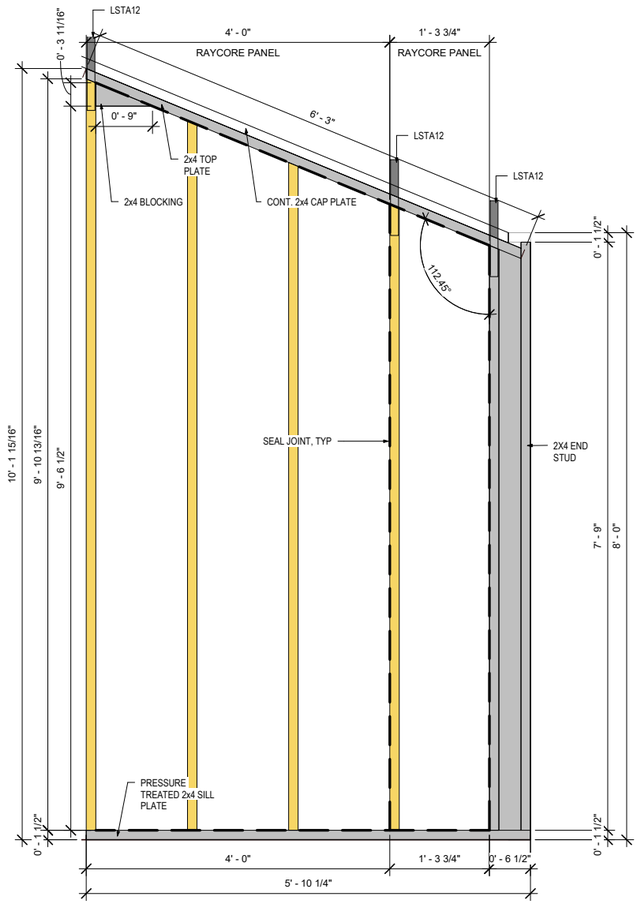
Framing Panel N6

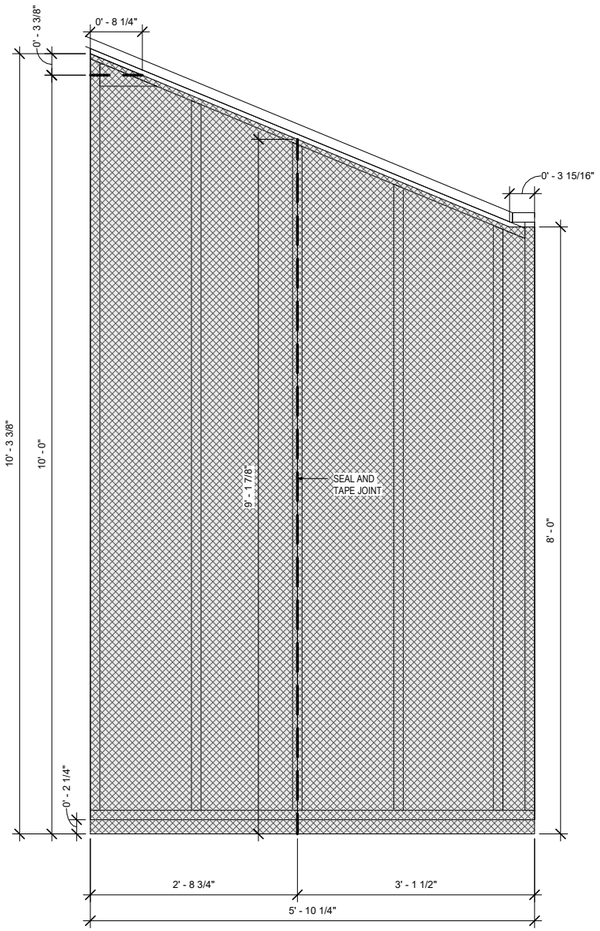
F2.N6

7/27/2020 8:50:16 AM



1 Panel Framing Elevation - E1

F3.E1 SCALE: 1" = 1'-0"



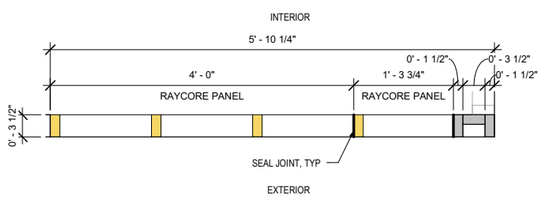
3 Sheathing Elevation - E1

F3.E1 SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



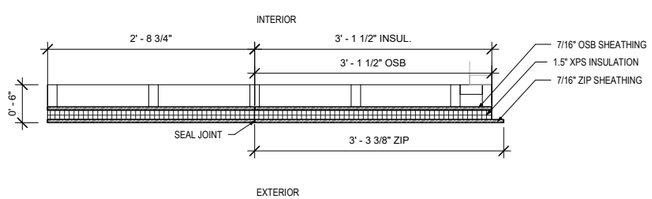
2 Panel Plan - E1

F3.E1 SCALE: 1" = 1'-0"

LEGEND

TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



5 Sheathing Plan - E1

F3.E1 SCALE: 1" = 1'-0"

WALL PANEL NOTES

1. EXTERIOR WALL PANEL NUMBERING BEGINS AT THE NORTHWEST CORNER AND CONTINUES IN CLOCKWISE ORDER.
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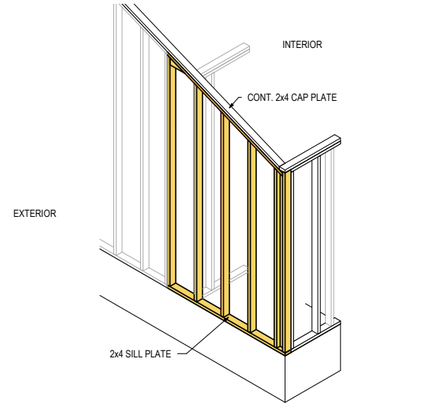

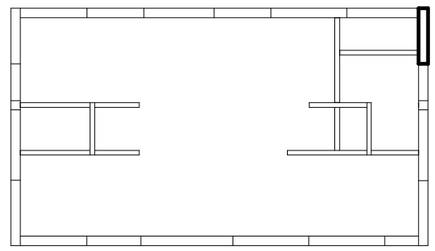

PANEL CODE: E1

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
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210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
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Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS

1 2020-03-14

Issue Status:

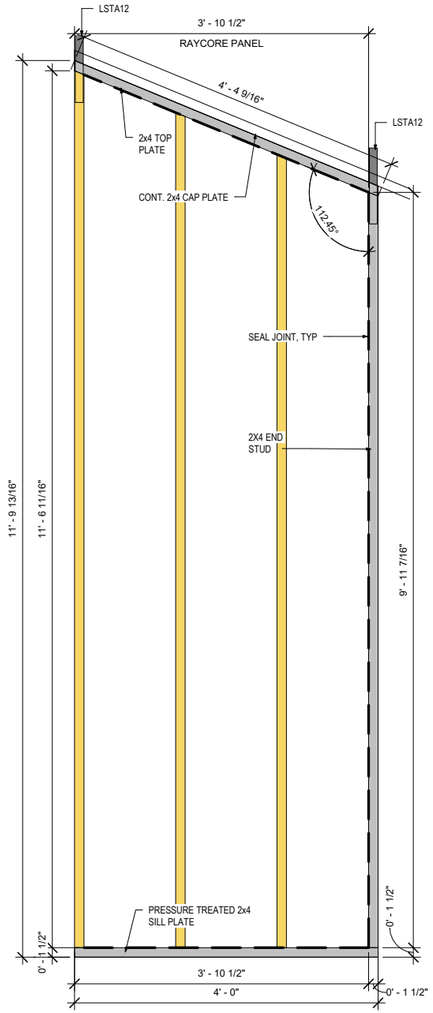
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel E1

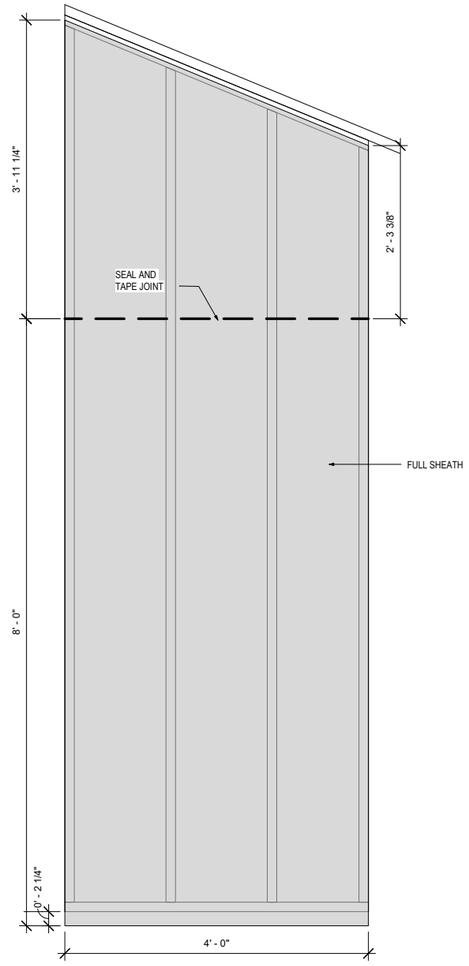
F3.E1

7/27/2020 8:50:17 AM



1 Panel Framing Elevation - E2

F3.E2 SCALE: 1" = 1'-0"



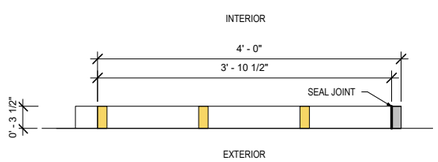
3 Sheathing Elevation - E2

F3.E2 SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



2 Panel Plan - E2

F3.E2 SCALE: 1" = 1'-0"

LEGEND

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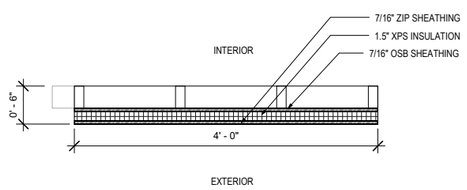

4 Sheathing Plan - E2

F3.E2 SCALE: 1" = 1'-0"

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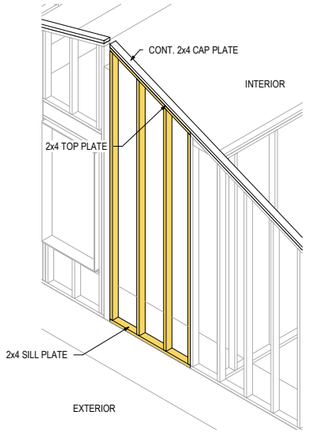

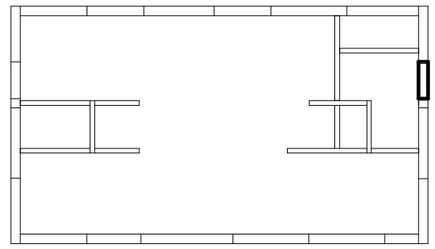

PANEL CODE: E2

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REVISIONS

1 2020-03-14

Issue Status:

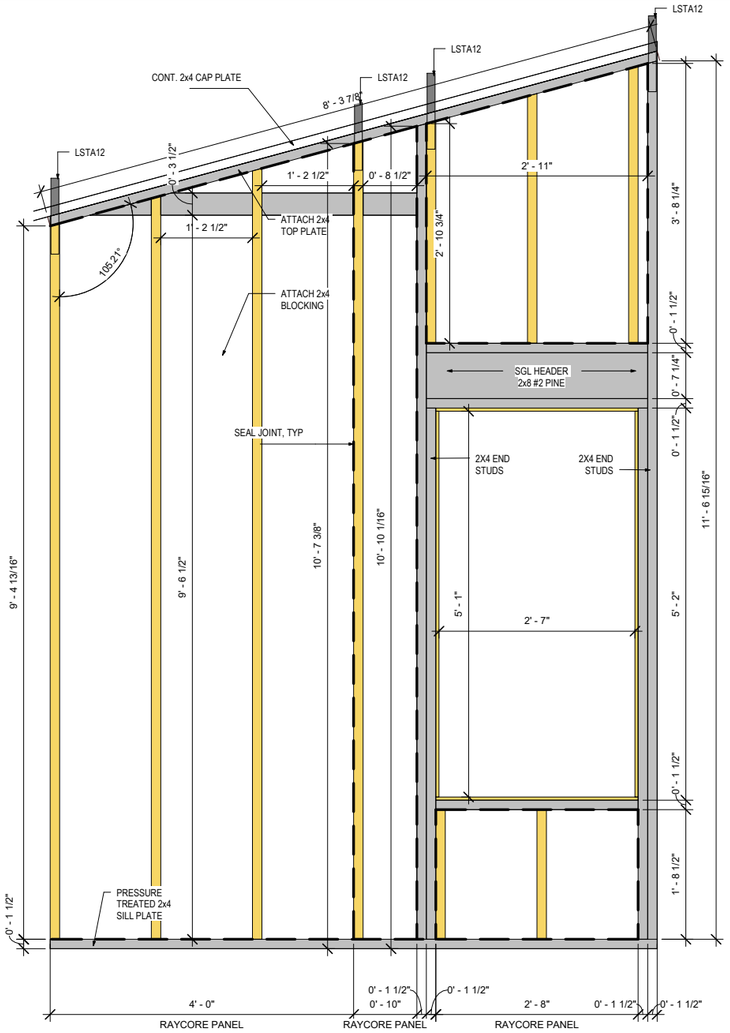
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel E2

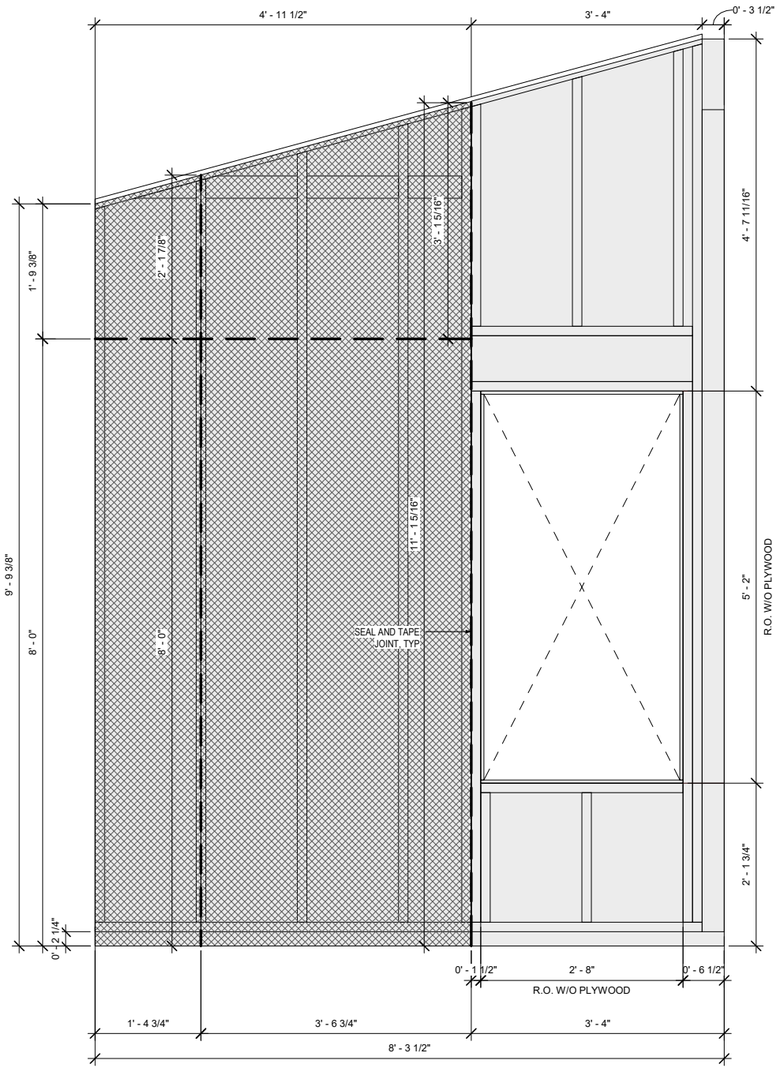
F3.E2

7/27/2020 8:50:18 AM



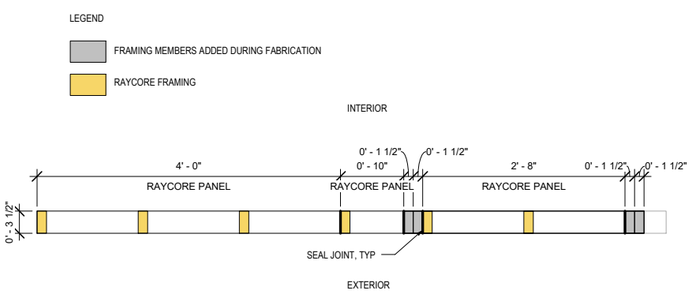
1 | Panel Framing Elevation - E3

F3.E3 | SCALE: 1" = 1'-0"



