June 2, 2023

Ms. Maggie Smith
South Carolina Building Code Council
South Carolina Manufacturing Board
110 Centerview Drive, Ste. 102
Columbia, SC   29210

RE: Carr Concrete
          Williamstown, WV
          Document: OZI-308 Ozark

Dear Ms. Smith:

Attached is (1) set of PFS accepted documents for the above referenced manufacturer. These documents are submitted for your review and approval.

PFS Corporation has reviewed these documents and to the best of our knowledge has found them to conform to the:

2021	International Building Code with SC modifications	
2021	International Residential Code with SC modifications	
2021	International Fire Code with SC modifications	
2021	International Plumbing Code with SC modifications	
2021	International Mechanical Code with SC modifications	
2021	International Fuel Gas Code with SC modifications	
2020	National Electrical Code with SC modifications	
2009	International Energy Conservation Code	
2017	ANSI A117.1	

It is my understanding that the plan review fee has been sent directly to your office, if applicable.

If you have any questions, please contact us.

Sincerely,

Mark Severson
Plans Examiner

Enclosure: As stated

cc: Luke Lehman
          File

PFS®

ADDITIONAL OR MODIFIED ACCEPTANCE (MODULARS/PANELIZED)

This form is to be used only when the manufacturer is seeking acceptance of an additional model, modified model or model name change which uses a previously accepted building system.

Current PFS Building System Acceptance #:_____

Model Name/ No. Ozark OZI-308_____

Manufacturer's Name: CXT_____

Plant(s) at which model will be produced Williamstown, WV_____

Check One: ___✔___ NEW MODEL   _____ Revised Model*

TECHNICAL DATA	Conforms		
	Yes	No	N/A
Floor Plan Showing:			
Braced Wall Method or Shearwalls	✔		
Building Size (LxW Dimensions)	✔		
Room Sizes, Light & Ventilation Schedule	✔		
Exit Requirements	✔		
Electrical Outlet Spacing & Smoke Detector	✔		
Location of Labels & Data Plates	✔		
Use Group, Type Const., Total Sq.Ft. Area	✔		
Plumbing System Design or Reference No. (_____)	✔		
Heat Loss Calculations or Reference No. (_____)			✔
HVAC/Furnace Size/Model No. (_____)			✔
Thermal Performance Calculations or Reference No. (_____)	✔		
Electrical Load Calculations or Reference No. (_____)	✔		
Service Size and Location (_____)	✔		
Applicable Building Codes_____	✔		

Submit model to the followingstates: SC_____

*Description of Modification:_____
_____

Requested by:_____ Luke Lehman _____ Date:_____ 5/16/23 _____
 (designer)

For PFS Use

Staff Plan Reviewer_____ *Mark Severson* _____ IBC Certification #:_____ Date:__ 6/2/2023 __

Structural Calculation(s) Reviewed By:_____ P.E. #:_____ Date:_____
Remarks:_____
_____

(1) copy sent to IBC within 15 days of approval.

VERBAL APPROVAL GIVEN [   ]   By Whom:_____ To Whom_____ Date:_____

MODEL WAS DEVIATED [   ]   Revision Number:_____

THIS FORM SHALL BE FILLED OUT COMPLETELY WITH EACH MODEL ACCEPTANCE OR MODIFICATION PRIOR TO SUBMITTAL TO PFS.

cc:_____
\forms\form-m
Rev 05/13/08 mb

South Carolina Building Codes Council

110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
llr.sc.gov/bcc

MODULAR PLAN REVIEW AND QUALITY CONTROL PROGRAM APPROVAL

By completing and submitting this form, the Manufacturer is attesting to the accuracy of the information.

Manufacturer: Carr Concrete (a Division of CXT, Inc.)

Address: 606 N. Pines Rd., Suite 202, Spokane, WA. 99206

Phone No.: 509-892-3238

FOR OFFICE USE ONLY	
Fee Received	
SC File/Approval No.	
Emailed	

Location of Manufacturing Facility

Address: 362 Waverly Road, Williamstown, WV. 26187

Phone No.: 304-850-6303

Approved Inspection Agency Office: PFS-TECO-SC

Address: 1507 Matt Pass, Cottage Grove, WI 53527

Phone No.: 608-839-1432

☐ Quality Control Program Approval   ☐ Building System Approval
☒ Design Approval   ☒ Model Name/Number: OZI-308

☒ Building/Component Plans   ☐ Electrical Plans   ☒ Mechanical Plans
☒ Specifications   ☐ Test Data   ☐ Quality Control Manual
☒ Calculations (Type): Structural   ☐ Plumbing Plans   ☐ Other (Specify): _____

Occupancy Classification: B   Type of Constructions: V-B

Live Load Floors (If varying, specify): 400

Live Load Roof: 30   Snow Load: 210   Wind Speed: 150   Exposure: C

Seismic Performance Category: D

R-Value Floor: NA   R-Value Walls: NA   R-Value Roof: NA

Fire Rating Exterior Walls: 1   Fire Rating Roof/Ceiling: 1

Fire Rating Occupant or Tenant Separation Walls: N/A

Fire Rating Occupant or Tenant Separation Floor/Ceiling: N/A

Fire Rating Corridor Walls: N/A   Fire Rating Chasewalls: N/A

This is to certify that the Documents submitted conform to the South Carolina Modular Buildings Construction Act.

Architect/Engineer Name: Ian Lehrer   Title: Tech. Dir.

Agency Name: PFSTECO

Manufacturing Facility Representative Name: Brandon Wheeler   Title: QC Supervisor

Submitted by: Luke Lehman   Title: Consulting Design Manager

Information provided in this application may be subject to public scrutiny or release under the S.C. Freedom of Information Act or other provisions of federal and state law.

▶ Manage Plans : Application for BCM.2312

Modular Plan Review And Quality Control Program Approval Receipt

Please print a copy of this receipt for your records.

Record of Receipt

Your application has been received and
payment has been authorized from the method provided.

Please allow 7 business days for your order to process
and reach its destination before calling the board to inquire
about the status.

Record of Receipt

Payment has been authorized from the method provided.

ORDER INFORMATION

Plan ID	Description	Amount
6552	Plan for BCM.2312	$200.00

PAYMENT INFORMATION

Card Type:	Visa
Amount:	$200.00
Cardholder Name:	MS Div Purchasing
Card Number:	
Date/Time:	6/2/2023 9:08:28 AM
Reference #:	1415418
Authorization #:	065923

Please retain this copy for your records. Cardholder will pay above amount to card issuer pursuant to cardholder agreement.
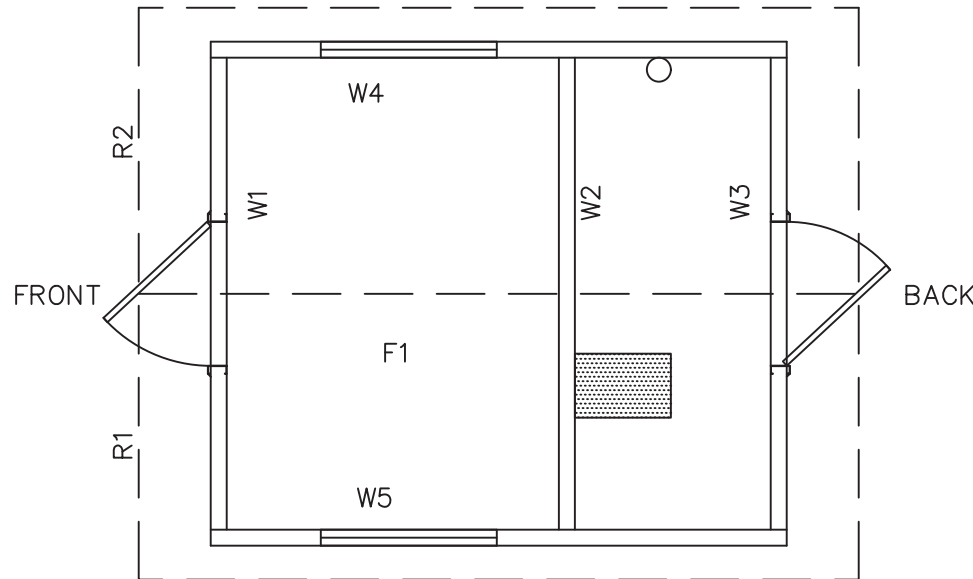
ORDER INFORMATION

License:
BCM.2312

Plan ID:

6552

OZARK 1

PANEL MARK NO. KEY PLAN

MANUFACTURED BY:
CXT INC. (WV)
362 WAVERLY ROAD
WILLIAMSTOWN, WV 26187

SITE ADDRESS:
BARAUCH PARK
535 BLACK RIVER RD,
GEORGETOWN, SC 29440

NOTES

1. BUILDING IS DESIGNED TO COMPLY WITH THE 2021 INTERNATIONAL BUILDING CODE (IBC).

2. DESIGN COMPLIES WITH THE PROVISIONS OF THE 2021 IBC FOR THE FOLLOWING LOADS:
   GROUND SNOW LOAD = 250 PSF
   ROOF SNOW LOAD = 210 PSF
   FLOOR LOAD = 400 PSF
   IBC DESIGN SPECTRAL RESPONSE S_S = 1.524, S_1 = 0.674
   SITE CLASS: D
   RISK CATEGORY: II
   SEISMIC DESIGN CATEGORY: D
   BEARING WALL SYSTEM: R = 4.0
   A5 – INTERMEDIATE PRECAST SHEARWALLS
   WIND – V_{ULT} = 150 MPH
   WIND – V_{ASD} = 116 MPH
   WIND EXPOSURE C
   OCCUPANT LOAD: 2
   ***BUILDING IS NOT TO BE PLACED IN A LOCATION WHERE LOADS EXCEED THE VALUES PROVIDED ABOVE

3. CONSTRUCTION TYPE: V–B
   OCCUPANCY: B
   EXTERIOR WALLS: 1–HR RATED PER IBC TABLE 721.1(2), ITEM 4–1.1
   MINIMUM FIRE SEPARATION DISTANCE: 10' PER IBC TABLE 705.8

4. CONCRETE STRENGTH f'ci = 2500 PSI INITIAL f'c = 5000 PSI
   FINAL AIR ENTRAINMENT 6% ± 1 1/2% IN PLASTIC CONCRETE.
   REINFORCING STEEL: ASTM A615 #3 GRADE 40, #4 AND LARGER GRADE 60
   Fy=60 KSI MINIMUM LAP 18" AT SPLICES. TIE BARS WITH DOUBLE ANNEALED
   16 GA IRON WIRE. REINFORCING TO BE PLACED IN CENTER OF PANEL UNO.
   ALL WELDED WIRE FABRIC (W.W.F.): ASTM A1064 GRADE 80, 4x4xW6.7xW6.7,
   Fy=80 KSI (OR EQUIVALENT), SMOOTH WIRE, MIN. LAP 2 SQUARES.

5. EMBEDDED ITEMS IDENTIFIED ON DRAWINGS (i.e. PS–2, R301)
   REFER TO CXT STANDARD EMBEDMENT CATALOG.

6. REFER TO SEPARATE CXT INCORPORATED SPECIFICATIONS COVERING DESIGN,
   MATERIALS, PRODUCTION, AND INSTALLATION CRITERIA FOR SPECIFIC STYLE
   OF BUILDING.

7. BACK OF PANELS TO HAVE SMOOTH TROWEL FINISH U.N.O.
   ALL SURFACES TO BE TEXTURED ARE NOTED ON PANEL DWG'S

8. ALL REBAR BENDS ARE TO HAVE A MINIMUM RADIUS OF 6x BAR DIAMETER.

9. INSTALLATION TO MEET APPLICABLE LOCAL, STATE & FEDERAL CODES, BY
   OTHERS.

10. ADEQUATE PLUMBING FACILITIES MUST BE PROVIDED IN ACCRDANCE WITH
    THE 2021 IBC (NOT BY CXT)

Key Plan (diagram labels)

FRONT — BACK
R2 / R1
W4, W1, W2, W3, W5
F1

APPLICABLE CODES

2021 INTERNATIONAL BUILDING CODE w/ SC MODIFICATIONS
2021 INTERNATIONAL PLUMBING CODE w/ SC MODIFICATIONS
2020 NATIONAL ELECTRIC CODE w/ SC MODIFICATIONS
2021 INTERNATIONAL MECHANICAL CODE w/ SC MODIFICATIONS
2009 INTERNATIONAL ENERGY CONSERVATION CODE (2013 ASHRAE 90.1)
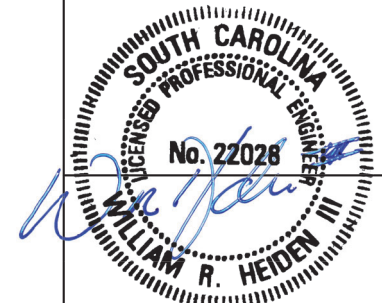w/ SC MODIFICATIONS
2017 ANSI A117.1

SPECIAL CONDITIONS AND/OR LIMITATIONS

ACCESSIBILITY TO THIS BUILDING, INCLUDING PARKING IS TO BE
PROVIDED BY OTHERS AND CONSTRUCTED IN ACCORDANCE WITH
ALL LOCAL BUILDING CODES

INDEX OF DRAWINGS

NO.	TITLE
OZ1–01	COVER SHEET
OZ1–02	RIGGING DETAIL
OZ1–03	FLOOR PLAN
OZ1–04	BUILDING ELEVATIONS
OZ1–05	INTERIOR ELEVATIONS
OZ1–06	CASTING
OZ1–07	FINISH DETAILS
OZ1–08	WALL PANEL MARK W1
OZ1–09	WALL PANEL MARK W2
OZ1–10	WALL PANEL MARK W3
OZ1–11	WALL PANEL MARK W4
OZ1–12	WALL PANEL MARK W5
OZ1–13	FLOOR SLAB MARK F1
OZ1–14	ROOF SLAB MARK R1
OZ1–15	ROOF SLAB MARK R2
OZ1–16	FOUNDATION DETAIL
OZ1–17	FLOOR DRAIN BLOCKOUTS & BELOW FLOOR PIPING
OZ1–18	WATER, WASTE, & VENT PIPING PLANS & NOTES
OZ1–19	PLUMBING PLAN, DIAGRAMS, & SCHEDULES
OZ1–20	ELECTRICAL PLAN, DETAILS & SCHEDULES
OZ1–21	ELECTRICAL PLAN, LEGENDS & NOTES
OZ1–22	EMBEDDED MATERIALS

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

SC 231223025

Review is limited to factory built elements only.

LBFoster
CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1–308

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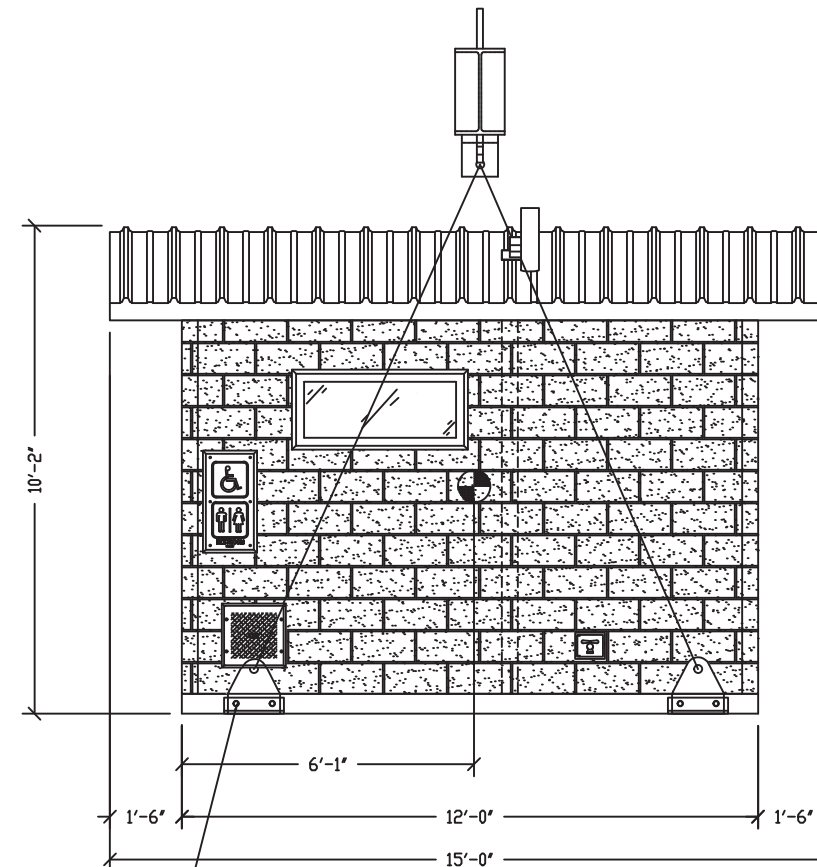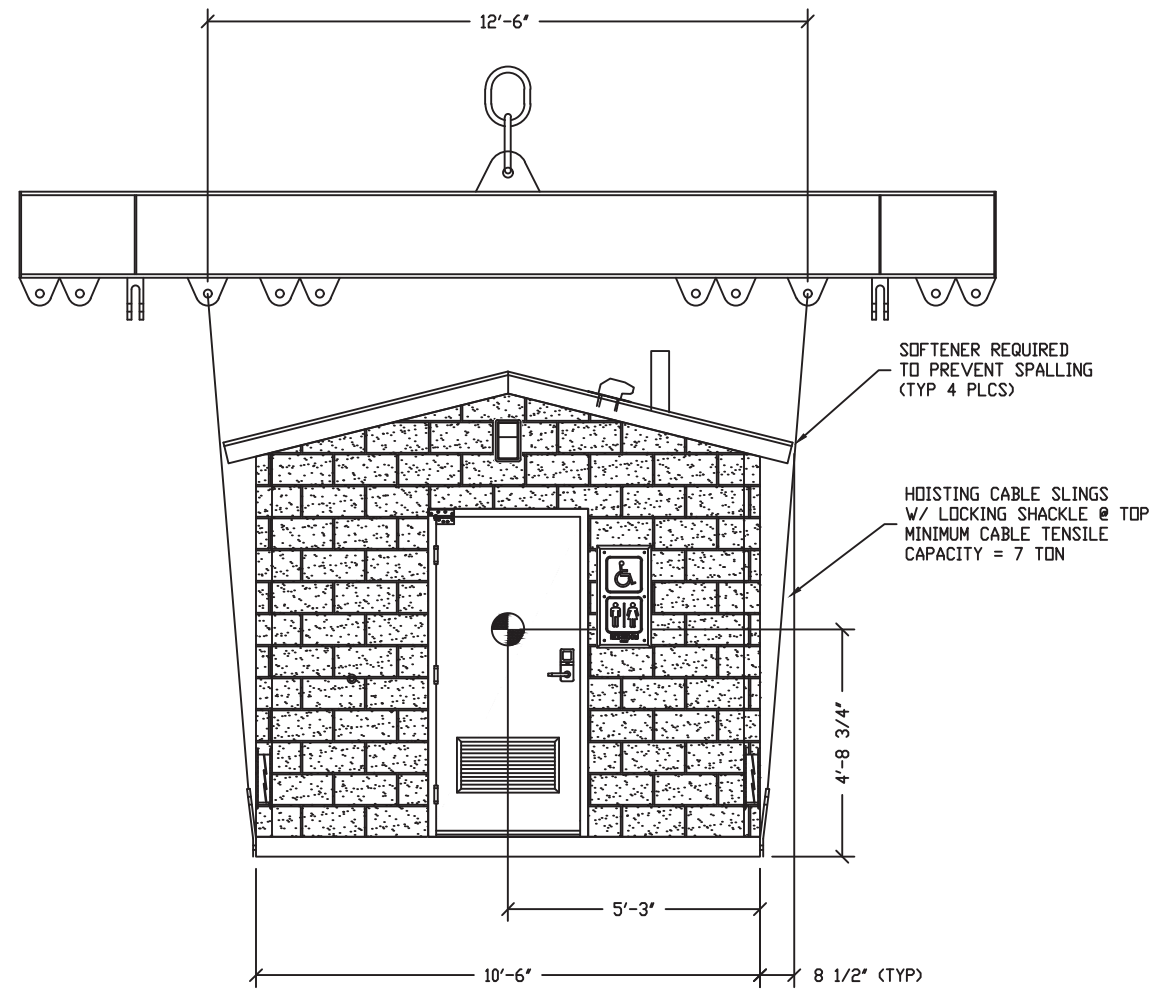particular purpose.

CXT Incorporated

CASTING TOLERANCES:

OVERALL LENGTH OR WIDTH
10 FT OR UNDER = ± 1/8'
10 TO 20 FT = +1/8', –3/16'
20 TO 40 FT = ±1/4'
TOTAL THICKNESS = –1/8, +1/4
VARIATION FROM SQUARE = ±1/8 PER 6 FT OF DIAGONAL
LOCAL SMOOTHNESS = 1/4' IN 10 FT
SWEEP = ±1/4'
POSITION OF TENDONS = ±1/4'
POSITION OF BLOCKOUTS = ±1/4'
SIZE OF BLOCKOUTS = ±1/4'
POSITION OF EMBEDS = ±1/4'
TIPPING AND FLUSHNESS OF PLATES = +1/16, –1/4
BOWING = LENGTH/360
END SQUARENESS = ±1/8'

SOUTH CAROLINA STATE APPROVAL, TAGS, & PE DRAWINGS (ECC ONLY) REQUIRED

WALL TEXTURE: SPLIT FACE BLOCK
WALL COLOR: WESTERN WHEAT
ROOF TEXTURE: RIBBED METAL
ROOF COLOR: EVERGREEN
TRIM PAINT: DTM ALKYD ENAMEL BROWN
SEALER: 2K ANTI–GRAFITI
PACKAGE: MARINE

REV.	DESCRIPTION	APPROVAL	DATE
SCALE 1/4" = 1'-0"		DATE	4/14/23
DRAWN C.WISSER		FILE NO.	OZ1–308
CHECKED JO		PLOT	48

COVER SHEET

DWG NO. OZ1–1
SHEET 1/22
REV.

12'-6"

SOFTENER REQUIRED
TO PREVENT SPALLING
(TYP 4 PLCS)

HOISTING CABLE SLINGS
W/ LOCKING SHACKLE @ TOP
MINIMUM CABLE TENSILE
CAPACITY = 7 TON

4'-8 3/4"

5'-3"

10'-6"

8 1/2" (TYP)

OZARK 1
BUILDING NUMBER OZ1-308

10'-2"

6'-1"

1'-6"   12'-0"   1'-6"

15'-0"

PS-22 LIFTING EYE ATTACHED TO AS-3
EMBEDS W/(2) 1 1/2" HIGH TENSILE COIL BOLTS
(SHEAR CAPACITY = 18,000# BOLT)

May 25, 2023

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

LBFoster
CXT® Products

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SCALE	1/4" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	48

RIGGING DETAIL

DWG NO.	SHEET	REV.
OZ1-2	2 / 22	

NOTES:
1.   WEIGHT IS APPROXIMATE.

SHIPPING WEIGHTS AND DIMENSIONS				
SECTION	WEIGHT	LENGTH	WIDTH	HEIGHT
A	41,700	15'-0"	11'-11"	10'-2"

Door Schedule

	TYPE	FRAME	DOOR SIZE	MATERIAL	DOOR PREP/LATCH	VENTILATION
A	SINGLE	3/0 x 6/8 x 3-3/4"	3/0 x 6/8 x 1-3/4"	GALVANIZED	LH REVERSE - DEADBOLT - PRIVACY LATCH	LOUVERED
	GLAZING	**STOP**	**SWEEP**	**THRESHOLD**	**HINGES**	**KICK PLATE**
	N/A	HAGER 230W	PEMKO P18062CP36B	PEMKO 170A36	PBB SPRING HINGE 4-1/2" x 4 1/2" STD. WEIGHT 26D FINISH	HAGER 190S 8"x34" US32D

	TYPE	FRAME	DOOR SIZE	MATERIAL	DOOR PREP/LATCH	VENTILATION
B	SINGLE	3/0 x 6/8 x 3-3/4"	3/0 x 6/8 x 1-3/4"	GALVANIZED	LH REVERSE - DEADBOLT - PASSAGE LATCH	LOUVERED
	GLAZING	**STOP**	**SWEEP**	**THRESHOLD**	**HINGES**	**KICK PLATE**
	N/A	HAGER 230W	PEMKO P18062CP36B	PEMKO 170A36	PBB SPRING HINGE 4-1/2" x 4 1/2" STD. WEIGHT 26D FINISH	HAGER 190S 8"x34" US32D

WINDOW & VENT SCHEDULE

SYMBOL	DESCRIPTION
A	MS-6 EMBED
B	MS-2 EMBED

LEXAN SELF–IGNITION > 1000, SMOKE DENSITY < 75, CLASS CC1.

1. ALL EXTERIOR DOORS AND WINDOWS TO BE LISTED AND LABELED AS COMPLIANT WITH AAMA/WDMA/CSA101/I.S.2/A440 OR TESTED PER ASTM E330.
2. DOOR HARDWARE SHALL NOT REQUIRE TIGHT PINCHING OR TWISTING OF THE WRIST OR SPECIAL KNOWLEDGE TO OPERATE.
3. UNLATCHING OF ANY DOOR SHALL NOT REQUIRE MORE THAN ONE OPERATION,

MARINE PACKAGE

LIGHTING AND VENTILATION REQUIREMENTS		
	RESTROOM	CHASE
AREA	62.27 SQ FT	45.89 SQ FT
REQUIRED VENTILATION	2.49 SQ FT	1.84 SQ FT
PROVIDED VENTILATION	22.04 SQ FT	20.40 SQ FT
REQUIRED NATURAL LIGHTING	4.98 SQ FT	3.67 SQ FT
PROVIDED NATURAL LIGHTING	7.38 SQ FT ***	0.00 SQ FT ***

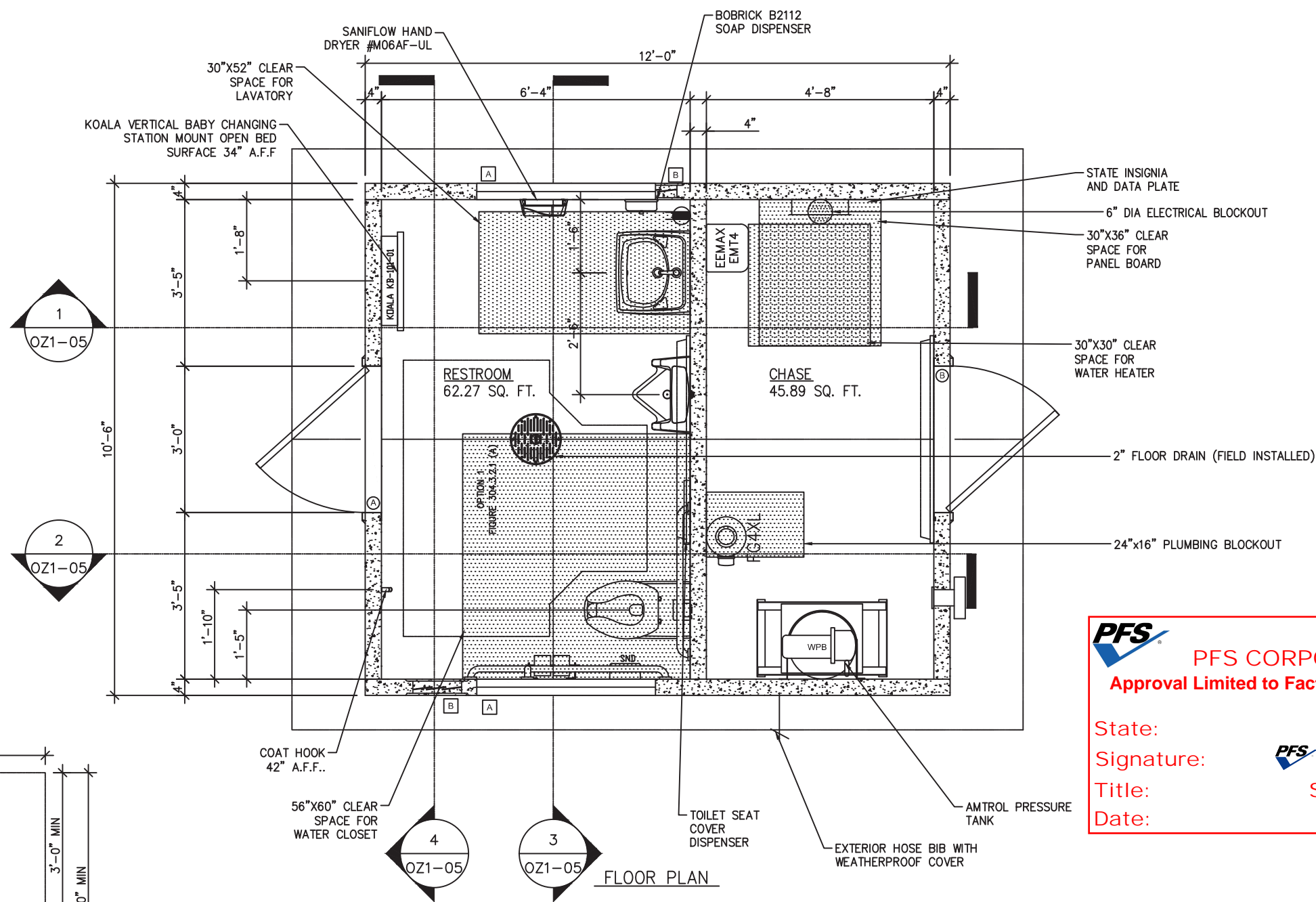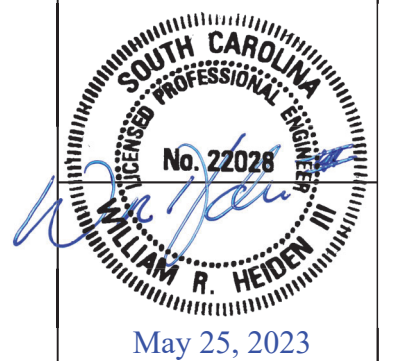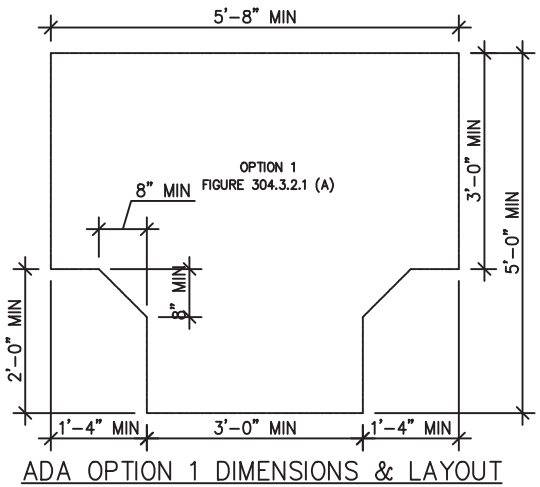***ARTIFICAL LIGHTING PROVIDED TO MEET REQUIRED FOOT CANDLES.

FLOOR PLAN

SANIFLOW HAND DRYER #M06AF–UL

30"X52" CLEAR SPACE FOR LAVATORY

KOALA VERTICAL BABY CHANGING STATION MOUNT OPEN BED SURFACE 34" A.F.F

KOALA KB-101-01

BOBRICK B2112 SOAP DISPENSER

12'-0"

6'-4"   4'-8"

4"   4"   4"

EEMAX EMT4

RESTROOM 62.27 SQ. FT.

CHASE 45.89 SQ. FT.

1'-8"   3'-5"   3'-0"   3'-5"   1'-10"   1'-5"   4"

10'-6"

STATE INSIGNIA AND DATA PLATE

6" DIA ELECTRICAL BLOCKOUT

30"X36" CLEAR SPACE FOR PANEL BOARD

30"X30" CLEAR SPACE FOR WATER HEATER

2" FLOOR DRAIN (FIELD INSTALLED)

24"x16" PLUMBING BLOCKOUT

WPB

SND

COAT HOOK 42" A.F.F..