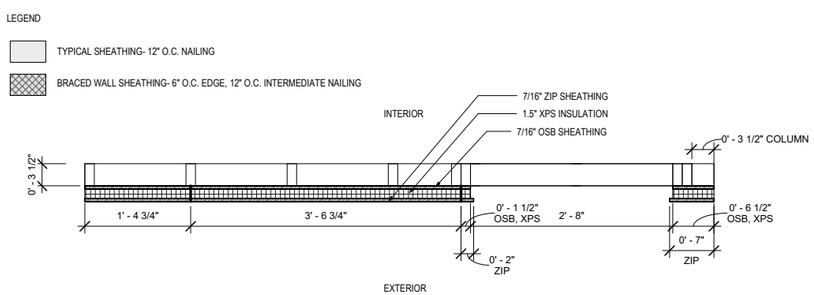
3 | Sheathing Elevation - E3

F3.E3 | SCALE: 1" = 1'-0"



2 | Panel Plan - E3

F3.E3 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - E3

F3.E3 | SCALE: 1" = 1'-0"

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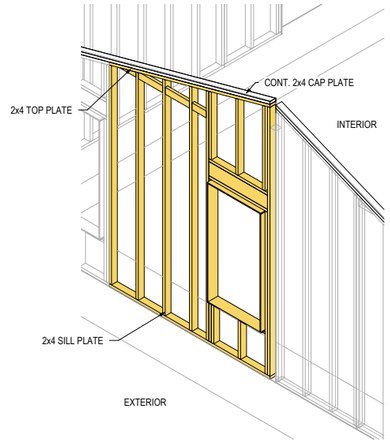

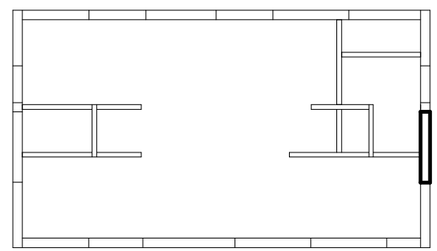

PANEL CODE: E3

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REVISIONS

1 2020-03-14

Issue Status:

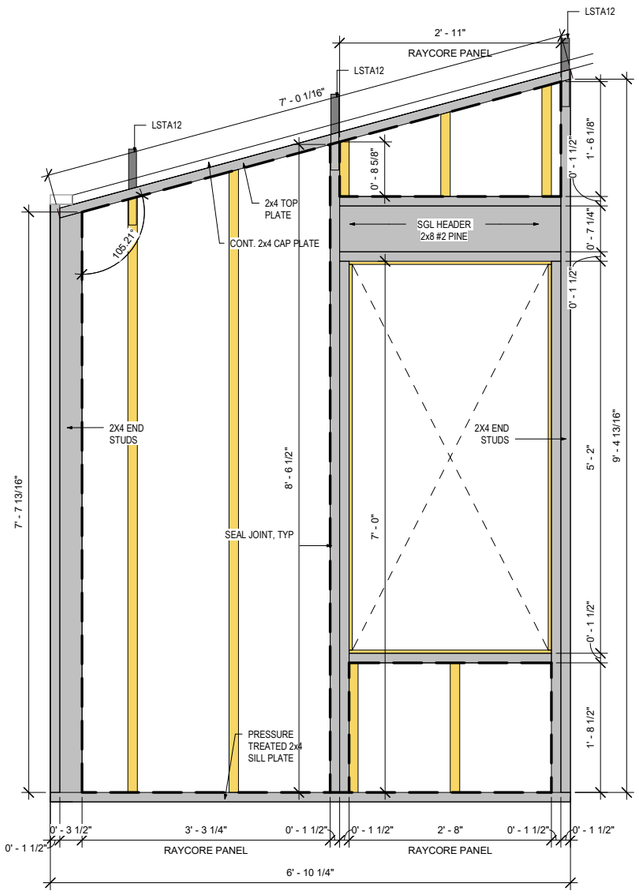
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel E3

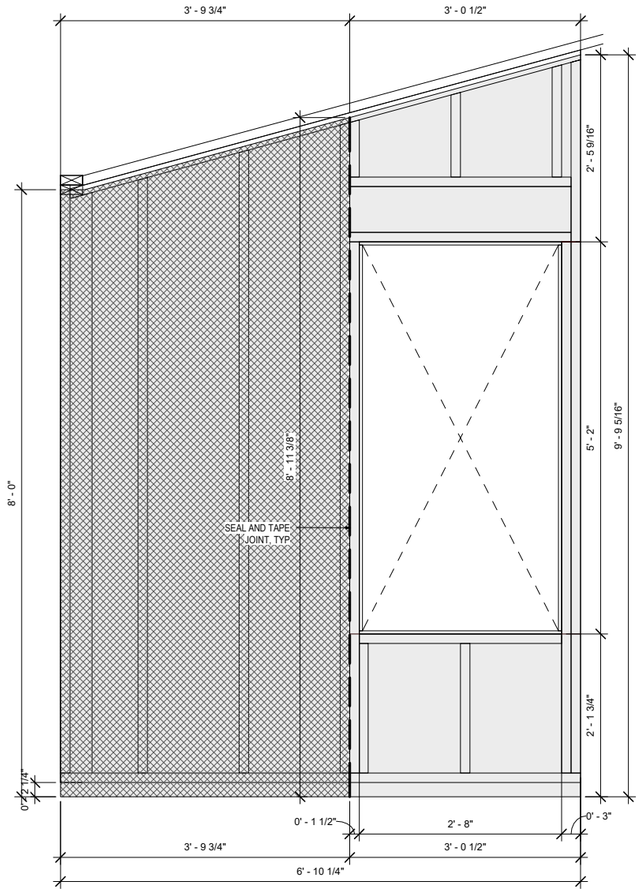
F3.E3

7/27/2020 8:50:19 AM



1 | Panel Framing Elevation - E4

F3.E4 | SCALE: 1" = 1'-0"



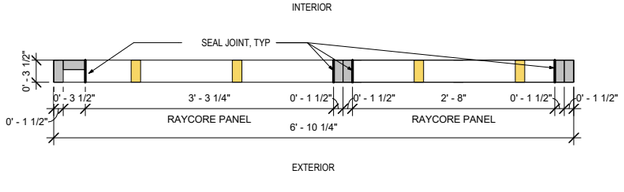
2 | Sheathing Elevation - E4

F3.E4 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



3 | Panel Plan - E4

F3.E4 | SCALE: 1" = 1'-0"

LEGEND

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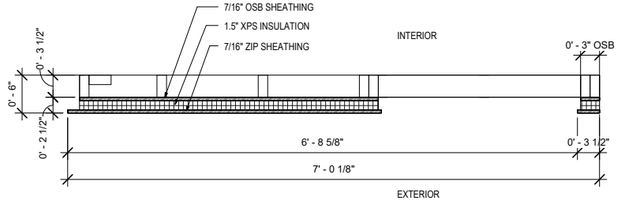

4 | Sheathing Plan - E4

F3.E4 | SCALE: 1" = 1'-0"

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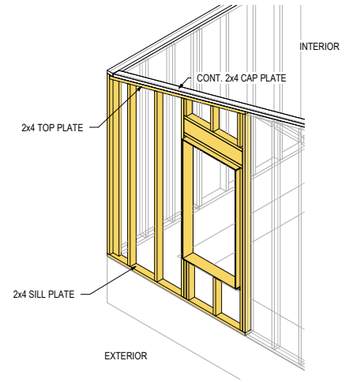

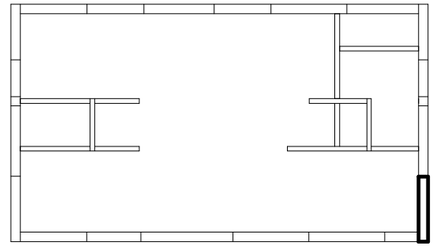

PANEL CODE: E4

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1 2020-03-14

Issue Status:

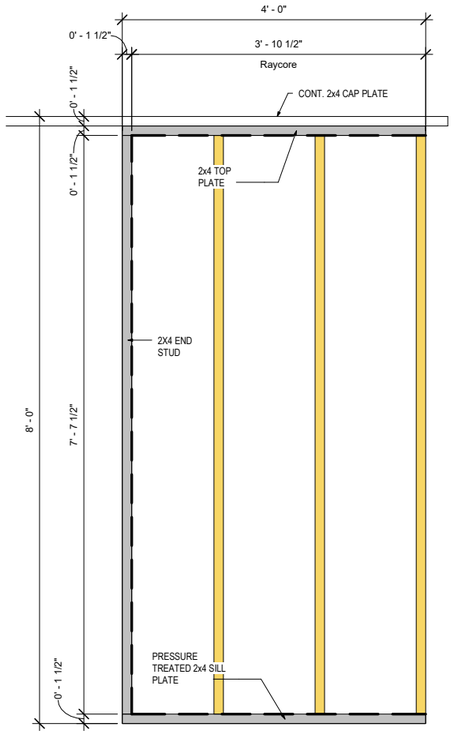
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel E4

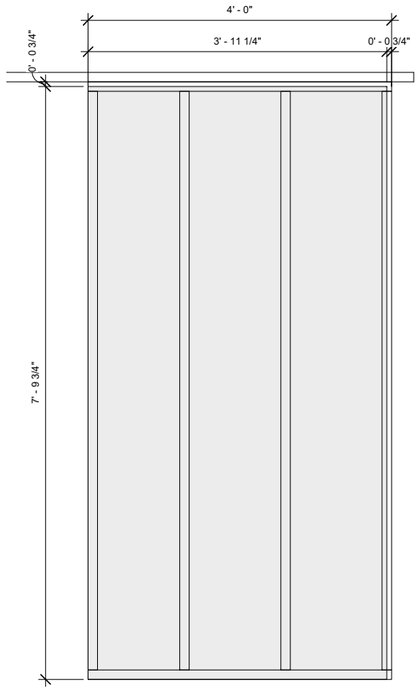
F3.E4

7/27/2020 8:50:20 AM



1 Panel Framing Elevation - S1

F4.S1 SCALE: 1" = 1'-0"



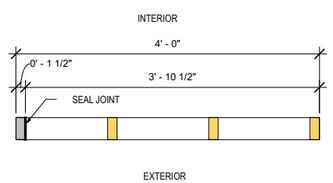
3 Sheathing Elevation - S1

F4.S1 SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



2 Panel Plan - S1

F4.S1 SCALE: 1" = 1'-0"

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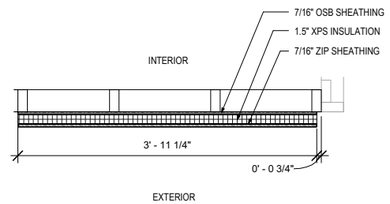

4 Sheathing Plan - S1

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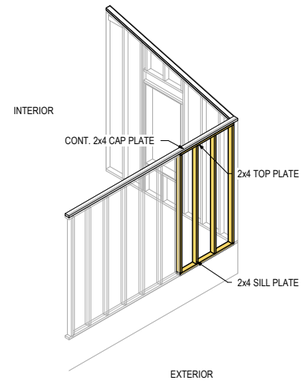

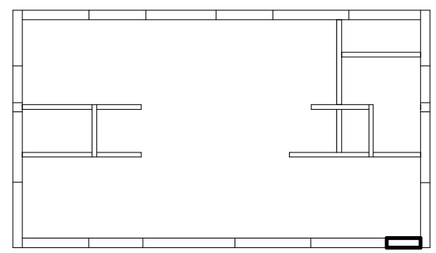

PANEL CODE: S1

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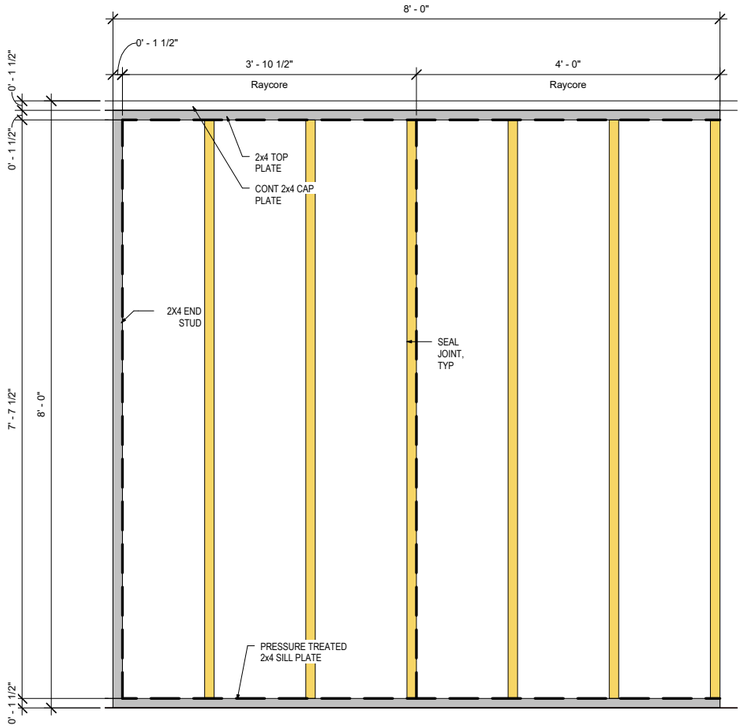
Framing Panel S1

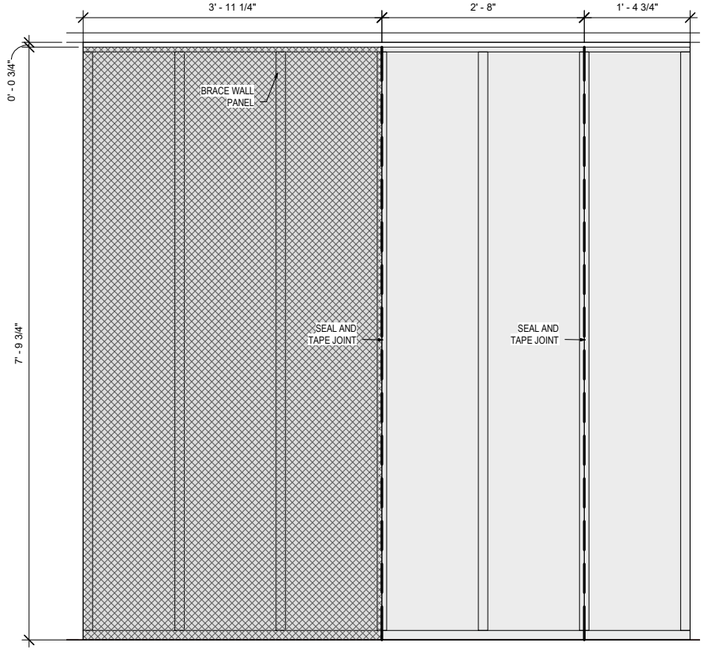
F4.S1

7/27/2020 8:50:21 AM



1 Panel Framing Elevation - S2

F4.S2 SCALE: 1" = 1'-0"



3 Sheathing Elevation - S2

F4.S2 SCALE: 1" = 1'-0"

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FRAMING MEMBERS ADDED DURING FABRICATION

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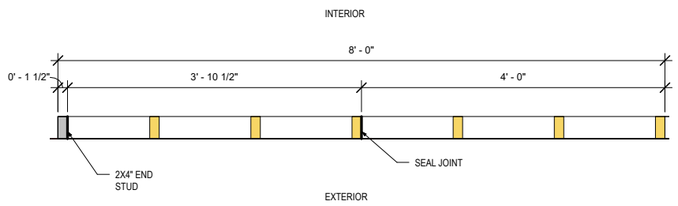

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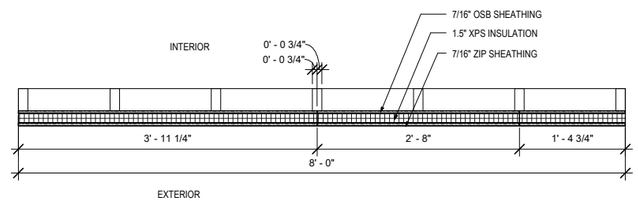
BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



4 Sheathing Plan - S2

F4.S2 SCALE: 1" = 1'-0"

WALL PANEL NOTES

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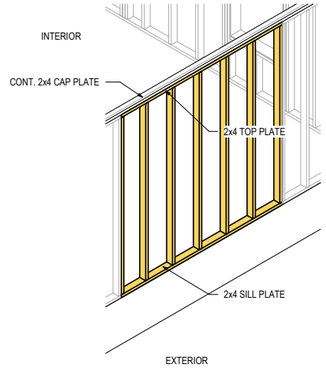

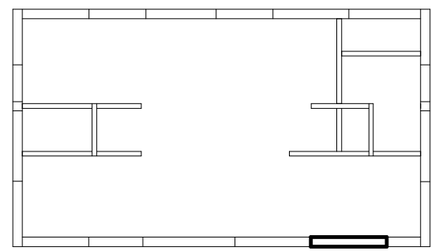

PANEL CODE: S2

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
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REVISIONS

1 2020-03-14

Issue Status:

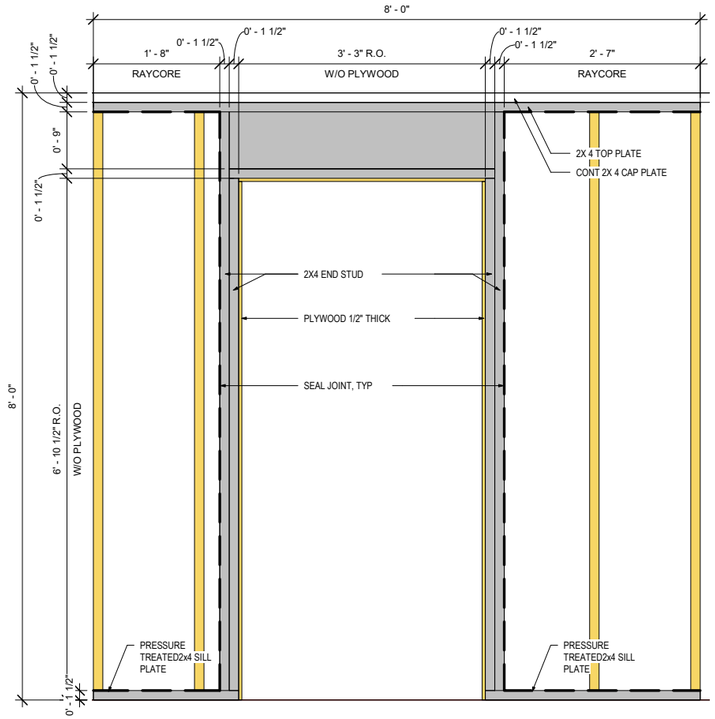
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel S2

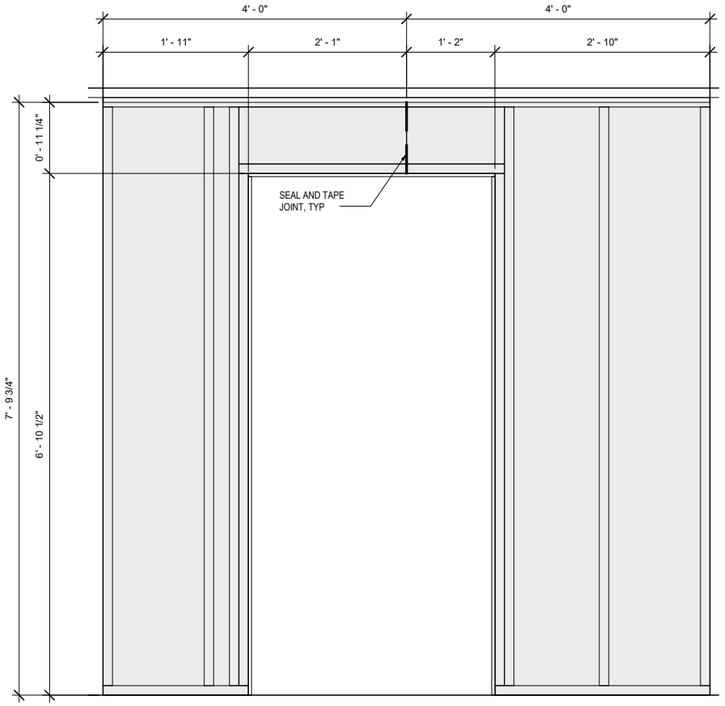
F4.S2

7/27/2020 8:50:22 AM



1 | Panel Framing Elevation - S3

F4.S3 | SCALE: 1" = 1'-0"



3 | Sheathing Elevation - S3

F4.S3 | SCALE: 1" = 1'-0"

LEGEND

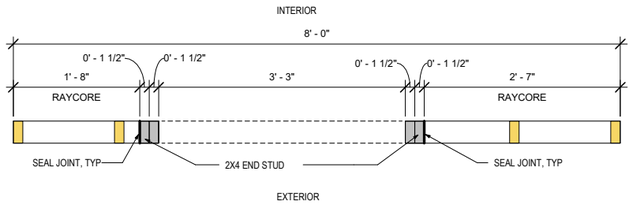
FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

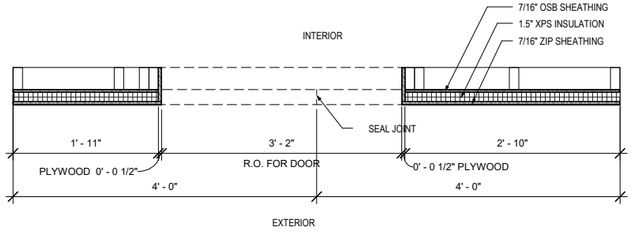
TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



2 | Panel Plan - S3

F4.S3 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - S3

F4.S3 | SCALE: 1" = 1'-0"

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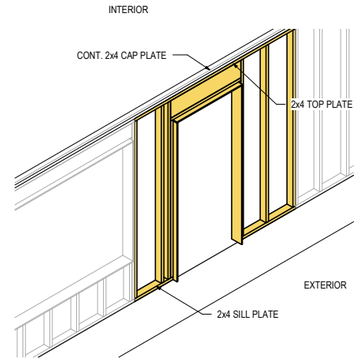

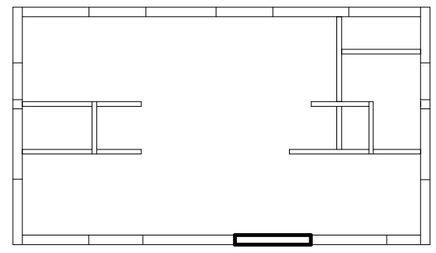

PANEL CODE: S3

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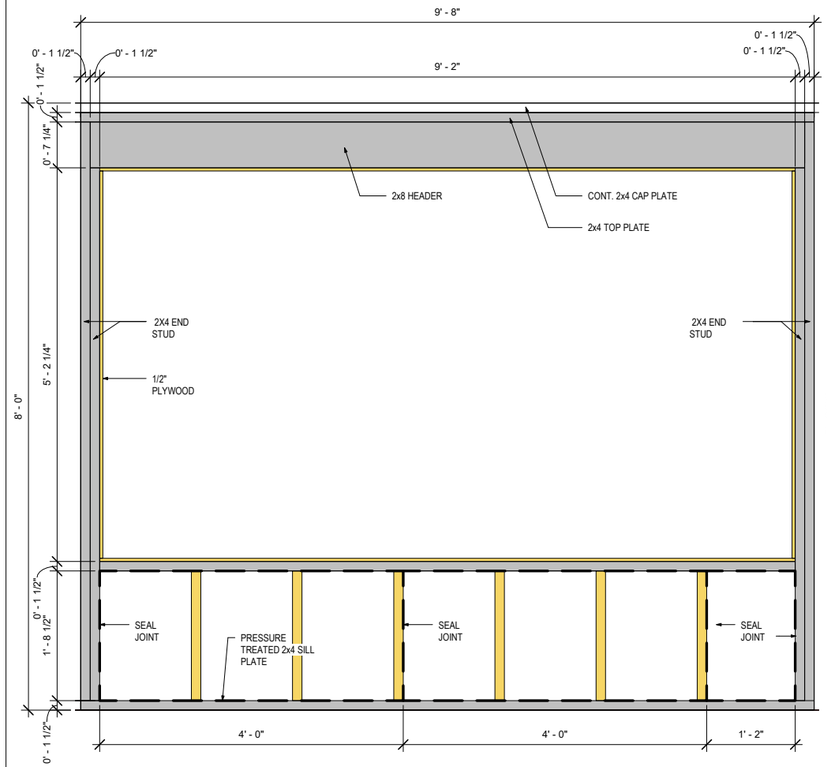
Framing Panel S3

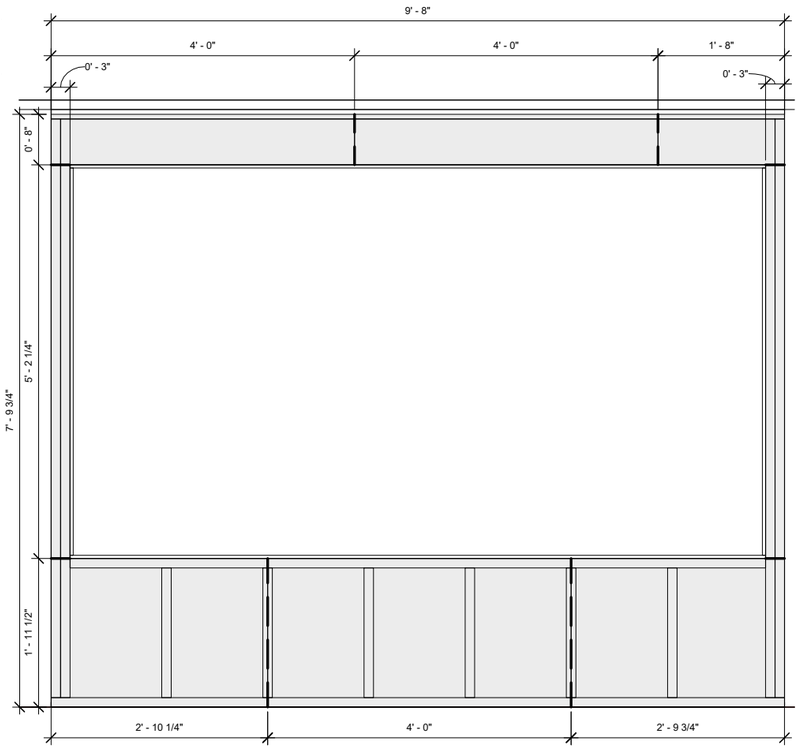
F4.S3

7/21/2020 8:50:23 AM



1 | Panel Framing Elevation - S4

F4.S4 | SCALE: 1" = 1'-0"



3 | Panel Framing Elevation - S4 Copy 1

F4.S4 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

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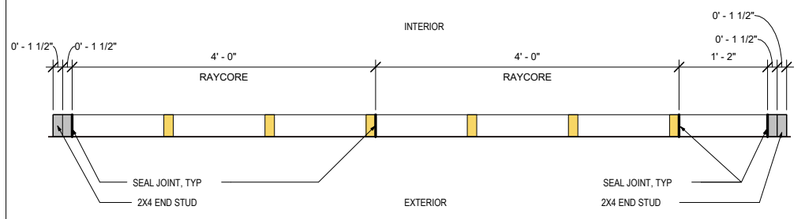
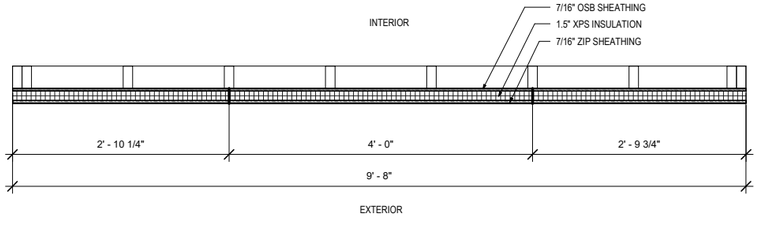


2 | Panel Plan - S4

F4.S4 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - S4

F4.S4 | SCALE: 1" = 1'-0"

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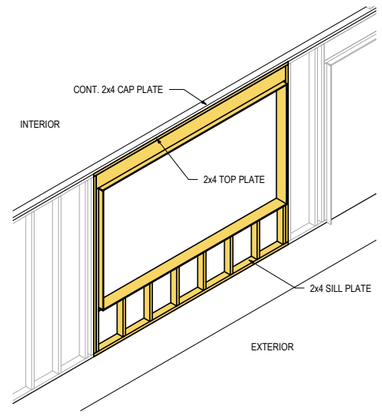

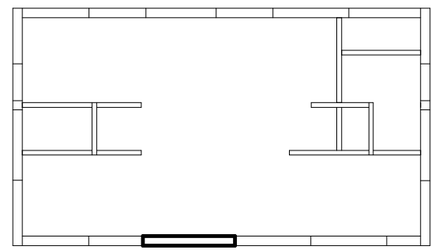

PANEL CODE: S4

APDesign | Kansas State University
AY 2019-2020

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REVISIONS

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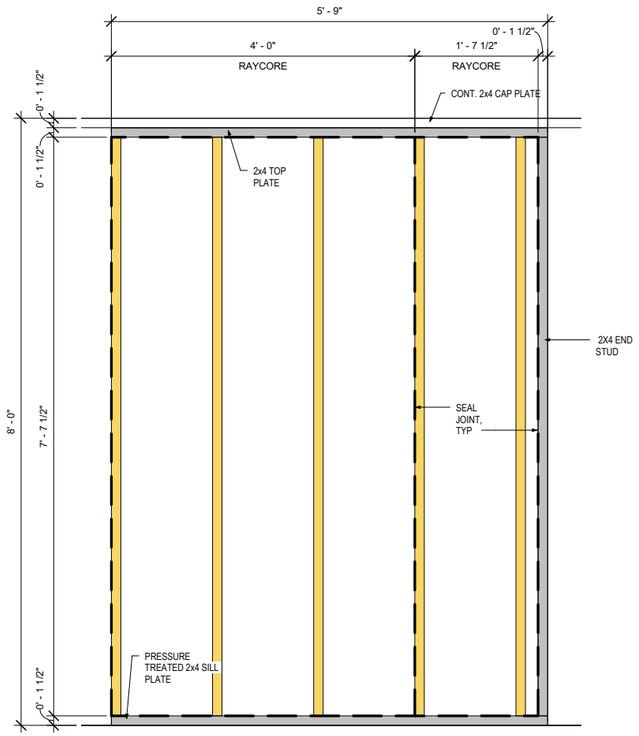
Framing Panel S4

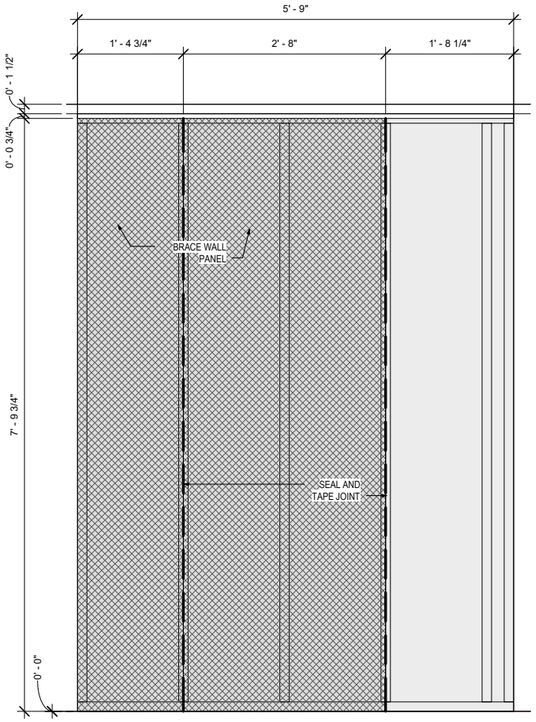
F4.S4

7/21/2020 8:50:24 AM



1 | Panel Framing Elevation - S5

F4.S5 | SCALE: 1" = 1'-0"



3 | Sheathing Elevation - S5

F4.S5 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

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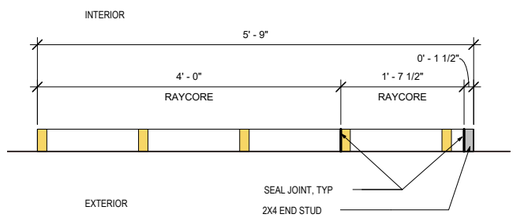
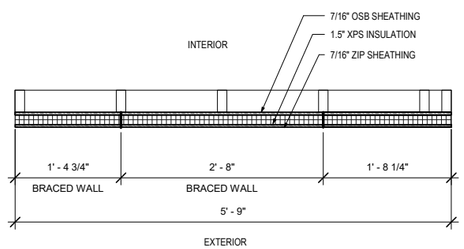


2 | Panel Plan - S5

F4.S5 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - S5

F4.S5 | SCALE: 1" = 1'-0"

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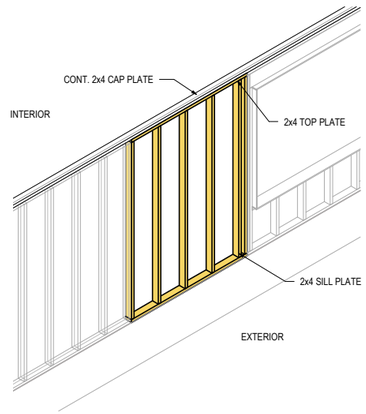