56"X60" CLEAR SPACE FOR WATER CLOSET

TOILET SEAT COVER DISPENSER

AMTROL PRESSURE TANK

EXTERIOR HOSE BIB WITH WEATHERPROOF COVER

ADA OPTION 1 DIMENSIONS & LAYOUT

5'-8" MIN

8" MIN   OPTION 1 FIGURE 304.3.2.1 (A)

3'-0" MIN   5'-0" MIN

2'-0" MIN

1'-4" MIN   3'-0" MIN   1'-4" MIN

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III

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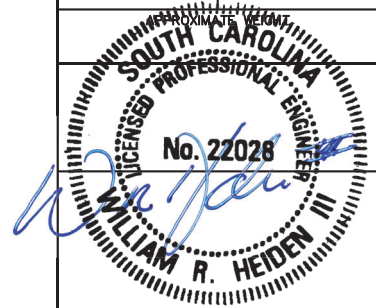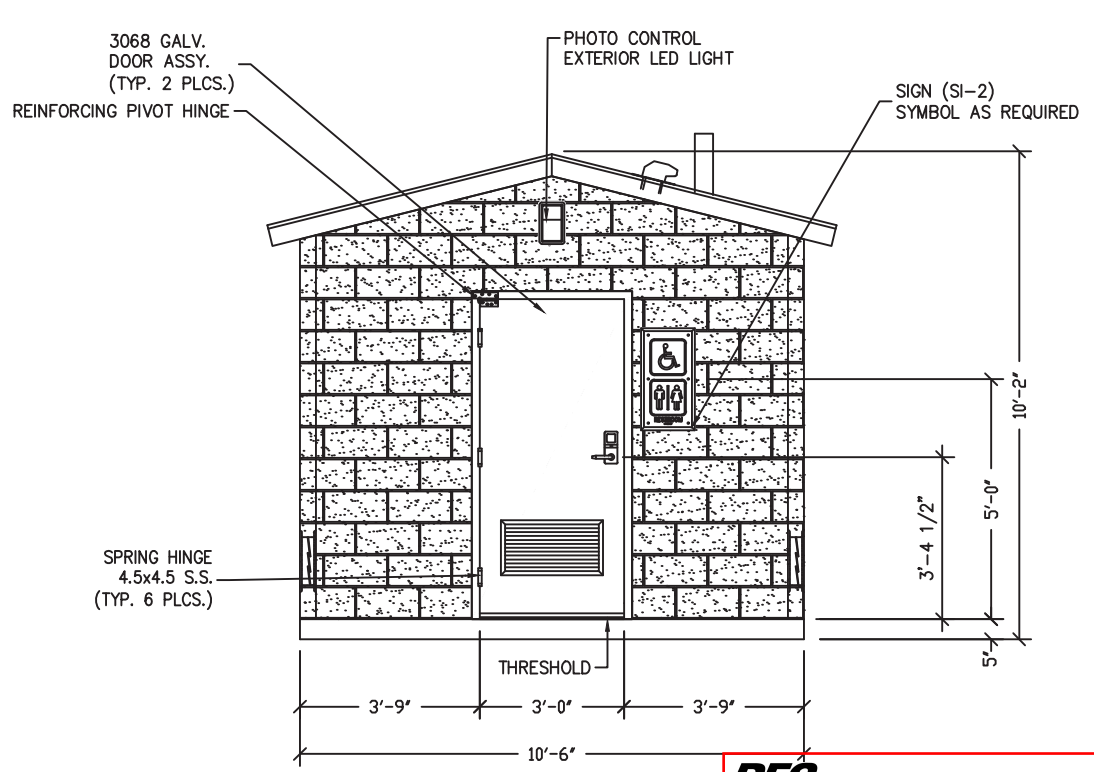
CXT Incorporated

| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/8" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	32

INTERIOR ELEVATIONS

DWG NO.	SHEET	REV.
OZ1-3	3 / 22	

NOTES:
1. ELECTRICAL AND PLUMBING COMPONENTS ARE SHOWN FOR GENERAL ARRANGEMENT ONLY. SEE SHEETS OZ1-18 THRU OZ1-21 FOR COMPLETE SYSTEM DESCRIPTIONS.

MARINE PACKAGE

Materials List

ITEM	QTY
SPRING HINGE 4.5x4.5 S.S.	6
3068 GALV DOOR ASSEMBLY	2
DOOR STOP	1
SI-2	3
MS-6	2
LOUVER	2
REINFORCING PIVOT HINGE	1
HOSE BIB	1
MS-2	2

FRONT ELEVATION

- 3068 GALV. DOOR ASSY. (TYP. 2 PLCS.)
- REINFORCING PIVOT HINGE
- PHOTO CONTROL EXTERIOR LED LIGHT
- SIGN (SI-2) SYMBOL AS REQUIRED
- SPRING HINGE 4.5x4.5 S.S. (TYP. 6 PLCS.)
- THRESHOLD

Dimensions: 10'-2", 5'-0", 3'-4 1/2", 5', 3'-9", 3'-0", 3'-9", 10'-6"

RIGHT SIDE ELEVATION

- EXHUAST FAN
- 1'-6"x3'-6" LEXAN WINDOWS (TYP 2 PLCS)
- RIBBED METAL ROOF TEXTURE
- SPLIT FACE BLOCK WALL TEXTURE
- FRAMELESS MS-2 WALL VENT (TYP 2 PLCS)

Dimensions: 4'-0", 1'-0", 3'-6", 1'-6", 12'-0", 1'-6", 15'-0"

BACK ELEVATION

- DOOR STOP
- THRESHOLD

Dimensions: 12", 3", 7'-6", 10'-2", 8'-5", 44" MAX, 4'-0 1/2", 5', 1'-0 1/4", 2'-0", 3'-9", 3'-0", 3'-9", 8 1/2", 10'-6", 8 1/2", 11'-11"

LEFT SIDE ELEVATION

- VENT PIPE

Dimensions: 10'-2", 5', 4'-0", 1'-6", 12'-0", 1'-6", 15'-0"

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: South Carolina
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 6/2/23

South Carolina Licensed Professional Engineer No. 22028 WILLIAM R. HEIDEN III

May 25, 2023

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CXT Incorporated

SC 231223025

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DRAWN C.WISSER		FILE NO.	OZ1-308
CHECKED JO		PLOT	48

EXTERIOR ELEVATIONS

DWG NO.	SHEET	REV.
OZ1-4	4 / 22	
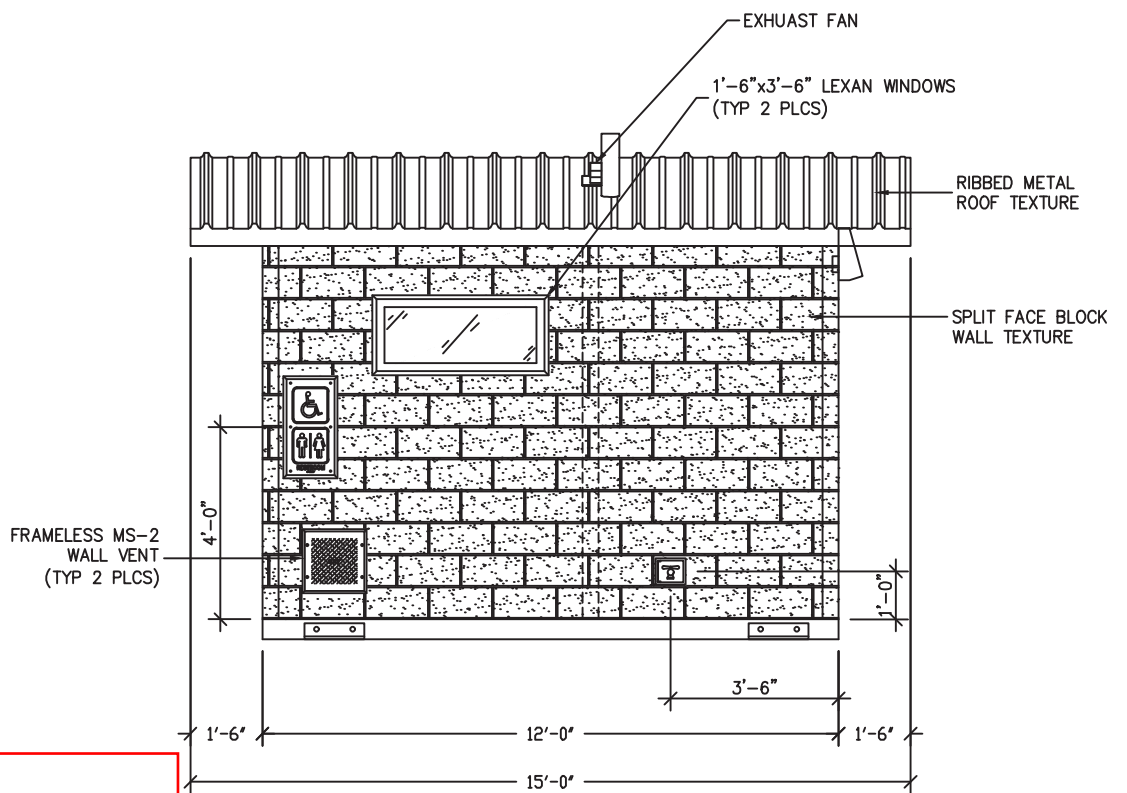
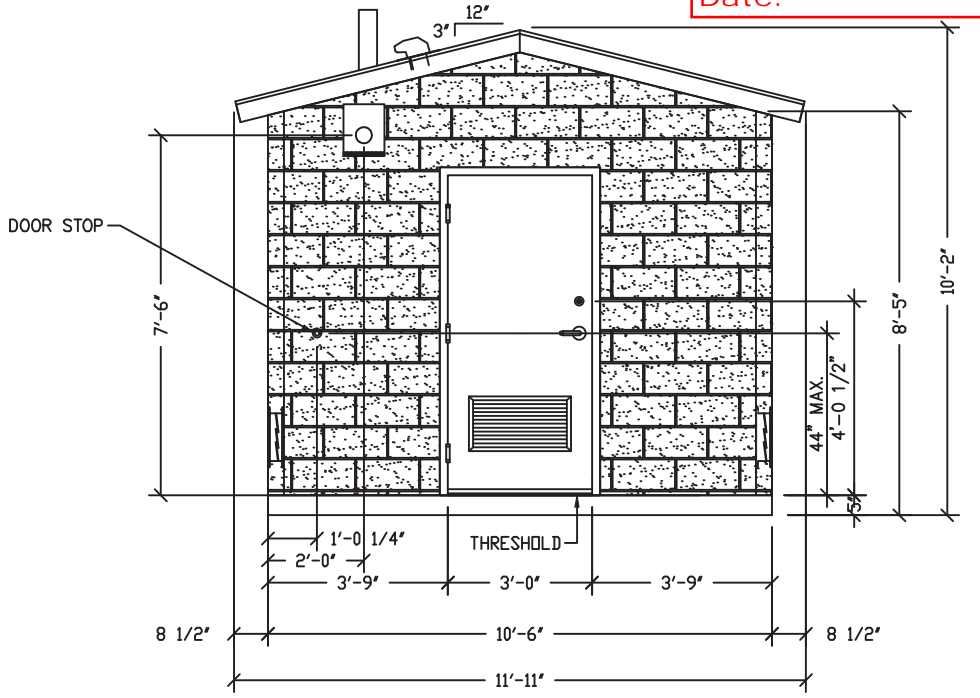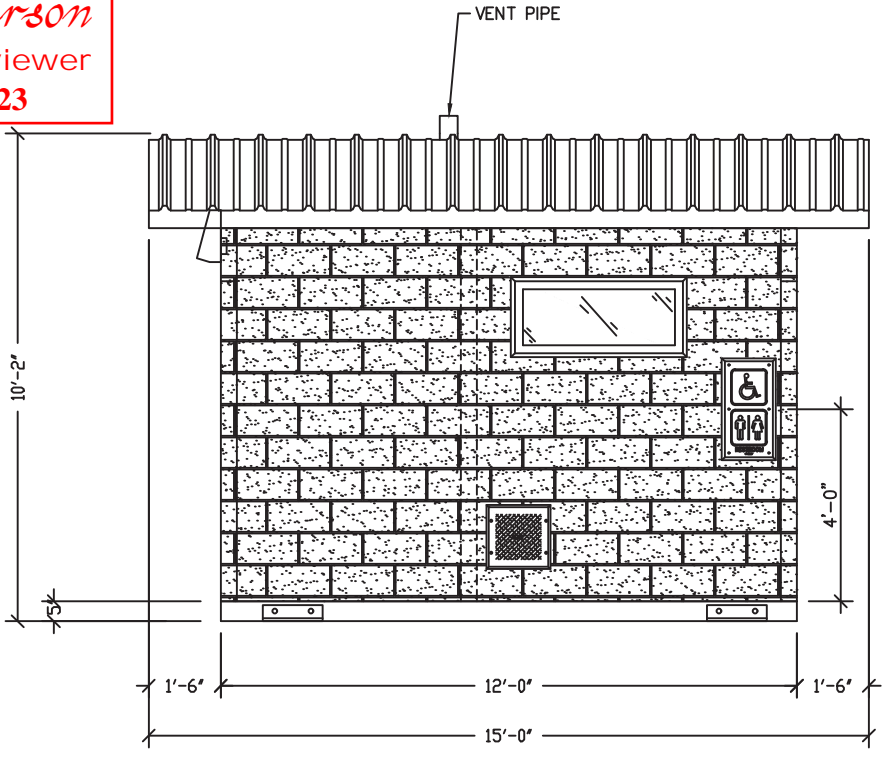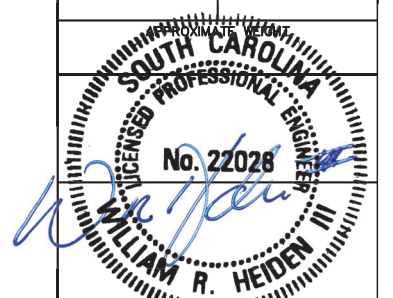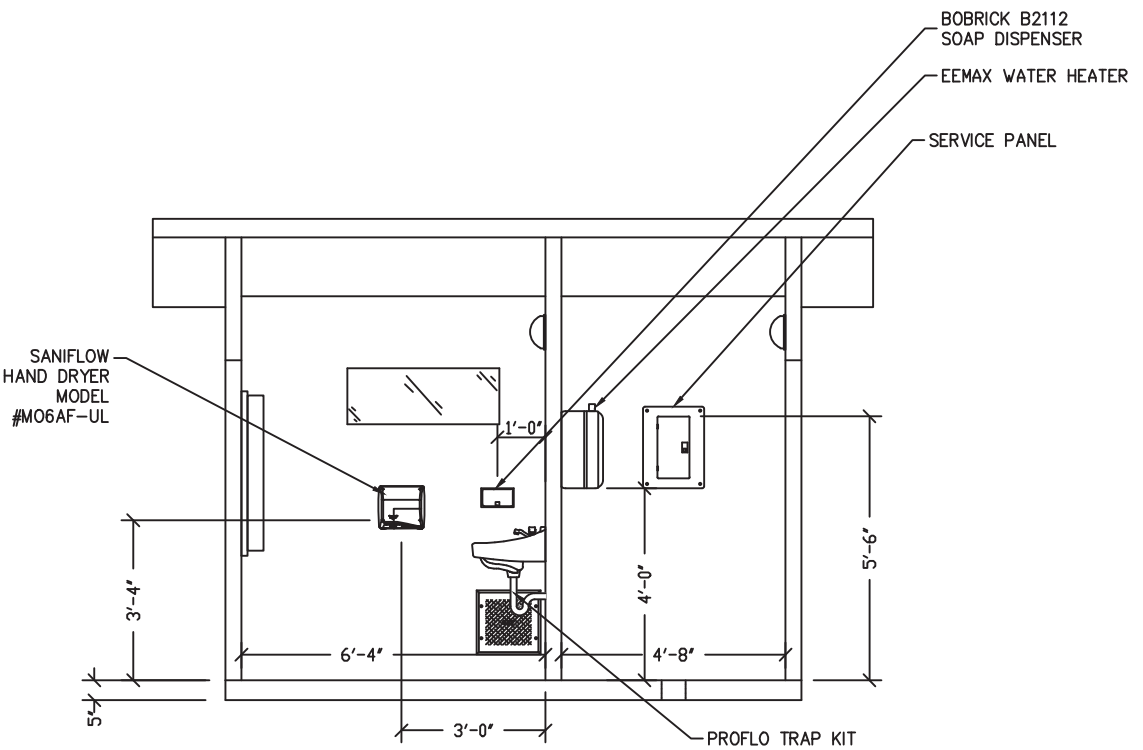## Materials List

ITEM	QTY
18" GRAB BAR	1
36" GRAB BAR	1
48" GRAB BAR	1
TOILET PAPER DISPENSER	1
TOILET PAPER ROLLS	2
COAT HOOK	1
CXT I.D. TAG	1
S.S. MIRROR	1
SANIFLOW HAND DRYER	1
BOBRICK B2112 SOAP DISPENSER	2
BABY CHANGING STATION	1
DOOR CLOSURE	1
AMTROL PRESSURE TANK	1

① INTERIOR ELEVATION – LEFT WALL

Labels:
- BOBRICK B2112 SOAP DISPENSER
- EEMAX WATER HEATER
- SERVICE PANEL
- SANIFLOW HAND DRYER MODEL #MO6AF-UL
- PROFLO TRAP KIT SUPPLY & DRAIN PROTECTION TYP. ALL LAVATORIES
- 1'-0", 5'-6", 4'-0", 3'-4", 5", 6'-4", 4'-8", 3'-0"
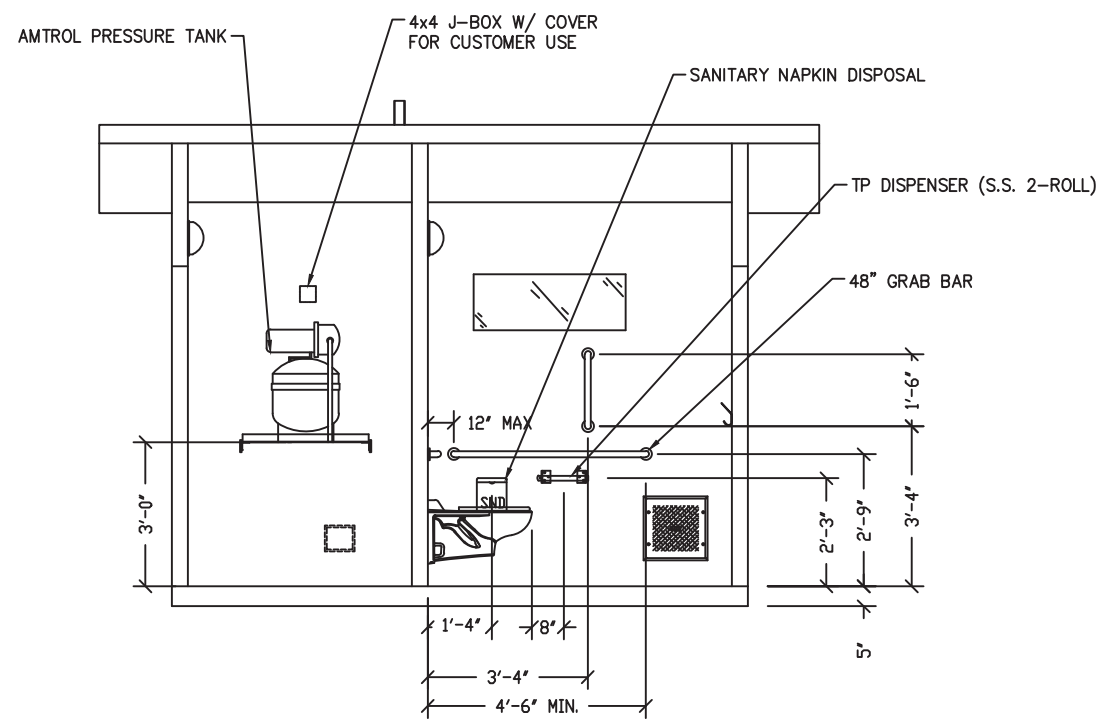
② INTERIOR ELEVATION – RIGHT WALL

Labels:
- AMTROL PRESSURE TANK
- 4x4 J-BOX W/ COVER FOR CUSTOMER USE
- SANITARY NAPKIN DISPOSAL
- TP DISPENSER (S.S. 2-ROLL)
- 48" GRAB BAR
- 12" MAX
- 3'-0", 1'-6", 2'-3", 2'-9", 3'-4", 5', 1'-4", 8", 3'-4", 4'-6" MIN.
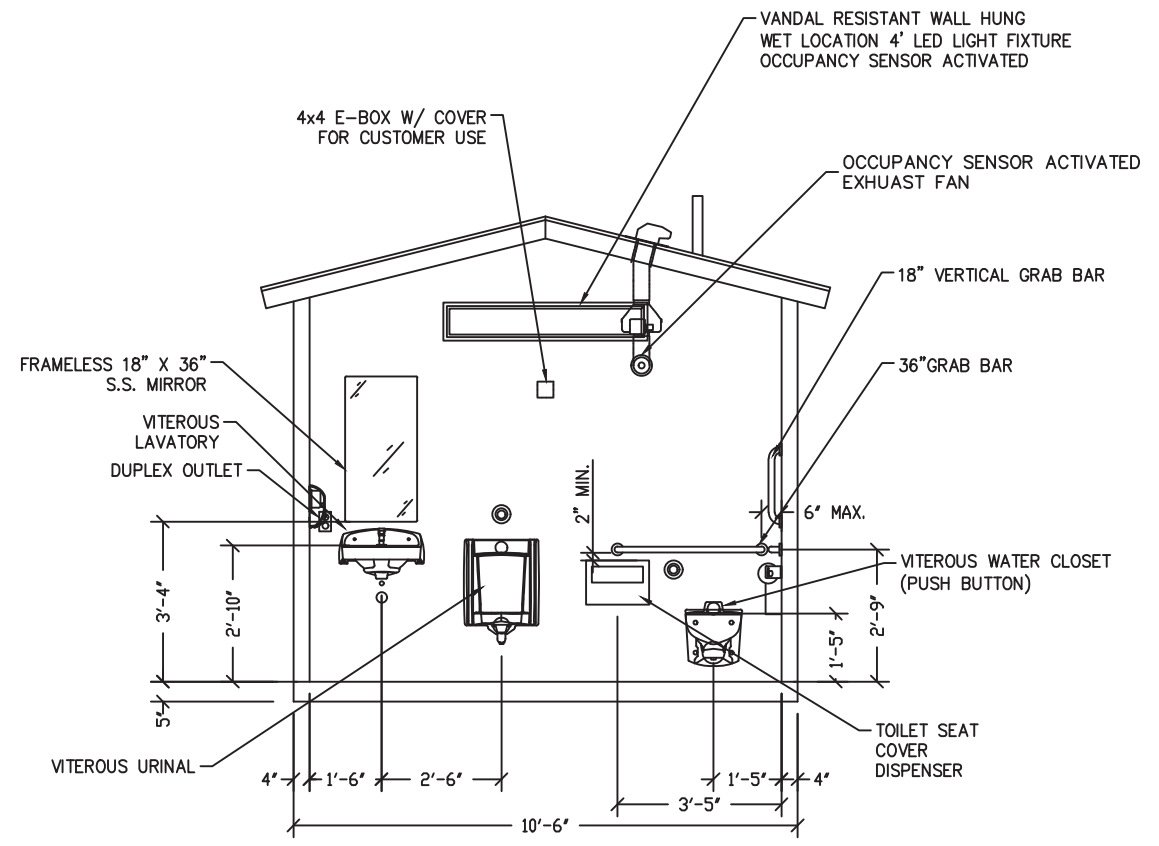
③ INTERIOR ELEVATION – PARTITION WALL

Labels:
- VANDAL RESISTANT WALL HUNG WET LOCATION 4' LED LIGHT FIXTURE OCCUPANCY SENSOR ACTIVATED
- 4x4 E-BOX W/ COVER FOR CUSTOMER USE
- OCCUPANCY SENSOR ACTIVATED EXHUAST FAN
- 18" VERTICAL GRAB BAR
- 36" GRAB BAR
- FRAMELESS 18" X 36" S.S. MIRROR
- VITEROUS LAVATORY
- DUPLEX OUTLET
- VITEROUS WATER CLOSET (PUSH BUTTON)
- TOILET SEAT COVER DISPENSER
- VITEROUS URINAL
- 2" MIN., 6" MAX., 3'-4", 2'-10", 1'-5", 2'-9", 5", 4", 1'-6", 2'-6", 3'-5", 1'-5", 4", 10'-6"

④ INTERIOR ELEVATION – FRONT WALL

Labels:
- DOOR CLOSURE
- COAT HOOK
- KOALA BABY CHANGING STATION MOUNT OPEN BED SURFACE AT 34" A.F.F.
- 3'-6", 2'-10", 1'-6", 3'-9", 3'-0", 3'-9", 1'-8", 10'-6"

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III

May 25, 2023

LBFoster CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

CXT Incorporated

SC 231223025

Review is limited to factory built elements only.

REV.	DESCRIPTION	APPROVAL	DATE
SCALE 1/4" = 1'-0"	DATE 4/14/23		
DRAWN C.WISSER	FILE NO. OZ1-308		
CHECKED JO	PLOT 48		

INTERIOR ELEVATIONS

DWG NO.	SHEET	REV.
OZ1-5	5 / 22	

1 TYPICAL ROOF SLAB EDGE

<DIM POINT>
4 1/2" MIN
1/2 x 1/2 CHAMFER (TYP 3 SIDES)
FORM FACE
RIBBED ROOF FINISH NOT INCLUDED IN 4 1/2" DIM

2 TYP. WALL TO FLOOR SLAB WELDED CONNECTION

WALL PANEL
AS-2
1/4
PS-19
FLOOR SLAB
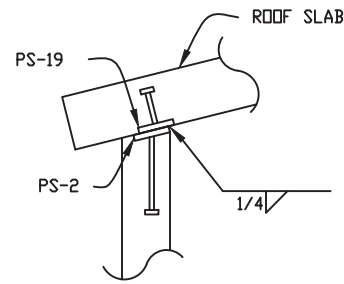
3 TYP. WALL TO ROOF SLAB WELDED CONNECTION

ROOF SLAB
PS-19
PS-2
1/4
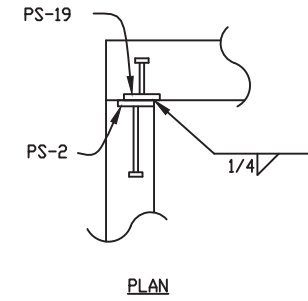
4 TYP. WALL TO WALL PANEL WELDED CONNECTION

PS-19
PS-2
1/4
PLAN
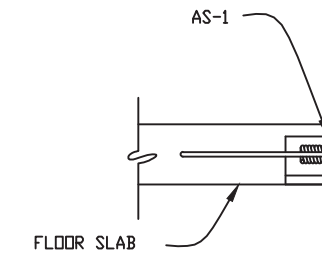
5 FLOOR LIFT PLATE DETAIL

AS-1
FLOOR SLAB
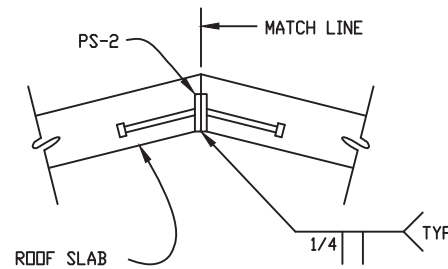
6 ROOF PEAK WELDMENT DETAIL

PS-2
MATCH LINE
ROOF SLAB
1/4 TYP

SOUTH CAROLINA
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No. 22028
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901 N. Highway 77 Hillsboro, TX 76645
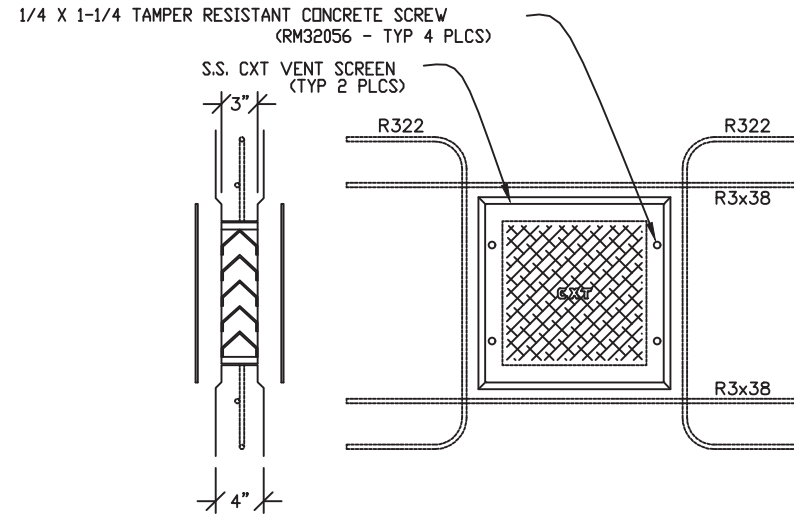362 Waverly Road Williamstown, WV 26187
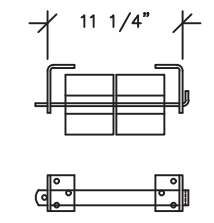
PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

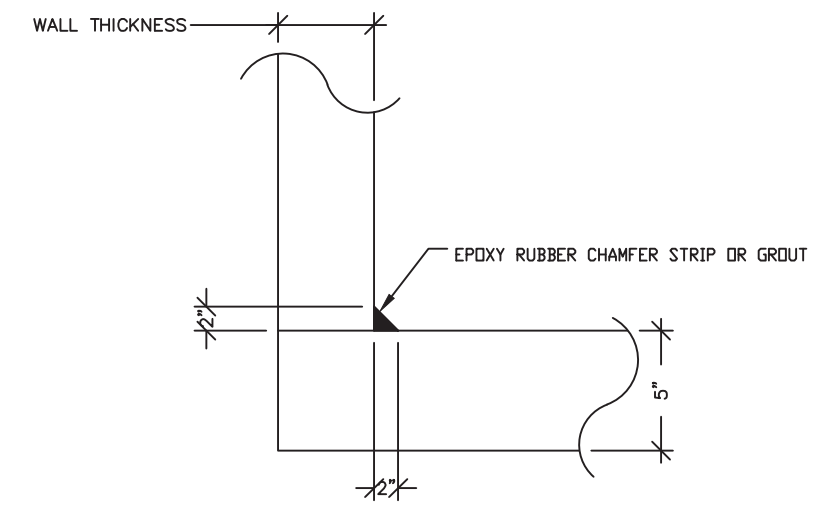| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/4" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	16

CASTING DETAILS

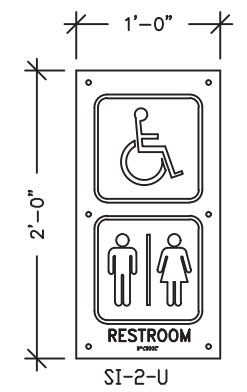| DWG NO.	SHEET	REV.
OZ1-6	6 / 22	

1/4 X 1-1/4 TAMPER RESISTANT CONCRETE SCREW
(RM32056 - TYP 4 PLCS)

S.S. CXT VENT SCREEN
(TYP 2 PLCS)

3"

R322   R322

R3x38

CXT

R3x38

4"

(7) STANDARD FRAMELESS
     MS-2 WALL VENT DETAIL

11 1/4"

DISPENSER DETAIL

WALL THICKNESS

EPOXY RUBBER CHAMFER STRIP OR GROUT

1/2"

5"

2"

WALL JOINT DETAIL

1'-0"

2'-0"

RESTROOM

SI-2-U

SIGN SI-2 DETAIL

45° BEVEL

3/4"   4"

OZARK 1

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
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PROJECT TITLE
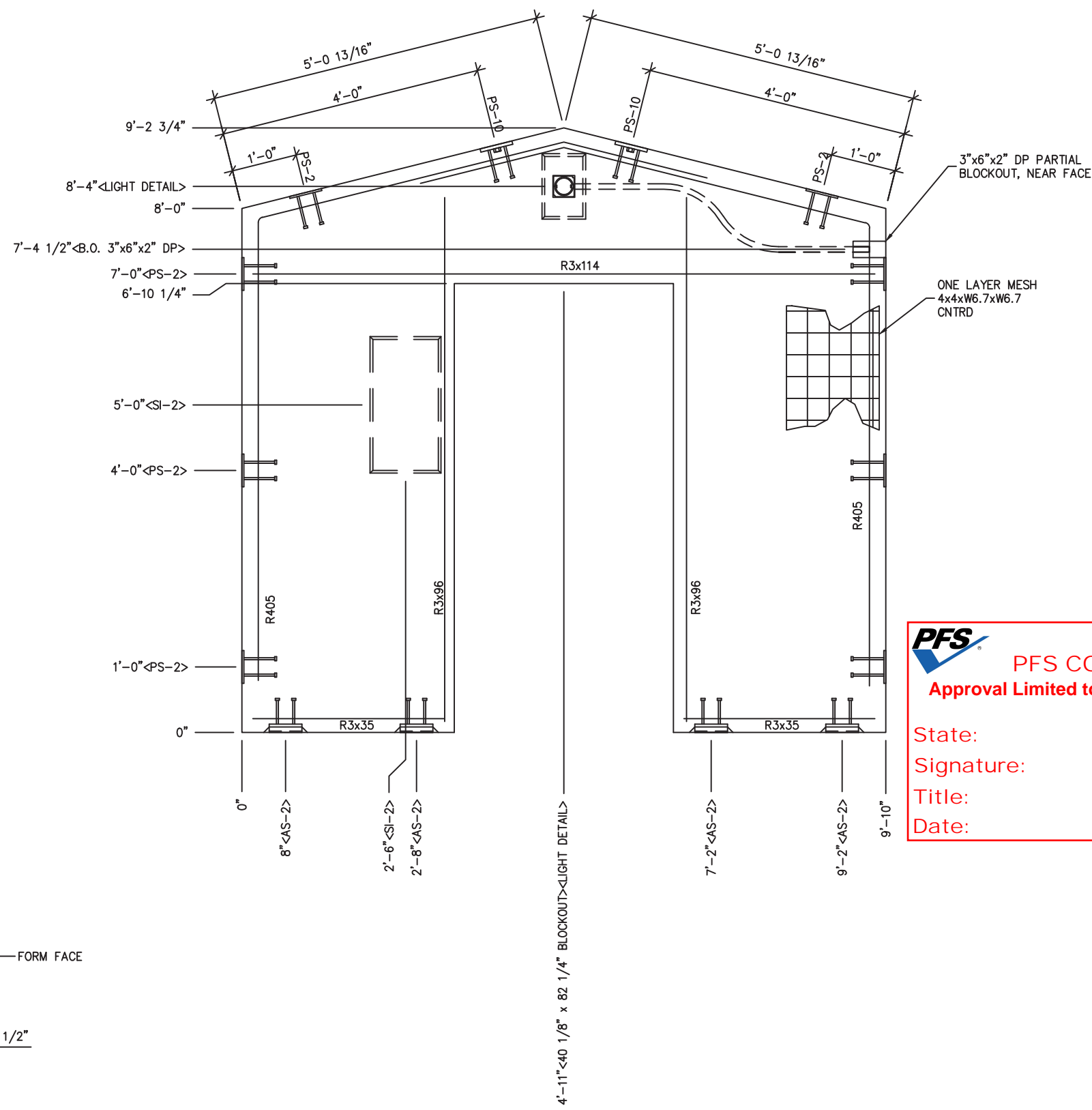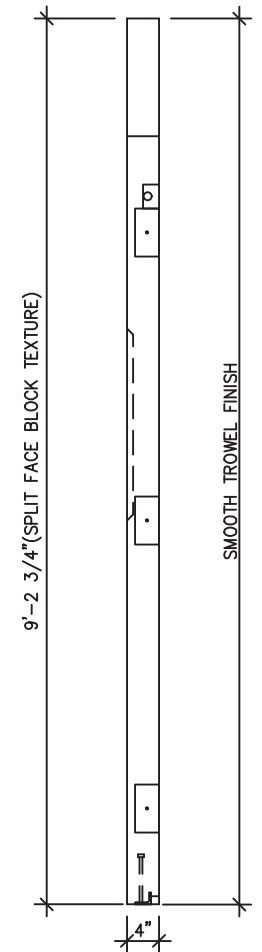OZARK 1
BUILDING NUMBER OZ1-308