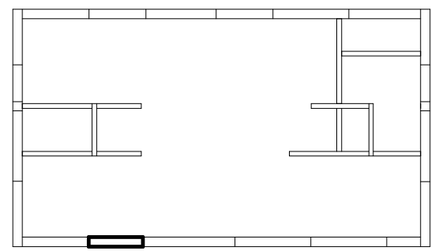

PANEL CODE: S5

NET+ STUDIO
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REVISIONS

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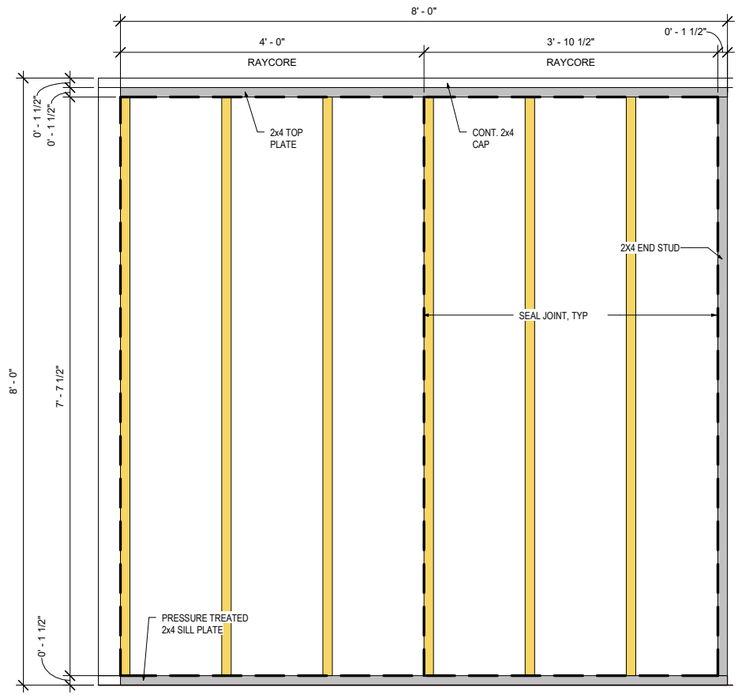
Framing Panel S5

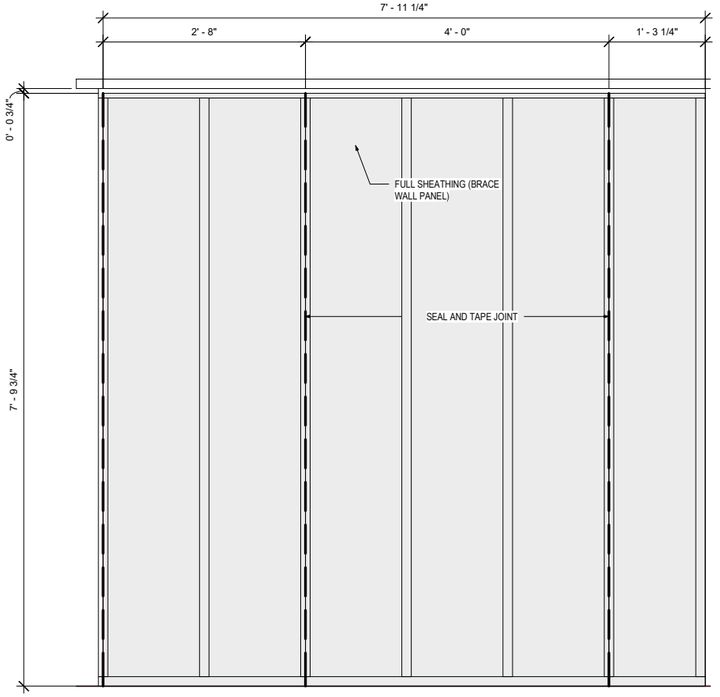
F4.S5

7/27/2020 8:50:25 AM



1 | Panel Framing Elevation - S6

F4.S6 | SCALE: 1" = 1'-0"



3 | Sheathing Elevation - S6

F4.S6 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING

LEGEND

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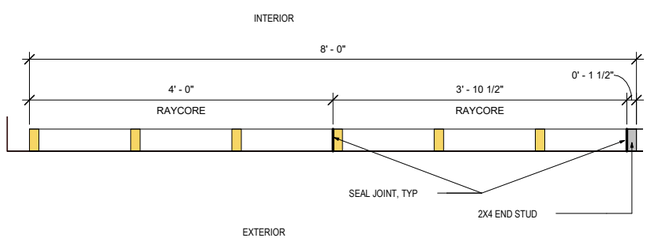
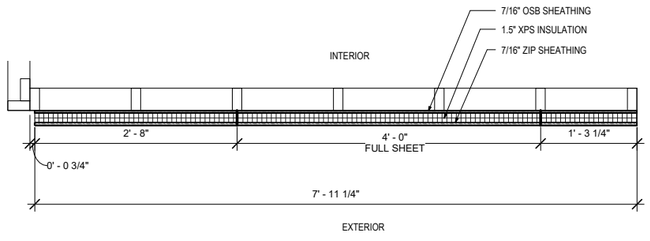


2 | Panel Plan - S6

F4.S6 | SCALE: 1" = 1'-0"



4 | Sheathing Plan - S6

F4.S6 | SCALE: 1" = 1'-0"

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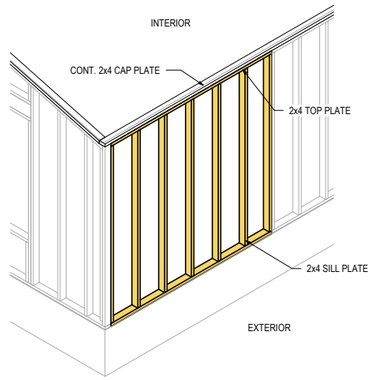

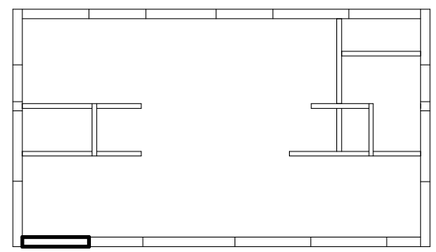

PANEL CODE: S6

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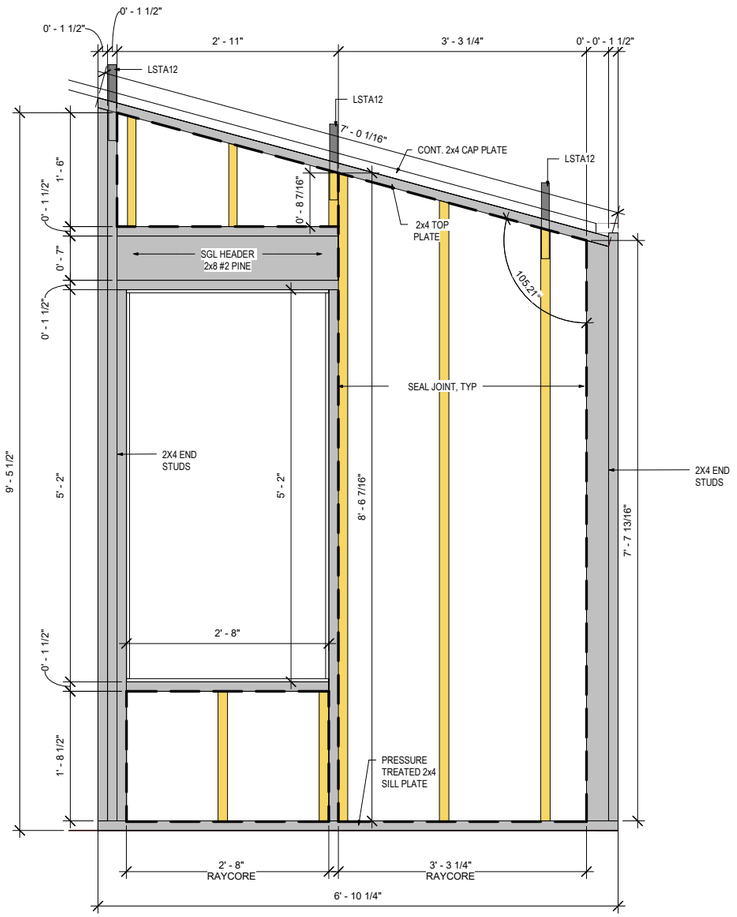
Framing Panel S6

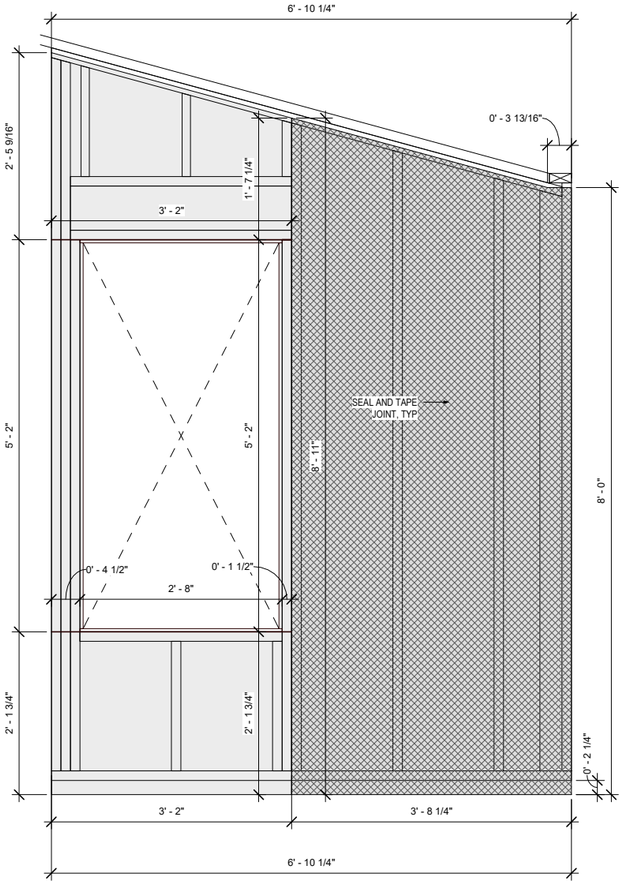
F4.S6

7/27/2020 8:50:26 AM



1 | Panel Framing Elevation - W1

F5.W1 | SCALE: 1" = 1'-0"



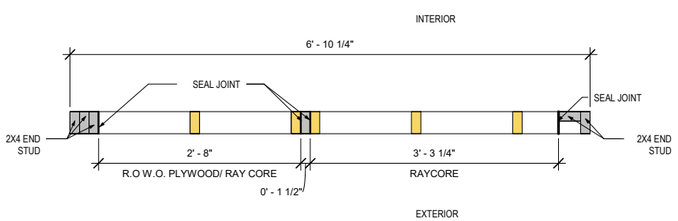
2 | Sheathing Elevation - W1

F5.W1 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



3 | Panel Plan - W1

F5.W1 | SCALE: 1" = 1'-0"

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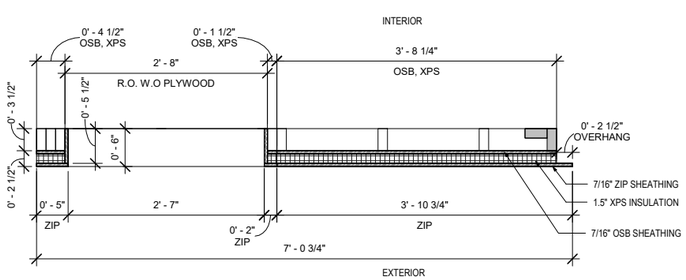

4 | Sheathing Plan - W1

F5.W1 | SCALE: 1" = 1'-0"

WALL PANEL NOTES

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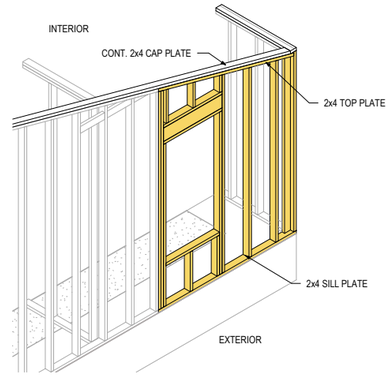

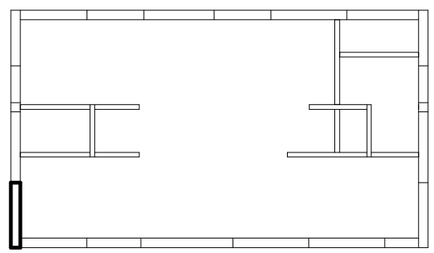

PANEL CODE: W1

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

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Client:

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210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS

1 2020-03-14

Issue Status:

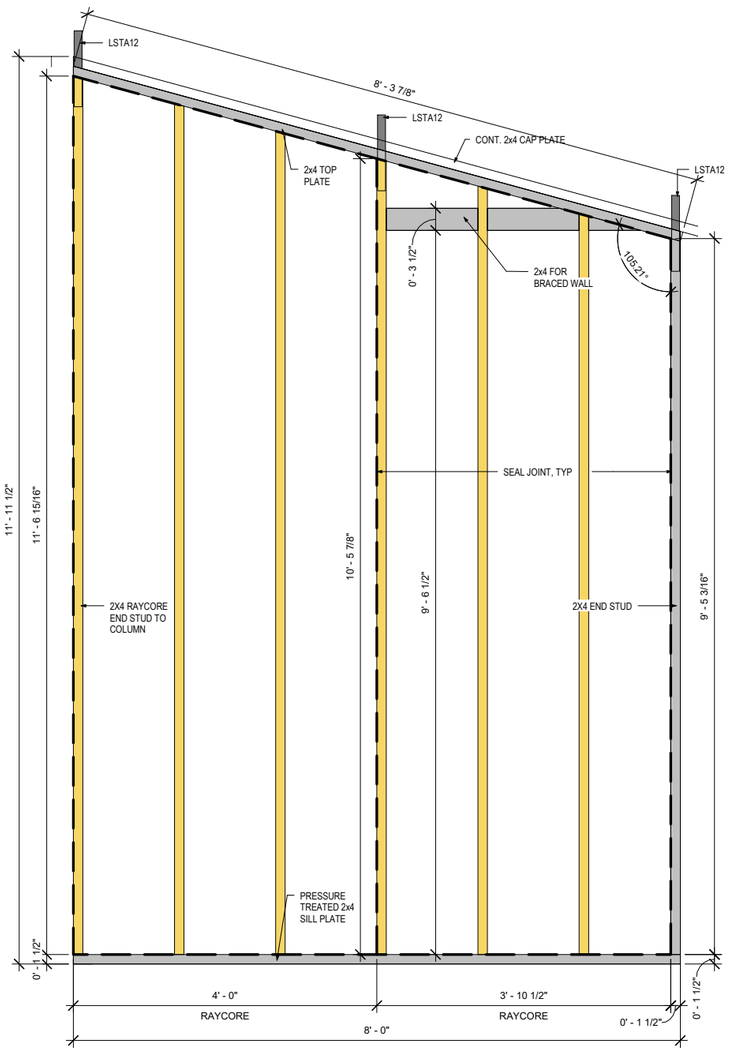
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel W1

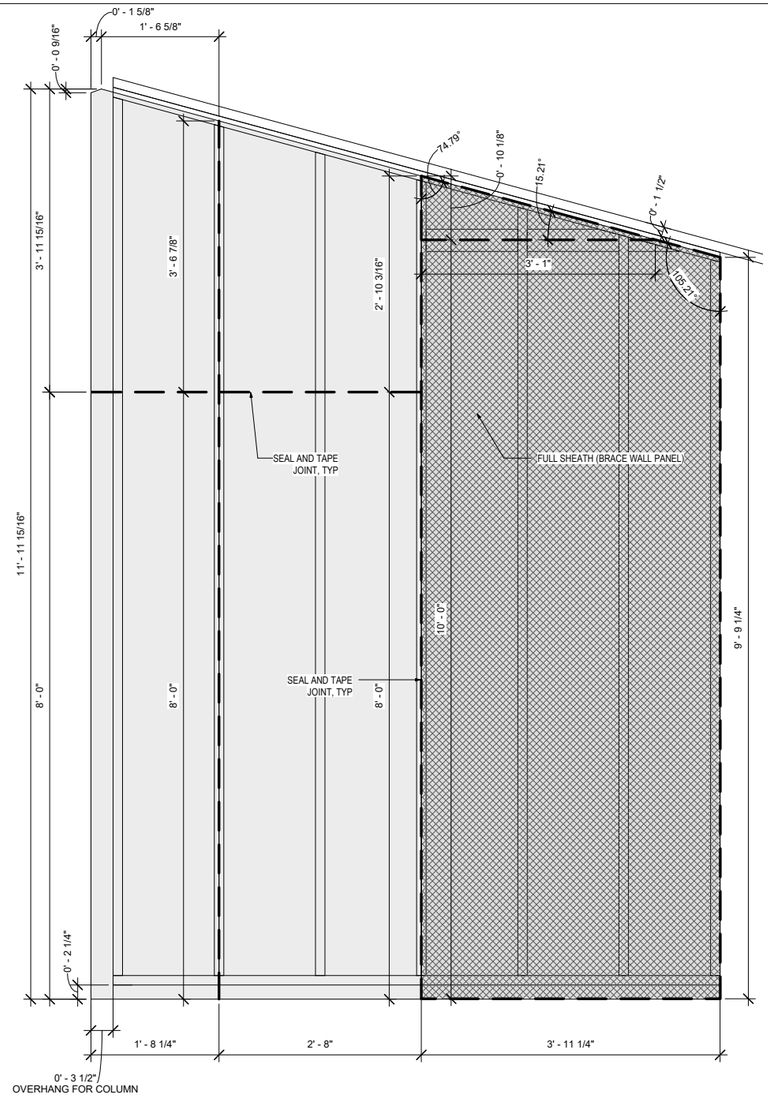
F5.W1

7/27/2020 8:50:27 AM



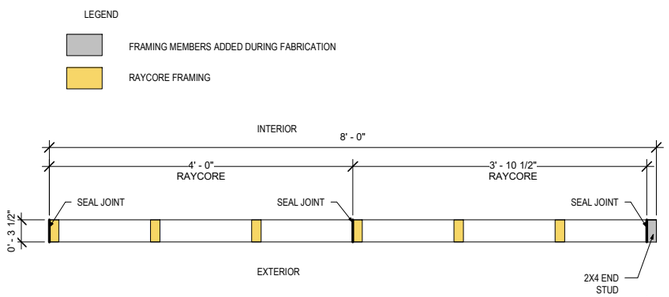
1 Panel Framing Elevation - W2

F5.W2 SCALE: 1" = 1'-0"



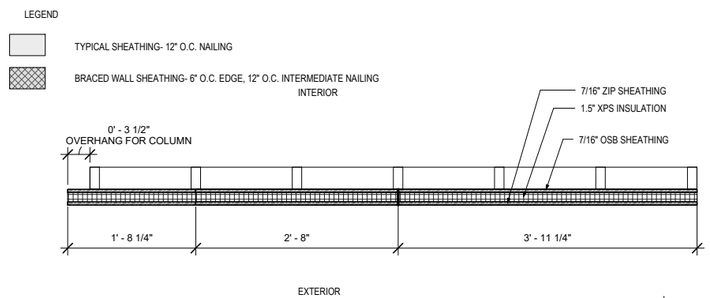
2 Sheathing Elevation - W2

F5.W2 SCALE: 1" = 1'-0"



3 Panel Plan - W2

F5.W2 SCALE: 1" = 1'-0"



4 Sheathing Plan - W2

F5.W2 SCALE: 1" = 1'-0"

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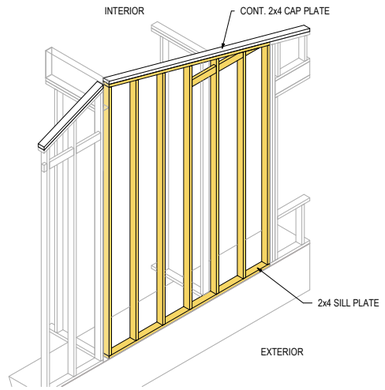

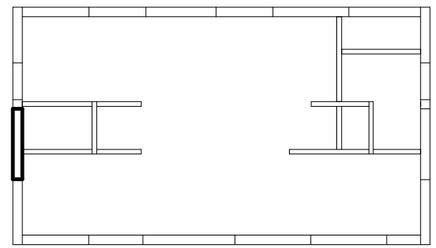

PANEL CODE: W2

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Issue Status:

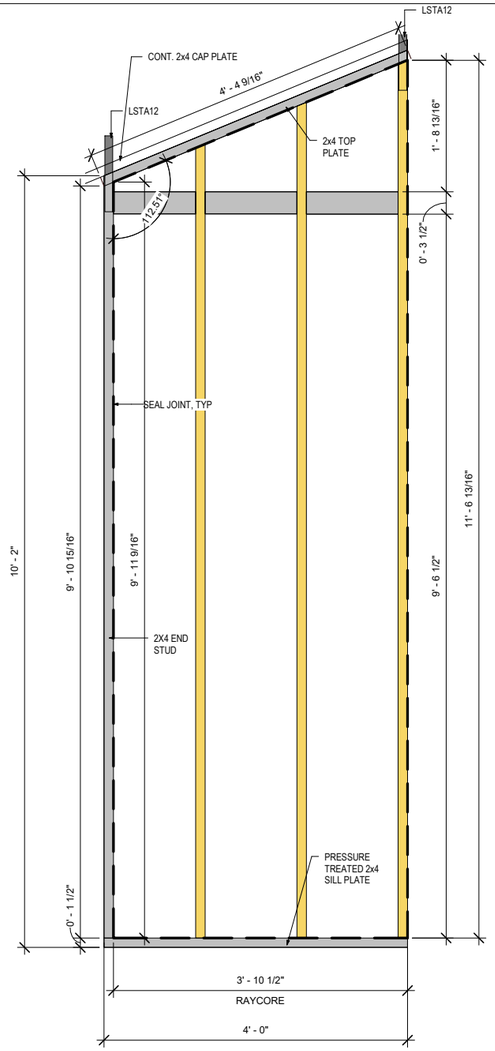
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel W2

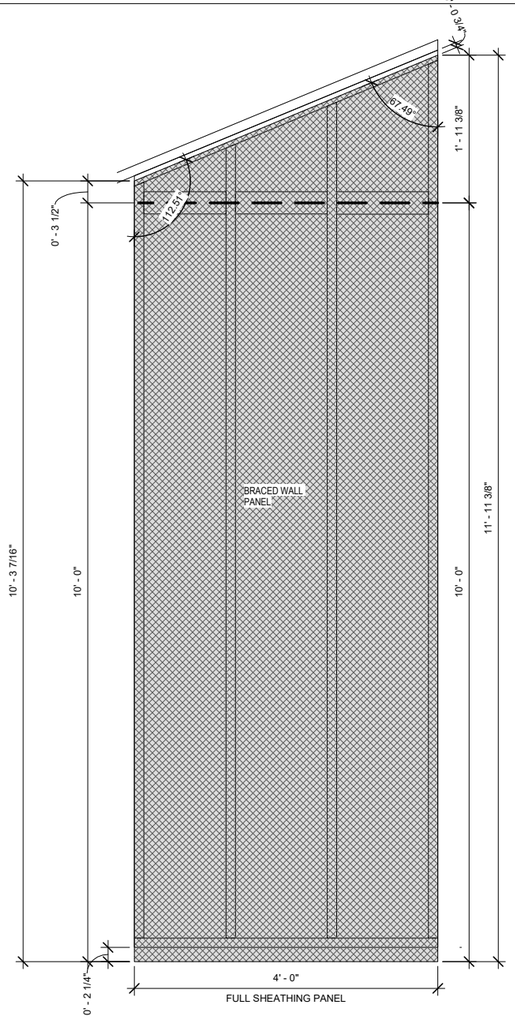
F5.W2

7/27/2020 8:50:29 AM



1 | Panel Framing Elevation - W3

F5.W3 | SCALE: 1" = 1'-0"



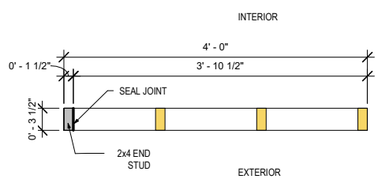
3 | Sheathing Elevation - W3

F5.W3 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



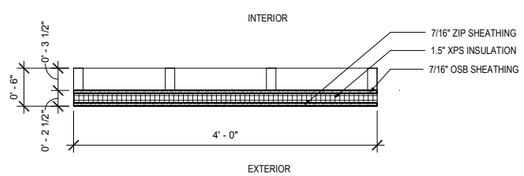
4 | Panel Plan - W3

F5.W3 | SCALE: 1" = 1'-0"

LEGEND

TYPICAL SHEATHING- 12" O.C. NAILING

BRACED WALL SHEATHING- 6" O.C. EDGE, 12" O.C. INTERMEDIATE NAILING



2 | Sheathing Plan - W3

F5.W3 | SCALE: 1" = 1'-0"

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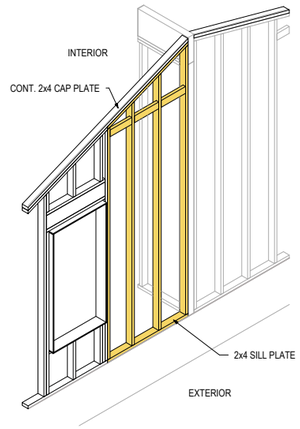

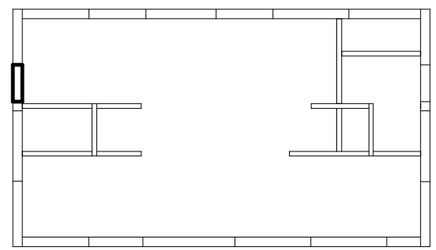

PANEL CODE: W3

NET+ STUDIO

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AY 2019-2020

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REVISIONS

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Issue Status:

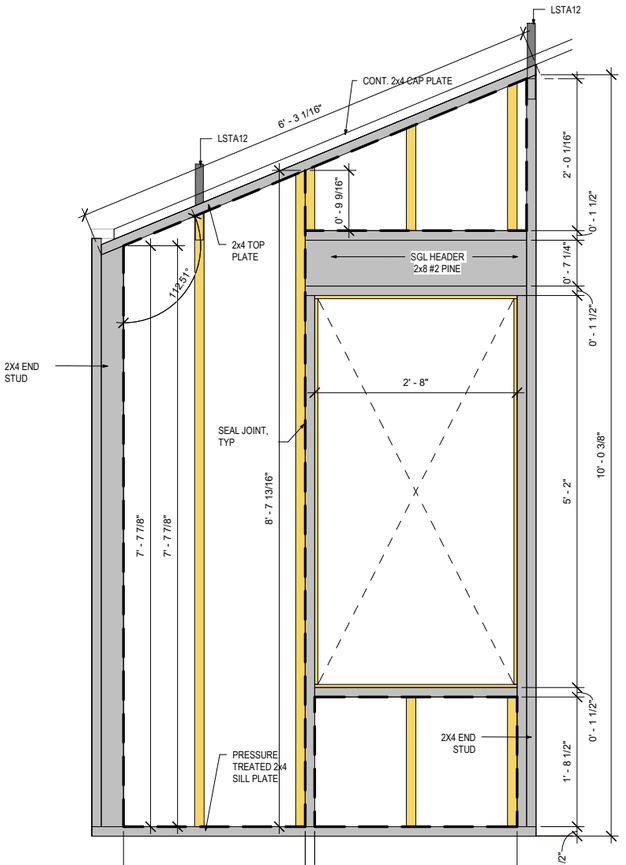
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel W3

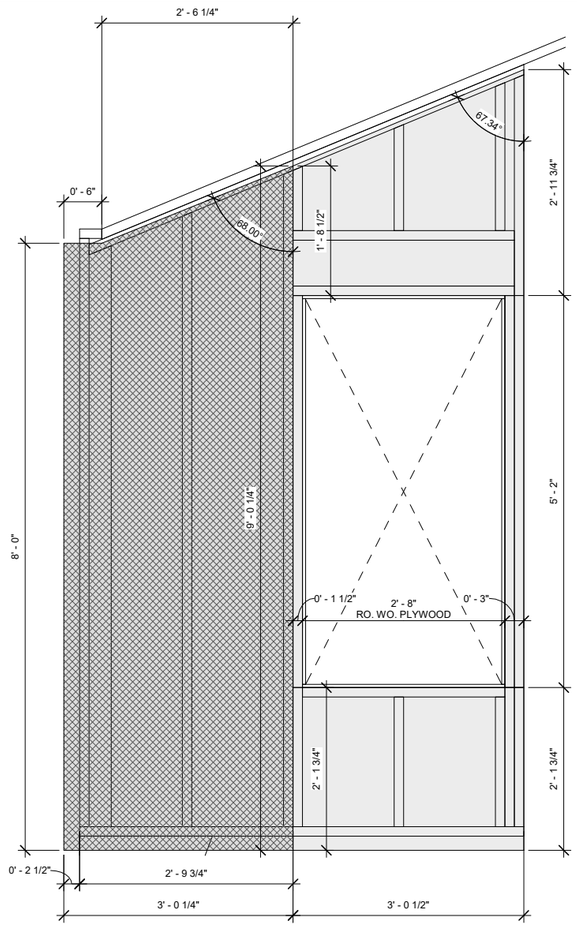
F5.W3

7/27/2020 8:50:30 AM



1 | Panel Framing Elevation - W4

F5.W4 | SCALE: 1" = 1'-0"



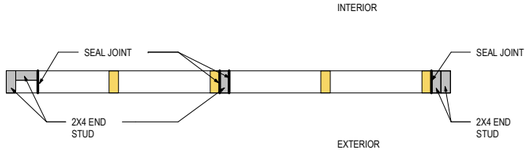
3 | Sheathing Elevation - W4

F5.W4 | SCALE: 1" = 1'-0"

LEGEND

FRAMING MEMBERS ADDED DURING FABRICATION

RAYCORE FRAMING



2 | Panel Plan - W4

F5.W4 | SCALE: 1" = 1'-0"

LEGEND

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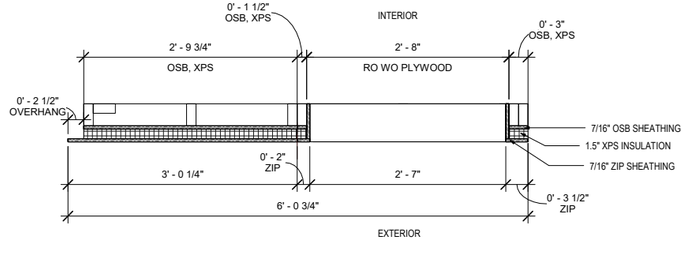

4 | Sheathing Plan - W4

F5.W4 | SCALE: 1" = 1'-0"

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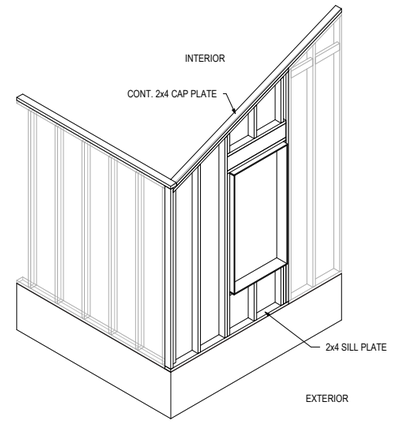

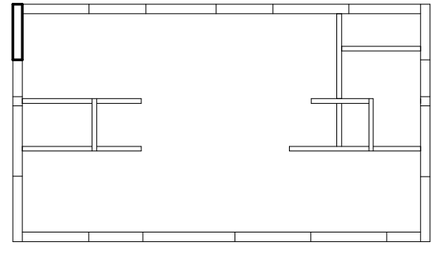

PANEL CODE: W4

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AY 2019-2020

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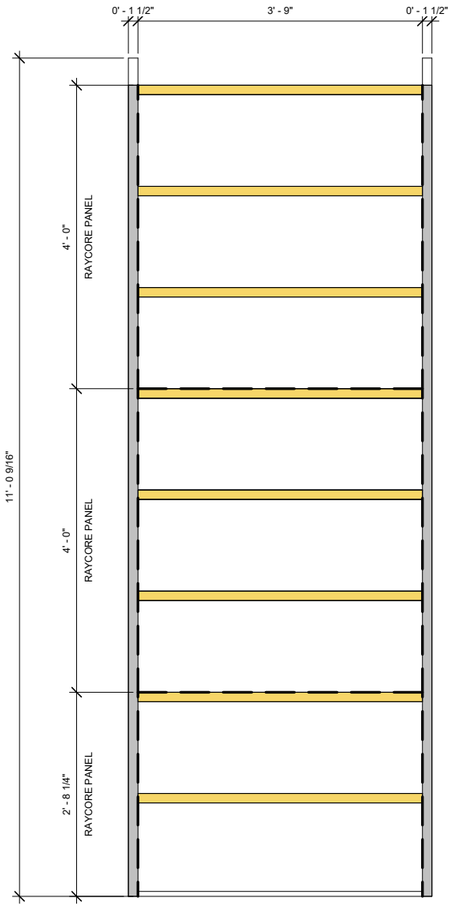
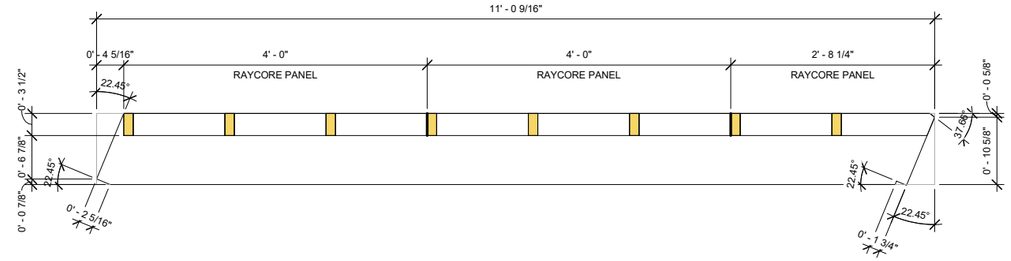
Framing Panel W4

F5.W4

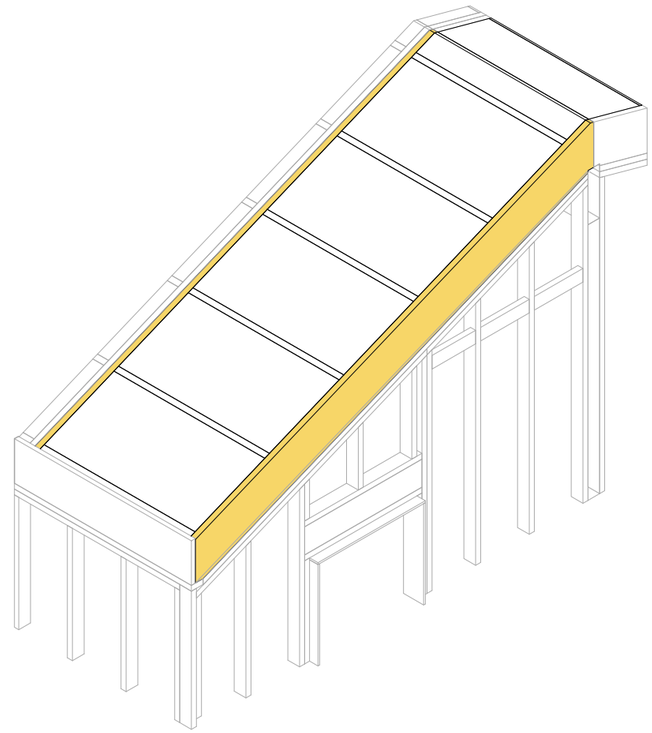
7/21/2020 8:50:31 AM



1 | R1 Panel Plan
F6.R1.1 | SCALE: 1" = 1'-0"