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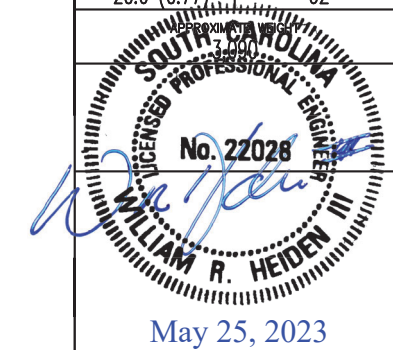| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/4" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	16

FINISH DETAILS

DWG NO.	SHEET	REV.
OZ1-7	7 / 22	

EMBEDDED MATERIALS

ITEM	QTY
AS-2 S.S.	4
PS-2 S.S.	8
PS-10 S.S.	2
R3x114	2
R3x96	4
R3x35	4
R405	2
SI-2	1
B.O. 40 1/8 x 82 1/4"	1
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 3"x6"x2" DP	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
20.6 (0.77)	62

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

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CXT® Products

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901 N. Highway 77 Hillsboro, TX 76645
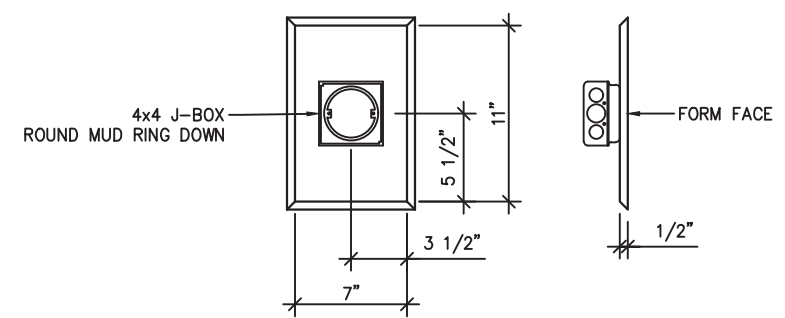362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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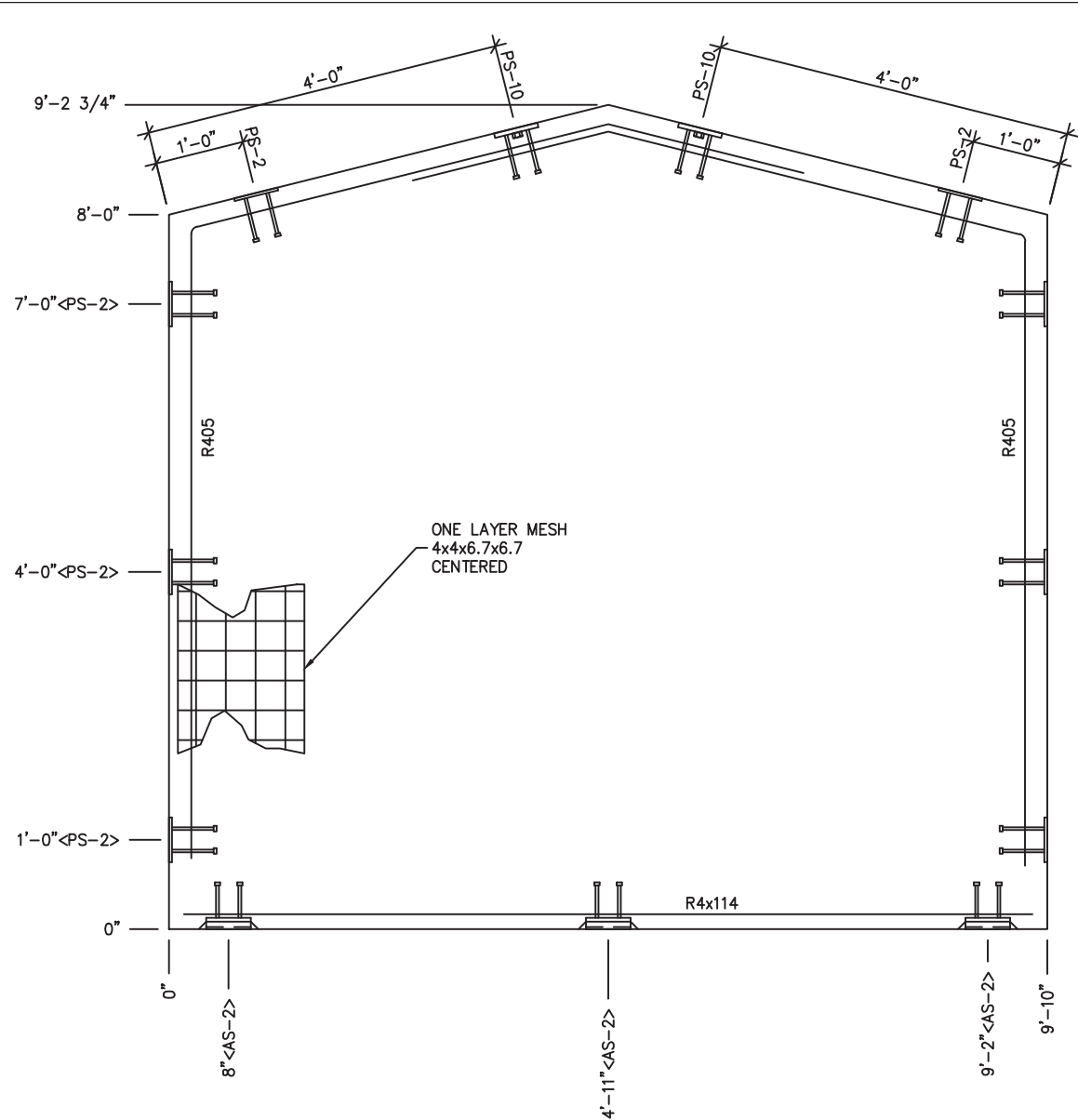| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

**WALL PANEL
MARK W1**

DWG NO.	SHEET	REV.
OZ1-8	8 / 22	

MARINE PACKAGE — Wall panel elevation drawing

9'-2 3/4"(SPLIT FACE BLOCK TEXTURE)
SMOOTH TROWEL FINISH
4"

5'-0 13/16"   5'-0 13/16"
4'-0"   4'-0"
9'-2 3/4"
PS-10   PS-10
1'-0"   PS-2   PS-2   1'-0"
8'-4"<LIGHT DETAIL>
8'-0"
3"x6"x2" DP PARTIAL BLOCKOUT, NEAR FACE
7'-4 1/2"<B.O. 3"x6"x2" DP>
7'-0"<PS-2>
6'-10 1/4"
R3x114
ONE LAYER MESH 4x4xW6.7xW6.7 CNTRD
5'-0"<SI-2>
4'-0"<PS-2>
R405   R3x96   R3x96   R405
1'-0"<PS-2>
0"
R3x35   R3x35
8"<AS-2>   2'-6"<SI-2>   2'-8"<AS-2>   7'-2"<AS-2>   9'-2"<AS-2>   9'-10"
4'-11"<40 1/8" x 82 1/4" BLOCKOUT><LIGHT DETAIL>

LIGHT DETAIL

4x4 J-BOX ROUND MUD RING DOWN
11"
5 1/2"
3 1/2"
7"
1/2"
FORM FACE
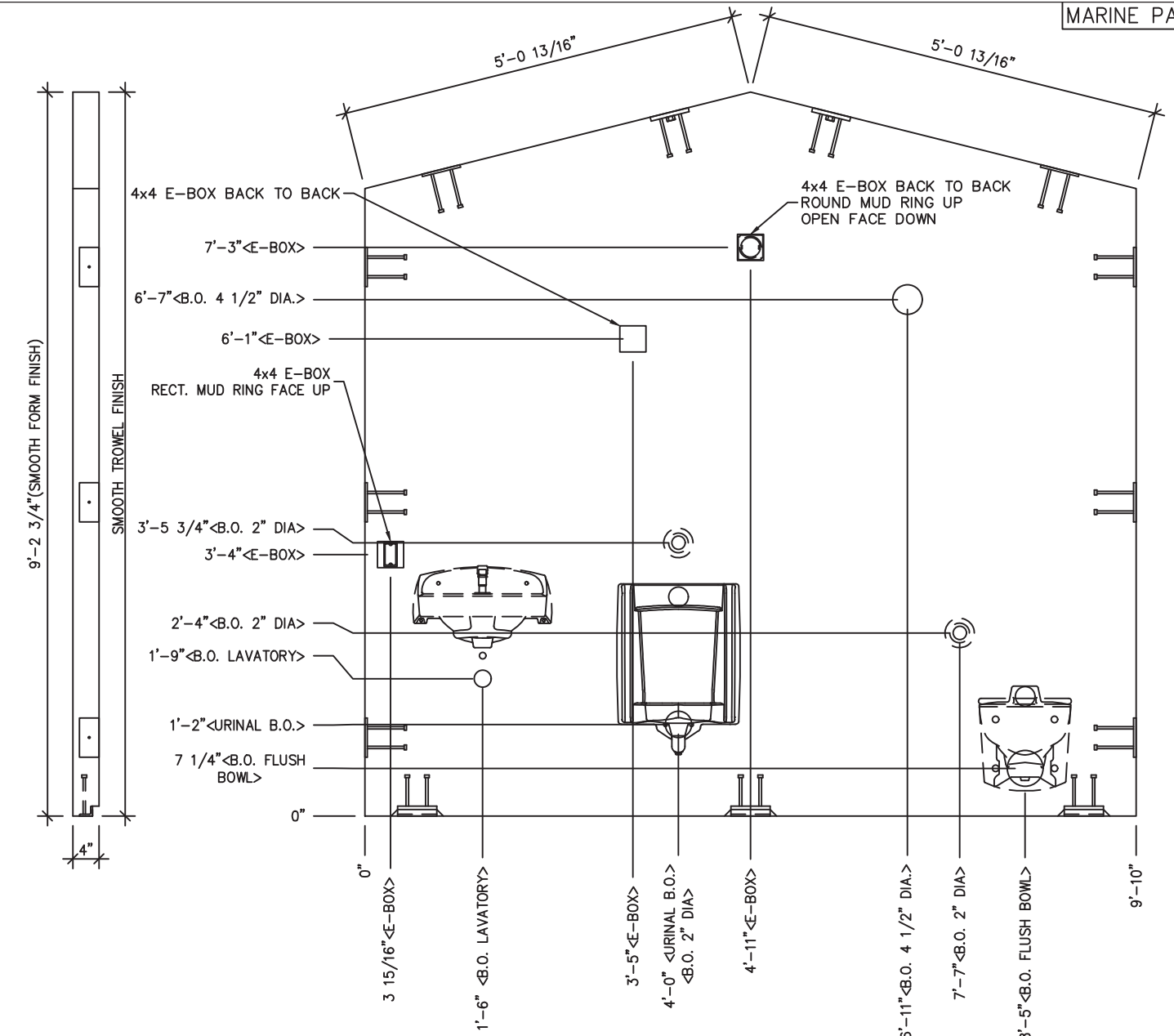
NOTES:
1. R3x35, R3x96 & R3x114 TO BE PLACE IN PAIRS ONE EA FACE W/ 3/4" CLEAR COVER.
2. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBED DETAIL

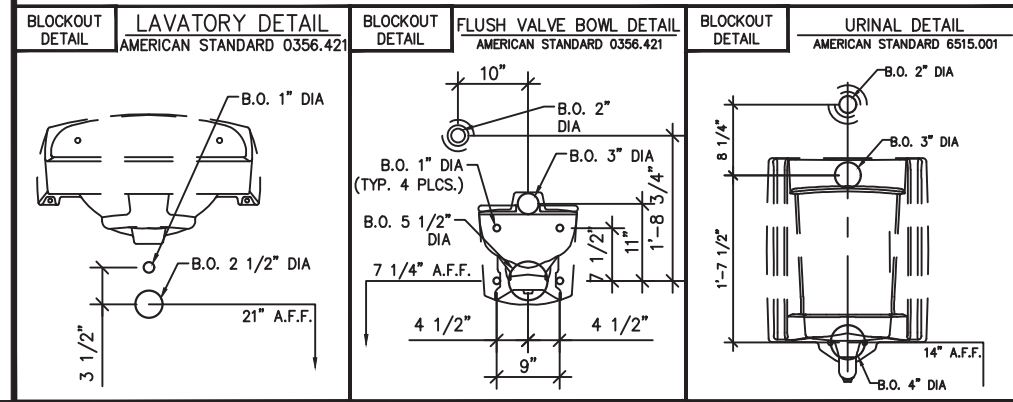- 9'-2 3/4"
- 4'-0"
- PS-10
- PS-10
- 4'-0"
- 1'-0"
- PS-2
- PS-2
- 1'-0"
- 8'-0"
- 7'-0"<PS-2>
- R405
- R405
- ONE LAYER MESH
  4x4x6.7x6.7
  CENTERED
- 4'-0"<PS-2>
- 1'-0"<PS-2>
- R4x114
- 0"
- 0"
- 8"<AS-2>
- 4'-11"<AS-2>
- 9'-2"<AS-2>
- 9'-10"

BLOCKOUT DETAIL

- 5'-0 13/16"
- 5'-0 13/16"
- 4x4 E-BOX BACK TO BACK
- 4x4 E-BOX BACK TO BACK
  ROUND MUD RING UP
  OPEN FACE DOWN
- 7'-3"<E-BOX>
- 6'-7"<B.O. 4 1/2" DIA.>
- 6'-1"<E-BOX>
- 4x4 E-BOX
  RECT. MUD RING FACE UP
- 3'-5 3/4"<B.O. 2" DIA>
- 3'-4"<E-BOX>
- 2'-4"<B.O. 2" DIA>
- 1'-9"<B.O. LAVATORY>
- 1'-2"<URINAL B.O.>
- 7 1/4"<B.O. FLUSH BOWL>
- 0"
- 9'-2 3/4"(SMOOTH FORM FINISH)
- SMOOTH TROWEL FINISH
- 4"
- 0"
- 3 15/16"<E-BOX>
- 1'-6"<B.O. LAVATORY>
- 3'-5"<E-BOX>
- 4'-0" <URINAL B.O.>
  <B.O. 2" DIA>
- 4'-11"<E-BOX>
- 6'-11"<B.O. 4 1/2" DIA.>
- 7'-7"<B.O. 2" DIA>
- 8'-5"<B.O. FLUSH BOWL>
- 9'-10"

EMBEDDED MATERIALS

ITEM	QTY
AS-2 S.S.	3
PS-2 S.S.	8
PS-10 S.S.	2
R405	2
R4x114	1
4x4 E-BOX	6
ROUND MUD RING	1
B.O. 2" DIAMETER	2
B.O. LAVATORY	1
B.O. FLUSH BOWL	1
B.O. 4 1/2" DIA	1
RECT. MUD RING	1
URINAL B.O.	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
28.2 (1.04)	85

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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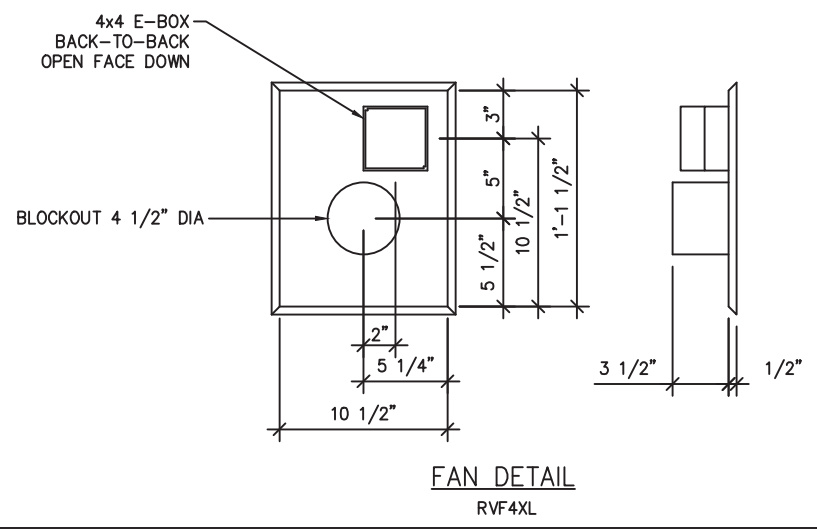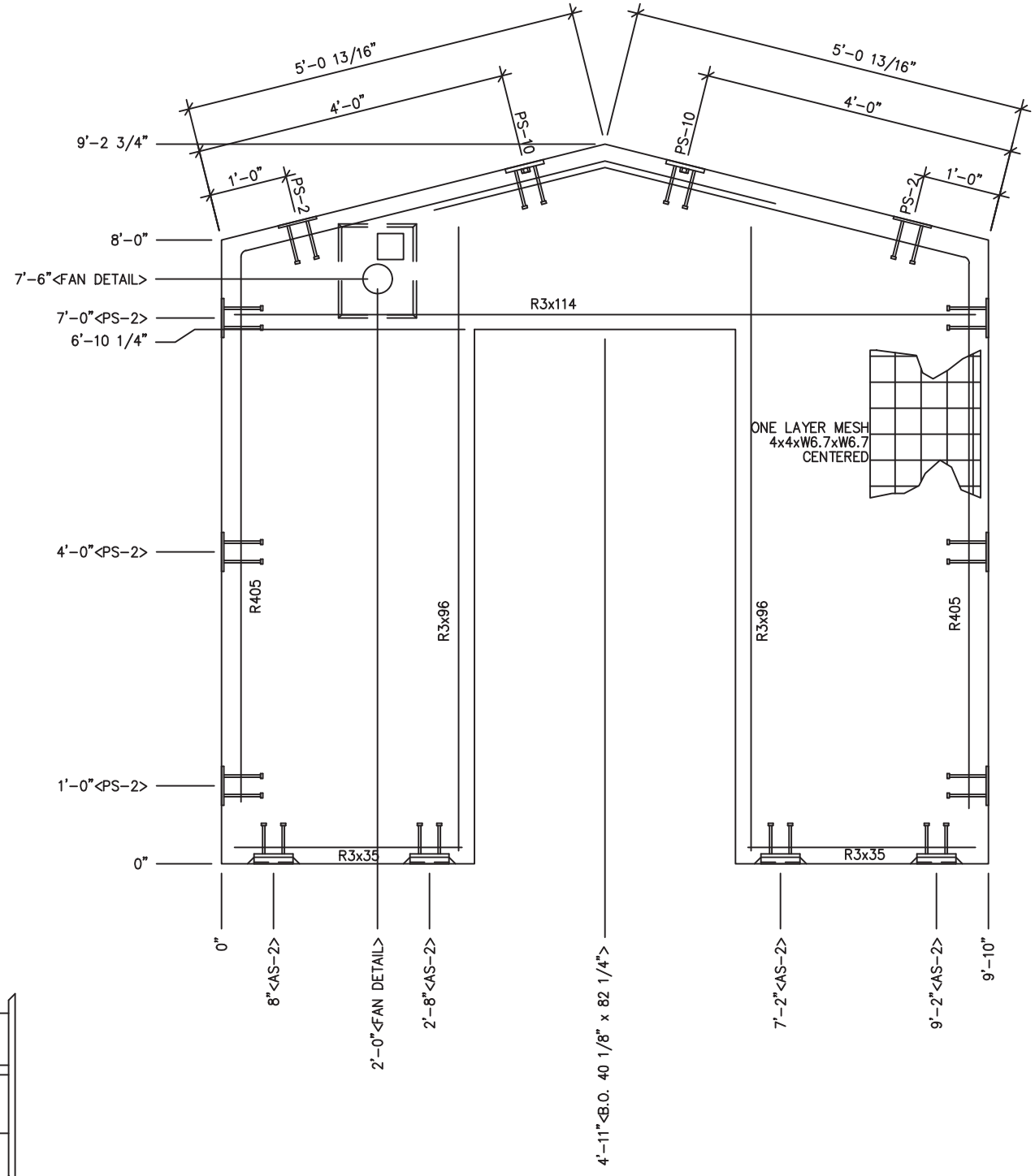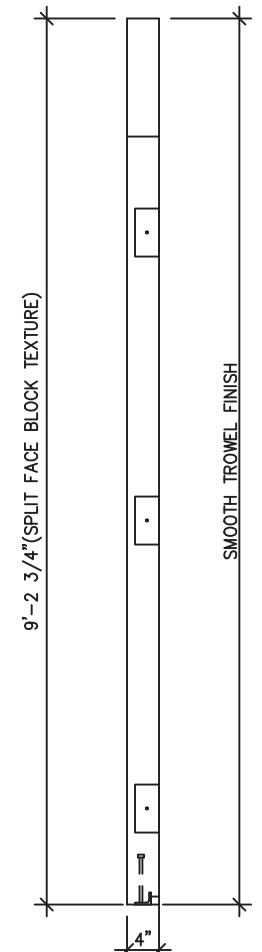| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

WALL PANEL
MARK W2

DWG NO.	SHEET	REV.
OZ1-9	9 / 22	

BLOCKOUT DETAIL — LAVATORY DETAIL
AMERICAN STANDARD 0356.421
- B.O. 1" DIA
- B.O. 2 1/2" DIA
- 21" A.F.F.
- 3 1/2"

BLOCKOUT DETAIL — FLUSH VALVE BOWL DETAIL
AMERICAN STANDARD 0356.421
- 10"
- B.O. 2" DIA
- B.O. 1" DIA (TYP. 4 PLCS.)
- B.O. 3" DIA
- B.O. 5 1/2" DIA
- 7 1/4" A.F.F.
- 11"
- 1-8 3/4"
- 4 1/2"
- 4 1/2"
- 9"

BLOCKOUT DETAIL — URINAL DETAIL
AMERICAN STANDARD 6515.001
- B.O. 2" DIA
- B.O. 3" DIA
- 8 1/4"
- 1'-7 1/2"
- 14" A.F.F.
- B.O. 4" DIA

EMBEDDED MATERIALS

ITEM	QTY
PS-2 S.S.	8
PS-10 S.S.	2
R3x114	2
R3x96	4
R3x35	4
R405	2
AS-2 S.S.	4
B.O. 40 1/8" x 82 1/4"	1
B.O. 4 1/2" DIA.	1
E-BOX	2

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
20.6 (0.77)	62

9'-2 3/4"(SPLIT FACE BLOCK TEXTURE)

SMOOTH TROWEL FINISH

4"

5'-0 13/16"
5'-0 13/16"
4'-0"
4'-0"
9'-2 3/4"
1'-0" PS-2
PS-10
PS-10
PS-2 1'-0"
8'-0"
7'-6" <FAN DETAIL>
7'-0" <PS-2>
6'-10 1/4"
R3x114
ONE LAYER MESH
4x4xW6.7xW6.7
CENTERED
4'-0" <PS-2>
R405
R3x96
R3x96
R405
1'-0" <PS-2>
0"
R3x35
R3x35

0"
8" <AS-2>
2'-0" <FAN DETAIL>
2'-8" <AS-2>
4'-11" <B.O. 40 1/8" x 82 1/4">
7'-2" <AS-2>
9'-2" <AS-2>
9'-10"

4x4 E-BOX
BACK-TO-BACK
OPEN FACE DOWN

BLOCKOUT 4 1/2" DIA

3"
5"
5 1/2"
10 1/2"
1'-1 1/2"
2"
5 1/4"
10 1/2"
3 1/2"
1/2"

FAN DETAIL
RVF4XL

NOTES:
1. R3x35, R3x96 & R3x114 TO BE PLACE IN PAIRS ONE EA FACE W/ 3/4" CLEAR COVER.
2. ALL OTHER BARS TO BE CENTERED IN PANEL.

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: **South Carolina**
Signature: *Mark Severson*
Title: **Staff Plan Reviewer**
Date: **6/2/23**

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

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362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
**BUILDING NUMBER OZ1-308**

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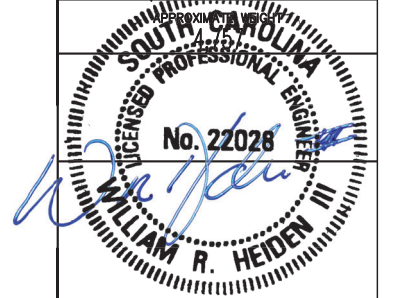| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

WALL PANEL
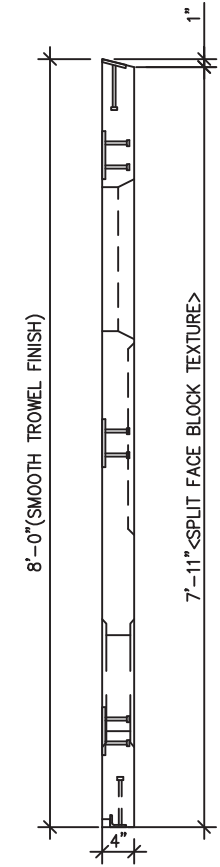**MARK W3**

DWG NO.	SHEET	REV.
OZ1-10	10 / 22	
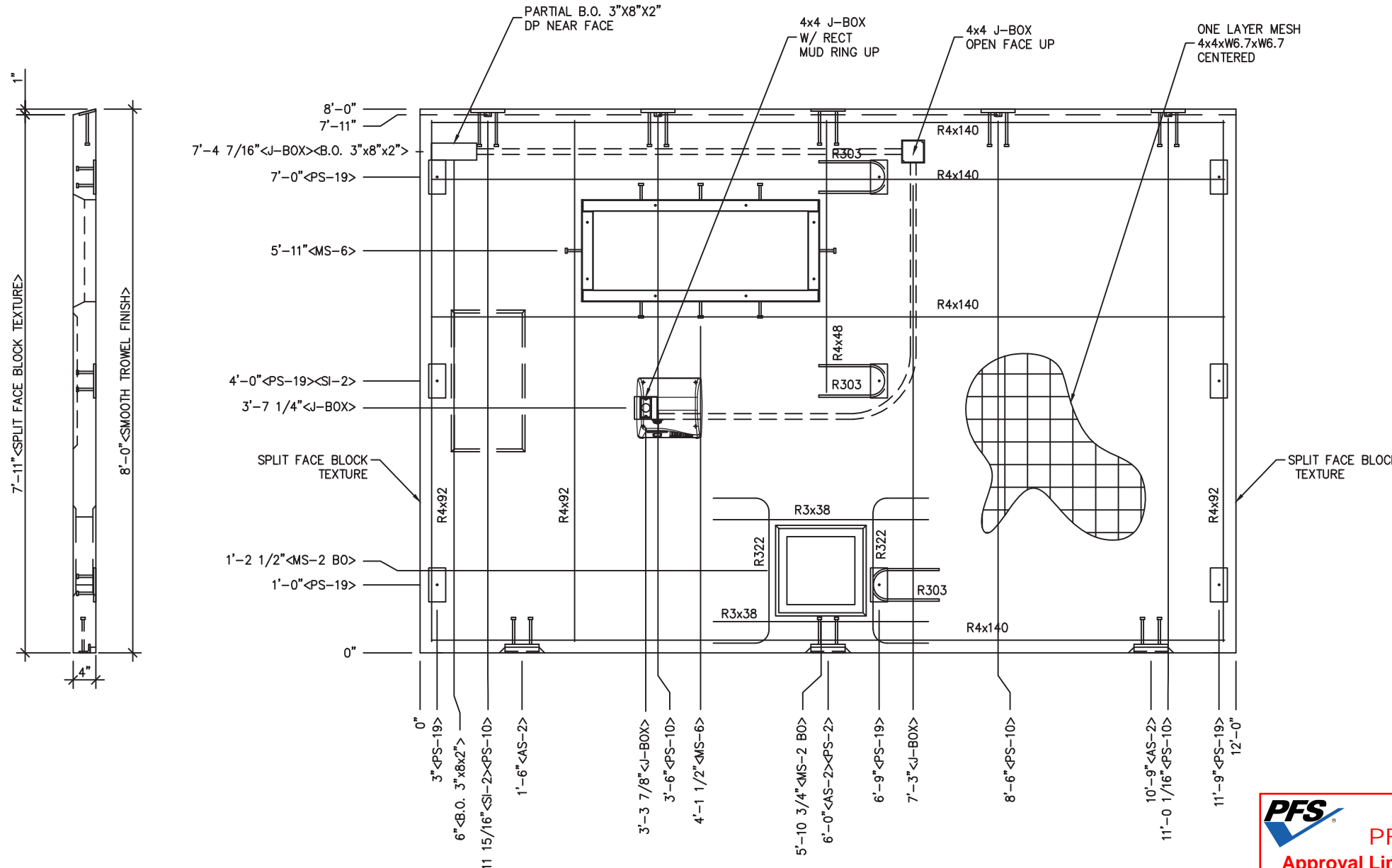
EMBEDDED MATERIALS	
ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x140	4
R4x92	6
MS-6 S.S.	1
R303	3
AS-2 S.S.	3
R4x48	2
SI-2 MOLD	1
4x4 J-BOX	2
B.O. 3"x8"x2"	1
RECTANGULAR MUD RING	1
R322	2
R3x38	2
B.O. MS-2	1

Callouts on drawing:

- PARTIAL B.O. 3"X8"X2" DP NEAR FACE
- 4x4 J-BOX W/ RECT MUD RING UP
- 4x4 J-BOX OPEN FACE UP
- ONE LAYER MESH 4x4xW6.7xW6.7 CENTERED
- SPLIT FACE BLOCK TEXTURE
- SPLIT FACE BLOCK TEXTURE

Left elevation dimensions:
- 1"
- 7'-11" <SPLIT FACE BLOCK TEXTURE>
- 8'-0" <SMOOTH TROWEL FINISH>
- 4"

Top/vertical dimensions:
- 8'-0"
- 7'-11"
- 7'-4 7/16" <J-BOX><B.O. 3"x8"x2">
- 7'-0" <PS-19>
- 5'-11" <MS-6>
- 4'-0" <PS-19><SI-2>
- 3'-7 1/4" <J-BOX>
- 1'-2 1/2" <MS-2 BO>
- 1'-0" <PS-19>
- 0"

Plan labels: R303, R4x140, R4x140, R4x140, R4x48, R303, R4x92, R4x92, R3x38, R322, R322, R303, R3x38, R4x140, R4x92

Bottom dimensions:
- 0"
- 0" <PS-19>
- 6" <B.O. 3"x8x2">
- 11 15/16" <SI-2><PS-10>
- 1'-6" <AS-2>
- 3'-3 7/8" <J-BOX>
- 3'-6" <PS-10>
- 4'-1 1/2" <MS-6>
- 5'-10 3/4" <MS-2 BO>
- 6'-0" <AS-2><PS-2>
- 6'-9" <PS-19>
- 7'-3" <J-BOX>
- 8'-6" <PS-10>
- 10'-9" <AS-2>
- 11'-0 1/16" <PS-10>
- 11'-9" <PS-19>
- 12'-0"

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
30.5 (1.13)	96

Engineer seal:
SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III

May 25, 2023

LBFoster CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

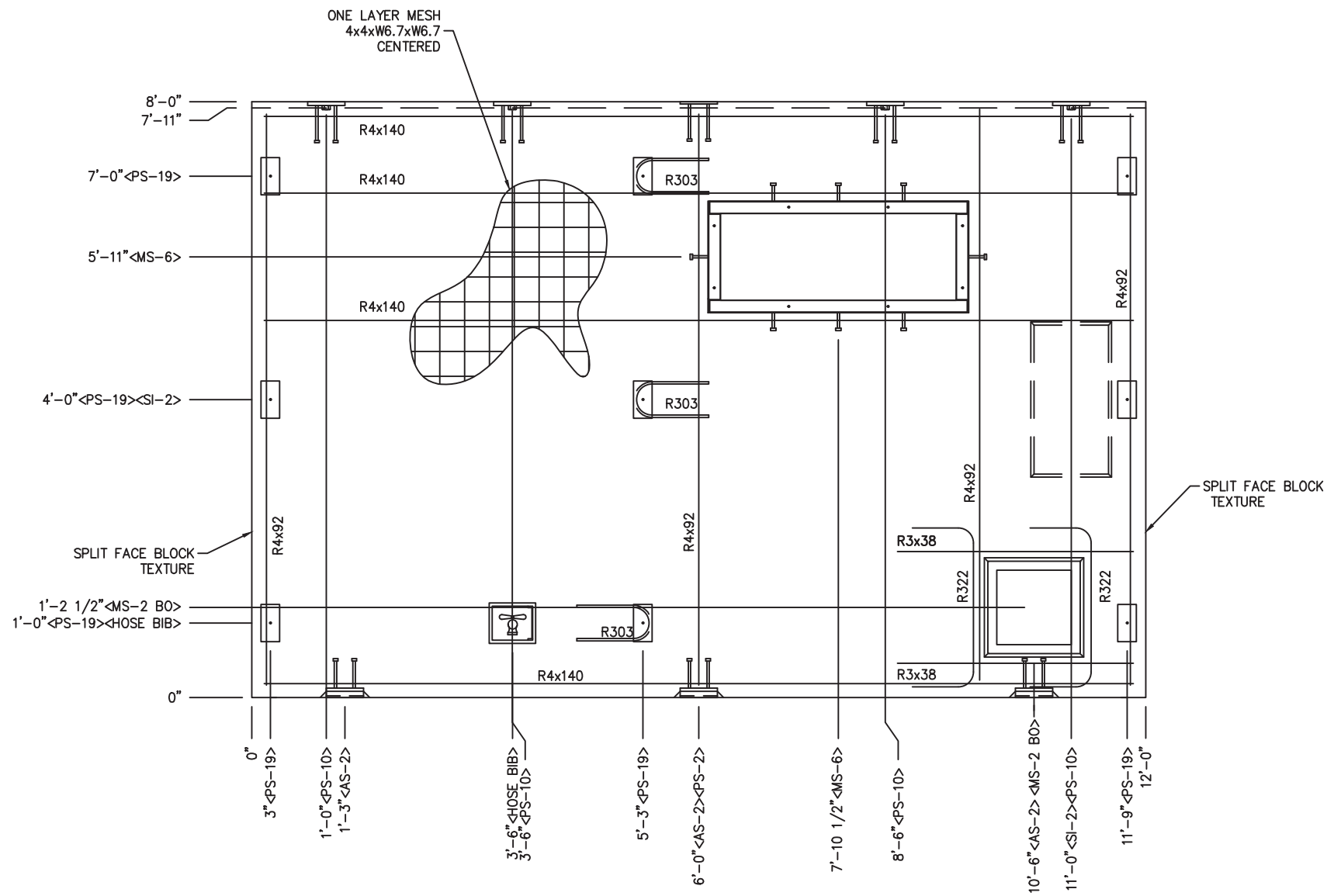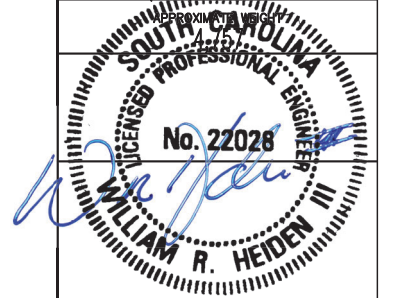| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

OZARK 1

NOTES:
1. R4x48 & R4x92 TO BE PLACED IN PAIRS, ONE EACH FACE W/ 3/4" COVER
2. ALL OTHER BARS TO BE CENTERED IN PANEL.