2 | R1 Panel Elevation
F6.R1.1 | SCALE: 1" = 1'-0"



3 | Panel 3D View - R1
F6.R1.1 | SCALE:

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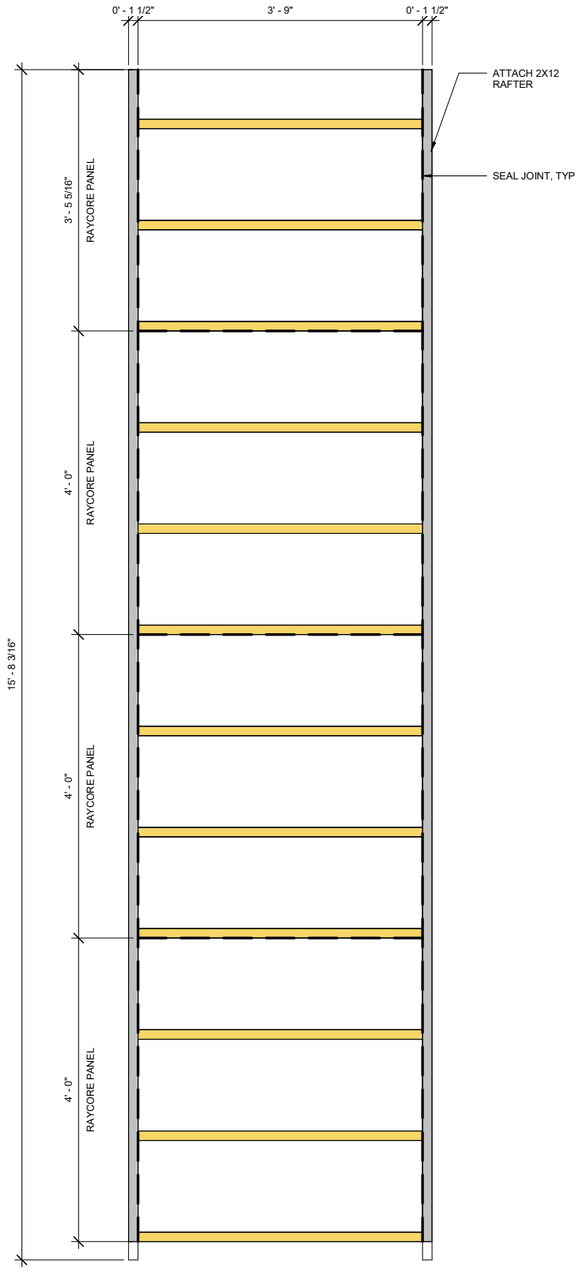
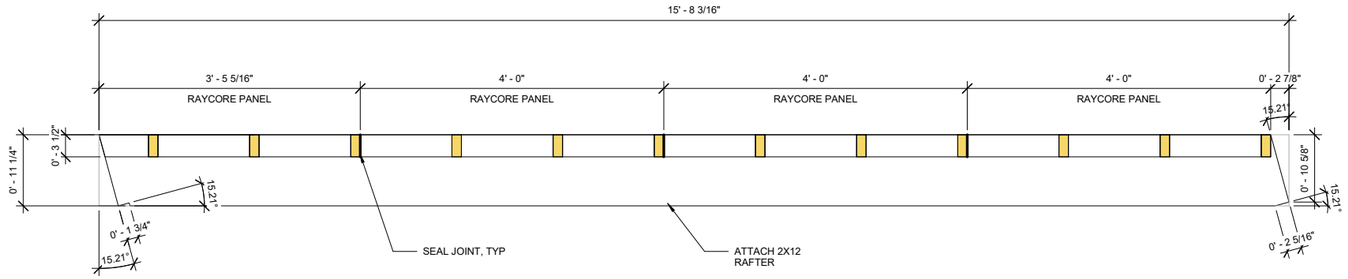
Roof Panel R1

F6.R1.1

7/21/2020 8:50:32 AM



1 | R2 Panel Plan
F6.R2.1 | SCALE: 1" = 1'-0"



2 | R2 Panel Elevation
F6.R2.1 | SCALE: 1" = 1'-0"

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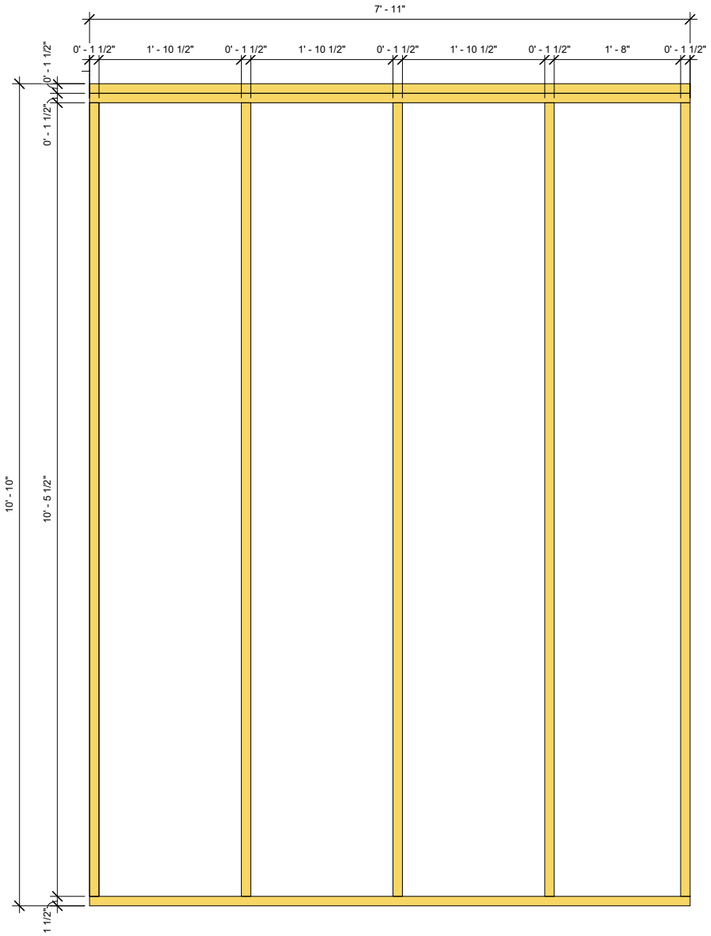
Roof Panel R2

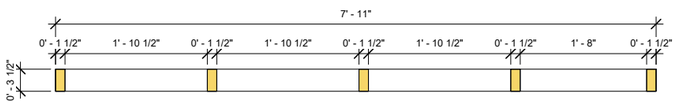
F6.R2.1

7/27/2020 8:50:32 AM



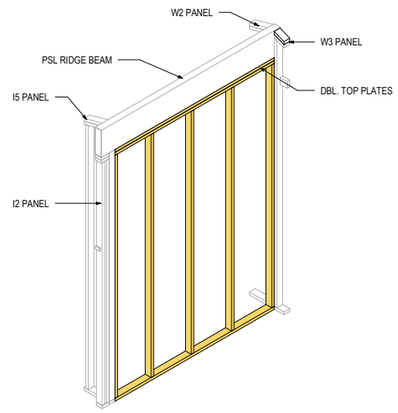
1 Panel Framing Elevation - I1

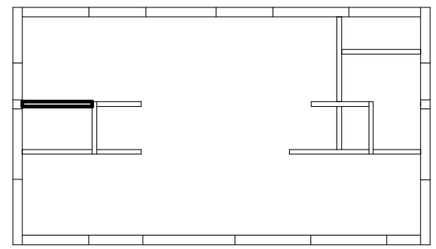
F7.I1 SCALE: 1" = 1'-0"



2 Panel Plan - I1

F7.I1 SCALE: 1" = 1'-0"





PANEL CODE: I1

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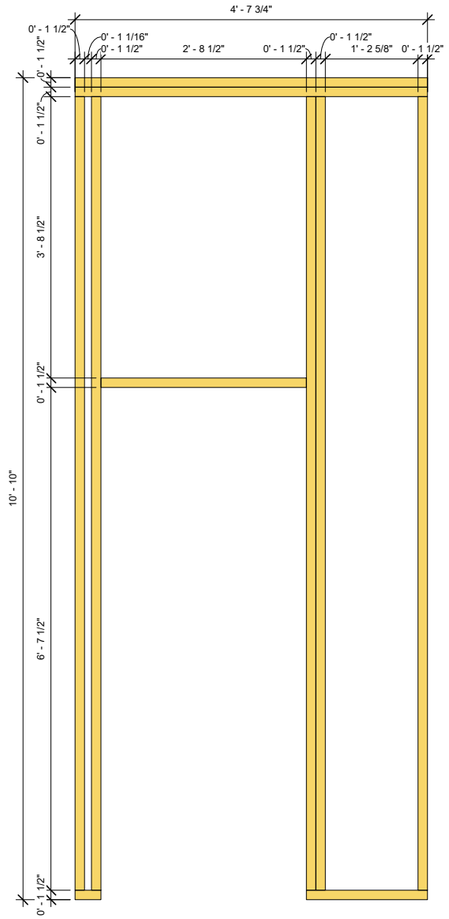
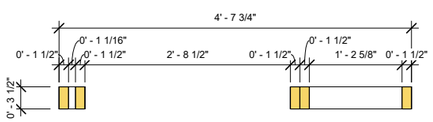
F7.I1

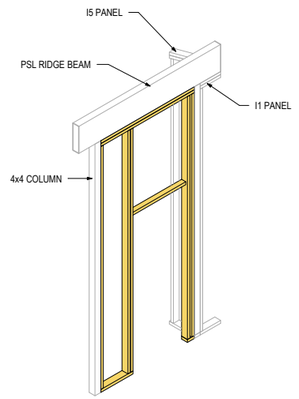
1/27/2020 8:50:33 AM

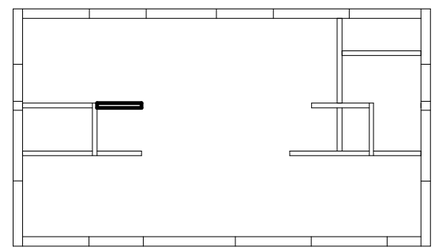


1 Panel Framing Elevation - I2
F7.I2 SCALE: 1" = 1'-0"



2 Panel Plan - I2
F7.I2 SCALE: 1" = 1'-0"





PANEL CODE: I2

NET+ STUDIO
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APDesign | Kansas State University
AY 2019-2020

Faculty Lead:
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Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS
1 2020-03-14

Issue Status:
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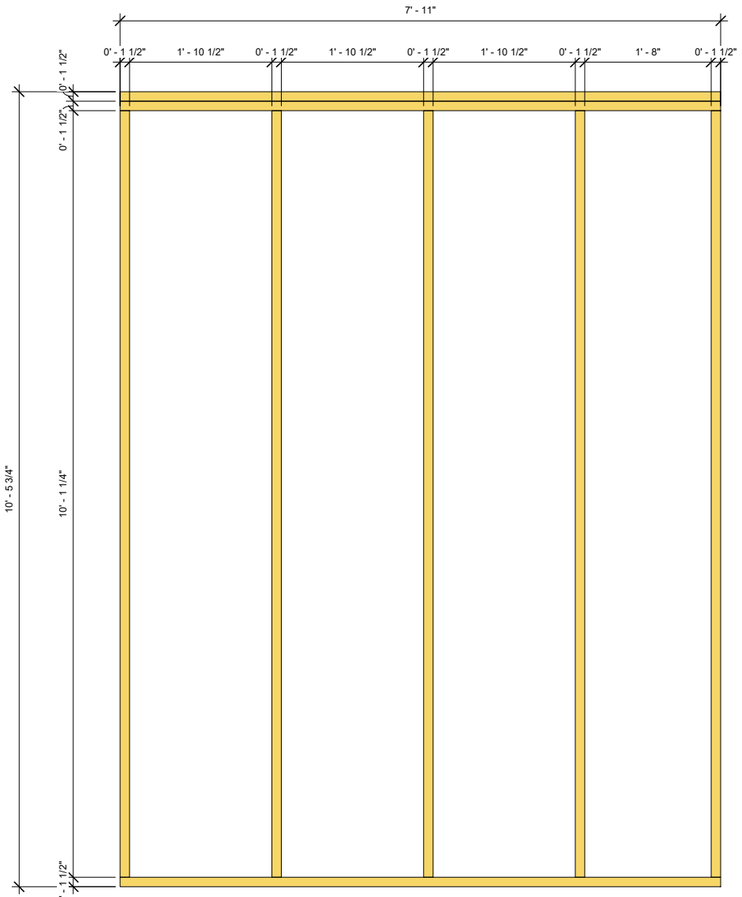
Date: March 14, 2020

Framing Panel I2

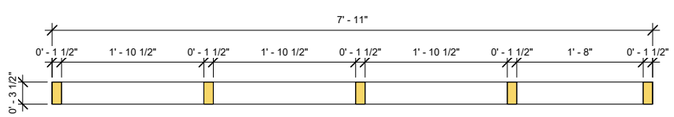
F7.I2

7/27/2020 8:50:34 AM



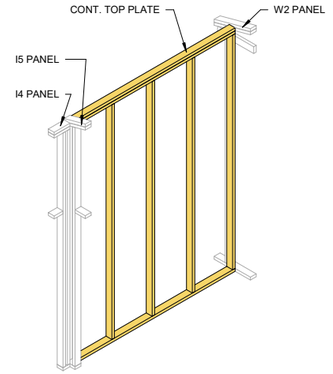
1 | Panel Framing Elevation - I3

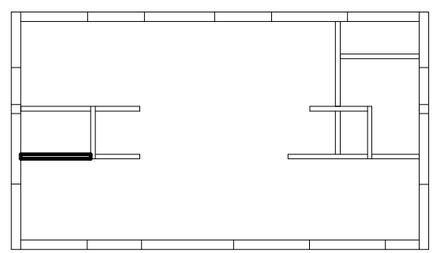
F7.I3 | SCALE: 1" = 1'-0"



2 | Panel Plan - I3

F7.I3 | SCALE: 1" = 1'-0"





PANEL CODE: I3

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F7.I3

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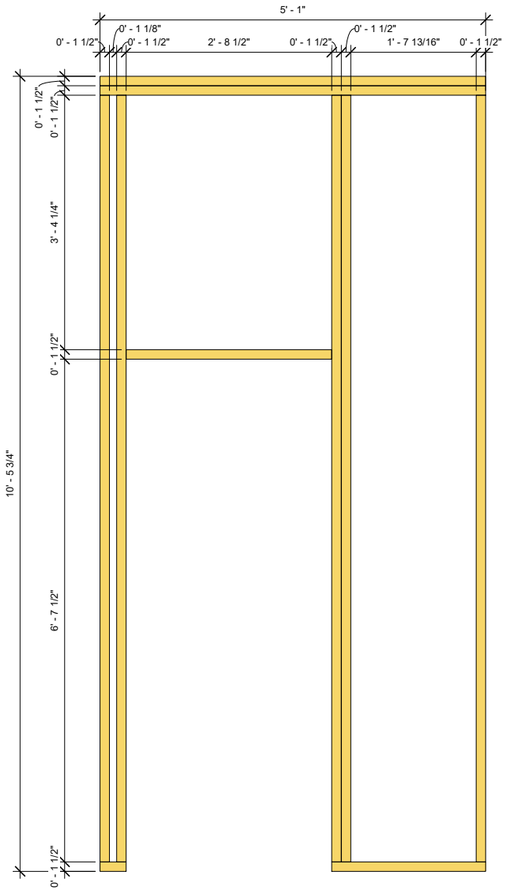
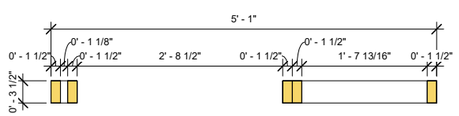


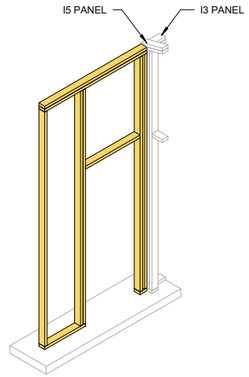
1 | Panel Framing Elevation - I4

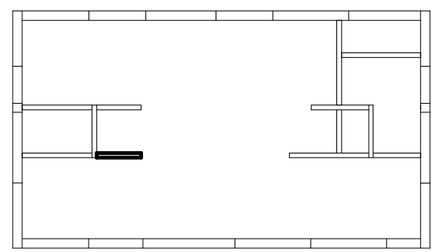
F7.I4 | SCALE: 1" = 1'-0"