WALL PANEL MARK W4

DWG NO.	SHEET	REV.
OZ1-11	11 / 22	

EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x140	4
R4x92	8
AS-2 S.S.	3
R303	3
MS-6 S.S.	1
SI-2 MOLD	1
B.O. HOSE BIB	1
R322	2
R3x38	2
B.O. MS-2	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
30.5 (1.13)	96

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

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901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

WALL PANEL
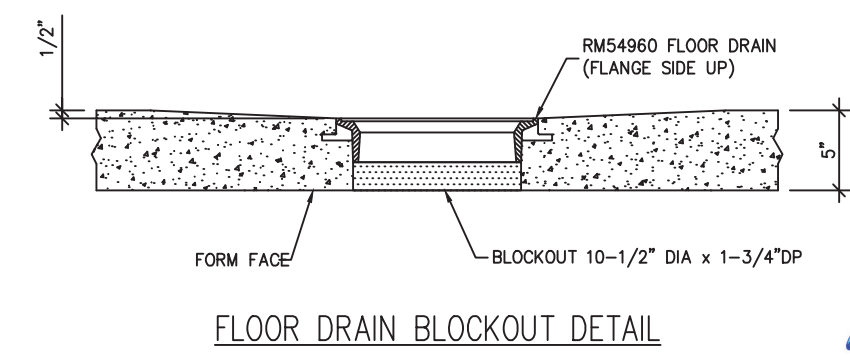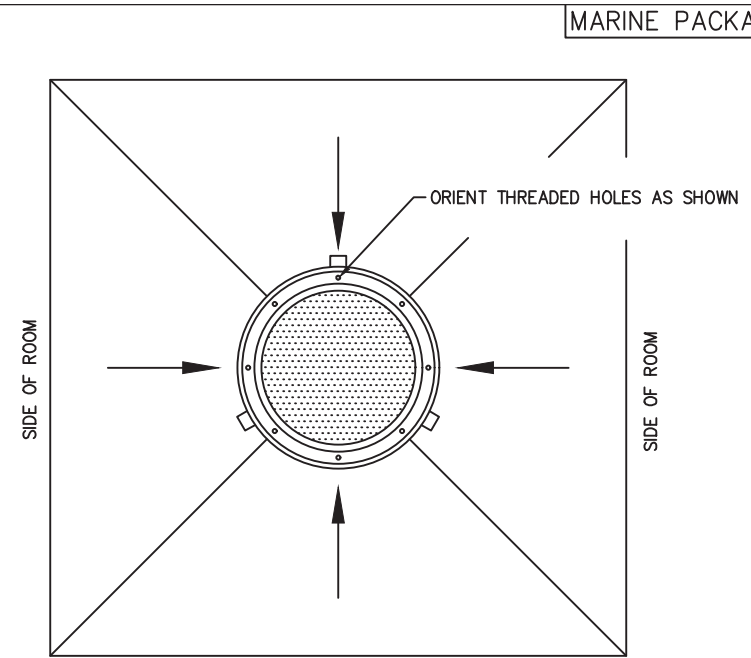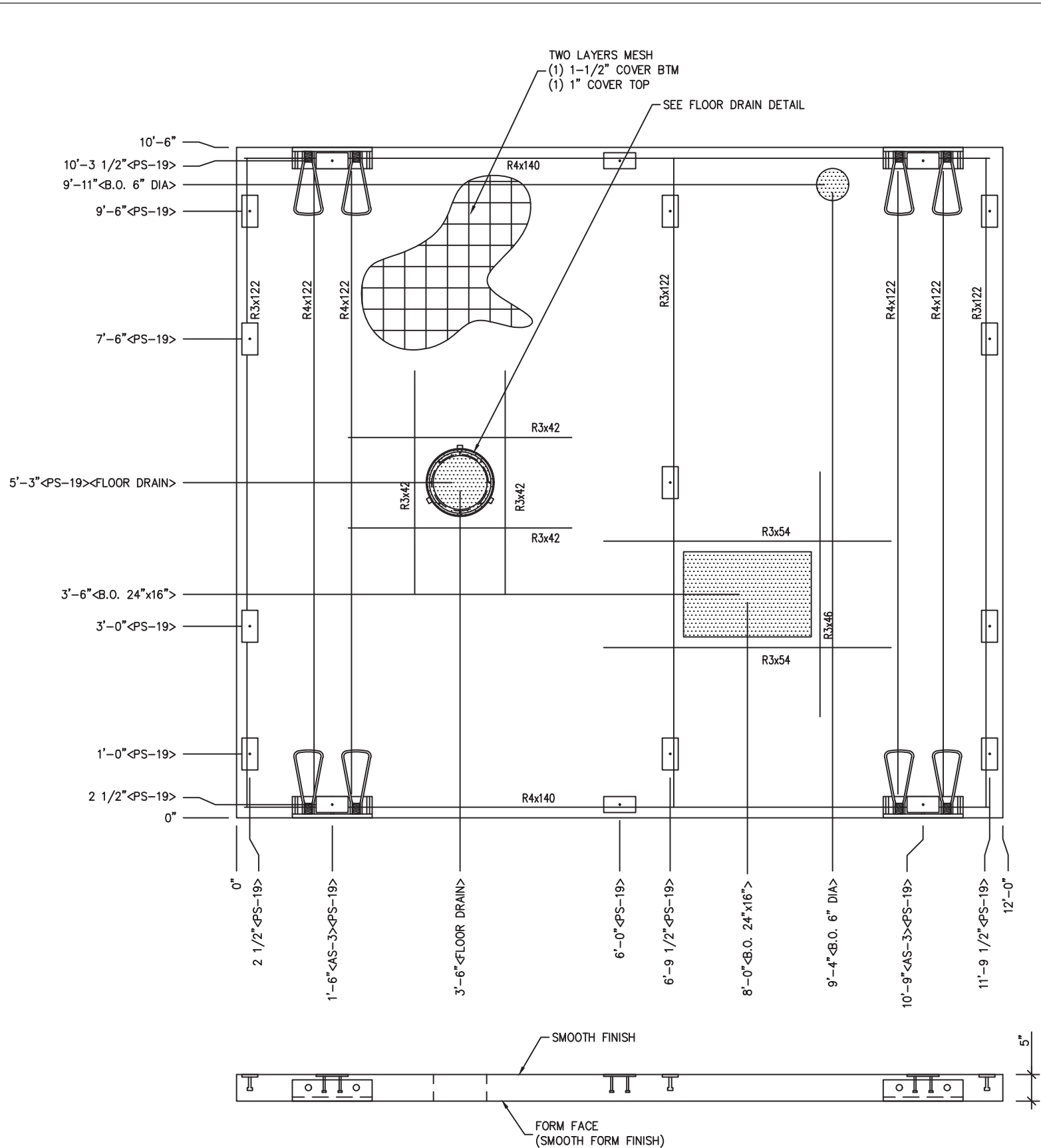**MARK W5**

DWG NO.	SHEET	REV.
OZ1-12	12 / 22	

NOTES:
1. R4x92 TO BE PLACED IN PAIRS, ONE EACH FACE W/ 3/4" COVER
2. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBEDDED MATERIALS

ITEM	QTY
AS-3 S.S.	4
PS-19 S.S.	17
R4x122	4
R4x140	2
R3x42	8
R3x46	2
R3x54	4
R3x122	6
B.O. 6" DIA.	1
B.O. 24"x16"	1
FLOOR DRAIN	1

TWO LAYERS MESH
(1) 1-1/2" COVER BTM
(1) 1" COVER TOP

SEE FLOOR DRAIN DETAIL

10'-6"
10'-3 1/2"<PS-19>
9'-11"<B.O. 6" DIA>
9'-6"<PS-19>
7'-6"<PS-19>
5'-3"<PS-19><FLOOR DRAIN>
3'-6"<B.O. 24"x16">
3'-0"<PS-19>
1'-0"<PS-19>
2 1/2"<PS-19>
0"

R4x140
R4x122
R3x122
R3x42
R3x54
R3x46

2 1/2"<PS-19>
1'-6"<AS-3><PS-19>
3'-6"<FLOOR DRAIN>
6'-0"<PS-19>
6'-9 1/2"<PS-19>
8'-0"<B.O. 24"x16">
9'-4"<B.O. 6" DIA>
10'-9"<AS-3><PS-19>
11'-9 1/2"<PS-19>
12'-0"

ORIENT THREADED HOLES AS SHOWN

SIDE OF ROOM
SIDE OF ROOM

1/2"

RM54960 FLOOR DRAIN
(FLANGE SIDE UP)

5"

FORM FACE

BLOCKOUT 10-1/2" DIA x 1-3/4"DP

FLOOR DRAIN BLOCKOUT DETAIL

SMOOTH FINISH

FORM FACE
(SMOOTH FORM FINISH)

5"

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
51.3 (1.90)	252

APPROXIMATE WEIGHT 7,695

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

NOTES:
1. SMOOTH TROWEL FINISH NEAR FACE, FORM FINISH ALL OTHER.
2. R3x122, R3x42, R3x54 & R3x46 TO BE PLACED IN PAIRS, ONE EACH FACE. 1" COVER TOP & 1 1/2" COVER BOT.
3. R4x122 TO BE PLACED AT BOT WITH 1 1/4" COVER.
4. ALL OTHER BARS TO BE CENTERED IN PANEL.
5. R4x140 TO BE PLACED AT TOP WITH 1" COVER.

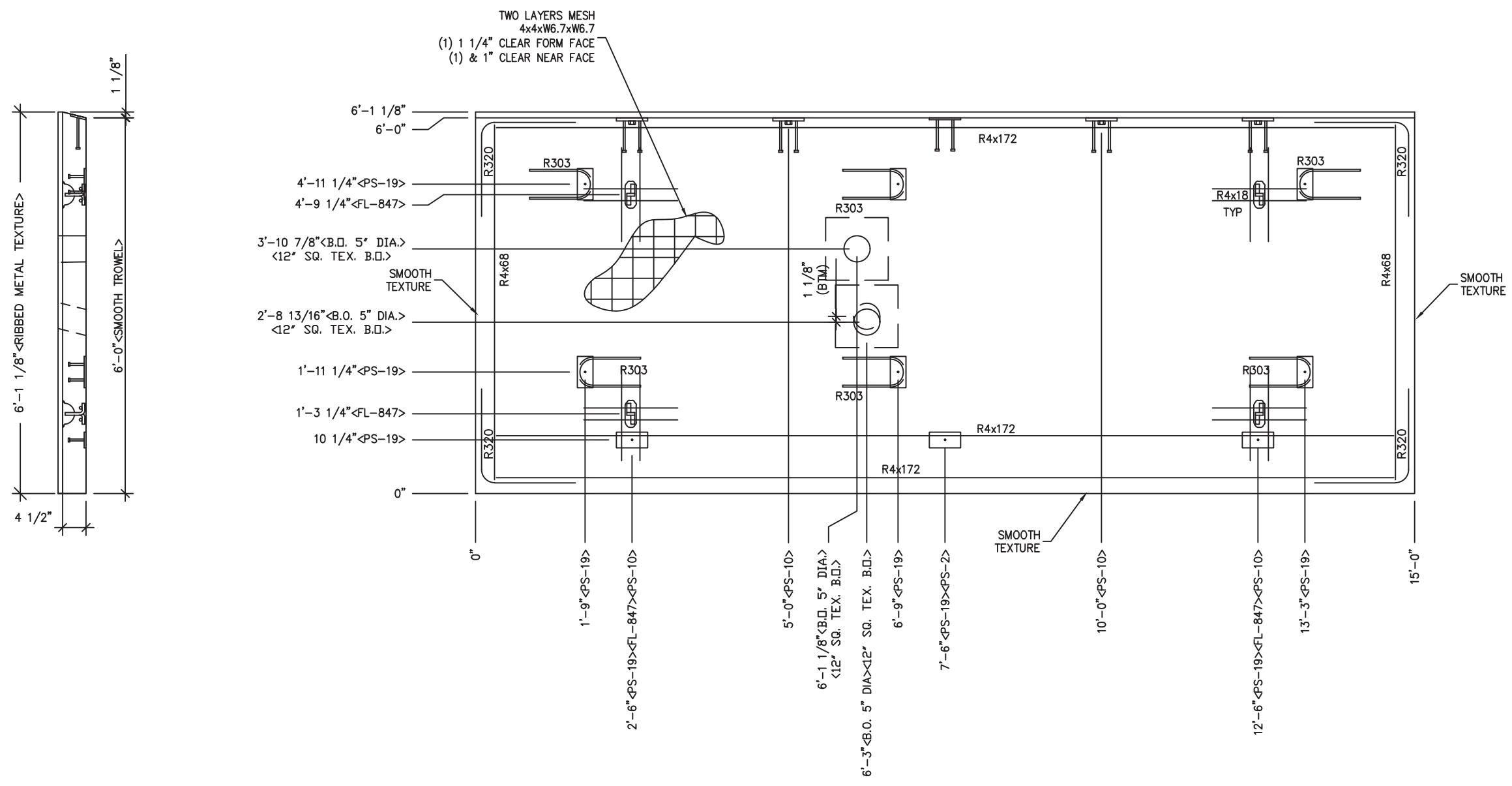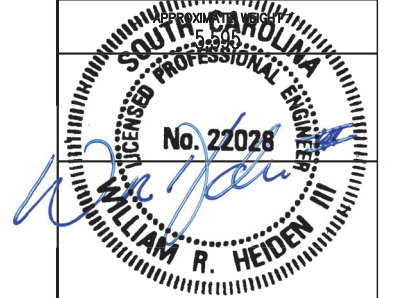|		APPROVAL	DATE
REV.	DESCRIPTION		
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

FLOOR SLAB
MARK F1

DWG NO.	SHEET	REV.
OZ1-13	13 / 22	

OZARK 1

EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x172	4
R303	6
R4x18	16
FL-847 S.S.	4
B.O. 5" DIA	2
B.O. TEX. 12" SQ	2
R4x68	4
R320	8

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
37.3 (1.38)	182

May 25, 2023

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CXT® Products

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362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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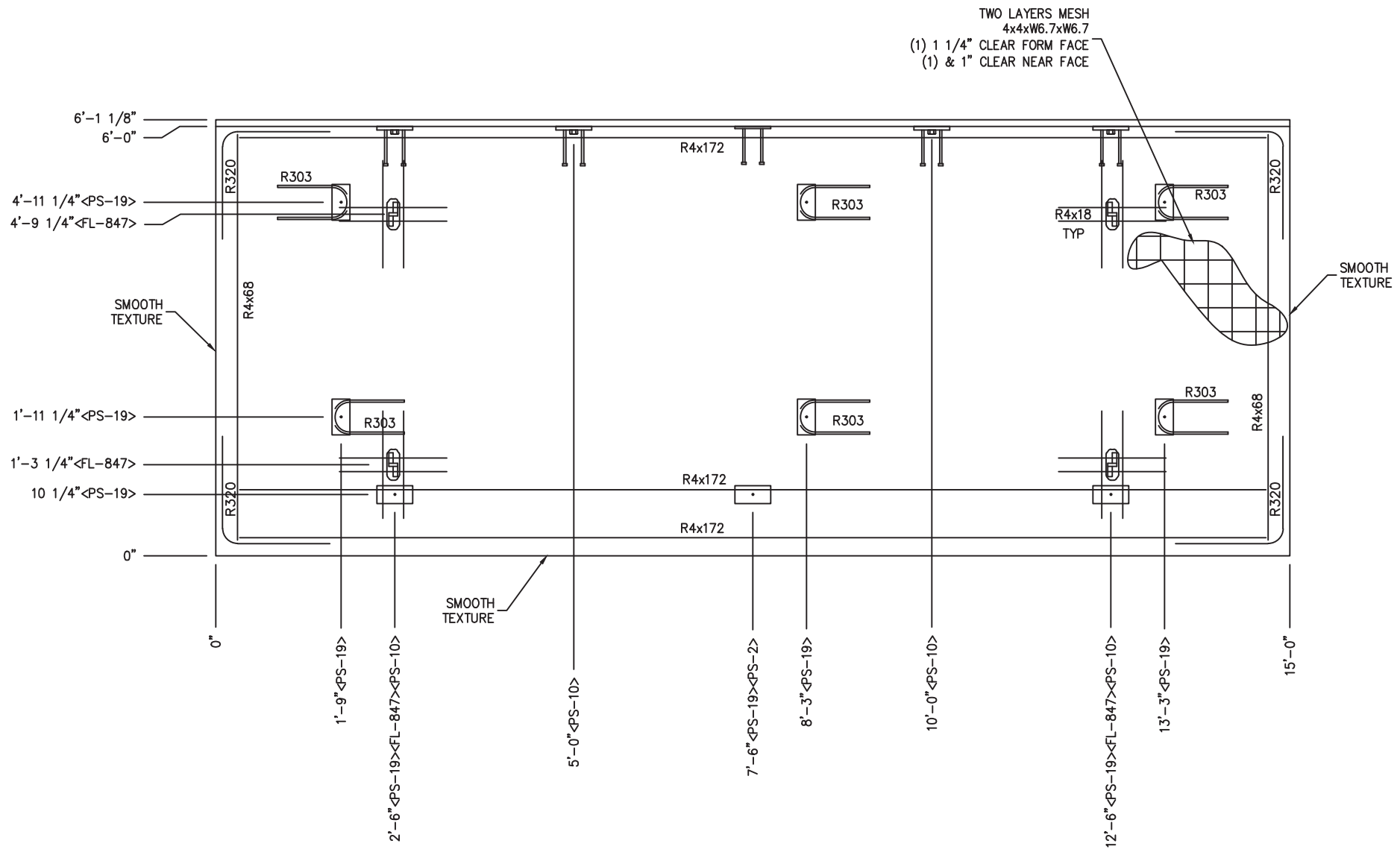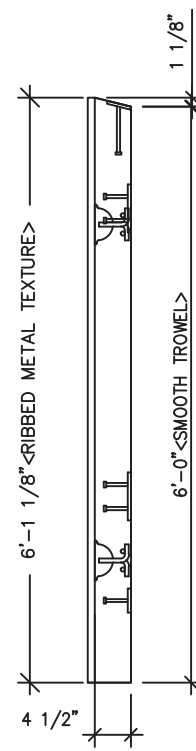| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

ROOF SLAB
MARK R1

DWG NO.	SHEET	REV.
OZ1-14	14 / 22	

NOTES:
1. REINFORCING BARS R4x172 TO BE PLACED IN PAIRS. ONE AT EACH FACE WITH 1 1/4" COVER @ FORM FACE & 3/4" COVER @ NEAR FACE
2. R4x18 BARS TO BE PLACED W/ 1" COVER NEAR FACE.
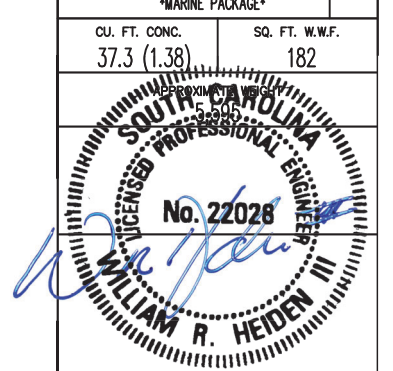3. ALL OTHER BARS TO BE CENTERED IN PANEL.

TWO LAYERS MESH
4x4xW6.7xW6.7
(1) 1 1/4" CLEAR FORM FACE
(1) & 1" CLEAR NEAR FACE

EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x172	4
R303	6
R4x18	16
FL-847 S.S.	4
R320	8
R4x68	4

1 1/8"

6'-1 1/8" <RIBBED METAL TEXTURE>

6'-0" <SMOOTH TROWEL>

4 1/2"

OZARK 1

TWO LAYERS MESH
4x4xW6.7xW6.7
(1) 1 1/4" CLEAR FORM FACE
(1) & 1" CLEAR NEAR FACE

6'-1 1/8"
6'-0"

R320
R303
R4x172

4'-11 1/4"<PS-19>
4'-9 1/4"<FL-847>

R4x68

SMOOTH TEXTURE

R303

R4x18 TYP

R303

R320

SMOOTH TEXTURE

1'-11 1/4"<PS-19>

R303
R303
R303
R4x68

1'-3 1/4"<FL-847>
10 1/4"<PS-19>

R320
R4x172
R4x172

0"

SMOOTH TEXTURE

0"
1'-9"<PS-19>
2'-6"<PS-19><FL-847><PS-10>
5'-0"<PS-10>
7'-6"<PS-19><PS-2>
8'-3"<PS-19>
10'-0"<PS-10>
12'-6"<PS-19><FL-847><PS-10>
13'-3"<PS-19>
15'-0"

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
37.3 (1.38)	182

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	24

ROOF SLAB
MARK R2

DWG NO.	SHEET	REV.
OZ1-15	15 / 22	

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: South Carolina
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 6/2/23

NOTES:
1. REINFORCING BARS R4x172 TO BE PLACED IN PAIRS. ONE AT EACH FACE WITH 1 1/4" COVER @ FORM FACE & 3/4" COVER @ NEAR FACE
2. R4x18 BARS TO BE PLACED W/ 1" COVER NEAR FACE.
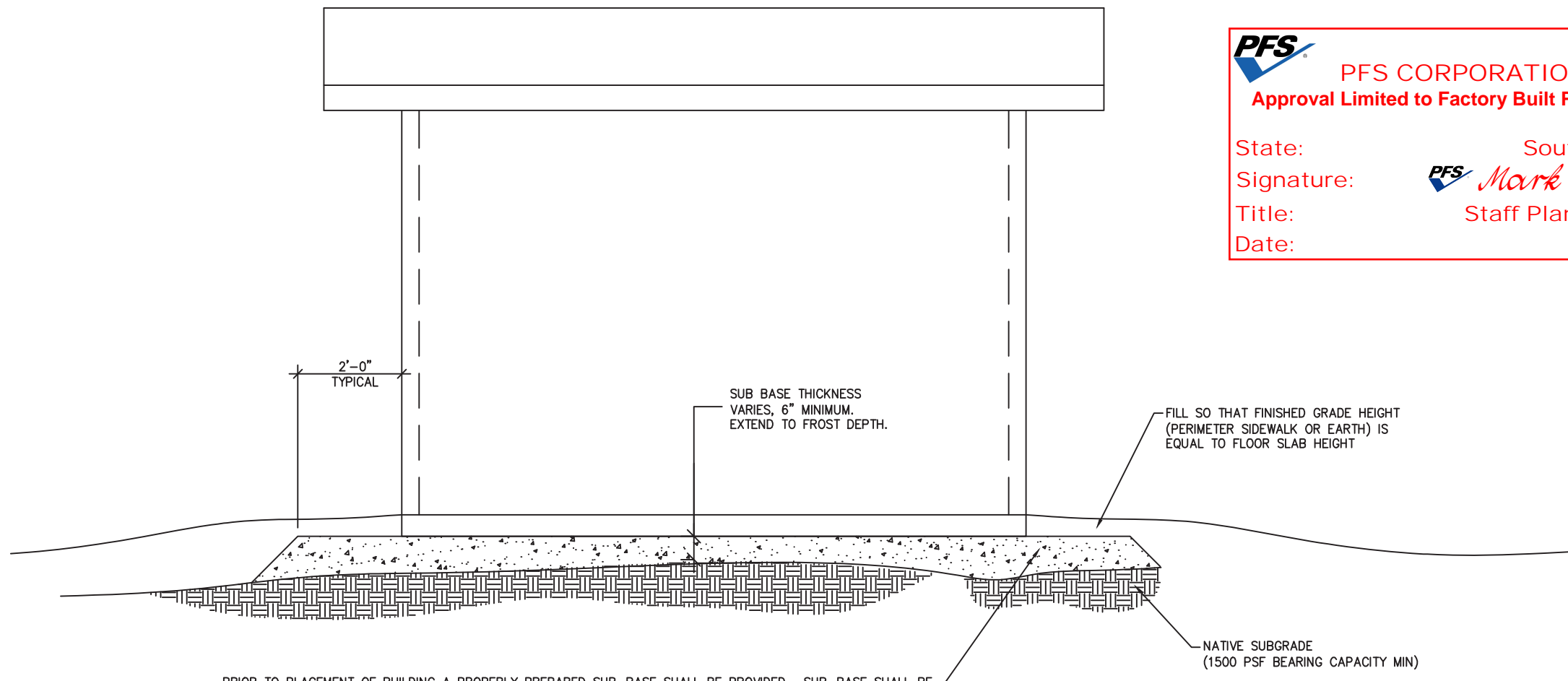3. ALL OTHER BARS TO BE CENTERED IN PANEL.

NOTE:

THIS FACTORY ASSEMBLED BUILDING, AS CONSTRUCTED, PROVIDES A RIGID BOX TYPE STRUCTURAL SYSTEM. VERTICAL LOADS ARE TRANSFERRED PRIMARILY THROUGH BEARING WALLS TO THE STRUCTURAL SLAB FLOOR OF THE BUILDING. THE VERTICAL LOADS ARE THEN DISTRIBUTED THROUGH THE REINFORCED CONCRETE FLOOR TO THE PREPARED GRANULAR, NON-FROST SUSCEPTIBLE (NFS) SUB-BASE WHICH DISTRIBUTES THE VERTICAL LOADS IN RELATIVELY UNIFORM FASHION TO THE NATIVE SUB-GRADE. AS WITH MOST CONSTRUCTION, THIS DOES REQUIRE THE NATIVE SUB-GRADE TO BE STRIPPED OF VEGETATION AND TOP SOIL PRIOR TO PLACEMENT OF THE PREPARED GRANULAR SUB-BASE. DUE TO THE INHERENT STIFFNESS OF THE BUILDING, IT WILL REMAIN SAFE AND STRUCTURALLY SOUND IN THE UNLIKELY EVENT OF FREEZING ACTION BELOW THE BUILDING REGARDLESS OF NATURAL FREEZE/ THAW CYCLES ANTICIPATED TO BE ENCOUNTERED IN THE STATE OF SOUTH CAROLINA.

LATERAL LOADS ARE TRANSFERRED TO THE GROUND THROUGH FRICTIONAL RESISTANCE WITHOUT SLIDING OR SHIFTING BETWEEN THE BUILDING FLOOR SLAB AND THE PREPARED SOIL AND GRAVEL SUB-BASE ON WHICH THE BUILDING RESTS. SEISMIC ANALYSES ARE BASED ON LOADS DETERMINED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE USING PARAMETERS, WHICH MEET OR EXCEED THE CODE PRESCRIBED REQUIREMENTS FOR THIS INSTALLATION.
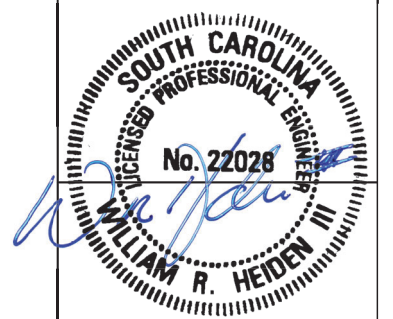
THIS BUILDING AS DESIGNED, RESTING ON A PROPERLY PREPARED GRANULAR SUB-BASE WILL BE SAFE AND STRUCTURALLY SOUND FOR VERTICAL AND LATERAL LOADS AS DISCUSSED ABOVE. A FULL DEPTH FOUNDATION WALL AT THE BUILDING PERIMETER AND AN ANCHORAGE SYSTEM, TYPICAL FOR OTHER TYPES OF BUILDING CONSTRUCTION, ARE NOT REQUIRED FOR THIS BUILDING.

THE 'FOUNDATION' FOR THIS STRUCTURE IS ESSENTIALLY THE COMBINATION OF THE COMPACTED SUB-BASE MATERIAL AND THE BUILDING'S REINFORCED SLAB. THE COMBINATION OF THE COMPACTED SUB-BASE MATERIAL AND THE BUILDING'S REINFORCED SLAB NEED TO BE AT LEAST 12" THICK AND THE COMPACTED SUB-BASE MATERIAL SHALL EXTEND BELOW THE LOCAL FROST DEPTH

PFS
PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**South Carolina**
Signature:	*Mark Severson*
Title:	**Staff Plan Reviewer**
Date:	**6/2/23**

2'-0"
TYPICAL

SUB BASE THICKNESS VARIES, 6" MINIMUM. EXTEND TO FROST DEPTH.

FILL SO THAT FINISHED GRADE HEIGHT (PERIMETER SIDEWALK OR EARTH) IS EQUAL TO FLOOR SLAB HEIGHT

NATIVE SUBGRADE (1500 PSF BEARING CAPACITY MIN)

PRIOR TO PLACEMENT OF BUILDING A PROPERLY PREPARED SUB-BASE SHALL BE PROVIDED. SUB-BASE SHALL BE A MINIMUM OF 6" THICK AND CONSIST OF ¾" MINUS CRUSHED ROCK (ROAD BASE MATERIAL) COMPACTED TO 95% OF OPTIMUM DENSITY IN ACCORDANCE WITH ASTM D 1557. FINISHED SURFACE OF SUB-BASE SHALL BE FLAT AND LEVEL, WITH A MAXIMUM DEVIATION OF −½", +0" FROM A TRUE HORIZONTAL PLANE. REFER TO BUILDING HANDLING SHEET FOR SUB-BASE REQUIREMENTS DURING BUILDING PLACEMENT. (PREPARED SUB-BASE NOT BY CXT).