2 | Panel Plan - I4

F7.I4 | SCALE: 1" = 1'-0"





PANEL CODE: I4

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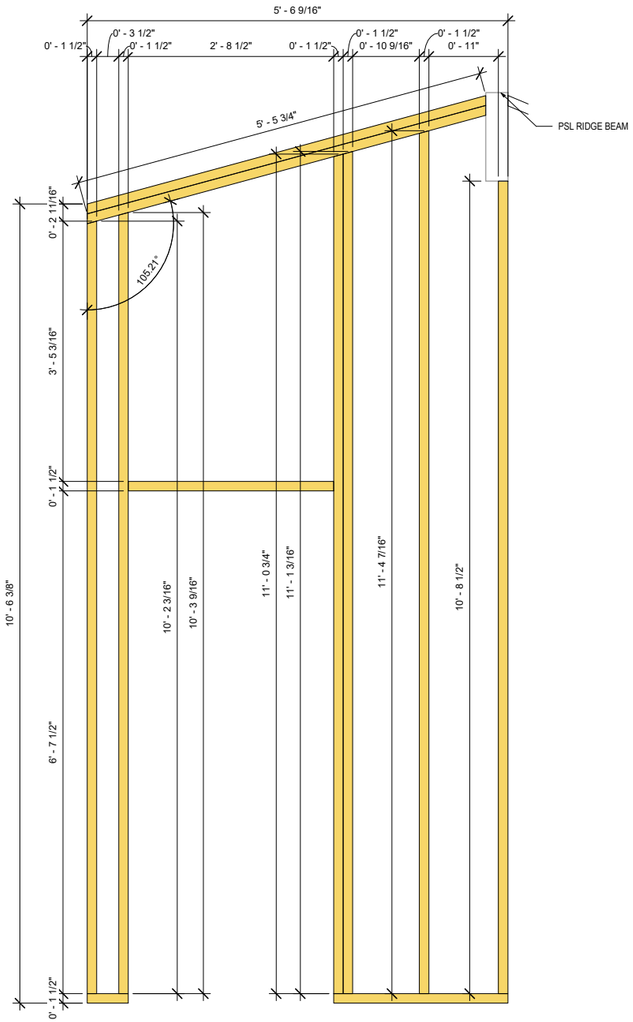
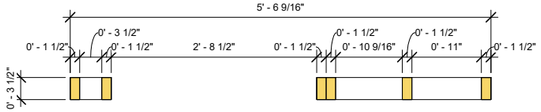
F7.I4

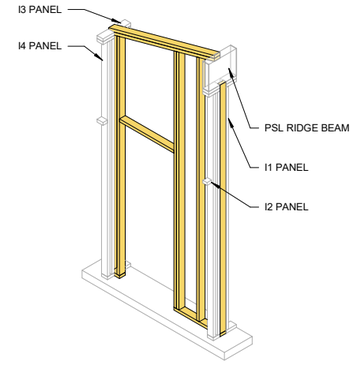
7/27/2020 8:50:35 AM

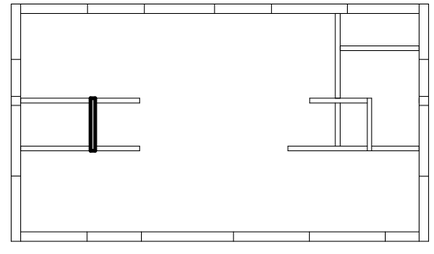


1 | Panel Framing Elevation - I5
F7.I5 | SCALE: 1" = 1'-0"



2 | Panel Plan - I5
F7.I5 | SCALE: 1" = 1'-0"





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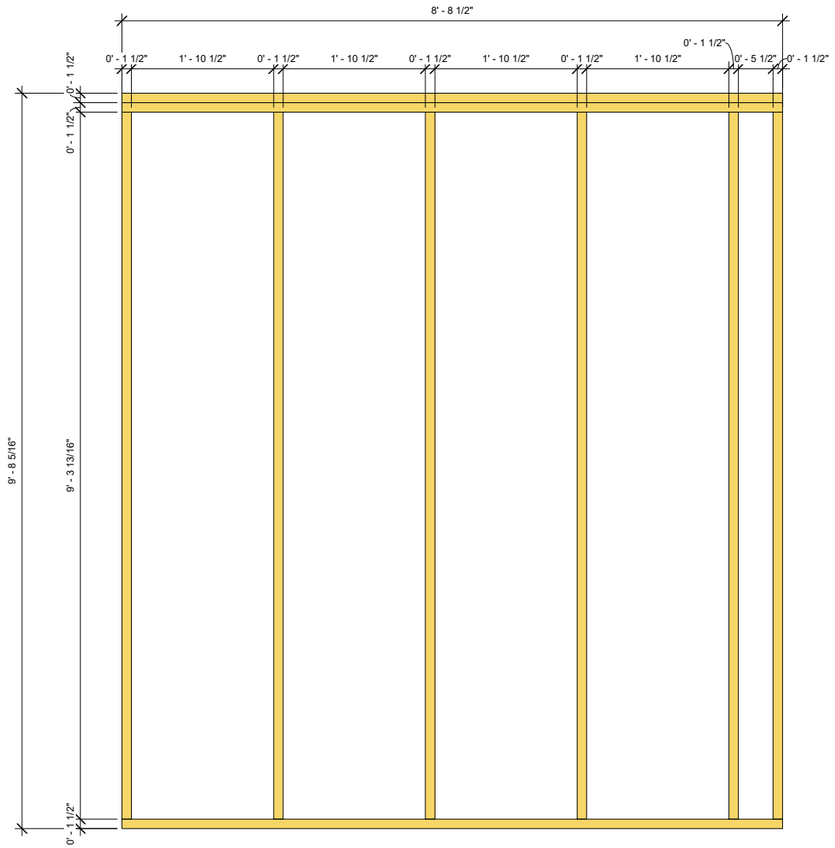
Framing Panel I5

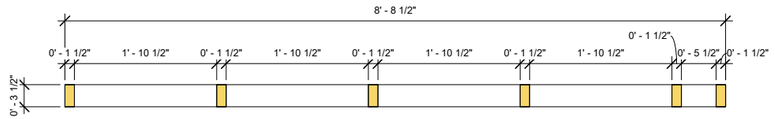
F7.I5

7/27/2020 8:50:36 AM



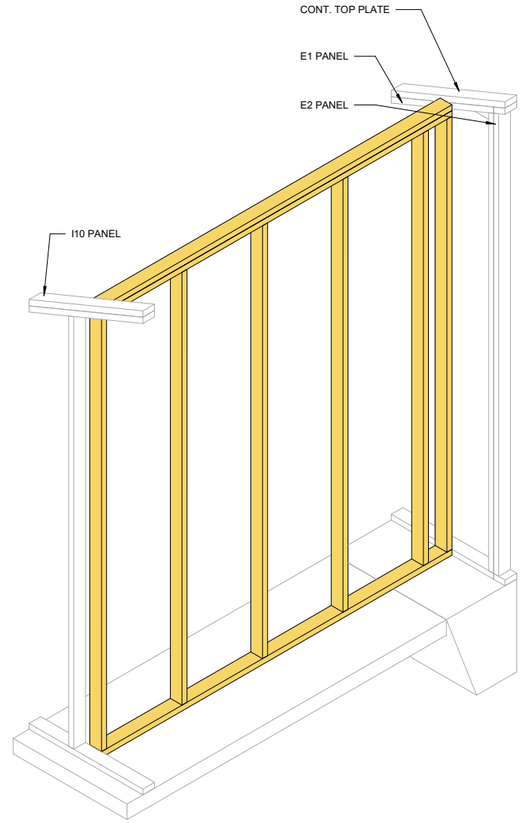
1 Panel Framing Elevation - I6

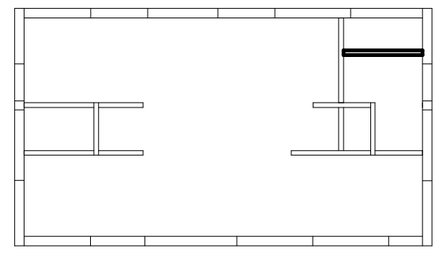
F7.I6 SCALE: 1" = 1'-0"



2 Panel Plan - I6

F7.I6 SCALE: 1" = 1'-0"





PANEL CODE: I6

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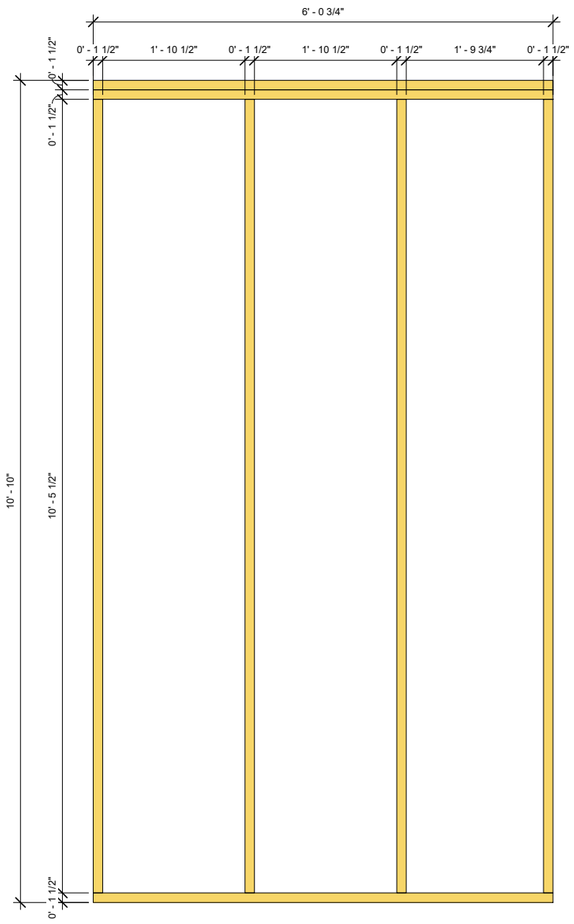
Framing Panel I6

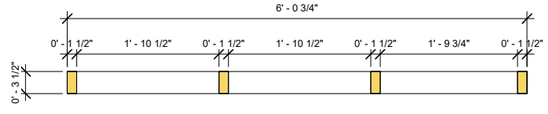
F7.I6

7/21/2020 8:50:37 AM



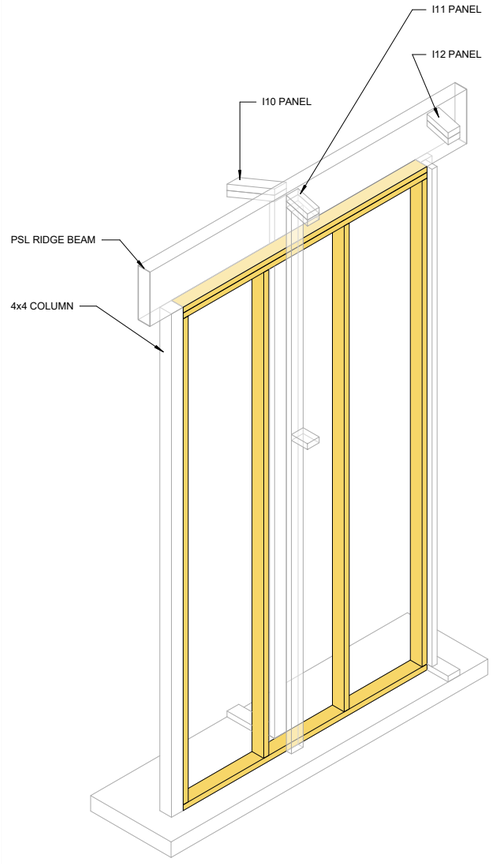
1 | Panel Framing Elevation - I7

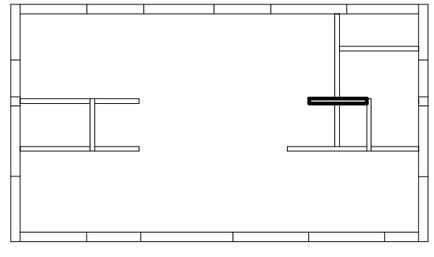
F7.I7 | SCALE: 1" = 1'-0"



2 | Panel Plan - I7

F7.I7 | SCALE: 1" = 1'-0"





PANEL CODE: I7

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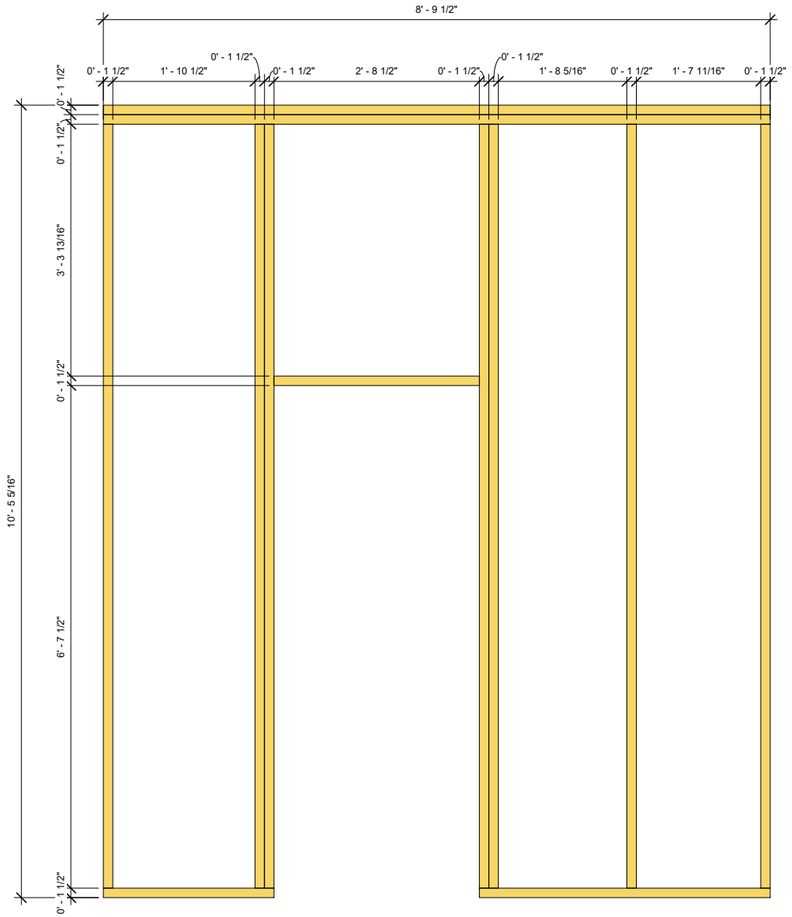
Framing Panel I7

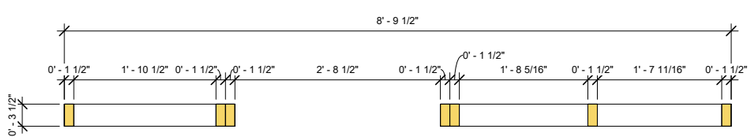
F7.I7

7/27/2020 8:50:38 AM



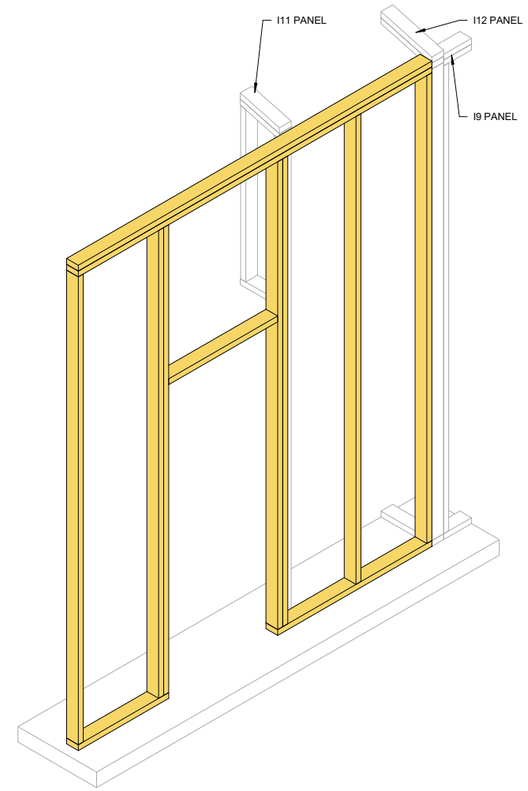
1 Panel Framing Elevation - I8

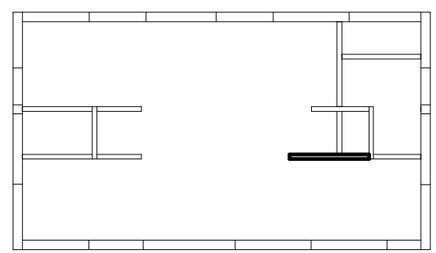
F7.I8 SCALE: 1" = 1'-0"



2 Panel Plan - I8

F7.I8 SCALE: 1" = 1'-0"