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

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901 N. Highway 77 Hillsboro, TX 76645
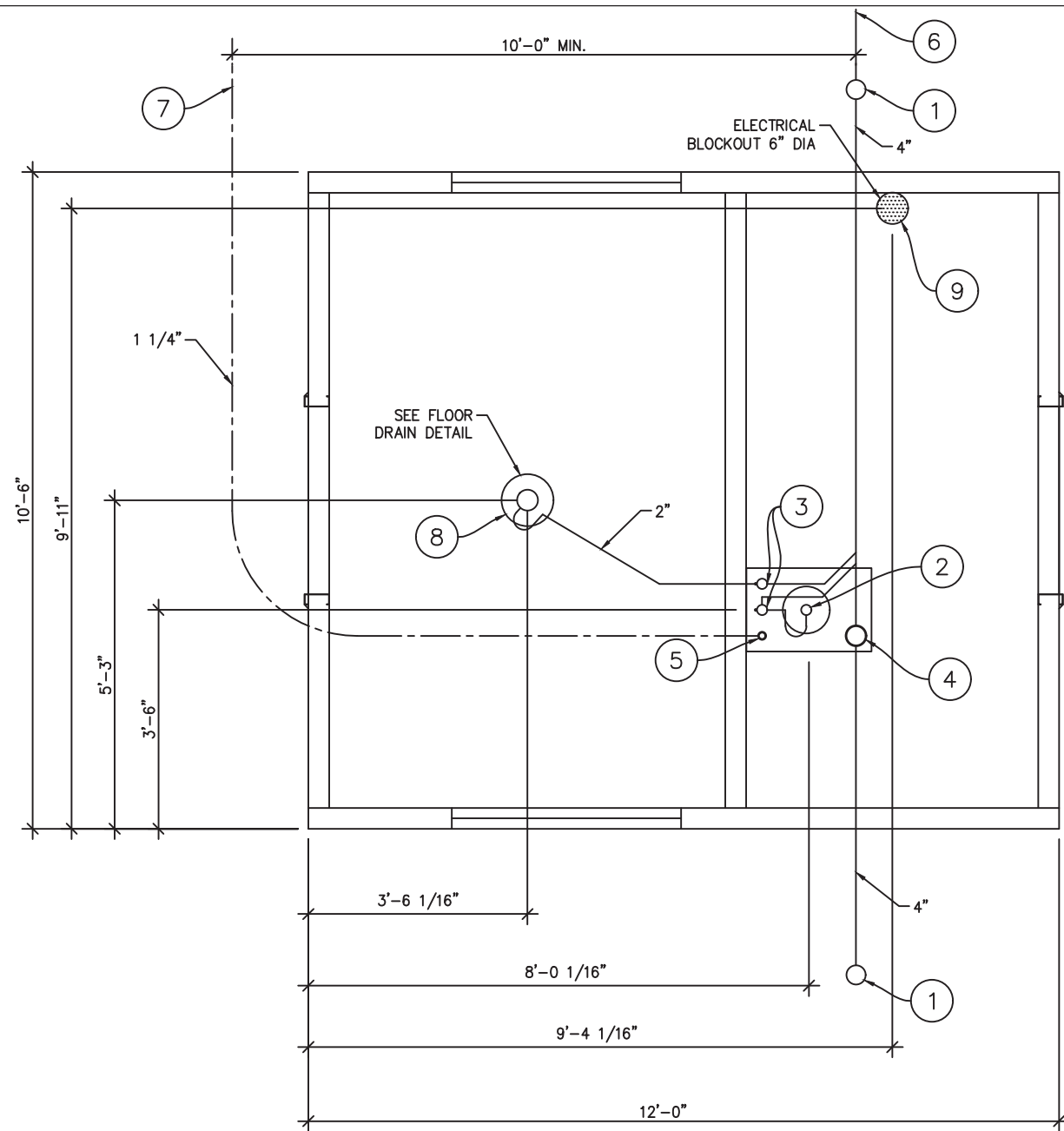362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/8" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	32

FOUNDATION DETAIL

DWG NO.	SHEET	REV.
OZ1-16	16 / 22	

MARINE PACKAGE

2'-0" x 1'-4" BLOCKOUT DETAIL

2" VENT
2" VENT
2" FLOOR DRAIN
1 1/4" WATER SUPPLY
4" WASTE

3", 8", 8", 3", 3", 1'-4"
3", 1'-0", 1'-0", 3"
2'-0"

Dimensions on left plan view:
- 10'-0" MIN.
- ELECTRICAL BLOCKOUT 6" DIA
- 1 1/4"
- SEE FLOOR DRAIN DETAIL
- 2"
- 10'-6"
- 9'-11"
- 5'-3"
- 3'-6"
- 3'-6 1/16"
- 8'-0 1/16"
- 9'-4 1/16"
- 12'-0"
- 4"

Callout bubbles: 6, 7, 1, 4", 9, 3, 2, 5, 4, 8, 1, 4", 1
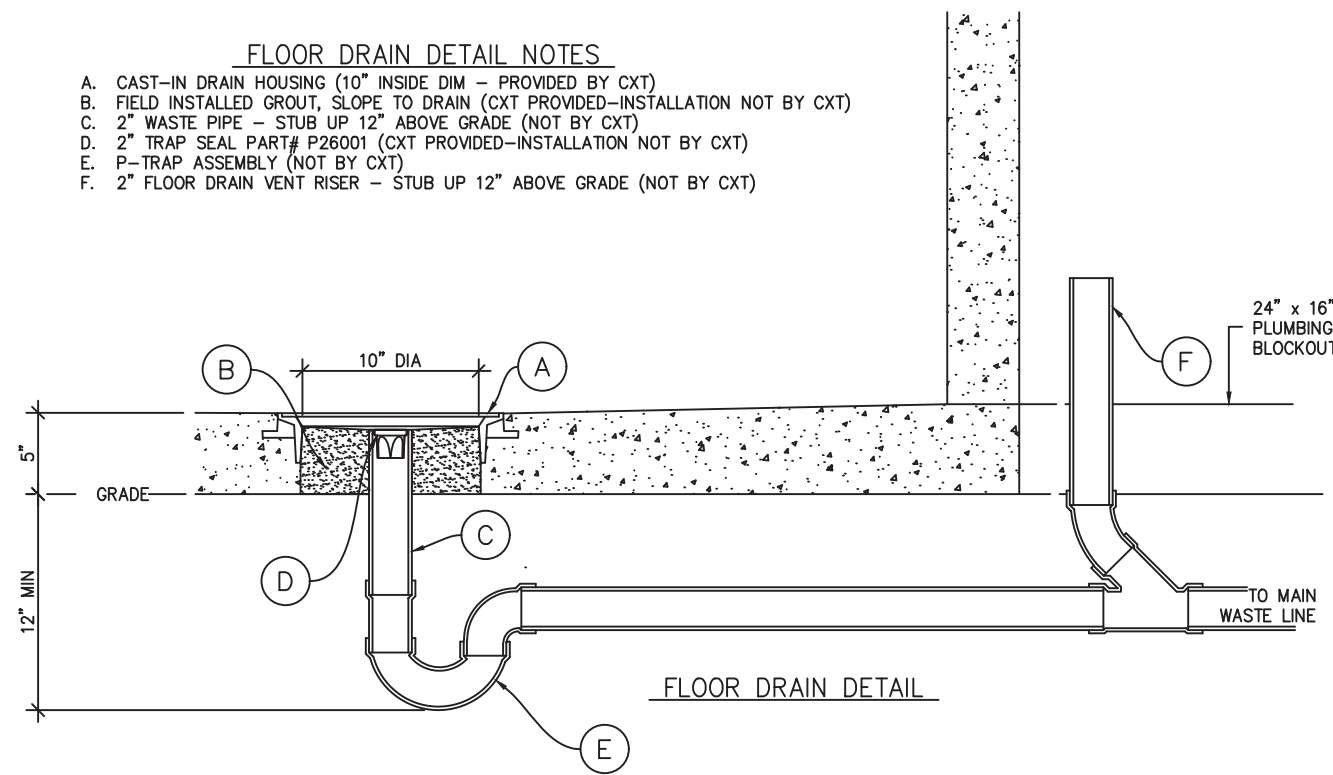
PIPING LEGEND

| BELOW FLOOR WASTE PIPING SCH 40 PVC ASTM D2665 TYPE DWV | BELOW FLOOR VENT PIPING SCH 40 PVC ASTM D2665 TYPE DWV | 1 1/4" WATER SERVICE ANNEALED "SOFT" COPPER ASTM B88, TYPE 'K' OR 'L' |

FLOOR DRAIN DETAIL NOTES

A. CAST-IN DRAIN HOUSING (10" INSIDE DIM - PROVIDED BY CXT)
B. FIELD INSTALLED GROUT, SLOPE TO DRAIN (CXT PROVIDED-INSTALLATION NOT BY CXT)
C. 2" WASTE PIPE - STUB UP 12" ABOVE GRADE (NOT BY CXT)
D. 2" TRAP SEAL PART# P26001 (CXT PROVIDED-INSTALLATION NOT BY CXT)
E. P-TRAP ASSEMBLY (NOT BY CXT)
F. 2" FLOOR DRAIN VENT RISER - STUB UP 12" ABOVE GRADE (NOT BY CXT)

BELOW FLOOR PIPING - KEY NOTES

1. 4" CLEAN OUT TO GRADE.

2. 2" FLOOR DRAIN. FIELD INSTALLED W/ TRAP SEAL SYSTEM IF OPTION IS ACCEPTED, INSTALL AS SHOWN W/ VENT & WASTE PIPE. (24"x16" BLOCKOUT)

3. 2" VENT EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, (1 FOR EA FLOOR DRAIN IF FLOOR DRAIN OPTION ACCEPTED) PROVIDE TEST PLUG. (24"x16" BLOCKOUT)

4. 4" WASTE PIPE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (24"x16" BLOCKOUT)

5. 1 1/4" TYPE 'K' OR 'L' ANNEALED 'SOFT' COPPER WATER SERVICE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST CAP AT END. (24"x16" BLOCKOUT)

6. 30" MIN. BURY, PROVIDE TRACER TAPE.

7. MIN. BURY PER LOCAL REQUIREMENTS TO PROTECT AGAINST FREEZING AND DAMAGE.

8. 2" FLOOR DRAIN. FIELD INSTALLED W/ TRAP SEAL SYSTEM IF OPTION IS ACCEPTED, INSTALL AS SHOWN W/ VENT & WASTE PIPE. (10" DIA BLOCKOUT)

9. ELECTRICAL STUB UP, (6" DIA BLOCKOUT)

ALL PIPING INDICATED ON THIS SHEET IS NOT BY CXT

FLOOR DRAIN DETAIL

10" DIA
24" x 16" PLUMBING BLOCKOUT
GRADE
5"
12" MIN
TO MAIN WASTE LINE

Callout bubbles: B, A, F, D, C, E

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901 N. Highway 77 Hillsboro, TX 76645
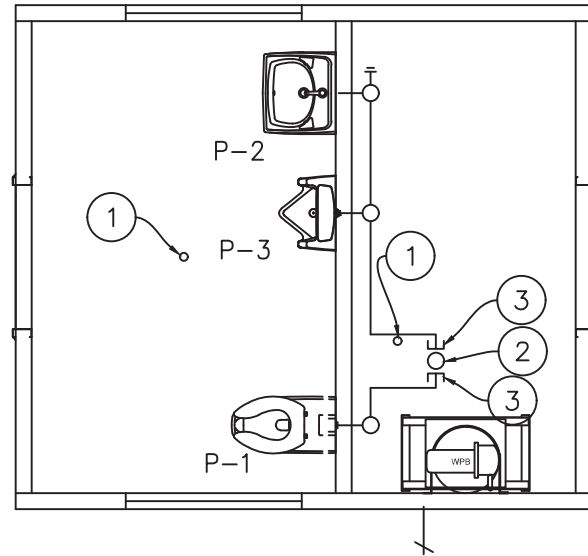362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

| REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/8" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	32

FLOOR DRAIN BLOCKOUTS & BELOW FLOOR PIPING

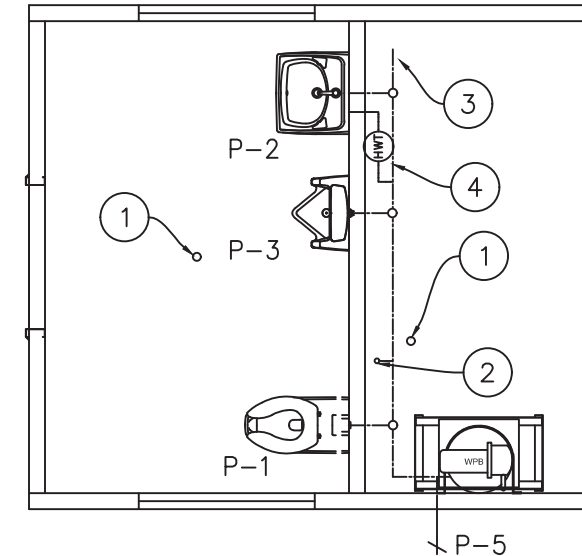| DWG NO.	SHEET	REV.
OZ1-17	17 / 22	

WASTE PIPING

WASTE PIPING – KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)

2. 4" WASTE THROUGH FLOOR, FIELD INSTALLED (NOT BY CXT)

3. PROVIDE TEST PLUG IN END OF WASTE PIPE. CONTINUATION OF PIPING IS FIELD INSTALLED & NOT BY CXT.

OZARK 1
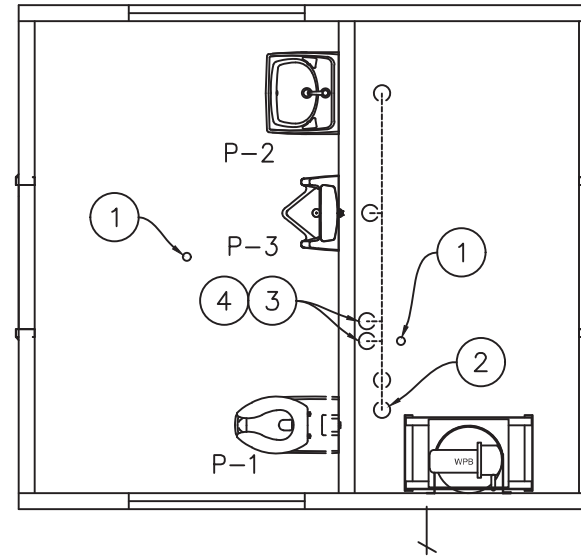
VENT PIPING

VENT PIPING – KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)

2. 3" VENT THROUGH ROOF.

3. 2" VENT WITH TEST PLUG.

4. FIELD INSTALLED 2" VENT PIPING FROM FLOOR DRAINS. (NOT BY CXT)

SPECIAL NOTES:

1. TOTAL FIXTURE COUNT : (3)

2. FLOWING PRESSURE: 45 PSI MIN, 80 PSI MAX

3. TOTAL DEVELOPED LENGTH = 10'-0""

*APPROXIMATE DISTANCE FROM THE SOURCE TO THE FARTHEST FIXTURE

WATER PIPING

WATER PIPING – KEY NOTES

1. 2" FLOOR DRAIN, FIELD INSTALLED

2. FIELD INSTALLED 1-1/4" WATER SUPPLY WITH SHUT-OFF VALVE NEAR FLOOR.

3. 3/4" HOSE BIBB WITH VACUUM BREAKER AND WHEEL HANDLE.

4. WATER PIPING ALONG WALL, SEE DIAGRAM ON SHEET OZI-19.
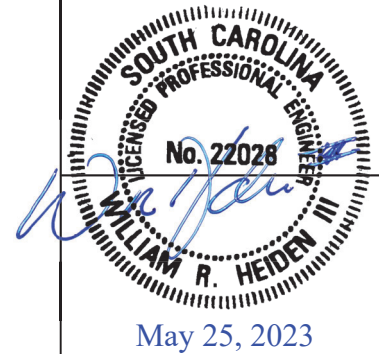
WATER PIPING DIAGRAM

PIPING LEGEND

— · — COLD WATER; COPPER. ASTM B88, TYPE 'K' OR 'L'

— · · — HOT WATER; COPPER, ASTM B88, TYPE 'K' OR 'L'

– – – – VENT PIPING; SCH 40 PVC, ASTM D2665, TYPE DWV

———— WASTE PIPE; SCH 40 PVC, ASTM D2665, TYPE DWV

· · · · · · FIELD PIPING; (NOT BY CXT)

P-5

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	1/4" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	48

WATER, WASTE & VENT PIPING PLANS & NOTES

DWG NO.	SHEET	REV.
OZ1-18	18 / 22	

MARINE PACKAGE

WASTE & VENT RISER DIAGRAM

Labels in diagram: 2, 7, 8, 3, CO, P-1, P-2, P-3, 1 1/2", 1 1/2" TRAP ARM 3'-6" MAX LENGTH, CO, 2", 2", 2", 2", 3", 3", 3", CO, CO, 2" WASTE NOT BY CXT, 4" WASTE PIPING W/ CO (NOT BY CXT)

WATER PIPING DIAGRAM

Labels: P-6, 4, 1/2", 9, P2, 5, P3, 6, 3, 3/4", 1 1/4", 1/2" CW W/ BALL VALVE BY CXT, 1-1/4", 11, P1, 1, 1-1/4" CW SUPPLY W/ SHUT OFF VALVE (NOT BY CXT), P-5, 3/4", P-4

WATER PRESSURE BOOSTER SYSTEM DETAIL — NTS

1-1/4" TO FIXTURES
BALL VALVE, TYP
1-1/4" TO PRESSURE BOOSTER, SEE DETAIL
3/4"
BYPASS LOOP
1-1/4"WATTS MODEL 375 RPZ CHECK VALVE ASSEMBLY
100 PSI SAFETY RELIEF VALVE
1-1/4" SUPPLY
BFP
WYE STRAINER
PUMP CONTROL
STORAGE TANK
3/4" SPRING CHECK VALVE FOR MORE INFO, SEE WATER RISER DIAGRAM. ALL PIPES HAVE A MINIMUM SIZE PER MANF. SEE INSTALLATION INSTRUCTIONS FOR MIN. SIZE.
QUICK COUPLER FOR BLOWING OUT WATER PIPING W/ COMPRESSED AIR
1-1/4" BALL VALVE
1/2" BALL VALVE
THROUGH FLOOR
1-1/4" ANNEALED TYPE K "SOFT" COPPER SERVICE

WATER SERVICE DETAIL — NTS

WATER PIPE – KEY NOTES

1. 1-1/4" COLD WATER THRU FLOOR, NOT BY CXT.
2. 3" VENT THROUGH ROOF
3. TO THIS POINT BY CXT.
4. ASSE 1010 WATER HAMMER ARRESTOR SIOUX CHIEF HYDRA-RESTOR #654-C OR EQUAL
5. 1/2" AIR QUICK CONNECTION W/ BALL VALVE FOR BLOWING OUT WATER PIPING.
6. HOSE BIB
7. FLOOR DRAIN, FIELD INSTALLED (NOT BY CXT)
8. 2" FLOOR DRAIN VENTS
9. ASSE 1070 WATER TEMPERATURE LIMITING DEVICE.
10. PROVED SHUT-OFF VALVES ON COLD AND HOT WATER SUPPLY FOR EACH FIXTURE.
11. WATER PRESSURE BOOSTER

PIPING LEGEND

COLD WATER; COPPER. ASTM B88, TYPE 'K' OR 'L'
HOT WATER; COPPER, ASTM B88, TYPE 'K' OR 'L'
VENT PIPING; SCH 40 PVC, ASTM D2665, TYPE DWV
WASTE PIPE; SCH 40 PVC, ASTM D2665, TYPE DWV
FIELD PIPING; (NOT BY CXT)
WYE STRAINER

SC 231223025

Review is limited to factory built elements only.

HOT WATER PIPING RISER DIAGRAM — NTS

RELIEF VALVE – PIPE TO NEAR FLOOR DRAIN
1/2"
VACUUM BREAKER
EXPANSION TANK AMTROL ST-5
BALL VALVE
1/2" CW
ELECTRIC WATER HEATER W/ SEISMIC RESTRAIN TO WALL
COLD WATER MAIN

NOTE:
INSULATE HW PIPING WITH 1" (R3.6)
PRE-MOLDED PIPE INSULATION WITH ASJ

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III

May 25, 2023

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CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

SYM	DESCRIPTION	MANUFACTURER	CXT PART NUMBER	FLUSH VL/FAUCET	SUPPLIES	QTY	HW	CW	WASTE	VENT	SUPPLIES / NOTES
P-1	WATER CLOSET (PUSH BUTTON)	AMERICAN STANDARD	2634.101 (W.C.) 5905.100 (W.C. SEAT)	SLOAN "ROYAL" #952-1.6 L-3 W=4"	SLOAN HY33A	1		1-1/4"	3"	2"	1. OFFSET FLUSH VALVE TAILPIECE PER ADA, RIGHT OR LEFT HAND, AS REQUIRED. PROVIDE FLUSH VALVE FOR 3" WALL THICKNESS. 2. MOUNT RIM AT 17" ABOVE FLOOR. 3. USE CLOSET GASKET JG13534 AND Z1203 FINISH KIT
P-2	LAVATORY (PUSH BUTTON)	AMERICAN STANDARD	0356421 (LAV)	SYMMONS SLS-7000		1		1/2"	1-1/2"	1-1/2"	1. HAMMER ARRESTOR JRS520-T-C, FLOOR DRAIN S2005A025NBLP, TRAP PRIMER- MIFAB MM500, DISTR UNIT- MIFAB 2. 1/2X15 COMP ANG LAV BSCR1915AC 3. 3 PC COVER SET PF202WH.
P-3	URINAL (PUSH BUTTON)	AMERICAN STANDARD	6515.001(URINAL)	SLOAN "ROYAL" #995.1	SLOAN HY33A	1	–	3/4"	2"	2"	1. PROVIDE FLUSH VALVE FOR 3" WALL THICKNESS. 2. MOUNT RIM AT 17" ABOVE FLOOR.
P-4	WATER PRESSURE BOOSTER TANK	AMTROL	RP-10HP, 14GAL			1	–	3/4" 1 1/4"	–	–	1. PRECHARGE TO MINIMUM INLET WATER PRESSURE AT WELL'S PRESSURE SWITCH TURN-ON SETTING (FIELD WORK, NOT BY CXT)
P-5	HOSE BIB	PRIER	B65			1	–	3/4'	–	–	
P-6	WATER HEATER	EEMAX	EMT-4			1	1/2'	1/2'	–	–	1. 4 GALLON 120V WALL MOUNTED WATER HEATER. PROVIDE GFCI OUTLET IN CHASE PER MF'R RECOMMENDATIONS.
P-7	FLOOR DRAIN	TRAVIS	54960-CXT			2	–	–	2"	2"	1. TRAP SEAL
		SIOUX CHIEF (CHASE)	840-2A			1					

PFS CORPORATION
Approval Limited to Factory Built Portion Only
State: South Carolina
Signature: Mark Severson
Title: Staff Plan Reviewer
Date: 6/2/23

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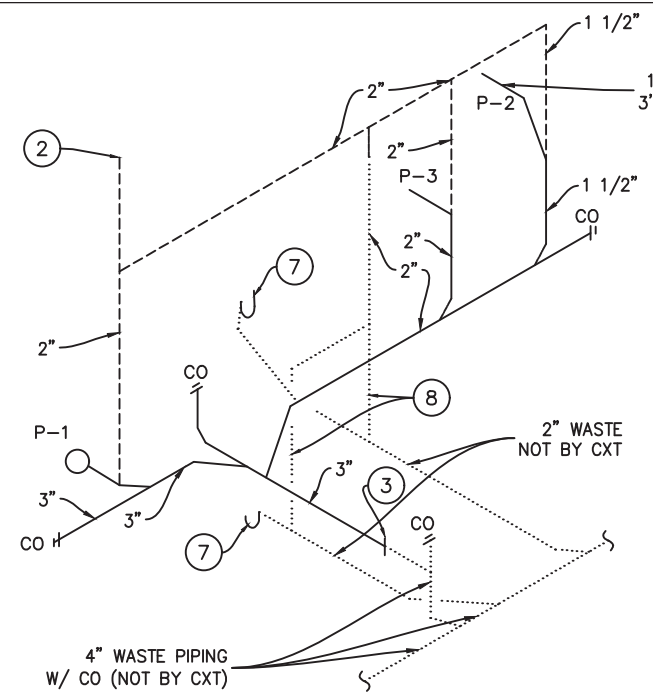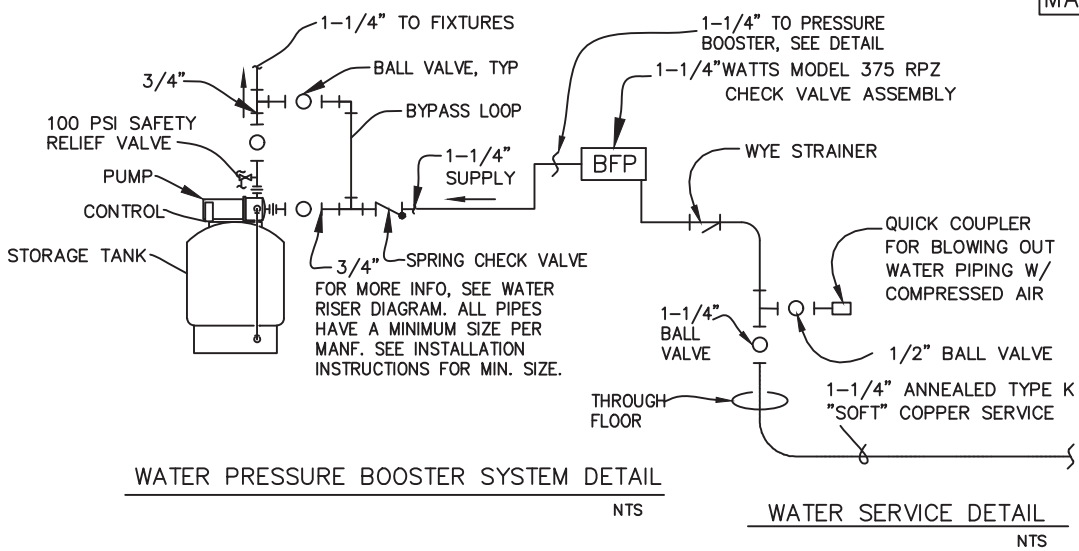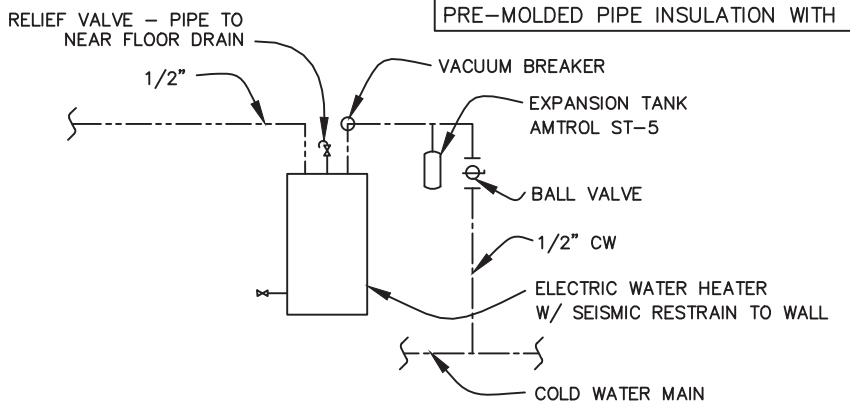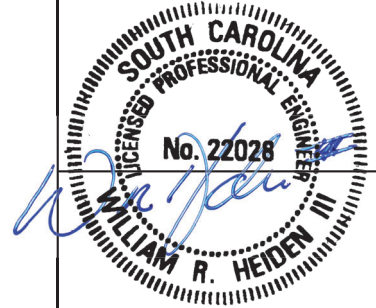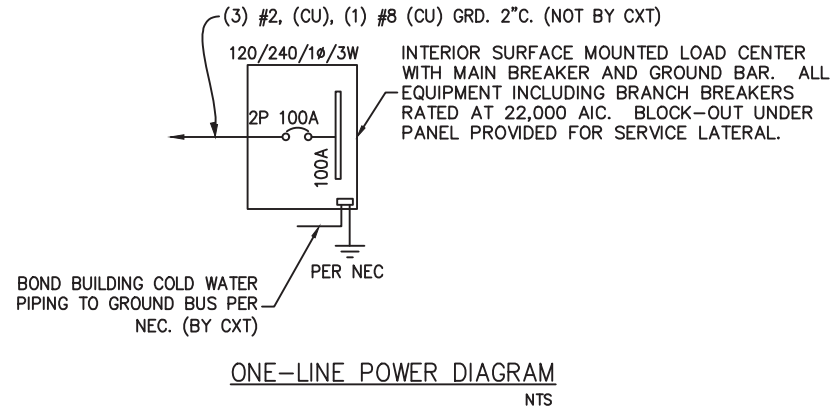
CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE
SCALE 1/4" = 1'-0"		DATE 4/14/23	
DRAWN C.WISSER		FILE NO. OZ1-308	
CHECKED JO		PLOT 48	

PLUMBING PLAN, DIAGRAMS & SCHEDULES

DWG NO. OZ1-19
SHEET 19/22
REV.

ONE-LINE POWER DIAGRAM
NTS

(3) #2, (CU), (1) #8 (CU) GRD. 2"C. (NOT BY CXT)

120/240/1∅/3W

2P 100A

100A

INTERIOR SURFACE MOUNTED LOAD CENTER WITH MAIN BREAKER AND GROUND BAR. ALL EQUIPMENT INCLUDING BRANCH BREAKERS RATED AT 22,000 AIC. BLOCK-OUT UNDER PANEL PROVIDED FOR SERVICE LATERAL.

PER NEC

BOND BUILDING COLD WATER PIPING TO GROUND BUS PER NEC. (BY CXT)

GENERAL ELECTRICAL NOTES

1. RECESSED JUNCTION BOXES FOR SINGLE DEVICES SHALL HAVE SINGLE GANG MUD RINGS CAST IN CONCRETE WALLS.

2. ALL RECEPTACLES SHALL BE GFCI PROTECTED BY CIRCUIT BREAKERS OR BY OTHER GFCI RECEPTACLES

3. ALL CONDUIT SHALL BE 3/4" MINIMUM, EXPOSED CONDUIT SHALL BE EMT, RECESSED SHALL BE PVC.

4. INSTALL ALL WIRING IN CONDUIT OR RELATED ENCLOSURES.

5. ALL ELECTRICAL INSTALLATIONS SHALL MEET THE 2020 NATIONAL ELECTRIC CODE

6. MINIMUM WIRE SIZE SHALL BE #12 AWG COPPER, THHN INSULATION UNLESS NOTED OTHERWISE.

7. ROUTE ALL CONDUITS IN UTILITY ROOM AT CEILING OR FACE OF WALLS.

8. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND MAY NOT SHOW EXACT LOCATIONS OF DEVICES, REFER TO WALL PANEL AND OTHER DRAWINGS FOR EXACT LOCATIONS OF J-BOXES, ETC.

9. PROVIDE CIRCUIT BREAKER LOCKOUT TAB FOR HAND DRYER.

PANEL SCHEDULE

AMP 100
SURFACE MOUNT

PANEL
120/240V, 1P, 3W

TOTAL CONNECTED VA LOAD 4,432
TOTAL CALCULATED VA LOAD 4,815

NO.	DESCRIPTION	OCP	TYPE	(VA)	(A)	PH.	NO.	DESCRIPTION	OCP	TYPE	(VA)	(A)
1	LIGHTS AND FANS	1P/20A	C	260	2.2	A	2	RECEPTACLES	1P/20A	R	360	3.0
3	WATER PRESSURE BOOSTER	1P/20A	L	1,272	10.6	B	4	EEMAX WATER HEATER GFCI OUTLET	1P/20A	R	1,400	11.7
5	RESTROOM HAND DRYER	1P/20A	N	1,140	9.5	A	6					
7						B	8					
9						A	10					
11						B	12					
13						A	14					
15						B	16					
17						A	18					
19						B	20					

NOTE: MAXIMUM ALLOWABLE AIC IS 22K AMPS, PANEL MODIFICATIONS WILL BE REQUIRED (NOT BY CXT) IF TRANSFORMER CAPACITY EXCEEDS 175 KVA.

LOAD		CONNECTED	CALCULATED
(C)ONTINUOUS	260 x1.25		325 VA
(R)EC (1ST 10KVA)	1760 x1.00		1760 VA
(N)ON-CONTINUOUS	1,140 x1.00		1,140 VA
(L)ARGEST MOTOR	1,272 x1.25		1,590 VA
TOTAL LOAD		4,432 VA	4,815 VA
			20.1 AMPS

LIGHTING FIXTURE SCHEDULE

FIXTURE NUMBER	VOLTAGE	WATTS	DESCRIPTION
A	120	25	LUMINAIRE VPF84 INTERIOR LIGHT FIXTURE, VPF8-4FT-NODIM-25W-40K-MVOLT-CLP-WHT-WL-20CC SURFACE MOUNTED, LED LAMP 4 FT, WRAP AROUND LENS, LOW TEMPERATURE DRIVER, OCCUPANCY SENSOR W/ ADDITIONAL OCCUPANCY SENSOR FOR FAN CONTROL
B	120	14	SWOOP 610 LED EXTERIOR LIGHT, YWP610-14W HP-3500K-120-CP-BRZ-CAB/PC EXTERIOR, VANDAL RESISTANT, WALL MOUNTED, 14 WATT, CLEAR PRISMATIC LENS, BUILT IN PHOTOELECTRIC CONTROL
C	120	25	LUMINAIRE VPF84 INTERIOR LIGHT FIXTURE, VPF8-4FT-NODIM-25W-40K-MVOLT-CLP-WHT-WL SURFACE MOUNTED, LED LAMP 4 FT, WRAP AROUND LENS, LOW TEMPERATURE DRIVER, SWITCH ACTIVATED

NOTE: THE SOURCE OF EFFICACY OF EXTERIOR LIGHTING IS TO BE A MINIMUM OF 45 LUMENS PER WATT

EXHAUST FAN SCHEDULE

SYM	MFR	MODEL #	CFM	SONES	VOLTS	AMPS	NTS.
EF-1	FANTECH	FG-4XL	193	6.0	120	0.84	1
EF-2	FANTECH	RVF-4XL	154	6.0	120	.79	1

NOTES:
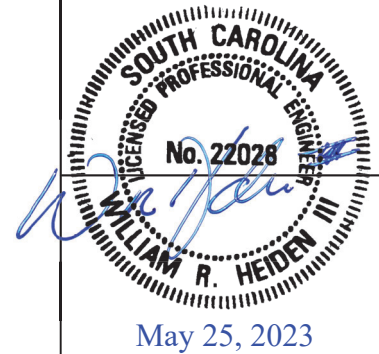1. FANS LISTED FOR WET LOCATION, CONTROL VIA OCCUPANCY SENSOR.

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

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CXT® Products

6701 E Flamingo Ave Bldg 300 Nampa, ID 83687
901 N. Highway 77 Hillsboro, TX 76645
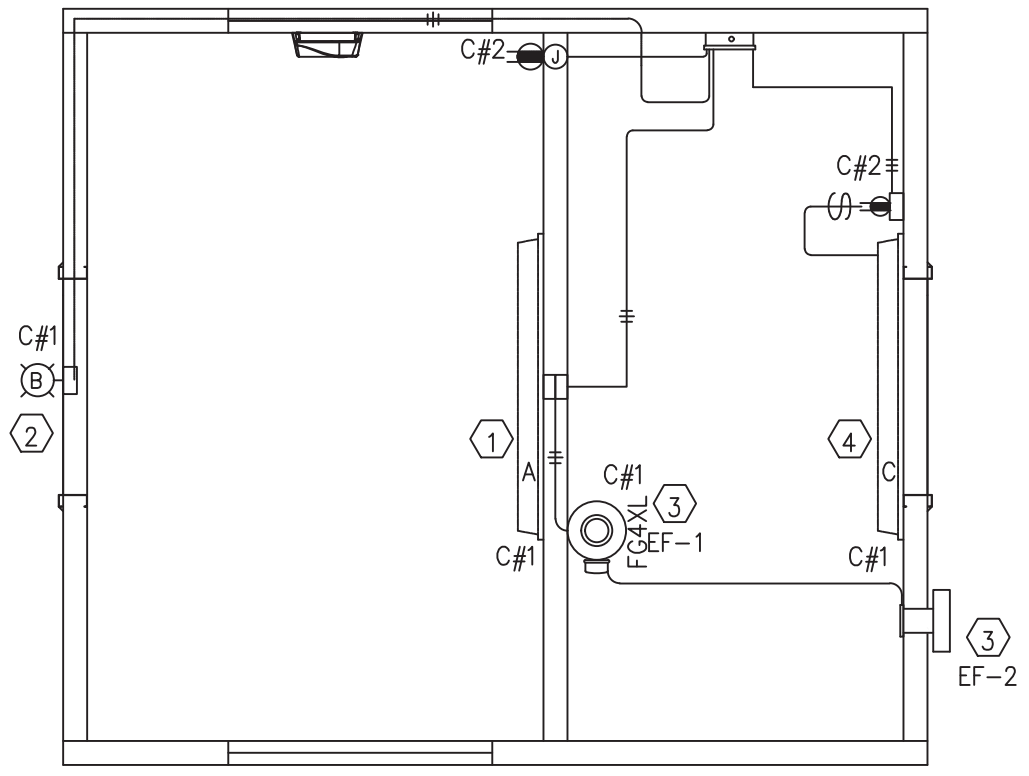362 Waverly Road Williamstown, WV 26187

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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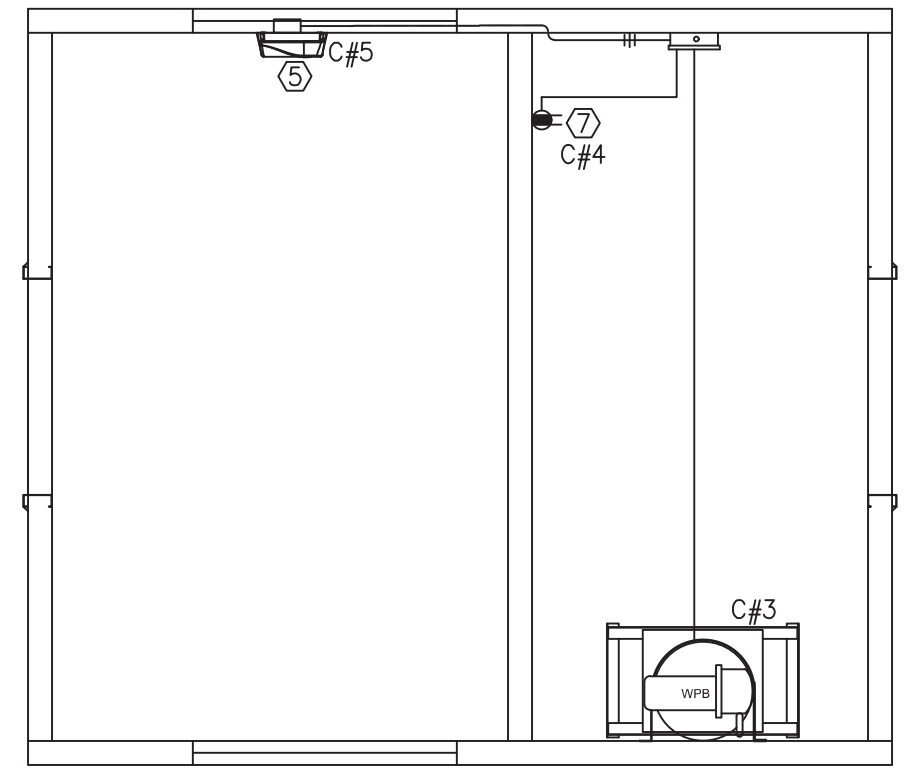
CXT Incorporated

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	3/8" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	32

ELECTRICAL PLAN, DETAILS & SCHEDULES

DWG NO. OZ1-20

SHEET 20/22

REV.

SC 231223025
Review is limited to factory built elements only.

RECEPTACLE,LIGHTING & EXHAUST FAN PLAN
N.T.S.

WATER PRESSURE BOOSTER, WATER HEATER, & HAND DRYER PLAN
N.T.S.

SC 231223025

Review is limited to factory built elements only.

KEY NOTES

1. OCCUPANCY SENSOR CONTROLLED LIGHTS AND EXHAUST FANS.

2. LIGHT FIXTURE TO BE CONTROLLED BY INTEGRAL PHOTOCELL.

3. CIRCUIT AS NEEDED FOR THE LOAD OF THE EXHAUST FAN. WIRE THRU OCCUPANCY SENSOR.

4. CHASE LIGHT TO BE SWITCH ACTIVATED.

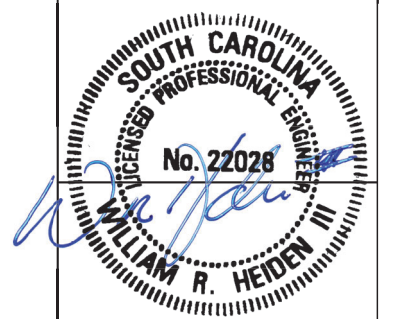5. NOT USED.

6. NOT USED.

7. GFCI OUTLET FOR WATER HEATER.

PFS CORPORATION
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State: **South Carolina**
Signature: *Mark Severson*
Title: **Staff Plan Reviewer**
Date: **6/2/23**

SYMBOLS LEGEND

⬡ 1	NOTE REFERENCE
▭	LED FIXTURE
◯	LED FIXTURE
$	ON / OFF SWITCH
⊖	GFCI RECEPTACLE
⊡	LOAD CENTER/PANEL-C
J	JUNCTION BOX

⫘	SURFACE MOUNTED CONDUIT CROSSHATCH DENOTES WIRES, (ALL #12AWG UNO) ALWAYS ONE WIRE TO BE GROUND WIRE
——	SURFACE MOUNTED CONDUIT
——	CONCEALED CONDUIT
C#XX	CIRCUIT SCHEDULE

REV.	DESCRIPTION	APPROVAL	DATE
SCALE	3/8" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	32

ELECTRICAL PLAN, LEGENDS & NOTES

DWG NO.	SHEET	REV.
OZ1-21	21 / 22	

WALL PANEL W1
EMBEDDED MATERIALS

ITEM	QTY
AS-2 S.S.	4
PS-2 S.S.	8
PS-10 S.S.	2
R3x114	2
R3x96	4
R3x35	4
R405	2
SI-2	1
B.O. 40 1/8 x 82 1/4"	1
ROUND MUD RING	1
4x4 J-BOX	1
B.O. 3"x6"x2" DP	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
20.6 (0.77)	62

APPROXIMATE WEIGHT
3,090

WALL PANEL W2
EMBEDDED MATERIALS

ITEM	QTY
AS-2 S.S.	3
PS-2 S.S.	8
PS-10 S.S.	2
R405	2
R4x114	1
4x4 E-BOX	6
ROUND MUD RING	1
B.O. 2" DIAMETER	2
B.O. LAVATORY	1
B.O. FLUSH BOWL	1
B.O. 4 1/2" DIA	1
RECT. MUD RING	1
URINAL B.O.	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
28.2 (1.04)	85

APPROXIMATE WEIGHT
4,230

WALL PANEL W3
EMBEDDED MATERIALS

ITEM	QTY
PS-2 S.S.	8
PS-10 S.S.	2
R3x114	2
R3x96	4
R3x35	4
R405	2
AS-2 S.S.	4
B.O. 40 1/8" x 82 1/4"	1
B.O. 4 1/2" DIA.	1
E-BOX	2

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
20.6 (0.77)	62

APPROXIMATE WEIGHT
3,090

WALL PANEL W4
EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x140	4
R4x92	6
MS-6 S.S.	1
R303	3
AS-2 S.S.	3
R4x48	2
SI-2 MOLD	1
4x4 J-BOX	2
B.O. 3"x6"x2"	1
RECTANGULAR MUD RING	1
R322	2
R3x38	2
B.O. MS-2	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
30.5 (1.13)	96

APPROXIMATE WEIGHT
4,757

WALL PANEL W5
EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x140	4
R4x92	8
AS-2 S.S.	3
R303	3
MS-6 S.S.	1
SI-2 MOLD	1
B.O. HOSE BIB	1
R322	2
R3x38	2
B.O. MS-2	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
30.5 (1.13)	96

APPROXIMATE WEIGHT
4,757

FLOOR SLAB F1
EMBEDDED MATERIALS

ITEM	QTY
AS-3 S.S.	4
PS-19 S.S.	17
R4x122	4
R4x140	2
R3x42	8
R3x46	2
R3x54	4
R3x122	6
B.O. 6" DIA.	1
B.O. 24"x16"	1
FLOOR DRAIN	1

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
51.3 (1.90)	252

APPROXIMATE WEIGHT
7,695

ROOF SLAB R1
EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x172	4
R303	6
R4x18	16
FL-847 S.S.	4
B.O. 5" DIA	2
B.O. TEX. 12" SQ	2
R4x68	4
R320	8

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
37.3 (1.38)	182

APPROXIMATE WEIGHT
5,595

ROOF SLAB R2
EMBEDDED MATERIALS

ITEM	QTY
PS-19 S.S.	9
PS-2 S.S.	1
PS-10 S.S.	4
R4x172	4
R303	6
R4x18	16
FL-847 S.S.	4
R320	8
R4x68	4

MARINE PACKAGE

CU. FT. CONC.	SQ. FT. W.W.F.
37.3 (1.38)	182

APPROXIMATE WEIGHT
5,595

South Carolina Licensed Professional Engineer
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

LBFoster
CXT® Products

PROJECT TITLE
OZARK 1
BUILDING NUMBER OZ1-308

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CXT Incorporated

SCALE	1/2" = 1'-0"	DATE	4/14/23
DRAWN	C.WISSER	FILE NO.	OZ1-308
CHECKED	JO	PLOT	48

EMBEDDED MATERIALS

DWG NO.	SHEET	REV.
OZ1-22	22 / 22	

CXT Inc. (Precast Division)

Calculations
Ozark OZI-308
Structural Analysis

Design Loads
400 psf Live Floor Load
250 psf Ground Snow Load
Wind Speed – 150 mph Exp. C
Seismic Design Category: D

Design Standards
2021 INTERNATIONAL BUILDING CODE
ASCE 7-16/ ACI 318-19

UL-752 Bullet Resistance
Classification: Level IV
Report #: 2012-647

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**South Carolina**
Signature:	*Mark Severson*
Title:	**Staff Plan Reviewer**
Date:	**6/2/23**

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

Table of Contents

PFS

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State:	**South Carolina**
Signature:	*Mark Severson*
Title:	**Staff Plan Reviewer**
Date:	**6/2/23**

All attached documents are for reference only and designed or approved by others.

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

Main Wind Force Resisting System Loads (ASCE 7-16)

Ozark OZI-308		
Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.
Exposure	C	See § 26.7.3: Exposure Categories, General.
Velocity	150 mph	See Figure 26.5-1A thru 26.5-2D: Basic Wind Speed (3 second Gust)
h.wind	8.00 ft	Windward wall height
h.lee	8.00 ft	Leeward wall height
W.building	10.5 ft	Width of the building
L.building	12 ft	Length of the building
H.building	9.69 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise	3	Roof pitch (per foot)
ϑ	14.04 deg	Roof Angle
Kd	0.85	Wind directionality factor. 0.85 when using load combinations, 1.0 otherwise.
K_1	0.00	
K_2	0.00	
K_3	0.00	See Figure 26.8-1: Multipliers for Obtaining Topographical Factor Kzt
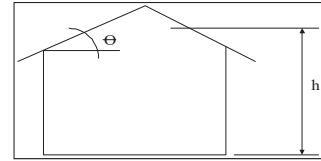
Kzt	1	Topographic factor
h	8.845 ft	Mean roof height
n_a	8.48	Natural frequency
Flexibility	Rigid	Building flexibility
α	9.5	Terrain factor
z_g	900 ft	Terrain factor
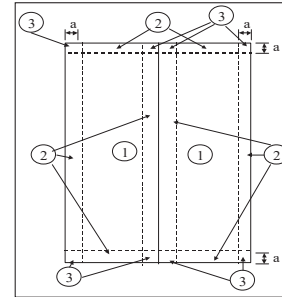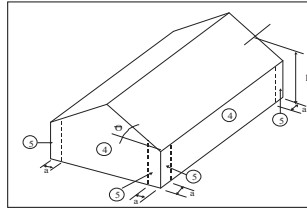
Velocity Pressure Exposure Coefficient		
K(z)	0.849	at windward eave

Velocity Pressure (27.3.2)	
q_z	41.56 psf

Gable	Type of Roof - Gable or Hip?

Partially Enclosed if the building meets both of the following conditions:

1. Total area of openings in one wall exceeds area of openings in the balance of the building by more than 10%.

2 Total area of openings in one wall exceeds 4 sq. ft. or 1% of area of that wall and the total area of openings in the balance of the building does not exceed 20% of the area in the balance of the building.

Zone	Opening Area	Gross Area	Agi	Aoi	Condition 1	Condition 2	Condition 3	Condition 4	Type:
Windward sidewall	0 sq ft	96.0 sq ft	407.7 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Windward endwall	0 sq ft	92.9 sq ft	410.9 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward sidewall	0 sq ft	96.0 sq ft	407.7 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Leeward endwall	0 sq ft	92.9 sq ft	410.9 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed
Roof	0 sq ft	126.0 sq ft	377.7 sq ft	0 sq ft	0.00	0.00	0.00	0.00	Enclosed

Enclosed

Gust Factor - (26.9)	
G =	0.85

External Pressure Coefficients				
C_{po}	0.8	See 27.3.3 Roof Overhangs		
Cp	0.8	Windward wall (Use with qz) Fig. 27.3-1		
	-0.500	Leeward wall (wind normal to ridge) (Use with qh)	L/B =	0.88
	-0.471	Leeward wall (wind parallel to ridge) (Use with qh)	L/B =	1.14
	-0.7	Sidewalls (Use with qh) Fig. 27.4-1		

Internal Pressures:	
Negative:	-7.48 psf
Positive:	7.48 psf

	Pos. Windward	Neg. Windward	Leeward
Roof Pressure Coefficients (Fig 27.3-1) Normal to Ridge when Theta >= 10degrees	-0.180	-0.957	-0.582

	0 to h/2	h/2 to h	h to 2h	> 2h
Roof Pressure Coefficients (Fig 27.3-1) Normal to Ridge when Theta < 10 deg.	-1.17	-0.76	-0.64	-0.57
Roof Pressure Coefficients (Fig 27.3-1) PARALLEL to Ridge	-1.09	-0.81	-0.59	-0.49

Roof Pressures Wind Perpendicular to Ridge w/ ϑ >= 10 deg	
w/ Negative Internal	1.12 psf
w/ Positive Internal	-41.30 psf
*WORST CASE LOADING	

Wall Pressures:	w/ Negative	w/ Positive Internal
Windward	35.74 psf	20.78 psf
Leeward (wind normal)	-16.00 psf	-25.14 psf
Leeward (wind parallel)	-16.00 psf	-24.14 psf
Side Wall	-17.25 psf	-32.21 psf
Additional Overhang Pressure:		28.26 psf

Roof Pressures: Wind Parallel to ridge for all roof slopes:	
Location	w/ Positive Internal
0 to h/2	-45.98 psf
h/2 to h	-35.93 psf
h to 2h	-28.49 psf
Over 2h	-24.78 psf

Roof Pressures: Wind Perpendicular to ridge for ϑ < 10 deg:	
Location	w/ Positive Internal
0 to h/2	0.00 psf
h/2 to h	0.00 psf
h to 2h	0.00 psf
Over 2h	0.00 psf

Wind Speed:	150 mph	Roof Slope:	3.00 : 12	COMPONENTS & CLADDING		
Exposure:	C	Mean Roof Height:	8.85 ft			
			Effective Area			
Zone	10.0 sq ft		100.0 sq ft		500.0 sq ft	
1	-38.21 psf	19.98 psf	-34.05 psf	11.67 psf	-34.05 psf	11.67 psf
2	-71.45 psf	19.98 psf	-50.67 psf	11.67 psf	-50.67 psf	11.67 psf
2oh	-91.44 psf	-	-91.44 psf	-	-91.44 psf	-
3	-108.86 psf	19.98 psf	-83.92 psf	11.67 psf	-83.92 psf	11.67 psf
3oh	-153.78 psf	-	-103.90 psf	-	-103.90 psf	-
4	-46.52 psf	40.76 psf	-38.21 psf	33.70 psf	-34.05 psf	28.29 psf
5	-58.99 psf	40.76 psf	-46.52 psf	33.70 psf	-34.05 psf	28.29 psf
a:	3.00 ft					

Higher pressures at the ridge line only applies to roof pitches > 7 degrees

ASCE 7-16 SNOW LOAD CALCULATION

Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.
Exposure	C	See § 26.7.3: Exposure Categories, General.
Pg	250 psf	See ASCE Figure 7.2-1: Ground Snow Load
W.building	10.5 ft	Length of the building
L.building	12 ft	Width of the building
H.building	9.69 ft	Height of the building (to the ridge). Enter 0 if unknown.
Roof Rise (per foot)	3	Roof pitch
ϑ	14.04 deg	Roof Angle

ASCE Table 7.3-2 - Thermal Condition:		C_t
All structures except as indicated below:		1.0
Structures kept just above freezing and others with cold, ventilated roofs in which the thermal resistance (R-value) between the ventilated space and the heated space exceeds 25*h (deg*sq ft/BTU).		1.1
Unheated and open air structures		1.2
Structures intentionally kept below freezing		1.3
Continuously heated greenhouses with a roof having a thermal resistance value (R-value) less than 2.0*h (deg*sq ft/BTU).		0.85

C_t	1.2	(Choose from table above)
Is	1	ASCE Table 1.5-2
Surface	Unobstructed	ASCE § 7.4
Roof type	Gable	
Hor. Eave to Ridge Distance - windward	5.25 ft	
Roof Exposure	Partially exposed	ASCE Table 7.3-1
C_e	1	ASCE Table 7.3-1
Cs	1	Slope Factor from Figure 7.4-1
Low Sloped?:	Yes	ASCE § 7.3.4
P_f	210.00 psf	Flat Roof Snow Load
P_s	210.00 psf	Sloped Roof Snow Load
Use unbalanced?	Yes	ASCE § 7.6.1
$P_{windward}$	0.00 psf	ASCE § 7.6.1
$P_{leeward\ 1}$	250.00 psf	ASCE § 7.6.1
$P_{leeward\ 2}$	250.00 psf	ASCE § 7.6.1
Distance from Ridge to Edge of $P_{leeward1}$ loading	5.3 ft	ASCE Figure 7.6-2

γ	30.00 pcf	Snow density	Eq. 7.7-1 of ASCE 7
S	4	Run per rise of 1	ASCE § 7.1
h_d	10.19 ft	Height of drifting snow on leeward side	
h_b	7.00 ft	Height of balanced snow	
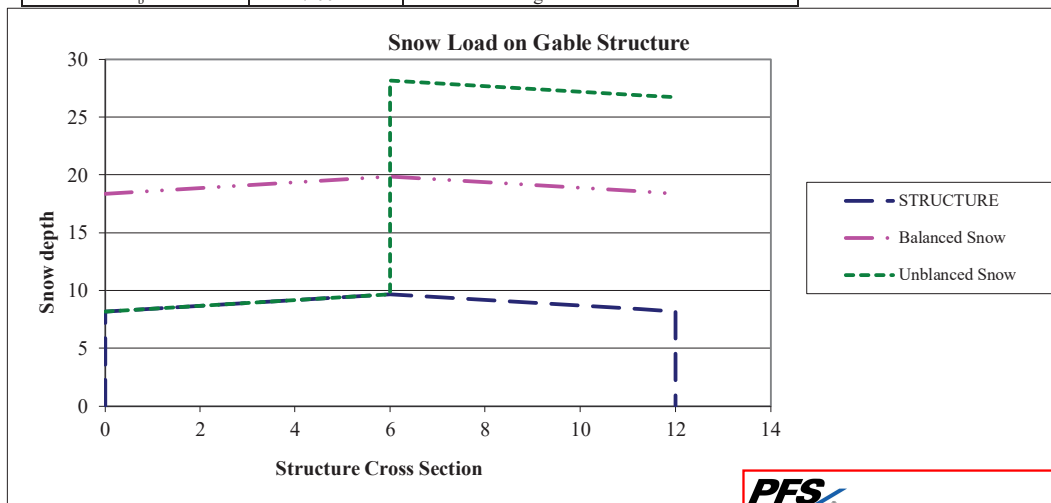
Snow Load on Gable Structure

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Seismic Loads (ASCE 7-16)

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Category	II	IBC TABLE 1604.5: Risk Category of Buildings and Other Structures.	
S_s	1.524 g	Max. Earthquake Ground Motion of 0.2 sec Spectral Response Acceleration	*ASCE Figure 22-1*
S_1	0.674 g	Max. Earthquake Ground Motion of 1.0 sec Spectral Response Acceleration	*ASCE Figure 22-2*
Site Class	D (Default)	Site classification (Use D if unknown unless jurisdiction, or geotechnical data determines Site Class E or F.)	*ASCE 20.1*
T_L	16.0 sec	Long Period Transition Period	*ASCE Figure 22-14*
Seismic Force Resisting System	A.5	Intermediate precast shear walls	*ASCE Table 12.2-1*
R	4.00	Response Modification Factor	
Ω_0	2.5	System Over strength Factor	
C_t	0.02	Approximate period parameter	ASCE Table 12.8-2
x	0.75	Approximate period parameter	ASCE Table 12.8-2
hn	9.05 ft	Height in feet from base to highest level of structure	

				Value 1*	Value 2*	*=Used for interpolation
F_a	1.2	Interpolated Value	*ASCE Table 11.4-1*	1	1	***1.2 used per ASCE 11.4-2
F_v	1.7	Interpolated Value	*ASCE Table 11.4-2*	1.7	1.7	

$Sms = Fa * S_S$	1.829 g	Adjusted MCE Spectral Response Acceleration at short periods	*ASCE 11.4-1*
$S_{m1} = F_v * S_1$	1.146 g	Adjusted MCE Spectral Response Acceleration at 1 sec period	*ASCE 11.4-2*
		(MCE = Maximum considered earthquake)	

$S_{DS} = 2/3\ Sm_s$	1.219 g	Design Spectral Acceleration Parameters	*ASCE 11.4-3*
$S_{D1} = 2/3\ Sm_1$	0.764 g	Design Spectral Acceleration Parameters	*ASCE 11.4-4*

I_E	1	Importance Factor	*ASCE Table 1.5-2*

Seismic Design Category	D	
Based on S_{DS}	D	Table 11.6-1
Based on S_{D1}	D	Table 11.6-2

Geotechnical Investigation Report Required?		**Yes per ASCE 11.8.2 and 11.8.3, IBC 1803**

EQUIVALENT LATERAL FORCE PROCEDURE

$T_a = C_t * hn^x$	0.10 sec	Approximate fundamental period	*ASCE 12.8-7*
$T_s = S_{D1}/S_{DS}$	0.63 sec		
T	0.10 sec	Fundamental period of the structure (can be taken as Ta per ASCE 12.8.2)	

$C_s = S_{DS}/(R/I)$	0.305	*ASCE 12.8-2*	
$C_{s.min}$	0.084	*ASCE 12.8-5 & 12.8-6*	
$C_{s.max}$	1.829	*ASCE 12.8-3 & 12.8-4*	
C_s	0.305		
k	1.000	*ASCE 12.8.3*	
W	45.95 kip		
$V = C_s * W$	35.02 kip	*ASCE 12.8-1*	*Shear **with** snow load*
$M_o =$	312.7 k-ft		*Overturning Moment **with** snow load*
$V = C_s * W$	29.30 kip		*Shear **without** snow load*
$M_o =$	260.3 k-ft		*Overturning Moment **without** snow load*

WITH SNOW LOAD

Level	Story Height	h_i or h_x	P_f (flat roof snow load)	w_i	$w_i*h_i^k$	C_{vx}	F_x	V_x (Story shear)	M_x	$F_{px\ (diaphragm\ force)}$
						12.8-12	12.8-11;11.7			12.10-1
Roof	8.85 ft	9.05 ft	210 psf	28.48 kip	257.8 k-ft	0.986	34.53 kip	34.53 kip	0.0 k-ft	13.89 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		17.48 kip	3.6 k-ft	0.014	0.49 kip	35.02 kip	305.4 k-ft	8.52 kip
Base	0 ft	0.00 ft	W=	45.95 kip	261.5 k-ft			$M_o =$	312.7 k-ft	

WITHOUT SNOW LOAD

Level	Story Height	h_i or h_x	P_f (flat roof snow load)	w_i	$w_i*h_i^k$	C_{vx}	F_x	V_x (Story shear)	M_x	$F_{px\ (diaphragm\ force)}$
						12.8-12	12.8-11;11.7			12.10-1
Roof	8.85 ft	9.05 ft	0 psf	20.97 kip	189.8 k-ft	0.981	28.74 kip	28.74 kip	0.0 k-ft	10.23 kip
Walls	0.00 ft	0.00 ft								
Floor	0.21 ft	0.21 ft		17.48 kip	3.6 k-ft	0.019	0.55 kip	29.30 kip	254.2 k-ft	8.52 kip
Base	0 ft	0.00 ft	W=	38.45 kip	193.5 k-ft			Mo =	260.3 k-ft	

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Center of Mass & Rigidity

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					X	Y
	Upper Left = 0,0		Lower Right		180	143
Wall	X Relative	Y Relative	Shear Force		Dist to CoRx	Dist to CoRy
	Stiffness	Stiffness	lbs	plf	dx (IN)	dy (IN)
W1	21.48%	0.00%	1,864	190	80.268	0.100
W2	57.05%	0.00%	4,952	504	7.732	0.053
W3	21.48%	0.00%	1,864	190	59.732	0.100
W4	0.00%	50.04%	4,344	362	9.304	60.947
W5	0.00%	49.96%	4,336	361	8.721	61.053

			Left Edge	Top Edge	Right Edge	Bottom Edge	Snow/Live	Center of Gravity		Live	Live
Slab	Thickness	Weight	X	Y	X	Y	(psf)	X	Y	w snow	w/o snow
R1	4.5	5595	0	71.5	180	143	210	90.0	107.3	9349	5595
R2	4.5	5595	0	0	180	71.5	210	90.0	35.8	9349	5595
F1	5	7695	18	8.5	162	134.5	400	90.0	71.5	7695	0
Totals		19560						91.9	71.5		

			Wgt	Wgt		wgt	wgt
Torsional Eccentricity			(w snow)	(w/o snow)		(w snow)	(w/o snow)
ex	ey		45,953	38,445	roof	28,478	20,970
8.36	0.06				floor	17,475	
Center of Gravity							
X	Y						
91.9	71.5						
Center of Rigidty							
X	Y						
100.3	71.4						

Wall Overturning Checks Using Weight of Adjacent Walls						
Force Transferred by Connections Between Walls						
	Anchorage Required to Resist Overturning From Design Moment	Toward Lower Right Anchor Resistance		Toward Upper Left Anchor Resistance		Overturning status using just connection to adjacent walls
		Moment		Moment		
Wall	(kip-ft)	(kip-ft)	check	(kip-ft)	check	
W1	22.66	45.16	OK	45.16	OK	None Required
W2	87.20	45.16	Need More	45.16	Need More	TRY BASE ANCHORS
W3	22.66	30.16	OK	30.16	OK	None Required
W4	59.35	152.65	OK	131.51	OK	None Required
W5	59.20	152.65	OK	131.51	OK	None Required

Overturning resistance considers only the weight of the wall, the weight of the roof supported by the wall, and connection to adjacent walls. Roof weight supported by other walls has not been considered. Connection to adjacent walls is taken as the connection capacity, not to exceed that portion of the adjacent wall weight that can be reasonably attributed to the connection.