PANEL CODE: I8

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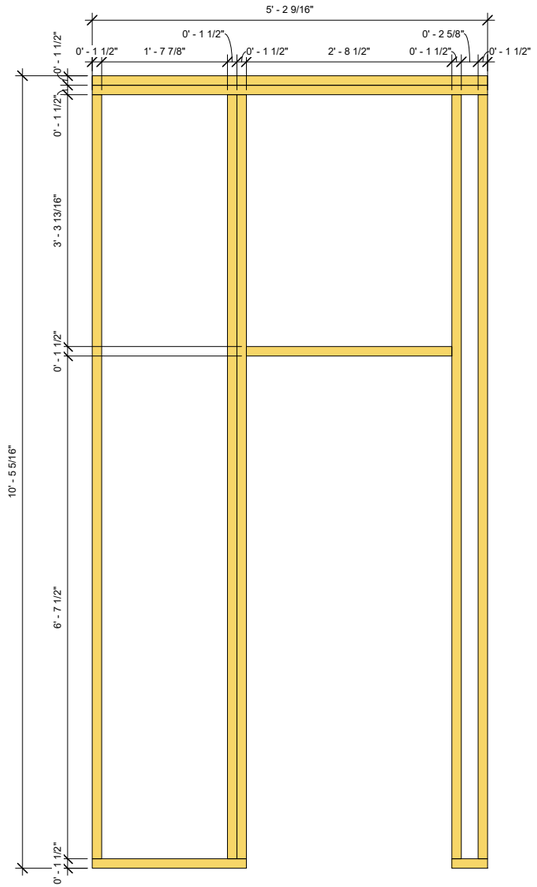
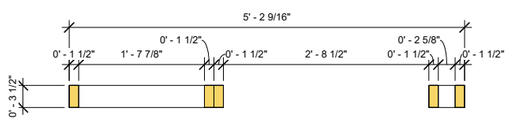


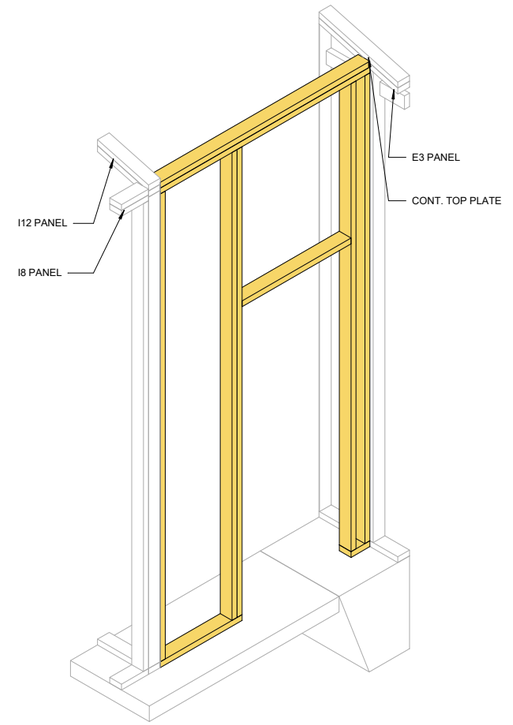
1 Panel Framing Elevation - I9

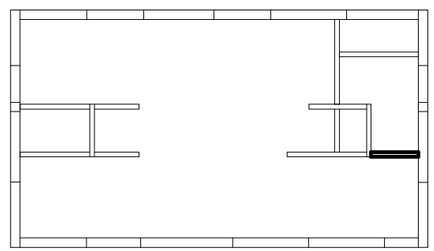
F7.I9 SCALE: 1" = 1'-0"



2 Panel Plan - I9

F7.I9 SCALE: 1" = 1'-0"





PANEL CODE: I9

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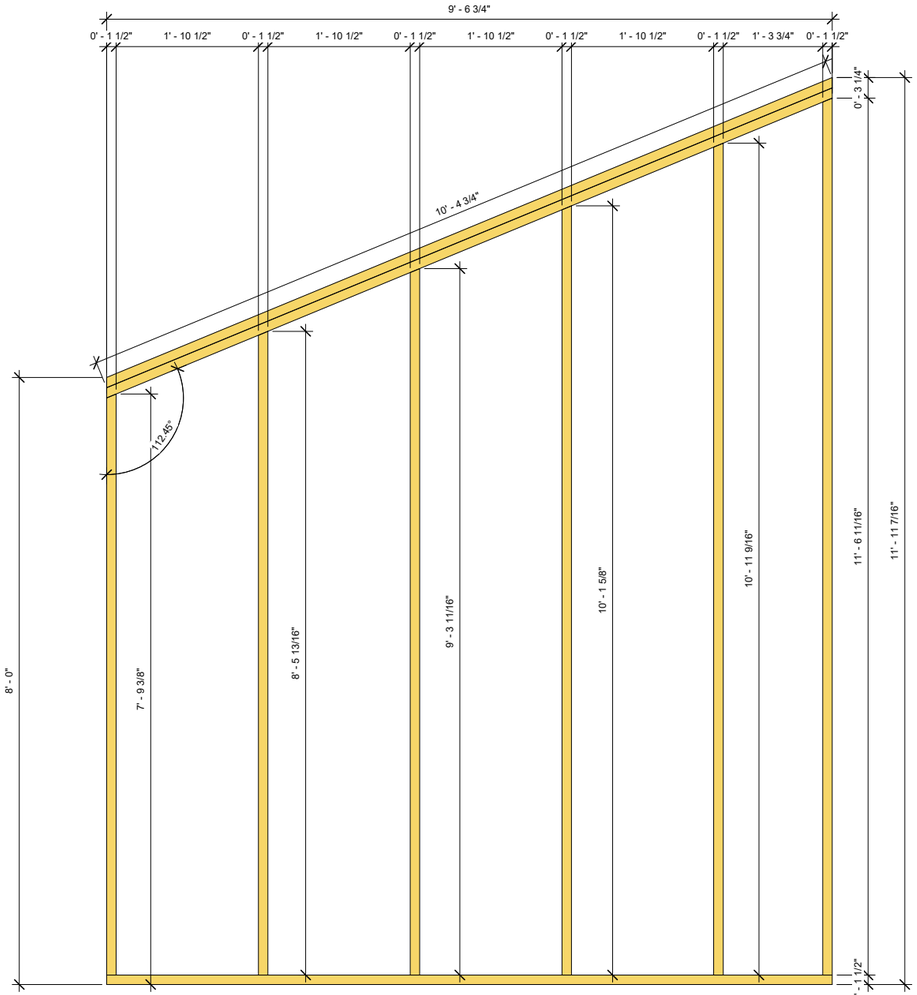
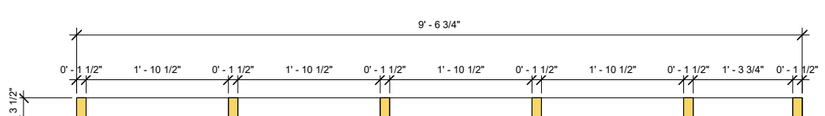
F7.I9

7/21/2020 8:50:39 AM



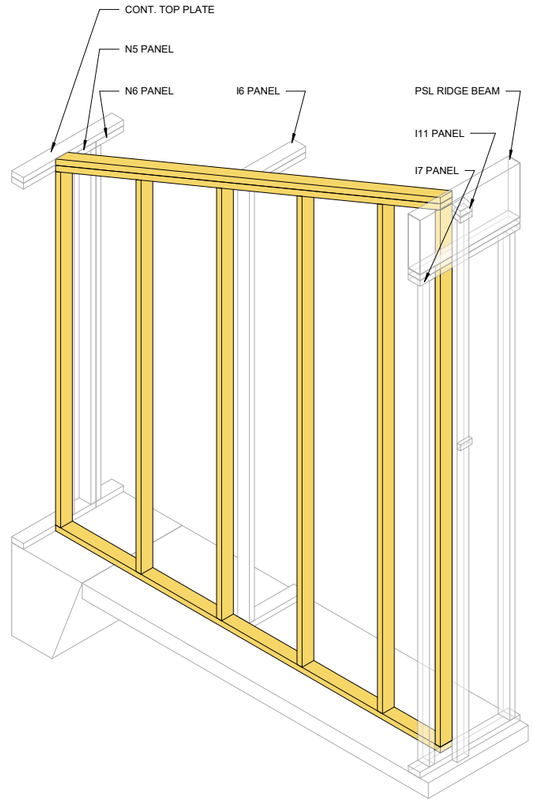
1 Panel Framing Elevation - I10

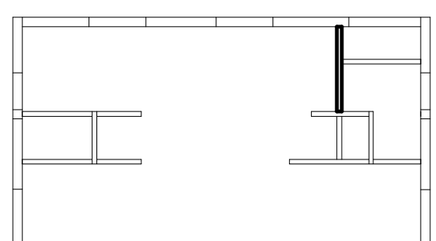
F7.I10 SCALE: 1" = 1'-0"



2 Panel Plan - I10

F7.I10 SCALE: 1" = 1'-0"





PANEL CODE: I10

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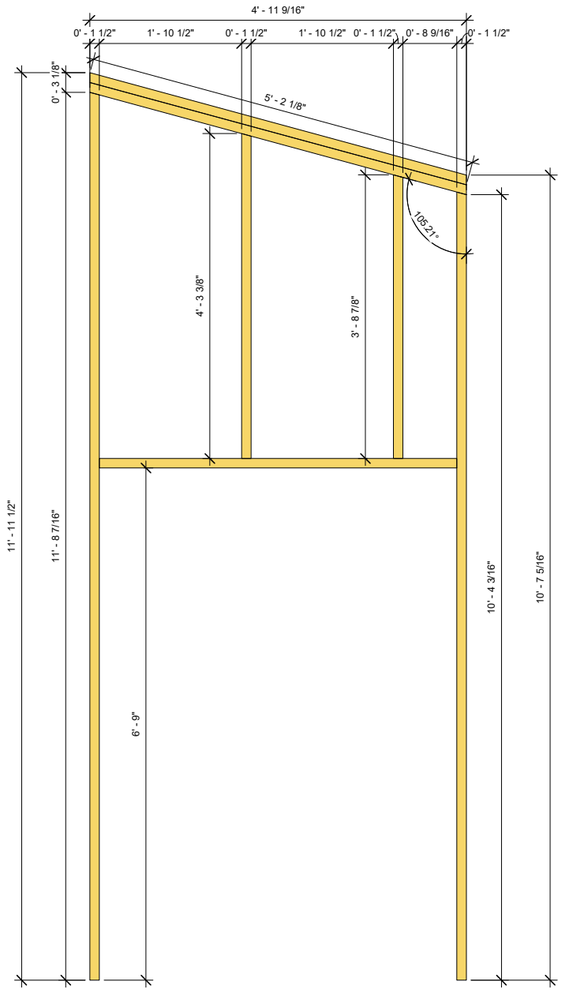
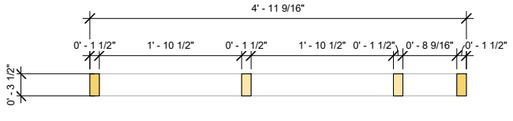
F7.I10

1/27/2020 8:50:40 AM



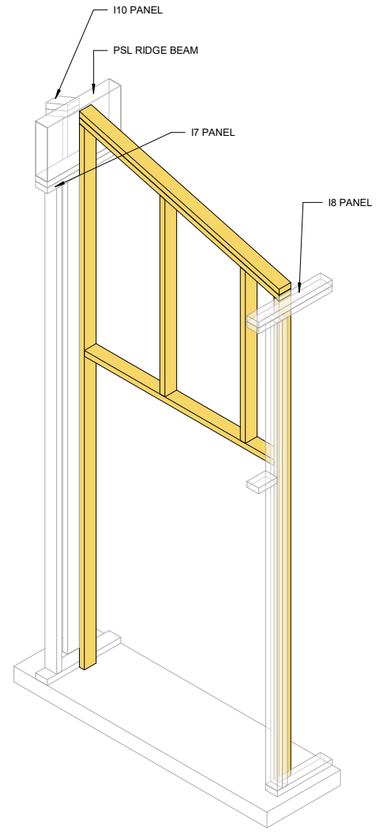
1 Panel Framing Elevation - I11

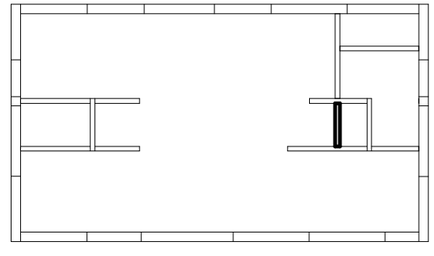
F7.I11 SCALE: 1" = 1'-0"



2 Panel Plan - I11

F7.I11 SCALE: 1" = 1'-0"





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Client:

Stafford County Economic Devolopment

210 E. 3RD
COURTHOUSE ANNEX
P.O. BOX 233
ST. JOHN, KS 67576
PH: (620) 549-3527

Project:

St. John, KS Affordable Net+ Prototype Home

REVISIONS

1 2020-03-14

Issue Status:

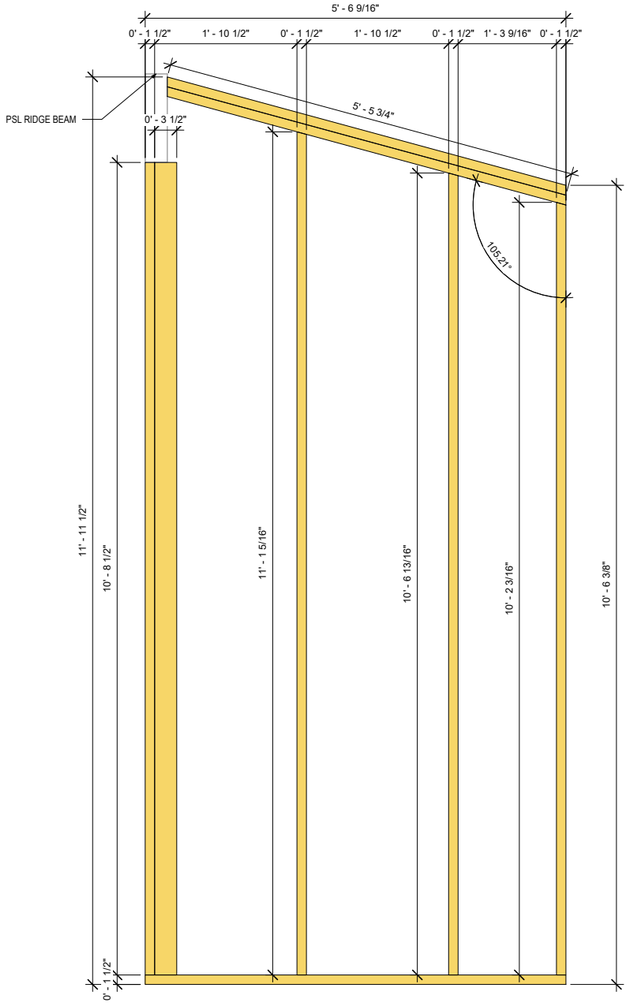
CONSTRUCTION DOCUMENTS

Date: March 14, 2020

Framing Panel I11

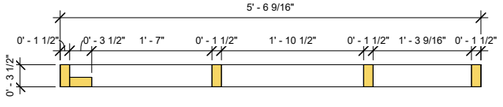
F7.I11

7/27/2020 8:50:41 AM



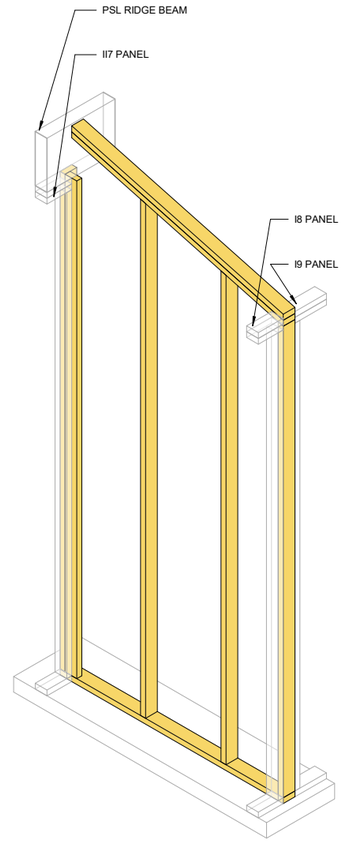
1 | Panel Framing Elevation - I12

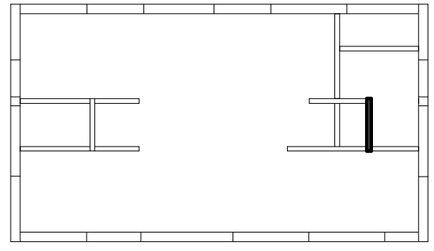
F7.I12 | SCALE: 1" = 1'-0"



2 | Panel Plan - I12

F7.I12 | SCALE: 1" = 1'-0"





PANEL CODE: I12

NET+ STUDIO
Affordable Net-Zero Housing to Strengthen and Sustain Communities

APDesign | Kansas State University
AY 2019-2020

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Framing Panel I12

F7.I12

7/27/2020 8:50:42 AM