Wall Overturning Checks Using Base Anchors Only						
Must investigate ONLY if connection to adjacent walls is insufficient						
	Design Moment	Toward Lower Right Anchor Resistance		Toward Upper Left Anchor Resistance		Combined Loading Unity Check	Required Tension Capacity per Base Anchor (lb)
	(kip-ft)	Moment		Moment			
Wall		(kip-ft)	check	(kip-ft)	check		
W1	22.66	55.72	OK	55.72	OK	OK	(1144)
W2	87.20	42.09	Try Both	42.09	Try Both	OK	2850
W3	22.66	55.72	OK	55.72	OK	OK	(381)
W4	59.35	52.10	Try Both	51.26	Try Both	OK	(4065)
W5	59.20	52.10	Try Both	51.26	Try Both	OK	(4074)

Wall Overturning Checks Using Base Anchors and Connection to Adjacent Walls						
Must investigate ONLY if both base anchor alone and adjacent walls alone are insufficient						
	Base Anchor Shear Required	Base Anchor Tension Available	Available Overturning Resistance (kip-ft) From Base Anchors		Overturning Unity Check of Base Anchors	
Wall	(% Capacity)	(% Capacity)	Lower Right	Upper Left	Lower Right	Upper Left
W1	0.0%	100.0%	100.88	100.88	OK	OK
W2	0.0%	100.0%	87.26	87.26	OK	OK
W3	0.0%	100.0%	85.88	85.88	OK	OK
W4	0.0%	100.0%	204.74	182.76	OK	OK
W5	0.0%	100.0%	204.74	182.76	OK	OK

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	DESIGN OF ROOF PANELS MARK R1 & R2

Material Properties

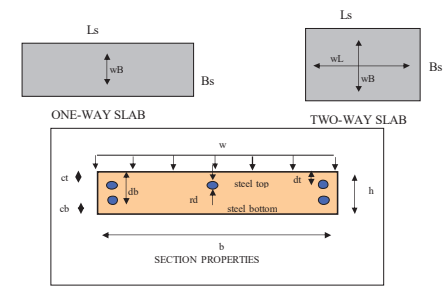|		
f ' c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Geometric Properties

Ls (overall length of slab)	15 ft	
Bs (overall width of slab)	6.09 ft	
Design will be performed as :	One-way slab	
tfr (roof finish thickness)	0.375 in	
b (section width)	12 in	(typically 12 inches)
h (section thickness)	4.5 in	
ct (cover top)	1 1/4 in	
cb (cover bottom)	1 in	
rd (assumed reinf. diameter)	0.319 in	(if centered enter 0)
dt (effective depth top)	1.410 in	
db (effective depth bottom)	3.181 in	
oh1 (overhang length and qty for Bs)	18 in	2	[qty of overhangs in Bs direction]
oh2 (overhang length and qty for ls)	8.5 in	1	[qty of overhangs in ls direction]
Cs (% of DL used for Seismic)	0.305	[from seismic analysis]
NBs (qty of walls in Bs direction)	3	[walls that support one or more roof panels in the short direction]
Nls (qty of walls in ls direction)	1	[walls that support one or more roof panels in the long direction]

Reinforcement Limits

ρ_t (maximum tensile reinforcement)	0.0166	
$\rho_{s,min\ temp}$ (min. temperature reinforcement)	0.0018	ACI 7.6.1.1 and 8.6.1.1
$\rho_{s,min\ t}$ (minimum tensile reinforcement)	0.0027	ACI 9.6.1.2

Notes:

fr (rupture modulus)	530.3 psi	ACI 19.2.3.1
Ig = (b*h^3)/12	91.125 in^4	
Ag = (b*h)	54 in^2	
Yt = h/2	2.3 in	
Mcr	21.478 kip in	ACI 24.2.3.5
β1	0.8	ACI Table 22.2.2.4.3
Δ initial	360	ACI Table 24.2.2
Δ long-term	480	ACI Table 24.2.2
B	8.830	
kd	0.463 in	
Lcr	1.61 in^4	
a	0.32 in	

(reinforcement ratio provided)		ω
$\rho_{provided}$ (bottom mesh)	0.0053	0.0848 psi
$\rho_{provided}$ (top mesh)	0.0119	0.1904 psi
$\rho_{provided}$ (both layers)	0.0146	0.2336 psi

Wire Mesh (Top)

Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2 = As'

Wire Mesh (Bottom)

Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2 = As

Loading

Design Loads	
Pressure on Slab	
D (Dead load))	60.938 psf
S (Snow Load)	250 psf
L (Live Load)	0 psf
Lr (Live Roof Load)	30 psf
W (Wind Load)	108.86 psf
E (Earthquake Load)	18.57 psf

Sustained Loading	
Pressure on slab	W
D (Dead load)	60.938 psf
S (Snow Load)	250 psf
Lr (Live Roof Load)	30 psf

Factored Design Loads

Factored Loading per ACI equation indicated	Factored Pressure on Slab W	Pressure on Section wB = W*(L^4 / B^4 + L^4)*be	Pressure on Section wL = W*(B^4 / B^4 + L^4)*be
ACI 318-19 5.3.1c	527.555 psf	0.53 klf	0 klf

1.545 ft
1.61 kip   1.61 kip
14.2916
0.00 kip   0.00 kip

B (Span in the short direction)	1.545 ft
L (Span in the long direction)	14.29166667 ft

Factored Sustained Loads

Factored Loading per ACI equation indicated	Factored Pressure on Slab W	Pressure on Section wB = W*(L^4 / B^4 + L^4)*be	Pressure on Section wL = W*(B^4 / B^4 + L^4)*be
ASCE 7-16 CC.2-1b	185.938 psf	0.19 klf	0 klf

1.545 ft
0.58 kip   0.58 kip
14.2916
0.00 kip   0.00 kip

Unfactored Design Loads

Factored Loading per ACI	Factored Pressure on Slab W	Pressure on Section wB = W*(L^4 / B^4 + L^4)*be	Pressure on Section wL = W*(B^4 / B^4 + L^4)*be
ASCE 7-16 2.4.1 6	319.9245 psf	0.25 klf	0 klf

1.545 ft
0.76 kip   0.76 kip
14.29166
0.00 kip   0.00 kip

ONE-WAY SLAB   **TWO-WAY SLAB**

SECTION PROPERTIES

SUMMARY
Use 1 Layer of Wire Mesh on Top: W6.7 x W6.7 x 4 x 4
Use 1 Layer of Wire Mesh on Bottom: W6.7 x W6.7 x 4 x 4

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DESIGN OF ROOF PANELS MARK R1 & R2

Notes:

Ls — ONE-WAY SLAB (wB, Bs)

Ls — TWO-WAY SLAB (wL, wB, Bs)

SECTION PROPERTIES (ct, cb, db, rd, steel top, steel bottom, dt, h, b)

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Geometric Properties

Ls (overall length of slab)	15 ft	
Bs (overall width of slab)	6.09 ft	
Design will be performed as :	One-way slab	
tfr (roof finish thickness)	0.375 in	
b (section width)	12 in	(typically 12 inches)
h (section thickness)	4.5 in	
et (cover top)	1 1/4 in	
ch (cover bottom)	1 in	
rd (assumed reinf. diameter)	0.319 in	(if centered enter 0)
dt (effective depth top)	1.410 in	
db (effective depth bottom)	3.181 in	
oh1 (overhang length and qty for Bs)	18 in	2	{qty of overhangs in Bs direction}
oh2 (overhang length and qty for ls)	8.5 in	1	{qty of overhangs in ls direction}
Cs (% of DL used for Seismic)	0.305	{from seismic analysis}
NBs (qty of walls in Bs direction)	3	{walls that support one or more roof panels in the short direction}
Nls (qty of walls in ls direction)	1	{walls that support one or more roof panels in the long direction}

fr (rupture modulus)	530.3 psi	ACI 19.2.3.1
Ig = (b*h^3)/12	91.125 in^4	
Ag = (b*h)	54 in^2	
Yt = h/2	2.3 in	
Mcr	21.478 kip-in	ACI 24.2.3.5
β1	0.8	ACI Table 22.2.2.4.3
Δ initial	360	ACI Table 24.2.2
Δ long-term	480	ACI Table 24.2.2
B	8.830 in	
kd	0.463 in	
I.cr	1.61 in^4	
a	0.32 in	

(reinforcement ratio provided)		ω
$\rho_{provided}$ (bottom mesh)	0.0053	0.0848 psi
$\rho_{provided}$ (top mesh)	0.0119	0.1904 psi
$\rho_{provided}$ (both layers)	0.0146	0.2336 psi

Flexure

One-way slab	Mu	ε_t	ε_{ty} Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	ϕb Per ACI Table 21.2.2	ϕMn trial = ϕfcbd^2ω(1-0.59ω)	DM = Mu - ϕM	ϕMn =	Check ϕMn > Mu	% allowed
Mpos (positive Moment) = (wB*B^2) / 8	0.16 kip-ft	0.021	0.003	Tension	0.9	3.67 kip-ft		3.67 kip-ft	O.K.	4.36%

	Mu	ε_t	ε_{ty} Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	ϕb Per ACI Table 21.2.2	ϕMn trial = ϕfcbd^2ω(1-0.59ω)	DM = Mu - ϕM	ϕMn =	Check ϕMn > Mu	% allowed
Mpos (positive Moment) = (wL*L^2) / 8	0.000 kip-ft	0.021	0.003	Tension	0.9	3.67 kip-ft		3.67 kip-ft	O.K.	0.00%

	Mu	ε_t	ε_{ty} Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	ϕb Per ACI Table 21.2.2	S Elastic Section Modulus	Mn Per ACI 14.5.2.1a	Mn Per ACI 14.5.2.1b	ϕMn Per ACI 14.5.2.1	Check ϕMn > Mu	% allowed
Mneg (negative Moment) = (wB*oh1^2) / 2	0.596 kip-ft	0.008	0.003	Tension	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	0.716 kip-ft	O.K.	83.28%
Mneg (negative Moment) = (wB*oh2^2) / 2	0.133 kip-ft	0.008	0.003	Tension	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	0.716 kip-ft	O.K.	18.57%
Mneg (negative Moment) = (wL*oh1^2) / 2	0.000 kip-ft	0.008	0.003	Tension	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	0.716 kip-ft	O.K.	0.00%
Mneg (negative Moment) = (wL*oh2^2) / 2	0.000 kip-ft	0.008	0.003	Tension	0.6	40.500 in^3	1.193 kip-ft	14.344 kip-ft	0.716 kip-ft	O.K.	0.00%

Shear

One-way slab	Vu	ϕv per Table ACI 21.2.1	Vc per ACI 22.5.5.1	ϕVc	Check ϕVc > Vu	% allowed
Vu = wB (B/2)	0.41 kip	0.85	5.40 kip	4.59 kip	O.K.	8.92%
Vu for side overhang 1 = wB*oh1	0.80 kip	0.85	2.39 kip	2.03 kip	O.K.	39.10%
Vu for side overhang 1 = wB*oh2	0.38 kip	0.85	2.39 kip	2.03 kip	O.K.	18.46%

Shear for Ls	Vu	ϕv per Table ACI 21.2.1	Vc per ACI 22.5.5.1	ϕVc	Check ϕVc > Vu	% allowed
Vu = wL (L/2)	0.00 kip	0.85	5.40 kip	4.59 kip	O.K.	0.00%
Vu for end overhang 2 = wL*oh1	0.00 kip	0.85	2.39 kip	2.03 kip	O.K.	0.00%
Vu for end overhang 2 = wL*oh2	0.00 kip	0.85	2.39 kip	2.03 kip	O.K.	0.00%

	Months	Epsilon
Sustained Load Duration Per Table 24.2.4.1.3	6	1.2

Span type:	Simple span	1

Deflection

Span	Service Loads Ma.serv	Ma.sus	I.eff.serv Per Table 24.2.3.5	I.eff.sustained Per Table 24.2.3.5	Immediate Deflection Δi AISC 15th Edition Table 3-23	ρ'	$\lambda\Delta$ per ACI 24.2.4.1.1	Long-Term Deflection Δl-t	Δ total long-term deflection ($\Delta i + \Delta l$-t)	Δ allow (immediate)	Δ allow (long term)	Check short term deflection	Check total long term deflection	% allowed - short term	% allowed - total long term
B	0.16 kip-ft	0.057 kip-ft	91.13 in^4	91.13 in^4	0.000 in	0.0053	0.9486	0.000 in	0.000 in	0.0515 in	0.0386 in	O.K.	O.K.	0.12%	0.31%
L	0 kip-ft	0 kip-ft	0.00 in^4	0.00 in^4	0.000 in	0.0053	0.9486	0.000 in	0.000 in	0.4764 in	0.3573 in	O.K.	O.K.	0.00%	0.03%

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

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ID:	Ozark OZI-308
	DESIGN OF WALL MARKED **W1**

Notes

Material Properties

f'c	5000 psi
Steel Reinforcement	Plain WWF Grade 80
Fy wire mesh	80000 psi
Fy rebar	60000 pcf
Lightweight?	No
Concrete density	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Shear Parameters

φv	0.85	ACI Table ACI 21.2.1
Vc	3.123 kip	ACI 22.5.5.1
φVc	2.654 kip	

Minimum Wall Reinforcement Requirements

pmin.vert	0.0025	ACI Table 11.6.1
pmin.hor	0.0025	ACI Table 11.6.1
Max Vertical spacing	12 in	ACI 11.7.2.2
Max Horizontal spacing	12 in	ACI 11.7.2.2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.94 psf	Dead Load (DL.lat)	0 psf
S (Snow Load)	250 psf	Snow Load (SL.lat)	0 psf
L (Live Load)	0 psf	Live Load (LL.lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr.lat)	0 psf
W (Wind Load)	108.86 psf	Wind Load (WL.lat)	58.99 psf
E (Earthquake Load)	18.57 psf	Earthquake Load (EL.lat)	15.24 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	527.555

Axial Pressure on Section

PuB	1.98 kip

Assumption check

0.06*f'c*Ag	14.4 kip	ACI 11.8.1.1(d)
Check	O.K.	

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	319.9245 psf

Axial Pressure on Section

PB	1.29 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.09 kip
φVc/2	1.33 kip
Check Shear	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4	
Ag = (b*h)	48 in^2	
Yt = h/2	2	
fr (rupture modulus)	530.330 psi	ACI 24.2.3.5
Mcr	16.971 kip-in	ACI Table 22.2.2.4.3
B1	0.8	
Trial Ast req'd	0.073 in^2	
B	8.829624606	
kd	0.542 in	
Icr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.23 in^2	
Icrdeflection	3.61 in^4	
Ie	64.00 in^4	
delta	360	ACI Table 24.2.2
rt (maximum tensile reinforcement)	0.0166	
rtemp (min. temperature reinforcement)	0.0018	
rmin (minimum tensile reinforcement)	0.0027	
rtrial (trial reinforcement ratio bottom)	0.0033	
ρprovided (reinforcement ratio provided)	0.0090	
a	0.32 in	

ACI's Alternate Design of Slender Walls

	ACI 11.8.1 & 11.8.2
Assumptions from this methodology:	
Cross section is constant over the height of the wall	ACI 11.8.1.1 (a)
Wall is tension-controlled for out-of-plane moment effect	ACI 11.8.1.1 (b)
φMn is at least Mcr, where Mcr is calculated using fr as provided in 19.2.3	ACI 11.8.1.1 (c)
Pu at mid-height shall not exceed 0.06*f'c*Ag	ACI 11.8.1.1 (d)
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum	ACI 11.8.2.1
Concentrated gravity loads are distributed over the wall length	ACI 11.8.2.2

Geometric Properties

X Corridnate	20
Y Corridnate	12.5
Direction of Wall	Y
Center of gravity X	20.000
Center of gravity Y	71.547
Wall Weight	3090.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	Yes
lop (length of opening on wall)	0 ft
H (height of wall)	103.2 in
Lh (length of wall)	9.833 ft
Analysis will be performed as	Two-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of DL used for Seismic)	0.305
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh

Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2 = As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI 5.3.1d & 5.3.5
Factored Pressure on Wall Ww	94.38 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.03 klf
Hw = W*(H^4 / H^4 + L^4)	0.06 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.02 klf
Hw = W*(H^4 / H^4 + L^4)	0.04 klf

Deflection

Service Loads

Axial	1.29 kip	
Lateral	0.02 klf	
Allowed service deflection	0.29 in	
Msa	2.864 kip-in	
M	2.879 kip-in	ACI 14-9
Δs	0.012 in	ACI 14-8
Check deflection	O.K.	

Flexure

Assumption check

	Hw	Lw	
Span			
et	0.011	0.011	
ety	0.003	0.003	ACI 21.2.2.1
Check	Tension	Tension	ACI 11.8.1.1(b)
φb	0.9	0.9	ACI Table 21.2.2
Mua	0.633 kip-ft	0.630 kip-ft	
Mu	0.630 kip-ft	0.630 kip-ft	ACI 11.8.3.1d
φMn trial = φAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft	
ΔM =Mu - φM	0.000 kip-ft	0.000 kip-ft	
As Add'l req'd	0.00 in^2	0.00 in^2	
Add'l bar size:	3	3	
c	0	0	
qty req'd	0	0	
or spacing of:	0	0	
As add'l =	0.000 kip-ft	0.000 kip-ft	
Ast = As + As add'l	0.20 in^2	0.20 in^2	
φMn = φAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft	
Check φMn > Mu	O.K.	O.K.	
% allowed	31.25%	31.25%	

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

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Legend: ◆ Entire Wall ■ DOOR 1

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.53 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
DOOR 1	3.24 ft	0 ft	3.34 ft	1.74 ft	1145.62	0.09 klf	0.62 klf	0.58 kip-ft

Flexure

Opening	φb	As req'd	Bar size	qty req'd:	φMn = φAsFy(db - a/2)	Check φMn > Mu
DOOR 1	0.9	0.007 in^2	No. 3	1	9.55 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
				Overturning			
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
4	110	110	40.946	55.72	55.72	45.16	45.16

Total Tension		Base Anchors				
14.334	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	8 in	3.53	8.26	110 in	0.171 kip*ft	32.322 kip*ft
Base Anchor 2	32 in	3.64	12.21	86 in	2.825 kip*ft	20.401 kip*ft
Base Anchor 3	86 in	3.64	12.21	32 in	20.401 kip*ft	2.825 kip*ft
Base Anchor 4	110 in	3.53	8.26	8 in	32.322 kip*ft	0.171 kip*ft

				Wall Connections						
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft)	
									Up Left	Low Right
Wall Connection 1	3	1.531	4.897	31.60%	W4	0	118.000	4.593	0.000	45.165
Wall Connection 2	3	1.531	4.897	31.60%	W5	118	0.000	4.593	45.165	0.000

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity					
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design Resistance (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector		Reserve Capacity
5838	40946	35108	474	7667	OK	1459	(35108)	OK

RIGIDITY

CALCULATED VALUES		38%	Final	2.286693812

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
DOOR 1	Entire Wall	118	103.2	Y	Y	6.074	0.165
	A'	118	82.32	Y	Y	8.222	0.122
	A	38.88	82.32	Y	Y	1.262	0.792
	B	39.04	82.32	Y	Y	1.274	0.785

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
DOOR 1	Entire Wall	A'	A'a	-	Deflection	0.043
	A	B	AB	+	Stiffness	2.536
	A'a	AB	Final	+	Deflection	0.437

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

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ID:	Ozark OZI-308	
	DESIGN OF WALL MARKED	W2
Notes		

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 pcf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
	1	ACI 20.2.2.2
E (Steel)	29000000 psi	ACI 19.2.2.1(a)
E (Concrete)	4286826 psi	
n (modular ratio)	6.76	

Shear Parameters

φv	0.85	ACI Table ACI 21.2.1
Vc	3.123 kip	ACI 22.5.5.1
φVc	2.654 kip	

Minimum Wall Reinforcement Requirements

ρmin.vert	0.0025	ACI Table 11.6.1
ρmin.hor	0.0025	ACI Table 11.6.1
Max Vertical spacing	12 in	ACI 11.7.2.2
Max Horizontal spacing	12 in	ACI 11.7.2.2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.94 psf	Dead Load (DL.lat)	0 psf
S (Snow Load)	250 psf	Snow Load (SL.lat)	0 psf
L (Live Load)	0 psf	Live Load (LL.lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr.lat)	0 psf
W (Wind Load)	108.86 psf	Wind Load (WL.lat)	58.99 psf
E (Earthquake Load)	18.57 psf	Earthquake Load (EL.lat)	15.24 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c
Factored Pressure on Roof Wr	527.555

Axial Pressure on Section

PuB	2.06 kip

Assumption check

0.06*f'c*Ag	14.4 kip	
Check	O.K.	ACI 11.8.1.1(d)

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	319.9245 psf

Axial Pressure on Section

PB	1.37 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.09 kip
φVc/2	1.33 kip
Check Shear	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4	
Ag = (b*h)	48 in^2	
Yt = h/2	2	
fr (rupture modulus)	530.330 psi	ACI 24.2.3.5
Mcr	16.971 kip-in	ACI Table 22.2.2.4.3
B1	0.8	
Trial Ast req'd	0.073 in^2	
B	8.829624606	
kd	0.542 in	
Icr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.23 in^2	
Icrdeflection	3.61 in^4	
Ie	64.00 in^4	
delta	360	ACI Table 24.2.2
r_t (maximum tensile reinforcement)	0.0166	
r_{temp} (min. temperature reinforcement)	0.0018	
r_{min} (minimum tensile reinforcement)	0.0027	
r_{trial} (trial reinforcement ratio bottom)	0.0033	
$ρ_{provided}$ (reinforcement ratio provided)	0.0090	
a	0.32 in	

ACI's Alternate Design of Slender Walls

	ACI 11.8.1 & 11.8.2
Assumptions from this methodology:	
Cross section is constant over the height of the wall	ACI 11.8.1.1 (a)
Wall is tension-controlled for out-of-plane moment effect	ACI 11.8.1.1 (b)
φMn is at least Mcr, where Mcr is calculated using fr as provided in 19.2.3	ACI 11.8.1.1 (c)
Pu at mid-height shall not exceed 0.06*f'c*Ag	ACI 11.8.1.1 (d)
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum	ACI 11.8.2.1
Concentrated gravity loads are distributed over the wall length	ACI 11.8.2.2

Geometric Properties

X Corridate	108	
Y Corridate	12.5	
Direction of Wall	Y	
Center of gravity X	108.000	
Center of gravity Y	71.500	
Wall Weight	4230.000 lbs.	
Central wall?	Yes	
Wall that supports 2 roof panels?	Yes	
lop (length of opening on wall)	0 ft	
H (height of wall)	103.2 in	
Lh (length of wall)	9.833 ft	
Analysis will be performed as	Two-way slab	
b (section width)	12 in	
h (section thickness)	4 in	
ct (cover top)	2 in	
cb (cover bottom)	2 in	
rd (assumed reinf. diameter)	0.319 in	
dt (effective depth top)	1.84 in	
db (effective depth bottom)	1.84 in	
Cs (% of DL used for Seismic)	0.305	
Eccentricity - Axial Load	1 in	
Is wall Split	No	

Wire Mesh

Wire Size	W6.7	
spacing	4 in	
Mesh Area	0.20 in^2	= As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI 5.3.1d & 5.3.5	
Factored Pressure on Wall Wu	94.38 psf	

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.03 klf
Hw = W*(H^4 / H^4 + L^4)	0.06 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.02 klf
Hw = W*(H^4 / H^4 + L^4)	0.04 klf

Deflection

Service Loads		
Axial	1.37 kip	
Lateral	0.02 klf	
Allowed service deflection	0.29 in	
Msa	2.904 kip-in	
M	2.920 kip-in	ACI 14-9
Δs	0.012 in	ACI 14-8
Check deflection	O.K.	

Flexure

Assumption check		
Span	Hw	Lw
et	0.011	0.011
ety	0.003	0.003	ACI 21.2.2.1
Check	Tension	Tension	ACI 11.8.1.1(b)
φb	0.9	0.9	ACI Table 21.2.2
Mua	0.636 kip-ft		
Mu	0.640 kip-ft	0.640 kip-ft	ACI 11.8.3.1d
φMn trial = φAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft	
ΔM =Mu - φM	0.000 kip-ft	0.000 kip-ft	
As Add'l req'd	0.00 in^2	0.00 in^2	
Add'l bar size:	3	3	
qty req'd	0	0	
or spacing of:	0	0	
As add'l =	0.000 kip-ft	0.000 kip-ft	
Ast = As + As add'l	0.20 in^2	0.20 in^2	
φMn = φAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft	
Check φMn > Mu	O.K.	O.K.	
% allowed	31.75%	31.75%	

→ Entire Wall

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.53 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12

Flexure

Opening	φb	As req'd	Bar size	qty req'd:	$\phi Mn = \phi AsFy(db - a/2)$	Check $\phi Mn > Mu$

CONNECTIONS

				Full Resistance Value				
					Overturning			
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection		
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft	
3	110	110	28.737	42.09	42.09	45.16	45.16	

Total Tension		Base Anchors				
10.693	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	8 in	3.53	8.26	110 in	0.171 kip*ft	32.322 kip*ft
Base Anchor 2	59 in	3.64	12.21	59 in	9.602 kip*ft	9.602 kip*ft
Base Anchor 3	110 in	3.53	8.26	8 in	32.322 kip*ft	0.171 kip*ft

				Wall Connections						
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft)	
									Up Left	Low Right
Wall Connection 1	3	1.531	7.534	48.61%	W4	0	118.000	4.593	0.000	45.165
Wall Connection 2	3	1.531	7.534	48.61%	W5	118	0.000	4.593	45.165	0.000

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity				
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector	Reserve Capacity
13991	28737	14746	1259	20365	OK	4664	(14746)	OK

RIGIDITY

CALCULATED VALUES	100%	Final	6.074083333

Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
Entire Wall	118	103.2	Y	Y	6.074	0.165

Combine Logic					
First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
Entire Wall	0	Final			6.074

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

PAGE: 11 of 19
DATE: 05/12/2023

ID:	**Ozark OZI-308**	
	DESIGN OF WALL MARKED	**W3**
Notes		

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 pcf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Shear Parameters

φv	0.85	ACI Table ACI 21.2.1
Vc	3.123 kip	ACI 22.5.5.1
φVc	2.654 kip	

Minimum Wall Reinforcement Requirements

ρmin.vert	0.0025	ACI Table 11.6.1
ρmin.hor	0.0025	ACI Table 11.6.1
Max Vertical spacing	12 in	ACI 11.7.2.2
Max Horizontal spacing	12 in	ACI 11.7.2.2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.94 psf	Dead Load (DL.lat)	0 psf
S (Snow Load)	250 psf	Snow Load (SL.lat)	0 psf
L (Live Load)	0 psf	Live Load (LL.lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr.lat)	0 psf
W (Wind Load)	108.86 psf	Wind Load (WL.lat)	58.99 psf
E (Earthquake Load)	18.57 psf	Earthquake Load (EL.lat)	15.24 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c	
Factored Pressure on Roof Wr	527.555	

Axial Pressure on Section

PuB	1.98 kip

Assumption check

0.06*f'c*Ag	14.4 kip	
Check	O.K.	ACI 11.8.1.1(d)

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	319.9245 psf

Axial Pressure on Section

PB	1.29 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.09 kip
φVc/2	1.33 kip
Check Shear	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4	
Ag = (b*h)	48 in^2	
Yt = h/2	2	
fr (rupture modulus)	530.330 psi	ACI 24.2.3.5
Mcr	16.971 kip-in	ACI Table 22.2.2.4.3
B1	0.8	
Trial Ast req'd	0.073 in^2	
B	8.829624606	
kd	0.542 in	
Icr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.23 in^2	
Icrdeflection	3.61 in^4	
Ie	64.00 in^4	ACI Table 24.2.2
delta	360	
rt (maximum tensile reinforcement)	0.0166	
rtemp (min. temperature reinforcement)	0.0018	
rmin (minimum tensile reinforcement)	0.0027	
rtrial (trial reinforcement ratio bottom)	0.0033	
ρprovided (reinforcement ratio provided)	0.0090	
a	0.32 in	

ACI's Alternate Design of Slender Walls

	ACI 11.8.1 & 11.8.2
Assumptions from this methodology:	
Cross section is constant over the height of the wall	ACI 11.8.1.1 (a)
Wall is tension-controlled for out-of-plane moment effect	ACI 11.8.1.1 (b)
φMn is at least Mcr, where Mcr is calculated using fr as provided in 19.2.3	ACI 11.8.1.1 (c)
Pu at mid-height shall not exceed 0.06*f'c*Ag	ACI 11.8.1.1 (d)
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum	ACI 11.8.2.1
Concentrated gravity loads are distributed over the wall length	ACI 11.8.2.2

Geometric Properties

X Corridate	160	
Y Corridate	12.5	
Direction of Wall	Y	
Center of gravity X	160.000	
Center of gravity Y	71.547	
Wall Weight	3090.000 lbs.	
Central wall?	Yes	
Wall that supports 2 roof panels?	Yes	
lop (length of opening on wall)	0 ft	
H (height of wall)	103.2 in	
Lh (length of wall)	9.833 ft	
Analysis will be performed as	Two-way slab	
b (section width)	12 in	
h (section thickness)	4 in	
ct (cover top)	2 in	
cb (cover bottom)	2 in	
rd (assumed reinf. diameter)	0.319 in	
dt (effective depth top)	1.84 in	
db (effective depth bottom)	1.84 in	
Cs (% of DL used for Seismic)	0.305	
Eccentricity - Axial Load	1 in	
Is wall Split	No	

Wire Mesh

Wire Size	W6.7	
spacing	4 in	
Mesh Area	0.20 in^2	= As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI 5.3.1d & 5.3.5	
Factored Pressure on Wall Ww	94.38 psf	

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.03 klf
Hw = W*(H^4 / H^4 + L^4)	0.06 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.02 klf
Hw = W*(H^4 / H^4 + L^4)	0.04 klf

Deflection

Service Loads

Axial	1.29 kip	
Lateral	0.02 klf	
Allowed service deflection	0.29 in	
Msa	2.864 kip-in	
M	2.879 kip-in	ACI 14-9
Δs	0.012 in	ACI 14-8
Check deflection	O.K.	

Flexure

Assumption check

	Hw	Lw	
Span			
et	0.011	0.011	
ety	0.003	0.003	ACI 21.2.2.1
Check	Tension	Tension	ACI 11.8.1.1(b)
φb	0.9	0.9	ACI Table 21.2.2
Mua	0.633 kip-ft		
Mu	0.630 kip-ft	0.630 kip-ft	ACI 11.8.3.1d
φMn trial = φAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft	
ΔM =Mu - φM	0.000 kip-ft	0.000 kip-ft	
As Add'l req'd	0.00 in^2	0.00 in^2	
Add'l bar size:	3	3	
qty req'd	0	0	
or spacing of:	0	0	
As add'l =	0.000 kip-ft	0.000 kip-ft	
Ast = As + As add'l	0.20 in^2	0.20 in^2	
φMn = φAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft	
Check φMn > Mu	O.K.	O.K.	
% allowed	31.25%	31.25%	

Legend: Entire Wall — DOOR 1

REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.53 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
DOOR 1	3.24 ft	0 ft	3.34 ft	1.74 ft	1145.62	0.09 klf	0.62 klf	0.58 kip-ft

Flexure

Opening	φb	As req'd	Bar size	qty req'd:	φMn = φAsFy(db - a/2)	Check φMn > Mu
DOOR 1	0.9	0.007 in^2	No. 3	1	9.55 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
				Overturning			
Base Anchors		Lateral	Base Anchors		Wall-Wall Connection		
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
4	110	110	40.946	55.72	55.72	30.16	30.16

Total Tension		Base Anchors				
14.334	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	8 in	3.53	8.26	110 in	0.171 kip*ft	32.322 kip*ft
Base Anchor 2	32 in	3.64	12.21	86 in	2.825 kip*ft	20.401 kip*ft
Base Anchor 3	86 in	3.64	12.21	32 in	20.401 kip*ft	2.825 kip*ft
Base Anchor 4	110 in	3.53	8.26	8 in	32.322 kip*ft	0.171 kip*ft

		Wall Connections							
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left / Low Right
Wall Connection 1	3	1.531	3.067	19.79%	W4	0	118.000	3.067	0.000 / 30.162
Wall Connection 2	3	1.531	3.067	19.79%	W5	118	0.000	3.067	30.162 / 0.000

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity				
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector	Reserve Capacity
5838	40946	35108	474	7667	OK	1459 (35108)	OK

RIGIDITY

CALCULATED VALUES	38%	Final	2.286693812

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
DOOR 1	Entire Wall	118	103.2	Y	Y	6.074	0.165
	A'	118	82.32	Y	Y	8.222	0.122
	A	38.88	82.32	Y	Y	1.262	0.792
	B	39.04	82.32	Y	Y	1.274	0.785

	Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
DOOR 1	Entire Wall	A'	A'a	-	Deflection	0.043
	A	B	AB	+	Stiffness	2.536
	A'a	AB	Final	+	Deflection	0.437

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

PAGE: 13 of 19
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ID:	**Ozark OZI-308**	
	DESIGN OF WALL MARKED	**W4**

Notes	

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 pcf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
λ	1	ACI 20.2.2.2
E (Steel)	29000000 psi	ACI 19.2.2.1(a)
E (Concrete)	4286826 psi	
n (modular ratio)	6.76	

Shear Parameters

φv	0.85	ACI Table ACI 21.2.1
Vc	3.123 kip	ACI 22.5.5.1
φVc	2.654 kip	

Minimum Wall Reinforcement Requirements

ρmin.vert	0.0025	ACI Table 11.6.1
ρmin.hor	0.0025	ACI Table 11.6.1
Max Vertical spacing	12 in	ACI 11.7.2.2
Max Horizontal spacing	12 in	ACI 11.7.2.2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.94 psf	Dead Load (DL.lat)	0 psf
S (Snow Load)	250 psf	Snow Load (SL.lat)	0 psf
L (Live Load)	0 psf	Live Load (LL.lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr.lat)	0 psf
W (Wind Load)	108.86 psf	Wind Load (WL.lat)	58.99 psf
E (Earthquake Load)	18.57 psf	Earthquake Load (EL.lat)	15.24 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c	
Factored Pressure on Roof Wr	527.555	

Axial Pressure on Section

PuB	2.03 kip

Assumption check

0.06*f'c*Ag	14.4 kip	
Check	O.K.	ACI 11.8.1.1(d)

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	319.9245 psf

Axial Pressure on Section

PB	1.34 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.08 kip
φVc/2	1.33 kip
Check Shear	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4	
Ag = (b*h)	48 in^2	
Yt = h/2	2	
fr (rupture modulus)	530.330 psi	ACI 24.2.3.5
Mcr	16.971 kip-in	
B1	0.8	ACI Table 22.2.2.4.3
Trial Ast req'd	0.073 in^2	
B	8.829624606	
kd	0.542 in	
Icr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.23 in^2	
Icrdeflection	3.61 in^4	
Ie	64.00 in^4	
delta	360	ACI Table 24.2.2
rt (maximum tensile reinforcement)	0.0166	
rtemp (min. temperature reinforcement)	0.0018	
rmin (minimum tensile reinforcement)	0.0027	
rtrial (trial reinforcement ratio bottom)	0.0033	
ρprovided (reinforcement ratio provided)	0.0090	
a	0.32 in	

ACI's Alternate Design of Slender Walls

	ACI 11.8.1 & 11.8.2
Assumptions from this methodology:	
Cross section is constant over the height of the wall	ACI 11.8.1.1 (a)
Wall is tension-controlled for out-of-plane moment effect	ACI 11.8.1.1 (b)
φMn is at least Mcr, where Mcr is calculated using fr as provided in 19.2.3	ACI 11.8.1.1 (c)
Pu at mid-height shall not exceed 0.06*f'c*Ag	ACI 11.8.1.1 (d)
Wall panel shall be simply supported, axially loaded, and subject to an out-of-plane uniform lateral loading where maximum	ACI 11.8.2.1
Concentrated gravity loads are distributed over the wall length	ACI 11.8.2.2

Geometric Properties

X Corridate	18	
Y Corridate	10.5	
Direction of Wall	X	
Center of gravity X	90.964	
Center of gravity Y	10.500	
Wall Weight	4575.000 lbs.	
Central wall?	Yes	
Wall that supports 2 roof panels?	No	
lop (length of opening on wall)	0 ft	
H (height of wall)	96 in	
Lh (length of wall)	12.000 ft	
Analysis will be performed as	Two-way slab	
b (section width)	12 in	
h (section thickness)	4 in	
ct (cover top)	2 in	
cb (cover bottom)	2 in	
rd (assumed reinf. diameter)	0.319 in	
dt (effective depth top)	1.84 in	
db (effective depth bottom)	1.84 in	
Cs (% of DL used for Seismic)	0.305	
Eccentricity - Axial Load	1 in	
Is wall Split	No	

Wire Mesh	
Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2 = As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI 5.3.1d & 5.3.5	
Factored Pressure on Wall Ww	94.38 psf	

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.02 klf
Hw = W*(H^4 / H^4 + L^4)	0.08 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.01 klf
Hw = W*(H^4 / H^4 + L^4)	0.05 klf

Deflection

Service Loads		
Axial	1.34 kip	
Lateral	0.01 klf	
Allowed service deflection	0.27 in	
Msa	1.630 kip-in	
M	1.638 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	O.K.	

Flexure

Assumption check		
Span	Hw	Lw
et	0.011	0.011
ety	0.003	0.003
Check	Tension	Tension
φb	0.9	0.9
Mua	0.725 kip-ft	0.720 kip-ft
Mu	0.720 kip-ft	0.720 kip-ft
φMn trial = φAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft
ΔM =Mu - φM	0.000 kip-ft	0.000 kip-ft
As Add'l req'd	0.00 in^2	0.00 in^2
Add'l bar size:	3	3
qty req'd	0	0
or spacing of:	0	0
As add'l =	0.000 kip-ft	0.000 kip-ft
Ast = As + As add'l	0.20 in^2	0.20 in^2
φMn = φAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft
Check φMn > Mu	O.K.	O.K.
% allowed	35.71%	35.71%

Reference codes (right column of Flexure): ACI 21.2.2.1, ACI 11.8.1.1(b), ACI Table 21.2.2, ACI 11.8.3.1d

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

PAGE: 14 of 19
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REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.53 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
WINDOW 1	2.54 ft	5.33 ft	3.18 ft	1.5 ft	186.03	0.08 klf	0.61 klf	0.51 kip-ft
VENT 1	5.4 ft	0.71 ft	1 ft	6.29 ft	50.00	0.31 klf	0.84 klf	0.07 kip-ft

Flexure

Opening	φb	As req'd	Bar size	qty req'd:	φMn = φAsFy(db - a/2)	Check φMn > Mu
WINDOW 1	0.9	0.007 in^2	No. 3	1	8.12 kip-ft	O.K.
VENT 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
				Overturning			
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
3	129	126	36.627	52.10	51.26	152.65	131.51

Total Tension			Base Anchors				
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -	
Base Anchor 1	18 in	3.64	12.21	126 in	0.762 kip*ft	38.231 kip*ft	
Base Anchor 2	72 in	3.64	12.21	72 in	12.193 kip*ft	12.483 kip*ft	
Base Anchor 3	129 in	3.64	12.21	15 in	39.141 kip*ft	0.542 kip*ft	

Wall Connections

	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft) Up Left	Low Right
Wall Connection 1	3	2.703	8.712	50.00%	W1	2	142.000	8.109	1.352	95.957
Wall Connection 2	3	2.703	7.462	50.00%	W2	89	55.000	7.462	55.339	34.199
Wall Connection 3	3	2.703	8.712	50.00%	W3	142	2.000	8.109	95.957	1.352

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity				
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector	Reserve Capacity
12602	36627	24025	905	19188	OK	4201	(24025) OK

RIGIDITY

CALCULATED VALUES	94%	Final	8.20648701

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	144	96	Y	Y	8.710	0.115
WINDOW 1	A'	144	14.04	Y	Y	68.160	0.015
	A	30.48	14.04	Y	Y	13.517	0.074
	B	75.36	14.04	Y	Y	35.374	0.028
VENT 1	B'	144	12	Y	Y	79.815	0.013
	C	64.8	12	Y	Y	35.593	0.028
	D	67.2	12	Y	Y	36.941	0.027

Combine Logic					
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
WINDOW 1	Entire Wall	A'	A'a	-	Deflection	0.100
	A	B	AB	+	Stiffness	48.891
	A'a	AB	A'b	+	Deflection	0.121
VENT 1	A'b	B'	B'a	-	Deflection	0.108
	C	D	CD	+	Stiffness	72.534
	B'a	CD	Final	+	Deflection	0.122

CXT INC.
(PRECAST DIV.)

OZARK
OZI-308 (SC)

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ID:	Ozark OZI-308	
	DESIGN OF WALL MARKED	W5

Notes	

Material Properties

f'c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy wire mesh	80000 psi	
Fy rebar	60000 pcf	
Lightweight?	No	
Concrete density	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
λ	1	ACI 20.2.2.2
E (Steel)	29000000 psi	ACI 19.2.2.1(a)
E (Concrete)	4286826 psi	
n (modular ratio)	6.76	

Shear Parameters

φv	0.85	ACI Table ACI 21.2.1
Vc	3.123 kip	ACI 22.5.5.1
φVc	2.654 kip	

Minimum Wall Reinforcement Requirements

ρmin.vert	0.0025	ACI Table 11.6.1
ρmin.hor	0.0025	ACI Table 11.6.1
Max Vertical spacing	12 in	ACI 11.7.2.2
Max Horizontal spacing	12 in	ACI 11.7.2.2

Loading

Axial Design Loads (pressure from roof)		Lateral Design Loads (pressure on wall)	
D (Dead load) + Ww (Wall weight)	110.94 psf	Dead Load (DL.lat)	0 psf
S (Snow Load)	250 psf	Snow Load (SL.lat)	0 psf
L (Live Load)	0 psf	Live Load (LL.lat)	0 psf
Lr (Live Roof Load)	30 psf	Live Roof Load (LLr.lat)	0 psf
W (Wind Load)	108.86 psf	Wind Load (WL.lat)	58.99 psf
E (Earthquake Load)	18.57 psf	Earthquake Load (EL.lat)	15.24 psf

Factored Axially Applied Loads

Factored Loading per ACI	ACI 318-19 5.3.1c	
Factored Pressure on Roof Wr	527.555	

Axial Pressure on Section

PuB	2.03 kip

Assumption check

0.06*f'c*Ag	14.4 kip	ACI 11.8.1.1(d)
Check	O.K.	

Unfactored Axially Applied Loads

Unfactored Pressure on Roof uWr	319.9245 psf

Axial Pressure on Section

PB	1.34 kip

Shear

Factored Loading per ACI	ACI 318-19 5.3.1c
Vu = wuB*(Bw-2db) / 2	0.08 kip
φVc/2	1.33 kip
Check Shear	O.K.

Allowable Capacity

Ig = (b*h^3)/12	64 in^4	
Ag = (b*h)	48 in^2	
Yt = h/2	2	
fr (rupture modulus)	530.330 psi	ACI 24.2.3.5
Mcr	16.971 kip-in	ACI Table 22.2.4.3
B1	0.8	
Trial Ast req'd	0.073 in^2	
B	8.829624606	
kd	0.542 in	
Icr	2.93 in^4	
a = As * fy / (0.85 * f'c *b)	0.33483 psi	
c	0.419 in	
Ase	0.23 in^2	
Icrdeflection	3.61 in^4	
Ie	64.00 in^4	
delta	360	ACI Table 24.2.2
rt (maximum tensile reinforcement)	0.0166	
rtemp (min. temperature reinforcement)	0.0018	
rmin (minimum tensile reinforcement)	0.0027	
rtrial (trial reinforcement ratio bottom)	0.0033	
ρprovided (reinforcement ratio provided)	0.0090	
a	0.32 in	

ACI's Alternate Design of Slender Walls

Assumptions from this methodology:	ACI 11.8.1 & 11.8.2
Cross section is constant over the height of the wall	ACI 11.8.1.1 (a)
Wall is tension-controlled for out-of-plane moment effect	ACI 11.8.1.1 (b)
φMn is at least Mcr, where Mcr is calculated using fr as provided in 19.2.3	ACI 11.8.1.1 (c)
Pu at mid-height shall not exceed 0.06*f'c*Ag	ACI 11.8.1.1 (d)
Wall panel shall be simply supported, axially loaded, and subject to out-of-plane uniform lateral loading where maximum	ACI 11.8.2.1
Concentrated gravity loads are distributed over the wall length	ACI 11.8.2.2

Geometric Properties

X Corridate	18
Y Corridate	132.5
Direction of Wall	X
Center of gravity X	91.548
Center of gravity Y	132.500
Wall Weight	4575.000 lbs.
Central wall?	Yes
Wall that supports 2 roof panels?	No
lop (length of opening on wall)	0 ft
H (height of wall)	96 in
Lh (length of wall)	12.000 ft
Analysis will be performed as	Two-way slab
b (section width)	12 in
h (section thickness)	4 in
ct (cover top)	2 in
cb (cover bottom)	2 in
rd (assumed reinf. diameter)	0.319 in
dt (effective depth top)	1.84 in
db (effective depth bottom)	1.84 in
Cs (% of DL used for Seismic)	0.305
Eccentricity - Axial Load	1 in
Is wall Split	No

Wire Mesh

Wire Size	W6.7
spacing	4 in
Mesh Area	0.20 in^2 = As

Factored Laterally Applied Loads

Factored Loading per ACI	ACI 5.3.1d & 5.3.5	
Factored Pressure on Wall Wu	94.38 psf	

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.02 klf
Hw = W*(H^4 / H^4 + L^4)	0.08 klf

Unfactored Laterally Applied Loads

Unfactored Pressure on Wall uWw	58.99 psf

Lateral Pressure on Section

Lw = W*(L^4 / L^4 + H^4)	0.01 klf
Hw = W*(H^4 / H^4 + L^4)	0.05 klf

Deflection

Service Loads		
Axial	1.34 kip	
Lateral	0.01 klf	
Allowed service deflection	0.27 in	
Msa	1.630 kip-in	
M	1.638 kip-in	ACI 14-9
Δs	0.006 in	ACI 14-8
Check deflection	O.K.	

Flexure

Assumption check	Hw	Lw	
Span			
et	0.011	0.011	
ety	0.003	0.003	ACI 21.2.2.1
Check	Tension	Tension	ACI 11.8.1.1(b)
φb	0.9	0.9	ACI Table 21.2.2
Mua	0.725 kip-ft		
Mu	0.720 kip-ft	0.720 kip-ft	ACI 11.8.3.1d
φMn trial = φAsFy(dt - a/2)	2.020 kip-ft	2.020 kip-ft	
ΔM =Mu - φM	0.000 kip-ft	0.000 kip-ft	
As Add'l req'd	0.00 in^2	0.00 in^2	
Add'l bar size:	3	3	
qty req'd	0	0	
or spacing of:	0	0	
As add'l =	0.000 kip-ft	0.000 kip-ft	
Ast = As + As add'l	0.20 in^2	0.20 in^2	
φMn = φAsFy(db - a/2)	2.016 kip-ft	2.016 kip-ft	
Check φMn > Mu	O.K.	O.K.	
% allowed	35.71%	35.71%	

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REINFORCEMENT AT OPENINGS

Loading	
Pu (factorized load from roof)	0.53 klf
Ww (weight of panel per sq ft)	0.05 ksf

Material Properties	
db (effective depth bottom)	1.84 in

Factorized Moment

Opening	Horizontal Location	Vertical Location	L length of opening	H height above opening	(-) Weight of Opening (LBS)	Pw total factorized panel load	wu total factorized load	Mu (wu*L^2)/12
WINDOW 1	2.54 ft	5.33 ft	3.18 ft	1.5 ft	186.03	0.08 klf	0.61 klf	0.51 kip-ft
VENT 1	1 ft	0.71 ft	1 ft	6.29 ft	50.00	0.31 klf	0.84 klf	0.07 kip-ft

Flexure

Opening	φb	As req'd	Bar size	qty req'd:	φMn = φAsFy(db - a/2)	Check φMn > Mu
WINDOW 1	0.9	0.007 in^2	No. 3	1	8.12 kip-ft	O.K.
VENT 1	0.9	0 in^2	No. 3	0	0 kip-ft	O.K.

CONNECTIONS

			Full Resistance Value				
					Overturning		
Base Anchors			Lateral	Base Anchors		Wall-Wall Connection	
Quantity in Shear	Maximum R - Distance	Maximum L - Distance	Shear kip	Moment + kip - ft	Moment - kip - ft	Moment + kip - ft	Moment - kip - ft
3	129	126	36.627	52.10	51.26	152.65	131.51

Total Tension		Base Anchors				
10.923	Dist	Tension (kip)	Shear	L - Dist	Moment +	Moment -
Base Anchor 1	18 in	3.64	12.21	126 in	0.762 kip*ft	38.231 kip*ft
Base Anchor 2	72 in	3.64	12.21	72 in	12.193 kip*ft	12.483 kip*ft
Base Anchor 3	129 in	3.64	12.21	15 in	39.141 kip*ft	0.542 kip*ft

				Wall Connections					
	Quantity of Anchors	Capacity of each Anchor	Countering Dead Load from Adjoining Wall	% of wall to use	Adjoining Wall	Dist (inches)	L - Dist	Allowable Force	Overturning Moment Resistance (kip-ft)
									Up Left / Low Right
Wall Connection 1	3	2.703	8.712	50.00%	W1	2	142.000	8.109	1.352 / 95.957
Wall Connection 2	3	2.703	7.462	50.00%	W2	89	55.000	7.462	55.339 / 34.199
Wall Connection 3	3	2.703	8.712	50.00%	W3	142	2.000	8.109	95.957 / 1.352

Wall Shear Checks

Shear Connections at Base			Wall Shear Capacity					
Design Force (lb)	Capacity (lb)	Reserve Capacity	Design (PLF)	Resistance (PLF)	check	Required Shear Capacity (lb) per Base Connector		Reserve Capacity
12584	36627	24043	903	19155	OK	4195	(24043)	OK

RIGIDITY

CALCULATED VALUES	94%	Final	8.192363837

	Pier Label	Length (inches)	Height (inches)	Fixed Top? (Y/N)	Useable? (Y/N)	Stiffness (k) (1000 kip / IN)	Deflection (in / 1000 kip)
	Entire Wall	144	96	Y	Y	8.710	0.115
WINDOW 1	A'	144	14.04	Y	Y	68.160	0.015
	A	30.48	14.04	Y	Y	13.517	0.074
	B	75.36	14.04	Y	Y	35.374	0.028
VENT 1	B'	144	12	Y	Y	79.815	0.013
	C	12	12	Y	Y	5.000	0.200
	D	120	12	Y	Y	66.445	0.015

	Combine Logic				
	First Segment	Second Segment	Re-Name	Combine/Subtract	Method	Combined
WINDOW 1	Entire Wall	A'	A'a	-	Deflection	0.100
	A	B	AB	+	Stiffness	48.891
	A'a	AB	A'b	+	Deflection	0.121
VENT 1	A'b	B'	B'a	-	Deflection	0.108
	C	D	CD	+	Stiffness	71.445
	B'a	CD	Final	+	Deflection	0.122

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ID:	**Ozark OZI-308**
	DESIGN OF FLOOR PANEL F1

Material Properties

Property	Value	Reference
f' c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Geometric Properties

Property	Value	Note
Ls (overall length of slab)	12 ft	
Bs (overall width of slab)	10.5 ft	
Design will be performed as :	**Two-way slab**	
tfr (floor finish thickness)	0 in	
b (section width)	12 in	(typically 12 inches)
h (section thickness)	5 in	
et (cover top)	1 1/2 in	
cb (cover bottom)	1 in	
rd (assumed reinf. diameter)	0.319 in	(if centered enter 0)
dt (effective depth top)	1.660 in	
db (effective depth bottom)	3.681 in	
oh1 (overhang length and qty for Bs)	0 in	0	[qty of overhangs in Bs direction]
oh2 (overhang length and qty for Ls)	0 in	0	[qty of overhangs in ls direction]
Cs (% of DL used for Seismic)	0.305	[from seismic analysis]
NsL (Num. of supports along Ls)	8	[either walls of vaults or enter "8" if no vault]
NsB (Num. of supports along Bs)	4	[either walls of vaults or enter "4" if no vault]

Reinforcement Limits

Property	Value	Reference
ρ_t (maximum tensile reinforcement)	0.0166	
$\rho_{s,min\ temp}$ (min. temperature reinforcement)	0.0018	ACI 7.6.1.1 and 8.6.1.1
$\rho_{s,min\ t}$ (minimum tensile reinforcement)	0.0027	ACI 9.6.1.2

Notes:

		Reference
fr (rupture modulus)	530.3 psi	ACI 19.2.3.1
Ig = (b*h^3)/12	125 in^4	
Ag = (b*h)	60 in^2	
Yt = h/2	2.5 in	
Mcr	26.517 kip in	ACI 24.2.3.5
β1	0.8	ACI Table 22.2.2.4.3
Δ initial	360	ACI Table 24.2.2
Δ long-term	480	ACI Table 24.2.2
B	8.830 in	
kd	0.510 in	
Icr	2.33 in^4	
a	0.32 in	#DIV/0!
c		

	(reinforcement ratio provided)	ω
$\rho_{provided}$	0.0045	0.0728
$\rho_{provided}$	0.0125	0.2006
$\rho_{provided}$	0.0050	0.0802
$\rho_{provided}$	0.0144	0.23

Ls
TWO-WAY SLAB
wL, wB, Bs

Ls
ONE-WAY SLAB
wB, Bs

SECTION PROPERTIES
ct, cb, db, rd, steel top, steel bottom, dt, h, b

Wire Mesh (Top)	
Wire Size	W6.7
spacing	4 in
Mesh Area	**0.20 in^2** = As'

Wire Mesh (Bottom)	
Wire Size	W6.7
spacing	4 in
Mesh Area	**0.20 in^2** = As

Loading

Design Loads	
Pressure on Slab	
D (Dead load)	62.5 psf
S (Snow Load)	0 psf
L (Live Load)	0 psf
LF (Live Floor Load)	400 psf
W (Wind Load)	0 psf
E (Earthquake Load)	19.05 psf

Sustained Loading	
Pressure on slab	W
D (Dead load)	62.5 psf
S (Snow Load)	0 psf
Lr (Live Floor Load)	400 psf

Factored Design Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI equation indicated	Factored Pressure on Slab **W**	**wB =** W*(L^4 / B^4 + L^4)*be	**wL =** W*(B^4 / B^4 + L^4)*be
ACI 5.3.1b	275 psf	0.01 klf	0.26 klf

3.500 ft → 0.02 kip / 0.02 kip
1.71 ft → 0.22 kip / 0.22 kip

B (Span in the short direction)	3.500 ft
L (Span in the long direction)	1.71 ft

Factored Sustained Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI equation indicated	Factored Pressure on Slab **W**	**wB =** W*(L^4 / B^4 + L^4)*be	**wL =** W*(B^4 / B^4 + L^4)*be
ASCE7-16 CC.2-1a	462.5 psf	0.025 klf	0.438 klf

3.500 ft → 0.04 kip / 0.04 kip
1.71 ft → 0.38 kip / 0.38 kip

Unfactored Design Loads		Pressure on Section	Pressure on Section
Factored Loading per ACI equation indicated	Factored Pressure on Slab W	**wB =** W*(L^4 / B^4 + L^4)*be	**wL =** W*(B^4 / B^4 + L^4)*be
ASCE 7-16 2.4.1 4	662.5 psf	0.04 klf	0.63 klf

3.500 ft → 0.07 kip / 0.07 kip
1.71 ft → 0.54 kip / 0.54 kip

SUMMARY
Use 1 Layer of Wire Mesh on Top: W6.7 x W6.7 x 4 x 4
Use 1 Layer of Wire Mesh on Bottom: W6.7 x W6.7 x 4 x 4

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OZARK
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ID: **Ozark OZI-308**
DESIGN OF FLOOR PANEL F1

Material Properties

f' c	5000 psi	
Steel Reinforcement	Plain WWF Grade 80	
Fy	80000 psi	
Lightweight?	No	
C_d (Concrete density)	150 pcf	O.K.
λ	1	ACI 19.2.4.1(a)
E (Steel)	29000000 psi	ACI 20.2.2.2
E (Concrete)	4286826 psi	ACI 19.2.2.1(a)
n (modular ratio)	6.76	

Geometric Properties

Ls (overall length of slab)	12 ft	
Bs (overall width of slab)	10.5 ft	
Design will be performed as :	Two-way slab	
tfr (floor finish thickness)	0 in	
b (section width)	12 in	(typically 12 inches)
h (section thickness)	5 in	
ct (cover top)	1 1/2 in	
cb (cover bottom)	1 in	
rd (assumed reinf. diameter)	0.319 in	(if centered enter 0)
dt (effective depth top)	1.660 in	
db (effective depth bottom)	3.681 in	
oh1 (overhang length and qty for Bs)	0 in	0	[qty of overhangs in Bs direction]
oh2 (overhang length and qty for Ls)	0 in	0	[qty of overhangs in ls direction]
Cs (% of DL used for Seismic)	0.305	[from seismic analysis]
NsL (Num. of supports along Ls)	8	[either walls of vaults or enter "8" if no vault]
NsB (Num. of supports along Bs)	4	[either walls of vaults or enter "4" if no vault]

Notes:

fr (rupture modulus)	530.3 psi	ACI 19.2.3.1
Ig = (b*h^3)/12	125 in^4	
Ag = (b*h)	60 in^2	
Yt = h/2	2.5 in	
Mcr	26.517 kip in	ACI 24.2.3.5
β1	0.8	ACI Table 22.2.2.4.3
Δ initial	360	ACI Table 24.2.2
Δ long-term	480	ACI Table 24.2.2
B	8.830 in	
kd	0.510 in	
Icr	2.33 in^4	
a	0.32 in	#DIV/0!
c		

(reinforcement ratio provided)		ω
ρ_provided	0.0045	0.0728
ρ_provided	0.0125	0.2006
ρ_provided	0.0050	0.0802
ρ_provided	0.0144	0.23

Ls — TWO-WAY SLAB / ONE-WAY SLAB (section diagrams)

SECTION PROPERTIES

Flexure

Flexural Moments for Bs

	Mu	εt	εty Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	φb Per ACI Table 21.2.2	φMn trial = φf'cbd^2w(1-0.59w)	ΔM = Mu - φMn	φMn =	Check φMn > Mu	% allowed
** Mpos (positive Moment) = (wB*B^2)*0.08	0.01 kip-ft	0.025	0.003	Tension	0.9	4.25 kip-ft		4.25 kip-ft	O.K.	0.23%
** Mneg (negative Moment) = (wB*B^2)*0.1	0.01 kip-ft	0.025	0.003	Tension	0.9	3.84 kip-ft		3.84 kip-ft	O.K.	0.32%

**continuous beam moment coefficients used*

Flexural Moments for Ls

	Mu	εt	εty Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	φb Per ACI Table 21.2.2	φMn trial = φf'cbd^2w(1-0.59w)	ΔM = Mu - φMn	φMn =	Check φMn > Mu	% allowed
** Mpos (positive Moment) = (wL*L^2)*0.078	0.06 kip-ft	0.025	0.003	Tension	0.9	4.25 kip-ft		4.25 kip-ft	O.K.	1.40%
** Mneg (negative Moment) = (wB*B^2)*0.106	0.00 kip-ft	0.025	0.003	Tension	0.9	3.84 kip-ft		3.84 kip-ft	O.K.	0.08%

**continuous beam moment coefficients used*

	Mu	εt	εty Per ACI 21.2.2.1	Status Check Per ACI 11.8.1.1(b)	φb Per ACI 21.2.4.1	S Elastic Section Modulus	Mn Per ACI 14.5.2.1a	Mn Per ACI 14.5.2.1b	φMn Per ACI 14.5.2.1	Check φMn > Mu	% allowed
Moh1 (Moment at oh1) = 0	0.00 kip-ft	0.009	0.003	Tension	0.6	50.000 in^3	1.473 kip-ft	17.708 kip-ft	0.884 kip-ft	O.K.	0.00%
Moh2 (Moment at oh2) = 0	0.00 kip-ft	0.009	0.003	Tension	0.6	50.000 in^3	1.473 kip-ft	17.708 kip-ft	0.884 kip-ft	O.K.	0.00%

Shear

Maximum Shear for Bs

	Vu	φv per Table ACI 21.2.1	Vc per ACI 22.5.5.1	φVc	Check φVc > Vu	% allowed
** VuB = wB * B * 0.6	0.02 kip	0.85	6.25 kip	5.31 kip	O.K.	0.40%
** Voh1 = 0	0.00 kip	0.85	2.82 kip	2.39 kip	O.K.	0.00%

**continuous beam shear coefficients used*

Shear for Ls

	Vu	φv per Table ACI 21.2.1	Vc per ACI 22.5.5.1	φVc	Check φVc > Vu	% allowed
** VuL = wL * L * 0.605633802816901	0.45 kip	0.85	6.25 kip	5.31 kip	O.K.	8.54%
** Voh2 = 0	0.00 kip	0.85	2.82 kip	2.39 kip	O.K.	0.00%

**continuous beam shear coefficients used*

	Months	Epsilon		Span type:	K
Sustained Load Duration Per Table 24.2.4.1.3	6	1.2		Simple span	1

Deflection

Span	Ma.serv	Ma.sus	I.eff.serv Per Table 24.2.3.5	I.eff.sustained Per Table 24.2.3.5	Immediate Deflection Δi AISC 15th Edition Table 3-23	ρ'	λΔ per ACI 24.2.4.1.1	Long-Term Deflection Δl-t	Δ total long-term deflection (Δi + Δl-t)	Δ allow (immediate)	Δ allow (long term)	Check short term deflection	Check long term deflection	% allowed - short term	% allowed - long term
B	0.01 kip-ft	0.04 kip-ft	125 in^4	125 in^4	0.000 in	0.0045	0.9777	0.000 in	0.000 in	0.1167 in	0.0875 in	O.K.	O.K.	0.13%	0.18%
L	0.06 kip-ft	0.16 kip-ft	125 in^4	125 in^4	0.000 in	0.0045	0.9777	0.000 in	0.000 in	0.0570 in	0.0428 in	O.K.	O.K.	0.28%	0.36%

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ID:	Ozark OZI-308	

Geometric properties			Loading	
Bs (width of roof panel)	11.92 ft		Wv (weight of vault)**	0 lb
Ls (Length of roof panel)	15.00 ft		Wtr (roof panel weight)	11190 lb
Ar Area of Roof	178.75 ft^2		Ww (total walls panel weight)	19560 lb
H (height of building)	9.69 ft		Fw (floor panel weight)	7695 lb
Lb (length of building)	12 ft		We (estimated weight of building)	38445 lb
Wb (width of building)	10.5 ft		Wev (estimated weight of building w/ vault)	38445 lb
Ab (Area of building)	126 ft^2		PSFr (roof snow load)	210 psf
Nv (quantity of vaults)	0		PSFf (Floor Live Load)	400 psf
Avl (Area of Vault Lips)	0.00 ft^2		Pmax (Maximum allowable pressure)	1500 psf
Av (Area of Vault)	0.00 ft^2		Fupmw (MWFRS Uplift Force)	44.92 psf
Vh (Vault height)	0 ft		WLlat (MWFRS lateral wind pressure)	51.74 psf
Cab (Closed Area of building)	118.61 ft^2		γw (specific weight of water)	62.4 pcf
Hw (depth of floodwater)	1 ft		**Weight of vault is not considered in sliding resistance	

μ (sliding factor)	0.40		FS (factor of safety required)	1.00

CHECK SLIDING RESISTANCE

Shear	.7*Vseismic (from seismic analysis with snow)	9804.4 lb
	.7*Vseismic (from seismic analysis without snow)	8202.6 lb
	Vwind = WLlat * max(Wb,Lb)*H	6016.7 lb

* Load adjustment per IBC 1605.3 load combinations.

Sliding Resistance with Snow	Pslide = u*(.6*We+.75*PSFr*Ar)	Pslide =	20488.05 lb		

				Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	FSwind =	3.4	$\geq$ 1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	2.1	$\geq$ 1.0	O.K.

Sliding Resistance with No Snow	Pslide = u*.6*We	Pslide =	9226.8 lb		

				Fsreqd	
Factor of Safety	FSwind = Pslide / Vwind	Fswind =	1.5	$\geq$ 1.0	O.K.
	FSseismic = Pslide / Vseismic	Fseismic =	1.1	$\geq$ 1.0	O.K.

CHECK OVERTURNING RESISTANCE

Shear	.7*Otseismic (from seismic analysis with snow)	87.555 kip-ft
	.7*Otseismic (from seismic analysis without snow)	72.896 kip-ft
	Otwind = (WLlat*Lb*H^2 / 2) + (Fupmw*Lb*Wb^2 / 2)	58.863 kip-ft

* Load adjustment per IBC 1605.3 load combinations.

Overturning Resistance with Snow	Otrsnow = (.6*We+.75*PSFr*Ar)*(Wb/2)	Otrsnow =	129.114 kip-ft		

				Fsreqd	
Factor of Safety	FSwind = Otrsnow / Otwind	FSwind =	2.19	$\geq$ 1.0	O.K.
	FSseismic = Otrsnow / Vseismic	Fseismic =	1.47	$\geq$ 1.0	O.K.

Overturning Resistance with No Snow	Otr = .6*We*Wb/2	Otr	121.102 kip-ft		

				Fsreqd	
Factor of Safety	FSwind = Otr / Vwind	Fswind =	2.06	$\geq$ 1.0	O.K.
	FSseismic = Otr / Vseismic	Fseismic =	1.66	$\geq$ 1.0	O.K.

CHECK BEARING PRESSURE CONDITION

Net Pressure	Pnet = (Wev + PSFr*Ar + PSFf*Af) / Ab	1003.04 psf

Allowable	Pmax $\geq$ Pnet	1500 psf $\geq$ 1003.04 psf	O.K.

By observation, if the building is placed on a properly prepared well drained granular sub-base, the design is sufficient for lateral and vertical loads.

CHECK BUOYANCY FORCE CONDITION

Buoyant Force	Fb = γw*Av*Hw+γw*Cab*(Hw-Vh)	Fb =	7401.33 lb

Factor of Safety	FSb = We / Fb	FSb =	5.19	$\geq$ 1.00	O.K.

The weight of the building exceeds the buoyant force due to hydrostatic pressure acting on the horizontal surface of the vault, therefore, the design is sufficient against buoyancy.

Floor Design Information:

1) The referenced building is made of flood damage resistant 5000 psi reinforced concrete.
2) The vault system, if existing, is designed to minimize infiltration into system and can be considered water tight to a height of 17"
3) Flood Ventilation is available at threshold level and flood ventilation exceeding 1" per sq. ft. of floor area is provided no more than 12" A.F.F.

Interior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: OZI-308 (IECC)
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Office	72	1	72
Workshop	54	1.4	76
		Total Allowed Watts =	148

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Office (72 sq.ft.)				
LED: 'A': Other:	1	1	25	25
LED: 'C': Other:	1	1	25	25
Workshop (54 sq.ft.)				
			Total Proposed Watts =	50

Section 4: Requirements Checklist

Interior Lighting PASSES: Design 66% better than code.

Lighting Wattage:

☐ 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
148	50	YES

Controls, Switching, and Wiring:

☐ 2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.

☐ 3. Daylight zones have individual lighting controls independent from that of the general area lighting.

  Exceptions:

  ☐ Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.

  ☐ Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.

☐ 4. Independent controls for each space (switch/occupancy sensor).

  Exceptions:

  ☐ Areas designated as security or emergency areas that must be continuously illuminated.

  ☐ Lighting in stairways or corridors that are elements of the means of egress.

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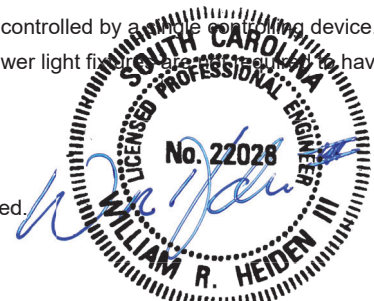
☐ 5. Master switch at entry to hotel/motel guest room.

☐ 6. Individual dwelling units separately metered.

☐ 7. Medical task lighting or art/history display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.

☐ 8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.

    Exceptions:

    ☐ Only one luminaire in space.

    ☐ An occupant-sensing device controls the area.

    ☐ The area is a corridor, storeroom, restroom, public lobby or sleeping unit.

    ☐ Areas that use less than 0.6 Watts/sq.ft.

☐ 9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.

    Exceptions:

    ☐ Sleeping units, patient care areas; and spaces where automatic shutoff would endanger safety or security.

☐ 10. Photocell/astronomical time switch on exterior lights.

    Exceptions:

    ☐ Lighting intended for 24 hour use.

☐ 11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

    Exceptions:

    ☐ Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

_____   _____   _____

Name - Title   Signature   Date

[Seal: SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 22028 WILLIAM R. HEIDEN III]

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Exterior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: OZI-308 (IECC)
Project Type: New Construction
Exterior Lighting Zone: 3 (Other (LZ3))

Construction Site: Owner/Agent: Designer/Contractor:

Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
Main entry	3 ft of door width	30	Yes	90	14
		Total Tradable Watts* =		90	14
		Total Allowed Watts =		90	
		Total Allowed Supplemental Watts** =		750	

* Wattage tradeoffs are only allowed between tradable areas/surfaces.

** A supplemental allowance equal to 750 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Main entry (3 ft of door width): Tradable Wattage				
LED: 'B': Other:	1	1	14	14
		Total Tradable Proposed Watts =		14

Section 4: Requirements Checklist

Lighting Wattage:

☐ 1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.
   Compliance: Passes.

Controls, Switching, and Wiring:

☐ 2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.
☐ 3. Lighting not designated for dusk-to-dawn operation is controlled by either a a photosensor (with time switch), or an astronomical time switch.
☐ 4. Lighting designated for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.
☐ 5. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

Exterior Lighting Efficacy:

☐ 6. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.

Exceptions:

☐ Lighting that has been claimed as exempt and is identified as such in Section 3 table above.

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☐ Lighting that is specifically designated as required by a health or life safety statue, ordinance, or regulation.

☐ Emergency lighting that is automatically off during normal building operation.

☐ Lighting that is controlled by motion sensor.

Exterior Lighting PASSES: Design 98% better than code.

Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title	Signature	Date

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 22028
WILLIAM R. HEIDEN III

May 25, 2023

PFS

PFS CORPORATION
Approval Limited to Factory Built Portion Only

State: South Carolina
Signature: *Mark Severson*
Title: Staff Plan Reviewer
Date: 6/2/23